AIRPORT MASTER PLAN

Draft Final Report

BISBEE DOUGLAS INTERNATIONAL AIRPORT

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ARMSTRONG

Bisbee Douglas International Airport Master Plan

Draft Final Report

Prepared for

Cochise County

By

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CHAPTER ONE

BISBEE DOUGLAS INTERNATIONAL AIRPORT MASTER PLAN

OVERVIEW

COCHISE COUNTY

BISBEE DOUGLAS INTERNATIONAL AIRPORT

AIRPORT MASTER PLAN

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CHAPTER 1 – BISBEE DOUGLAS INTERNATIONAL AIRPORT MASTER PLAN OVERVIEW

1.1 INTRODUCTION

In 2011, Cochise County published its first ever Strategic Plan in order to provide the most efficient and effective delivery of services to its community. Consequently, Cochise County continues to move forward with its progressive community-wide planning efforts with its decision to update the Airport Master Plan for Bisbee Douglas International Airport. Bisbee Douglas International Airport is located in Douglas, Arizona, and is a valuable resource to both the surrounding community and the County as a whole. The Airport Master Plan will ensure future airport development is designed to enhance air and ground operations and improve safety and airport services for the County, as well as the public users of the airport.

1.2 PURPOSE

An airport master plan 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 narrative report. The goal of the plan is to provide direction for future airport development that will satisfy aviation demand in a financially feasible manner and meet the needs of Cochise County with respect to the airport. This Airport Master Plan updates and replaces the 1997 Airport Master Plan.

1.3 OBJECTIVES

The primary objectives of an airport master plan are to produce an attainable phased development plan 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 County goals and objectives. There are a number of objectives that Cochise County would like to achieve as a result of this Airport Master Plan for Bisbee Douglas International Airport.

Specific goals and objectives of the project include, but are not limited to:

- Capture the issues that the proposed development will address.
- Justify the proposed development through the technical, economic, and environmental investigation of concepts and alternatives.
- Provide an effective graphic presentation of the proposed development and anticipated land uses in the vicinity of the airport.
- Establish a realistic timeframe for the implementation of the development proposed in the plan, particularly the short-term capital improvement program.
- Propose a realistic and achievable financial plan to support the prioritized implementation schedule.

- Provide sufficient project definition and detail for subsequent environmental evaluations that may be required before a project is approved.
- Present a plan that adequately addresses the issues and satisfies local, state and Federal regulations.
- Document policies and future aeronautical demand to support municipal or local deliberations on spending, debt, land use controls and other policies necessary to preserve the integrity of the airport and its surroundings.
- Set the stage and establish the framework for a continuing planning process that will monitor key activities and permit changes to the plan recommendation as required.
- Review of existing land uses surrounding the airport for compatibility and control.

1.4 Airport Master Plan Process and Schedule

Airport planning takes place at the national, state, regional, and local levels. 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 updated biennially and published by the Federal Aviation Administration (FAA). The NPIAS 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 (SIASP) 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 (RIASP) 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 and ALPs are prepared by the operators of individual airports and are usually completed with the assistance of consultants. Cochise County completed this Airport Master Plan with the assistance of Armstrong Consultants, Inc. The airport master plan process involves collecting readily available data, forecasting future aviation demand, determining facility requirements, studying various alternatives, and developing plans and schedules. **Figure 1-1** depicts the steps in the airport master plan process. This process takes into consideration the needs and concerns of the airport sponsor, airport tenants and users, as well as the general public.

1.5 Technical Advisory Committee

The Bisbee Douglas International Airport Technical Advisory Committee (TAC) consisted of members representing various interests in and around the airport. Their involvement throughout this Airport Master Plan process helped to keep interested parties informed and fostered consensus for future development actions. The TAC representatives included the following individuals:

Ann English	Chairman, Cochise County Board of Supervisors
Richard Searle	Vice-Chairman, Cochise County Board of Supervisors
Jim Vlahovich	Deputy County Administrator, Cochise County
Eddie Levins	Director of Facilities Management, Cochise County
Lisa Marra	Grants Director, Cochise County
Beverly Wilson	Planning and Zoning Director, Cochise County
Karen Lamberton	Transportation Planner, Cochise County

Elda Orduño	Deputy County Attorney, Cochise County
Jared Raymond	Airport Planner, Federal Aviation Administration
Kenneth Potts	Airport Grants Manager, ADOT MPD – Aeronautics Group
Tim Bolton	Principal Planner, AZ State Land Department
Lt. Col. David Stine	Airspace Manager, Arizona Air National Guard – 162nd FW
Lauren Ortega	Public Works Director, City of Douglas
Sam Place	Landowner, Member of the public
Belinda Burnett	Director of Aviation Programs/Chief Flight Instructor, Cochise College

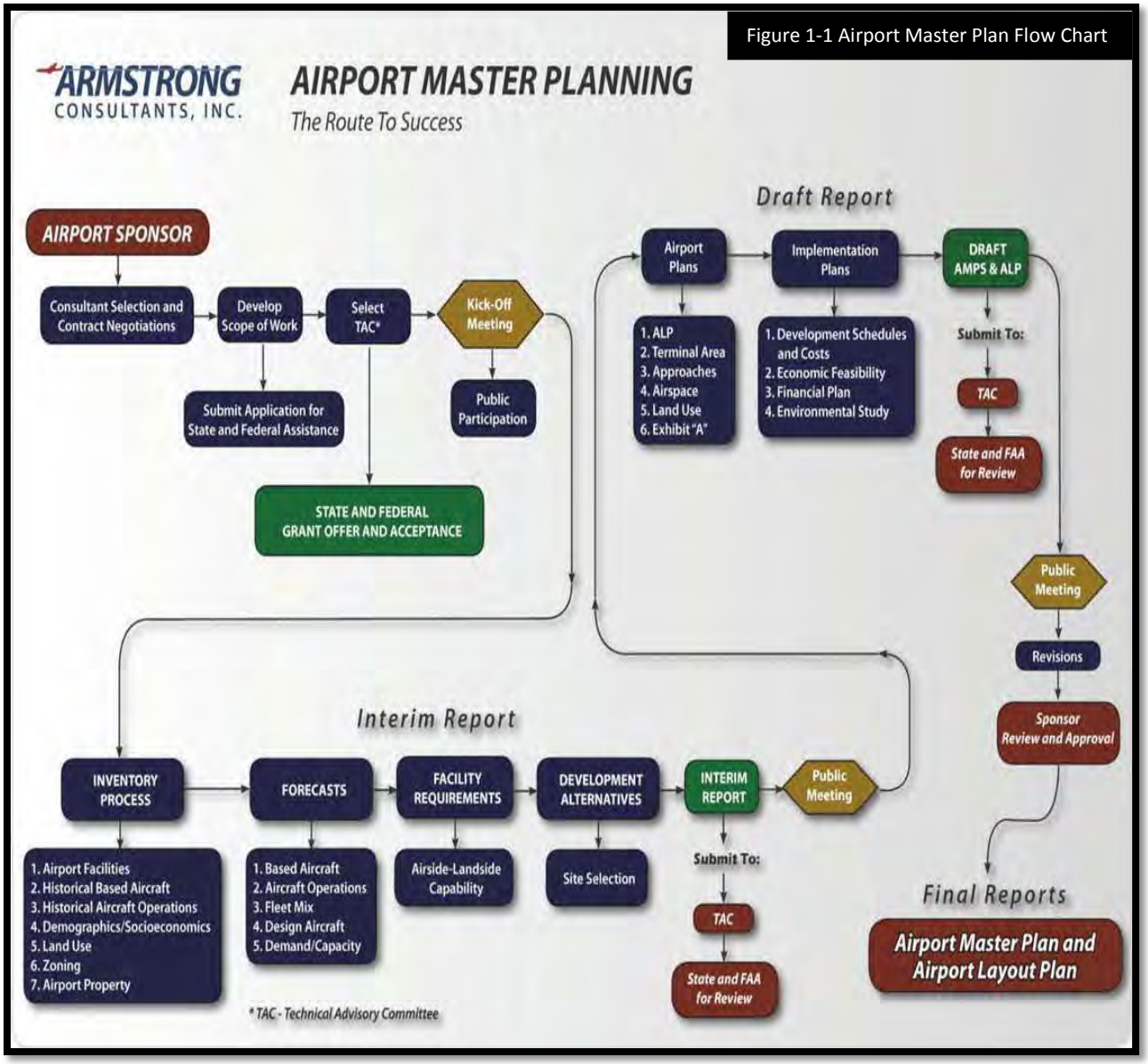

Figure 1-1 Airport Master Plan Flow Chart

CHAPTER TWO

INVENTORY OF AIRPORT ASSETS

COCHISE COUNTY

BISBEE DOUGLAS INTERNATIONAL AIRPORT

AIRPORT MASTER PLAN

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CHAPTER 2 – INVENTORY OF AIRPORT ASSETS

2.1 AIRPORT HISTORY

Bisbee Douglas International Airport (the Airport) is a general aviation airport located in southeastern Arizona, approximately ten miles north of Douglas, Arizona and 24 miles east of Bisbee, Arizona in Cochise County. The Airport is approximately 110 miles southeast of downtown Tucson and approximately 224 miles southeast of the state capitol in Phoenix, Arizona.

The Bisbee Douglas International Airport was initially constructed during 1941-1943 by the United States (U.S.) Army Corps of Engineers (through the War Department) as the Douglas Army Airfield, to become a major bomber training facility. During World War II, there were about 5,500 troops stationed at Douglas at any one time.

The original Douglas Army Airfield included seven operational runways, all over 7,000 feet in length, and 141 buildings. The present airport terminal building served as the base administration building. However, most of the original buildings are no longer in existence. Five of the original hangars, the terminal building, a few small sheds, and a small training building remain. A state prison, constructed in 1987, now occupies the area which was once a large part of the landside operations area of the Airfield.

On May 13, 1949, the U.S. government, acting through the War Assets Administration deeded the Douglas Army Airfield to Cochise County. The airfield was named Bisbee Douglas International Airport. The idea was to convert the airport to serve as the major air commerce facility in the region. As such, many of the buildings were remodeled to accommodate passenger service. For example, the base administration building was remodeled to serve as an airline terminal building; the terminal building remains today, for the most part, in its vintage configuration.

During the 1960s, the Airport did have scheduled airline service, but this is no longer the case today. Several Airport Layout Plan (ALP) record drawings have been completed for the Airport over the years starting in 1956. The ALP drawings were also updated in 1967 and 1974. The original Cochise County Airport System Plan was prepared in 1982, and updated in 1994. Perhaps the most significant to note is the phasing out of the airport's numerous runways. Of the seven original runways, only two remain in use today, Runway 17-35 and Runway 8-26. The last Airport Master Plan was prepared by Gannett Fleming and Nicolas J. Pela & Associates in 1997. There has been relatively little development activity at the Airport over recent years. It is the County's desire to create a new vision for the Bisbee Douglas International Airport, which is why the County has decided to update the Airport Master Plan.

As previously mentioned, the Airport was originally deeded by the Federal Government to Cochise County via a Quit Claim Deed dated May 13, 1949. According to the most current Airport Master Plan from 1997, this action was taken by the War Assets Administration under Reorganization Plan One of 1947 (12 Federal register 4534), and the provisions of the Surplus Property Act of 1944. The Quit Claim Deed conveyed the present airport property, as well as the then existing buildings and improvements. The conveyance was subject to several restrictions. If the terms, conditions, and obligations contained in the restrictions of the 1949 conveyance are not met by Cochise County, the airport, at the option of the

Federal Aviation Administration (FAA), may revert back to the Federal Government with sixty days notice. Cochise County would be given the sixty days to comply with any condition which is in default.

It should be noted that the development of the state prison on the Airport property did not meet the description of a "public airport use" as the original 1949 Quit Claim conveyance demanded. However, prior to the Arizona Department of Corrections (ADOC) prison development, the County requested the Administrator of the FAA to release 72.62 acres of land for non-airport use. The FAA did issue an Instrument of Release in May of 1981, which approved this development. A copy of the Quit Claim Deed can be found in **Appendix I**.

2.2 AIRPORT SERVICE LEVEL AND ROLE

Since 1970, the FAA has classified a subset of the 5,400 public-use airports in the United States as being vital to serving the public needs for air transportation, either directly or indirectly, and therefore may be made eligible for federal funding to maintain their facilities. These airports are classified within the National Plan of Integrated Airport Systems (NPIAS), where the airport service level reflects the type of public use the airport provides. The service level also reflects the funding categories established by Congress to assist in airport development.

The categories of airports listed in the NPIAS are:

Commercial Service – These are public airports that accommodate scheduled air carrier service provided by the world's certificated air carriers. Commercial service airports are either:

- Primary – a public-use airport that enplanes more than 10,000 passengers annually, or
- Non-primary - a public-use airport that enplanes between 2,500 and 10,000 passengers annually.

Reliever – This is an airport designated by the FAA as having the function of relieving congestion at a commercial service airport by providing more general aviation access. These airports comprise a special category of general aviation (GA) airports and are generally located within a relatively short distance of primary airports. Privately owned airports may also be identified as reliever airports.

General Aviation – These are airports used exclusively by private and business aircraft not providing scheduled air carrier passenger service.

Bisbee Douglas International Airport's service level is categorized in the NPAIS as general aviation. There are many GA airports that are not included in the NPIAS, however, some criterion for inclusion in the basic airport category is that the airport has at least 10 based aircraft, is located at least 30 miles away from the nearest NPIAS airport, or that the airport is a facility identified and used by certain federal agencies (U.S. Forest Service, U.S. Customs and Border Protection, etc.) or has Essential Air Service (EAS).

In the case of Bisbee Douglas International Airport, the U.S. Forest Service uses the airport exclusively approximately four months out of the year. Also, according to FAA records, as of 2012, the Airport has 12 based aircraft. The Airport is also located approximately 56 miles from Sierra Vista Municipal Airport, an airport also included in the NPIAS as a general aviation airport. The nearest NPIAS primary commercial service airport to Bisbee Douglas International Airport is Tucson International Airport, located approximately 110 miles to the northwest.

At the State level, the Arizona Department of Transportation Multimodal Planning Division – Aeronautics Group has long recognized the importance of planning as a proactive approach to ensuring aviation continues its role in the statewide transportation system. They created a similar plan to the FAA's NPIAS in 1978 called the Arizona State Airports System Plan (ASASP). The purpose of the ASASP is to provide a framework for the integrated planning, operation, and development of Arizona's aviation assets. The most current version of the ASASP was published in 2008.

The ASASP also classifies airports into service roles. Bisbee Douglas International Airport is categorized as a GA rural airport. The ASASP defines a GA rural airport as an airport that serves a supplemental role in local economies, primarily serving smaller business, recreational, and personal flying. This classification accurately describes the role Bisbee Douglas International Airport plays in the local community. The majority of the aircraft utilizing the Airport are predominately single-engine piston, multi-engine piston, turbo prop, light turbo jet, and rotorcraft aircraft. Furthermore, the role of a general aviation rural airport lends itself to specific aeronautical activities. The types of aeronautical activities found at Bisbee Douglas International Airport include the following:

Business Transportation - Business aviation users benefit by being able to travel to or from business centers to conduct business activities in a single day, without requiring an overnight stay or extensive ground travel time. Local and other small businesses generally utilize single- engine and multi-engine piston aircraft. This user category also includes state and federal agencies and travel by government officials. Bisbee Douglas International Airport is located 10 miles north of the central business district in Douglas, Arizona. Additionally, the Airport is located approximately 11 miles from the border of Agua Prieta, Mexico. Both Douglas and Agua Prieta serve as the main business districts in the area.

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. Bisbee Douglas International Airport is located in an area of the State that does attract a fair amount of tourists and contains multiple recreational activity areas. Some examples of tourist/recreational areas near the Airport are discussed in Section 2.5.1.

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 operations, day and night local and cross-country flights, and practice instrument approach procedures. Bisbee Douglas International Airport is located near Cochise College and its airport, which supports one of the State's premier college flight training programs. Cochise College student pilots and instructors frequently use the Airport for flight training activities.

Military - Military operations are those conducted by U.S. or foreign military aircraft and personnel for the purposes of national security and defense. Almost all military operations are training or proficiency activities. Bisbee Douglas International Airport is located in close proximity to Army Post Fort Huachuca/Libby Army Airfield and Davis-Monthan Air Force Base. Thus, both the Army and Air Force use the Airport and/or its airspace during training exercises and for refuelling services while in the area.

Air Medevac Services - Arizona Lifeline and Lifenet provide essential emergency medical transportation for life threatening situations and assists in patient transfers by air to higher level care facilities using both fixed-wing and helicopters. The air medevac services provide quick and efficient transportation in emergency situations when time is of the essence, resulting in lives saved.

Aerial Firefighting - The Airport is utilized by aerial firefighting aircraft during the Arizona wildfire season of May through July. The airport's configuration is able to accommodate large rotary aircraft, aerial tankers, and patrol aircraft. The U.S. Forest Service fire crew has a permanent base at the Airport during wildfire season, and one U.S. Forest Service firefighting-equipped helicopter is based on the airfield during these months.

Prison Transports - The Airport is adjacent to the Arizona State Prison Complex – Douglas, and is on occasion used by the State and County to transport prisoners. The type of aircraft utilized for prisoner transport most often is a small single-engine piston aircraft, but on occasion a larger twin-engine piston aircraft may be used.

2.3 AIRPORT SETTING

Bisbee Douglas International Airport (KDUG) is located in the southeast corner of Arizona in Cochise County, approximately 9 miles from the U.S.-Mexico border. The Airport is located within the Sulphur Springs Valley with higher terrain bordering the valley to the west and the east. The terrain surrounding Bisbee Douglas International Airport within the 20 mile valley is generally flat. The Mule Mountains are located approximately 15 miles west of the Airport and reach an elevation of 7,370 feet mean sea level (MSL). The Chiricahua Mountains are located approximately 10 miles northeast of the Airport and reach an elevation of 9,759 feet MSL.

The Airport is designated by the FAA as Site Number 00671.*A, and is situated at a field elevation of 4,150 feet MSL. An airport's location is defined by its Airport Reference Point (ARP), which is the geometric center of the runway system based upon the length of the existing runways. ARPs are calculated based on future and ultimate runway lengths and locations. The existing ARP at Bisbee Douglas International Airport is located at 31° 28' 04.88"N latitude and 109° 36' 12.08"W longitude. The existing Airport Reference Code (ARC) is listed as C-I. A more in depth description of the ARC is discussed in Section 2.13.4. The existing airport property encompasses approximately 3,000 acres which is owned and operated by Cochise County. The geographic location of Bisbee Douglas International Airport is depicted in **Figure 2-1**.

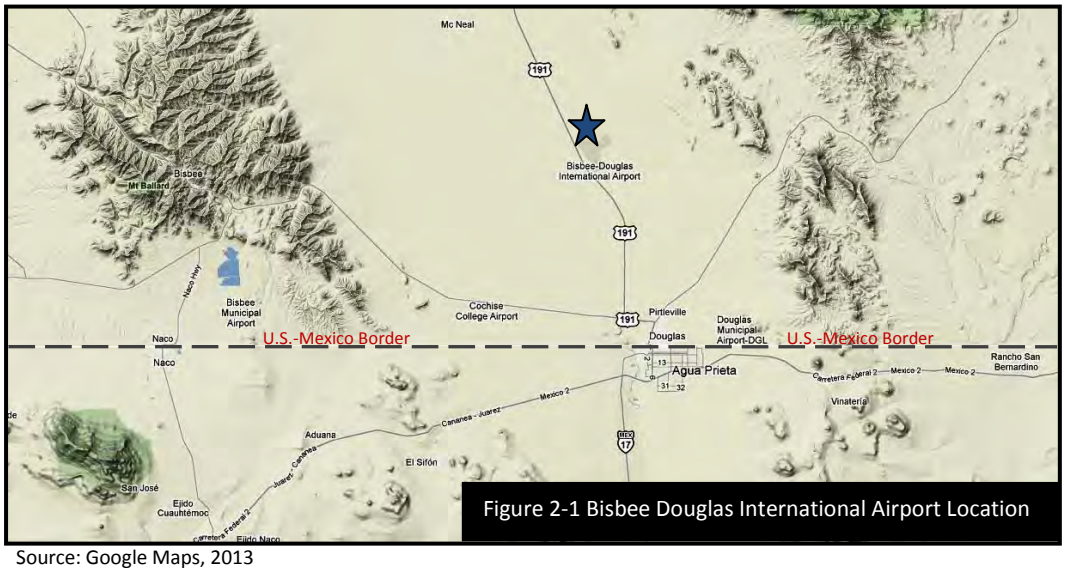


Figure 2-1 Bisbee Douglas International Airport Location

Source: Google Maps, 2013

2.4 COMPATIBLE LAND USE

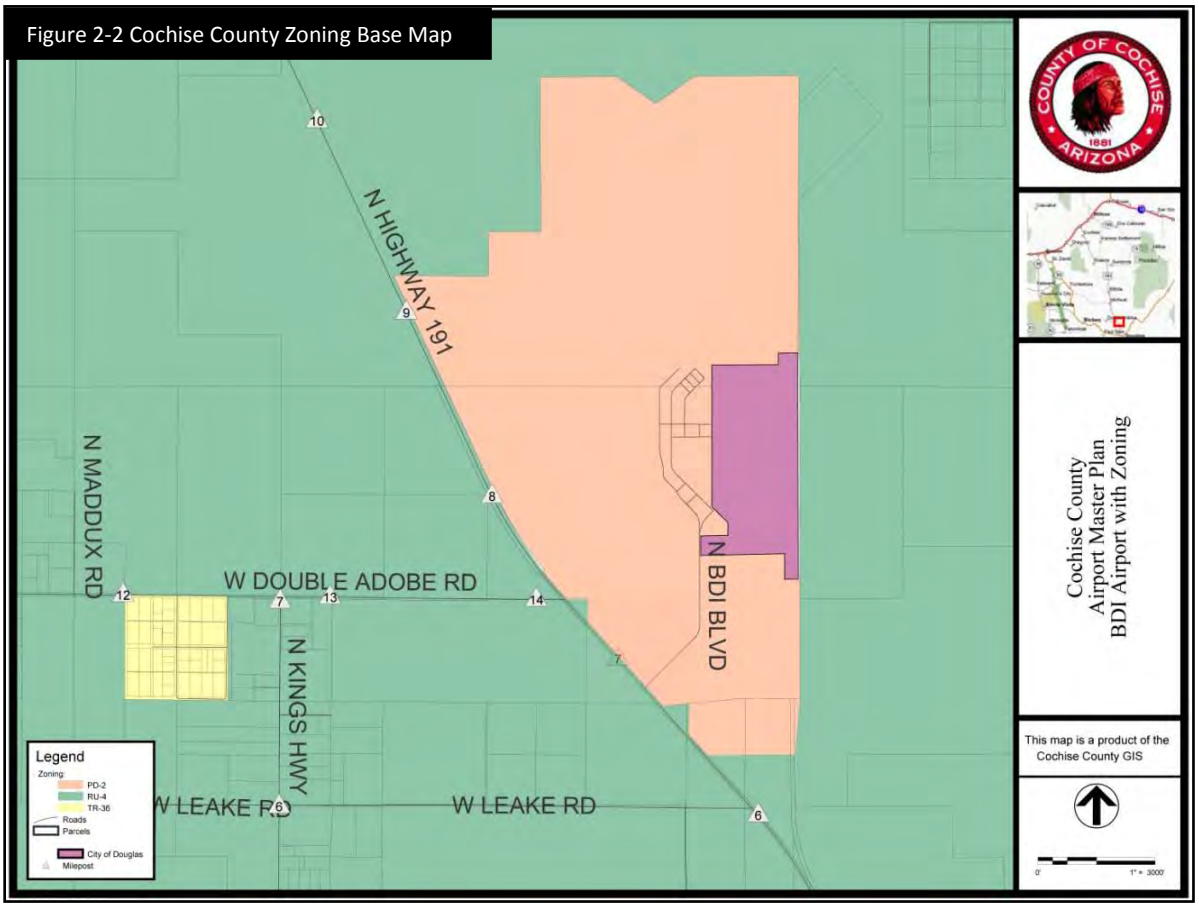
Land use compatibility conflicts are a common problem around many airports, including smaller general aviation facilities. In urban areas, as well as some rural settings, airport owners find that essential expansion to meet the demands of airport traffic is difficult to achieve due to the nearby development of incompatible land uses. Aircraft noise is generally a deterrent to residential development and other noise sensitive uses. In accordance with State of Arizona airport compatibility legislation, residential development should be placed outside of the 65 day-night average sound level (DNL) noise contour.

Conflicts may also exist in the protection of runway approach/departure and transition zones to ensure the safety of both the flying public and the adjacent property owners. Adequate land for this use should be either owned in fee or controlled through easements, as recommended in this and future sections of this Airport Master Plan.

All of the unincorporated areas of Cochise County have been zoned. The purpose of zoning is to guide the development of land in accordance with the County's Comprehensive Plan, and to promote the public health, safety, and general welfare of the County's residents. Zoning districts specify permitted land uses, minimum lot sizes, and certain site development standards. Cochise County encompasses a large and diverse area; there are 34 individual zoning districts within the County. However, for general purposes, the majority of these zoning districts can be classified into three broad groupings: Rural, Residential, and Commercial/Industrial.

According to the Cochise County zoning base map of the area, all of the airport property encompassing Bisbee Douglas International Airport is zoned as Planned Development (PD). The land surrounding the airport is identified as RU-4, indicating it is zoned as rural. The closest residential developments are located over three miles to the east and southeast of the airport. The existing Cochise County land use zoning map of the land surrounding the Airport is shown in **Figure 2-2.**

Figure 2-2 Cochise County Zoning Base Map



Source: Cochise County Planning and Zoning Department, 2013

2.5 Socioeconomic Characteristics

The socioeconomic makeup of the community of an airport is always an important aspect to examine during the airport master planning process. Examining the specific socioeconomic characteristics of Cochise 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. By analyzing the information in this Chapter, forecasts of aviation activity can be developed. The forecasts are provided in Chapter 3, Forecasts of Aviation Activity.

2.5.1 Local Profile

Bisbee Douglas International Airport is geographically situated directly to the north of Douglas, Arizona and almost directly east of Bisbee, Arizona, the two largest communities in the area. The city of Douglas has experienced both residential and economic growth within the last few years. The Douglas city-center is located approximately one mile from the U.S.-Mexico border; the Douglas Port of Entry serves as an entry/exit point for business travelers and tourists alike. The city of Bisbee, Arizona is a former

mining town with a smaller population than Douglas, but sees a steady stream of tourist activities throughout the year. Besides the rich history of the town, Bisbee relies on its eclectic artist community to draw visitors to the area.

In addition, the Airport is located adjacent to Foreign-Trade Zone 139. Foreign-Trade Zones (FTZ) are secure areas under U.S. Customs and Border Protection (CBP) supervision and are located in or near ports of entry; they are the United States' version of international free-trade zones. They are designed to encourage companies to maintain and expand their operations in the United States through such benefits as a reduction in tariffs, minimizing processing fees, expediting the transport of goods from the Port of Entry, and providing an 80 percent reduction in state real and personal property taxes. The close proximity of the Airport to FTZ 139 could be advantageous to the County; for example, with the influx of new businesses and workers to the area, an increase in aircraft operations and based aircraft could occur.

The Airport itself is located adjacent to Highway 191, which if taken north will connect to Interstate 10 (I-10). The Airport is also within close proximity to Arizona Highways 80 and 92; Highway 80 can be used to access the community of Bisbee and Highway 90 to access the community of Sierra Vista. A variety of attractions surround both Bisbee and Douglas. As previously mentioned, both towns have a rich mining history, and this living history is a large draw for tourism in the region. Additionally, the Leslie Canyon National Wildlife Preserve and San Pedro Riparian National Conservation Area are located in the vicinity which provides nature lovers a chance to observe over 238 species of wildlife. The Chiricahua Mountains, one of Arizona's largest mountain ranges, is also located close by.

2.5.2 POPULATION

According to 2010 U.S. Census data, there are 131,346 people residing in Cochise County. Furthermore, there are 17,378 people residing in Douglas, Arizona, the closest city to the Airport, and 79,138 people in the nearby Mexican border town of Agua Prieta. The population has increased at a double-digit rate from 2000-2010 in the State of Arizona, as well as in Cochise County. The population has also increased steadily in Douglas and Agua Prieta. The increase in population trend is illustrated in **Table 2-1.**

Table 2-1 Current and Historical Population

	2000	2010	Annual Growth Rate 2000-2010
Douglas, Arizona[1]	14,312	17,378	2%
Agua Prieta, Mexico[2]	61,944	79,138	2.5%
Cochise County[1]	117,755	131,346	11%
Arizona[1]	5,130,632	6,392,017	22%

Sources: [1]U.S. Census Bureau, 2000 and 2010 Census Briefs; [2]Instituto Nacional de Estadística Geografía e Informática, Mexico (web).

Population projections for Cochise County and Arizona were obtained from the Arizona Department of Administration, Office of Employment and Population Statistics. Based upon 2012 data, the population of Cochise County is projected to grow on average 1.1 percent annually between 2015 and 2030; the

population of Arizona is projected to grow on average 1.8 percent annually between 2015 and 2030. Long-range population projections for Douglas and Agua Prieta were calculated based upon the annual growth rate from 2000-2010. These projections are shown in **Table 2-2**. Traditionally, population growth in an area is advantageous to airports; an increase in an area's population often means the potential for increases in an airport's user base and aviation and non-aviation related businesses.

Table 2-2 Population Projections

	2015	2020	2025	2030	Average Annual Growth 2015-2030
Douglas, Arizona	19,186	21,183	23,388	25,822	2%[1]
Agua Prieta, Mexico	89,537	101,303	114,615	129,677	2.5%[1]
Cochise County[2]	134,166	142,398	150,247	157,693	1.1%
Arizona[2]	6,777,534	7,485,163	8,168,354	8,852,645	1.8%

Sources: [1]Table 2-1 Current and Historical Population, Armstrong Consultants, Inc. (ACI), 2013; [2]Arizona Department of Administration, Office of Employment & Population Statistics, 2012

2.5.3 EMPLOYMENT

According to the U.S. Census Bureau 2007-2011 American Community Survey 5-year Estimates, the largest industries in Cochise County are education, health care and social services, followed by public administration, professional, scientific, management, administration and waste management services, and retail trade. Employment distribution by industry for Cochise County is shown in **Table 2-3** and **Figure 2-3**.

2.5.4 ECONOMIC IMPACT OF MEXICAN BUSINESSES AND VISITORS

Since the early 1990s, Agua Prieta, Mexico has seen a considerable increase in maquiladoras (twin factories with a presence on both sides of the border that manufacture and assemble products for export). Many of the manufacturing plants in Agua Prieta operate under the maquiladoras concept in which Douglas, Arizona serves as the warehouse distribution center and Agua Prieta the manufacturing center. Agua Prieta has more than 20 manufacturing plants with multiple warehouse operations in Douglas.

The Douglas Port of Entry is open 24 hours a day, seven days a week to vehicle and pedestrian traffic. A 2007-2008 University of Arizona study indicated 81.6 percent of Mexican residents entering through Douglas did so for the purpose of shopping – the highest of all ports in Arizona. The same study also found that Mexican visitors to Cochise County accounted for 5.3 percent of countywide taxable sales. Mexican visitors spent an annual $186.4 million in Cochise County, with 55 percent of that occurring in retail stores, 24.1 percent in grocery stores, and 7.3 percent in restaurants. Accounting for indirect and induced impacts, Mexican visitors were responsible for $211.8 million in sales, 1,763 jobs, and $36.5 million in income countywide.

Table 2-3 Cochise County Employment Distribution

	Cochise County	% of Total
Agriculture, forestry, fishing, hunting, and mining	1,637	3.4
Construction	3,353	6.9
Manufacturing	1,359	2.8
Wholesale trade	828	1.7
Retail trade	5,925	12.2
Transportation, warehousing, and utilities	2,190	4.5
Information	693	1.4
Finance, insurance, real estate, rental and leasing	2,002	4.1
Professional, scientific, management, administrative and waste management services	6,404	13.2
Educational, health, and social services	9,383	19.4
Arts, entertainment, recreation, accommodation and food services	4,971	10.3
Public administration	7,394	15.3
Other services	2,298	4.7
Total	47,116	100%

Source: U.S. Census Bureau, American FactFinder, 2007-2011 American Community Survey 5-year Estimates, retrieved 2013

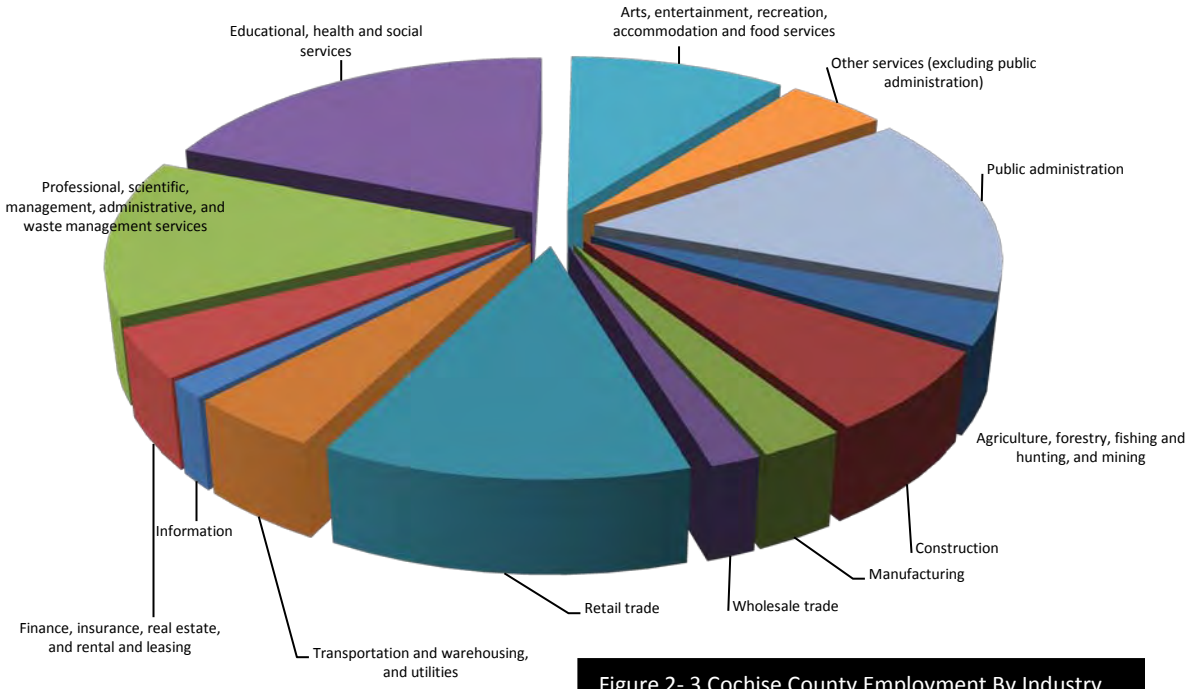


Figure 2- 3 Cochise County Employment By Industry

Source: ACI, 2013

2.5.5 INCOME

According to the U.S. Census American Community Survey 5-year Estimates for 2007-2011, the median household income in Arizona is approximately $50,752. Likewise, according to the same data, the median income for a household in Cochise County is approximately $45,906. The average number of persons per household in Cochise County is 2.53, and 2.64 for Arizona as a whole. The per capita income for 2007-2011 was $23,296 for the County and $25,784 for the State of Arizona. The percentage of families living below the poverty line for 2007-2011 was 16.2 percent for the County, as well as for the State of Arizona.

2.6 CLIMATE AND METEOROLOGICAL CONDITIONS

Meteorological conditions play an important role in the planning and development of an airport. Wind direction and speed are essential in determining optimum runway orientation. Temperatures substantially affect aircraft performance and are a major factor in runway length determination. The percentage of time an airport experiences low visibility because of meteorological conditions is a key factor in determining the need for instrument approach procedures and the type of procedure and facilities needed. The type of instrument approach procedure that might be needed, in turn, determines airspace and imaginary surface requirements. The amount and type of precipitation that occurs at an airport affects visibility and runway friction, or runway braking effectiveness. It also affects the type of maintenance equipment required, for example, snow and ice removal equipment.

2.6.1 LOCAL CLIMATIC DATA

According to the Western Regional Climate Center, the monthly average maximum temperature for the hottest month (June) is 95.0 degrees Fahrenheit. July is the month with the largest amount of precipitation (3.30 inches). The total annual average precipitation is 12.52 inches. The average total snow fall is 1.3 inches and there is typically no snow accumulation during the winter months.

2.7 SURROUNDING AIRPORTS/SERVICE AREA

As previously discussed, Bisbee Douglas International Airport is located in the southeastern region of Arizona. The region's mild climate and terrain serve as an ideal location for an airport: there are several other airports located within the region. A comparison of several other notable public airports in the vicinity of Bisbee Douglas International Airport was conducted in order to illustrate their proximity to the study airport and to give an overall picture of the types of aeronautical facilities available to the surrounding communities. This type of comparison is typically performed in order to define an airport's 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 Bisbee Douglas International Airport, the public airports in the area and their specific services and facilities were reviewed. **Table 2-4** summarizes the closest public airports and their services in relation to Bisbee Douglas International Airport. The service area includes the area within half the distance of the nearest airport with a published instrument approach procedure from Bisbee Douglas International Airport and

is depicted in **Figure 2-4**. It may be of interest to note that Bisbee Douglas International Airport (DUG), Cochise College Airport (P03), Douglas Municipal Airport (DGL), and Bisbee Municipal Airport (P04) have overlapping geographic service areas where these four airports serve the two population centers of Bisbee and Douglas. Bisbee and Douglas are not overly populous areas, and thus having four general aviation, public use airports within a relatively close proximity to one another may be a contributing factor to the lack of growth at Bisbee Douglas International Airport over the years.

Table 2-4 Bisbee Douglas International Airport and Surrounding Airports

	Identifier	Distance (Nautical Miles)	Distance (Highway Miles)	NPIAS Status	Runway Length(s) Width(s)	Pavement Type	Instrument Approaches	Fuel
Bisbee Douglas International Airport, Douglas, AZ	DUG	-	-	GA	6,430'x100' 4,966'x60'	Asphalt Asphalt	VOR/DME, GPS	Yes
Cochise College Airport, Douglas, AZ	P03	7.4 SW	15	N/A	5,303'[1]x60'	Asphalt	None	Yes
Douglas Municipal Airport, Douglas, AZ	DGL	9.1 SE	13	GA	5,760'x75' 4,095'x100'	Asphalt Dirt	None	Yes
Bisbee Municipal Airport, Bisbee, AZ	P04	15.6 SW	23	GA	5,929'x60' 2,650'x110'	Asphalt Dirt	None	Yes
Sierra Vista Municipal Airport - Libby Army Airfield, Fort Huachuca/Sierra Vista, AZ	FHU	38.6 W	56	JU	12,001'x150' 5,366'x150' 4,285'x75'	Concrete Asphalt Asphalt	ILS, LOC, GPS,VOR	Yes

Note. Abbreviations: GA= general aviation, JU= joint-use, N/A= not applicable
Source: www.AirNav.com, 2013

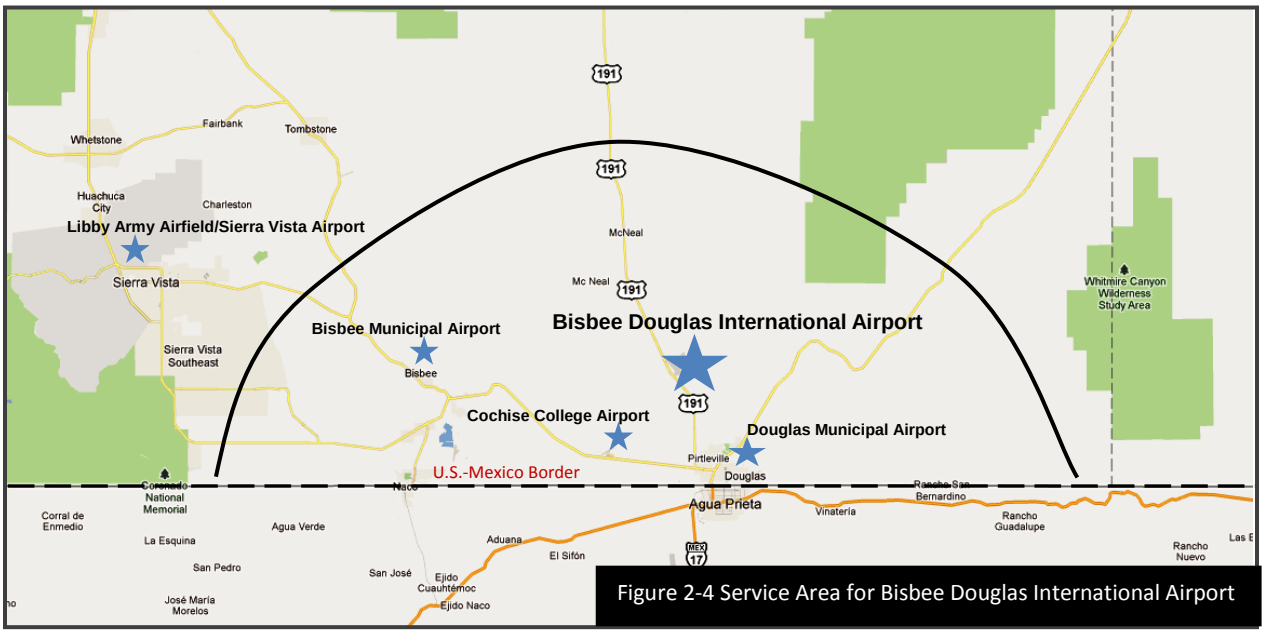


Figure 2-4 Service Area for Bisbee Douglas International Airport

Source: Google Maps, 2013

2.8 Airport Ownership and Management

Bisbee Douglas International Airport is owned and operated by Cochise County. The operation and maintenance of the airport is the responsibility of the County's Facilities Management Department. The County Board of Supervisors is responsible for the administrative and financial oversight of the airport.

2.9 Grant History

The grant history for the capital improvements at Bisbee Douglas International Airport is depicted in **Table 2-5.**

Table 2-5 Bisbee Douglas International Airport Grant History

State Fiscal Year	State Grant Number	Federal Grant Number	Project Description and Project Type	Local Amount	State Amount	Federal Amount	Total Amount
2002	2F44	N/A	Rehabilitation of Runway 17-35 Phase 1 - design only	$7,363	$7,363	$149,994	$164,720
2004	4F14	3-04-0013-02-03	Rehabilitation of Runway 8-26 and T/W TA/A4 - design/construct	$14,726	$14,726	$300,000	$329,453
2004	4S27	N/A	Master Plan Update - planning	$6,300	$56,700	-	$63,000
2005	5F40	3-04-0013-03-04	Rehabilitation of Runway 17-35 & T/W A1, A2 and A3 - design/construct	$28,684	$28,864	$1,089,973	$1,147,342
2006	6F87	3-04-0013-04-05	Rehabilitate Apron – design/construct	$6,875	$6,875	$261,250	$275,000
2010	10F09	3-04-0013-05-09	Expand main terminal apron – construct only	$18,259	$18,259	$693,852	$730,371
2011	1F03	3-04-0013-06-10	Rehabilitate T/W A1, A2 - phase 1 - design only	$3,947	$3,948	$150,000	$157,895
2013	3S1A	N/A	Crack seal and rubberized asphalt seal coat R/W 17-35 & 8-26, T/W A3 & A4 – construct only	$37,654	$338,891	-	$376,545
2013	3F2M	3-04-0013-07-12	Rehabilitate T/W A2 and new edge lighting system – construct only	$31,634	$31,634	$644,423	$707,691
2014	4S10	N/A	T/W A reconstruction – design only	$20,000	$180,000	-	$200,000
2014	4F3D	3-04-0013-08-13	Update Airport Master Plan - planning	$9,642	$9,642	$196,407	$215,690
			Total amount	**$185,084**	**$696,902**	**$3,485,899**	**$4,367,707**

Source: ADOT MPD - Aeronautics Group, September, 2013

2.10 Airport Financial Data

Financial data was obtained for the Bisbee Douglas International Airport from 2009 to 2013 in order to conduct a review of the revenue and expenditures. The data provides a baseline for the financial status of the airport and allows for further evaluation in the Airport Development and Financial Plan chapter. It is important to note that Cochise County's fiscal year is from July 1st to June 30th.

Preliminary observations of the data reveal that fuel sales were at their peak at $297,216 in fiscal year 2009/2010 and have steadily tapered off to $96,605 in fiscal year 2012/2013. Airport operations expenditures have fluctuated over recent years from a high of $418,060 in 2012/2013 to a low of $298,033 in 2010/2011. The largest source of revenue comes from the sale of water to the Arizona Department of Corrections (DOC) for the Arizona State Prison Complex – Douglas located adjacent to the Airport. The second largest source of revenue comes from the sale of aircraft fuel (Jet A and AVGAS). The Financial Chapter of the master plan report discusses the economic benefits in more detail and provides recommendations to potentially increase revenues and help fund the County's share of future airport capital improvement projects. A breakdown of airport revenues and expenditures from 2009 to 2013 for the Airport is depicted in **Table 2-6**.

Table 2-6 Bisbee Douglas International Airport Financial Data 2009-2013

	2009/20010	2010/2011	2011/2012	2012/2013	*2013/2014
Revenue					
Hangar Leases	$19,135	$18,840	$19,915	$18,615	$19,379
Other Leases	$46,742	$50,395	$50,037	$52,350	$51,573
Fuel (Jet A, AVGAS)	$297,216	$263,356	$166,461	$96,605	$91,601
Water Sales - DOC	$165,179	$184,042	$172,324	$150,557	$159,485
Other	$2,545	$5,798	$251,012[1]	$2,091	$142,931[2]
Total Revenue	**$530,817**	**$522,431**	**$659,749**	**$320,218**	**$464,969**
Expenditures					
Airport Operations	$366,645	$298,033	$352,584	$418,060	$351,997
Fuel (Jet A, AVGAS)	$279,113	$194,482	$149,205	$91,849	$50,371
Airport Facility Utility	$20,193	$19,076	$15,399	$14,574	$19,101
Other Utility	$32,311	$31,298	$33,407	$38,461	$42,600
Debt Service	$0	$0	$0	$0	$0
Total Expenditures	**$698,262**	**$542,889**	**$550,595**	**$562,944**	**$464,069**
Net Loss/Gain	**-$167,445**	**-$20,458**	**$109,154**	**-$242,726**	**$900**

Note. Fiscal Year is July 1st through June 30th; *Budget Amount (2013/2014)
[1]Includes $250,048 in miscellaneous charges for services related to the water system upgrade for the State Prison Complex
[2]Cash carried forward in budget
Source: Cochise County, September, 2013

2.11 BASED AIRCRAFT AND OPERATIONS

There are various federal, state, and local sources available for determining existing activity levels at an airport. These include, but are not limited to, FAA Form 5010-1 *Airport Master Record*, FAA Terminal Area Forecast (TAF), on-site inventory, and airport management records.

The FAA Form 5010-1 is the official record kept by the FAA to document airport physical conditions and other pertinent information. The information is typically collected from the airport sponsor and includes an annual estimate of aircraft activity as well as the number of based aircraft. The accuracy of the information contained in the 5010-1 Form varies directly with the airport manager's record keeping system and the date of its last revision. The current FAA 5010-1 Form for Bisbee Douglas International Airport indicates there are 12 based aircraft. The 5010-1 also reports 19,700 annual operations; this is based upon a 12-month reporting period which ended in April of 2012.

The TAF is a historical record and contains forecast projections of based aircraft and annual operations. The TAF is maintained and utilized by the FAA for planning and budgeting purposes. The 2014-2034 TAF data for the Airport projects 19 based aircraft and 19,650 annual operations for each year over the course of this future projection. The TAF data may not accurately reflect the based aircraft and operations numbers, as it is dependent on when it was last updated by the FAA. Furthermore, it is difficult to accurately record aircraft operations at airports that are not equipped with an air traffic control tower. Normally, operations are recorded by air traffic controllers and reported to the FAA. Bisbee Douglas International Airport does not have an air traffic control tower.

Thus, the existing activity at the Airport was evaluated using a method for estimating general aviation operations. The FAA Statistics and Forecast Branch has developed a *Model for Estimating General Aviation Operations at Non-Towered Airports using Towered and Non-Towered Airport Data.* This model was created using data from towered and non-towered general aviation airports. A dummy variable is used to differentiate between those airports having an air traffic control tower and those that do not. The model was used to estimate the number of operations at 2,789 non-towered general aviation airports included in the FAA *Terminal Area Forecasts*. The equation they developed is Equation #15, *Model for Estimating General Aviation Operations at Non-Towered Airports*. Local factors such as the number of based aircraft, population, location, and the number of flight schools is applied to the equation resulting in an estimated number of annual operations. The factors pertinent to Bisbee Douglas International Airport were applied in this formula, and the results are shown in **Appendix E**.

The estimated number of annual operations determined by Equation #15 (6,105) is much closer to those that have been reported by airport management. According to discussions with airport management, there were five based aircraft and 1,920 annual operations in 2012. The based aircraft fleet mix included four single-engine and one multi-engine aircraft. Historical based aircraft and operations are shown in **Table 2-7**.

Table 2-7 Historical Based Aircraft and Operations

Year	Total Operations	Based Aircraft
1996[1]	3,285	24
2007[2]	3,800	15
2011[3]	19,700	12
2012[4]	1,920	5
2013[5]	6,105	5

Note. [1]Bisbee Douglas International Airport Master Plan – 1996 actual data; [2]Arizona State Airports System Plan – 2007 base year data; [3]Bisbee Douglas International Airport Master Record – October 2013; [4]Bisbee Douglas International Airport Manager, November 2013; [5]Estimate of operations derived from *Model for Estimating General Aviation Operations at Non-Towered Airport, Equation #15, FAA Statistics and Forecast Branch (July 2001).*

2.12 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 Cochise County. This data indicates that there are 494 certificated pilots and 251 aircraft registered in Cochise County as of November 2013. Aircraft are not always based where they are registered. Of the 251 registered aircraft in the Cochise County, 12 are based at Bisbee Douglas International Airport according to FAA records.

2.13 Design Standards

Airport design standards provide basic guidelines for a safe, efficient, and economic airport system. The standards cover the wide range of size and performance characteristics of aircraft that are anticipated to use an airport. Various elements of airport infrastructure and their functions are also covered by these standards. Choosing the correct aircraft characteristics for which the airport will be designed needs to be done carefully so that future requirements for larger and more demanding aircraft are taken into consideration while remaining mindful that designing for large aircraft that will never serve the airport is not economical.

2.13.1 Design Aircraft

According to FAA Advisory Circular 150/5300-13A, *Airport Design*, planning a new airport or improvement to an existing airport requires the selection of one or more “design aircraft.” In most cases, the design aircraft (for the purpose of airport geometric design) is a composite aircraft representing a collection of aircraft classified by the parameters:

- Aircraft Approach Category (AAC)
- Airplane Design Group (ADG)
- Taxiway Design Group (TDG)

For the purpose of selecting a design aircraft, the FAA recommends that the most demanding aircraft, or family of aircraft, which conducts at least 500 operations per year at the airport be selected as the design aircraft. Additionally, when an airport has more than one active runway, a design aircraft is selected for each runway. According to the approved 1997 Master Plan for the Airport, the existing

design aircraft for Runway 8-26 is a light, twin-engine propeller aircraft, and the existing design aircraft for Runway 17-35 is a small corporate jet. An example of a light, twin-engine propeller aircraft is the Piper Navajo. Likewise, an example of a small corporate jet is the LearJet 25.

2.13.2 Runway Design Code (RDC)

To arrive at the RDC, the AAC, ADG, and approach visibility minimums are combined to form the RDC of a particular runway. The RDC provides the information needed to determine certain design standards that apply. The first component, depicted by a letter, is the AAC and relates to aircraft approach speed (operational characteristics). The second component, depicted by a Roman numeral, is the ADG and relates to the aircraft wingspan or tail height (physical characteristics). The final component relates to the visibility minimums expressed by runway visual range (RVR) values in feet of 1,200, 1,600, 2,400, 4,000, and 5,000. If a runway is only used for visual approaches, the term "VIS" should appear as the third component. The existing RDC for Runway 17 is C/I/5000; the existing RDC for Runway 35 is C/I/VIS; the existing RDC for Runways 8 and 26 are B/I/VIS. The FAA AC 150/5300-13A, *Airport Design*, RDC components are illustrated in **Table 2-8**.

Table 2-8 Runway Design Code

Aircraft Approach Category	Approach Speed	
Category A	less than 91 knots	
Category B	91 to 120 knots	
Category C	121 knots to 140 knots	
Category D	141 knots to 165 knots	
Category E	165 knots or more	
Airplane Design Group	**Wingspan**	**Tail Height**
Group I	< 49 feet	<20 feet
Group II	49 to 78 feet	20 to 29 feet
Group III	79 to 117 feet	30 to 44 feet
Group IV	118 to 170 feet	45 to 59 feet
Group V	171 to 213 feet	60 to 65 feet
Group VI	214 to 261 feet	66 to 79 feet
Runway Visual Range (ft.)	**Flight Visibility Category (statute mile)**	
VIS	Visual approach only	
5000	Not lower than 1 mile	
4000	Lower than 1 mile but not lower than 3/4 mile	
2400	Lower than 3/4 mile but not lower than 1/2 mile (CAT-I PA)	
1600	Lower than 1/2 mile but not lower than 1/4 mile (CAT-II PA)	
1200	Lower than 1/4 mile (CAT-III PA)	

Source: FAA Advisory Circular 150/5300-13A, *Airport Design*, 2014

2.13.3 TAXIWAY DESIGN GROUP (TDG)

The TDG design standards are based on the overall main gear width (MGW) and the cockpit-to-main gear (CMG) distance. Taxiway/taxilane width and fillet standards, and in some instances, runway to taxiway and taxiway/taxilane separation requirements, are determined by the TDG. The FAA advises that it is appropriate for a series of taxiways on an airport to be built to a different TDG standards based on anticipated use.

For airports with two or more active runways, it is advisable to design all airport elements to meet the requirements of the most demanding RDC and TDG. However, it may be more practical and economical to design some airport elements such as a secondary runway to standards associated with a lesser demanding RDC and TDG. For example, it would not be prudent for an air carrier airport that has a separate general aviation runway, or a crosswind runway for general aviation traffic, to design that runway for air carrier traffic.

The existing taxiways at the Airport vary in width from 25 feet - 75 feet. Taxiway A is 75 feet wide, categorizing it in TDG 5. Taxiway A2 is 25 feet wide, thus falling within TDG 1 standards. Finally, the remaining Taxiways A1, A3, and A4 are 35 feet wide, and therefore are categorized in TDG 2. Taxiway A5 has been abandoned, and therefore does not have an assigned TDG.

2.13.4 AIRPORT REFERENCE CODE (ARC)

The ARC is not a design standard, rather it is an airport designation that signifies the airport's highest Runway Design Code (RDC), minus the third (visibility) component of the RDC. The ARC is used for planning purposes only, and does not limit the aircraft that may be able to operate safely on the airport. According to the approved Master Plan from 1997, the current ARC for Bisbee Douglas International Airport is C-I. Examples of the types of design aircraft and their corresponding ARC are depicted in **Figure 2-5**.

2.13.5 SAFETY AREAS

Runway and Taxiway Safety Areas (RSAs and TSAs) are defined surfaces surrounding the runway and taxiway prepared specifically to reduce the risk of damage to aircraft in the event of an undershot, overshot, 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, aircraft rescue and fire fighting (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.

The runway safety areas for Runway 17-35 and Runway 8-26 at Bisbee Douglas International Airport are in good condition and appear to meet FAA standards. No apparent violations were noted at the time of the site visit. The taxiway safety areas were also reviewed and no apparent deficiencies were noted.

However, upon further review, it was discovered that the Taxiway Object Free Area (TOFA) for Taxiway A is in violation of the taxiway centerline to a fixed or movable object standard. All three hangars (one wood-framed structure and two steel-framed structures) located along Taxiway A are located approximately 100 feet from the taxiway centerline; the standard separation requirement for taxiways designated in TDG 5 states that 160 foot separation is required from the taxiway centerline to a fixed or movable object. Furthermore, the small electrical building located along Taxiway A is also approximately 100 feet from the taxiway centerline, and thus does not meet the required separation standard.

Figure 2-5 Typical Design Aircraft and Corresponding ARC

Source: ACI, 2013

2.13.6 Obstacle Free Zone (OFZ) and Object Free Area (OFA)

The 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 14 CFR Part 77 primary surface in 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.

2.13.7 Runway Protection Zone (RPZ)

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 minimums associated with that runway end.

For Runway 17-35, the RPZ begins 200 feet from the runway threshold and extends for 1,700 feet at both ends; the RPZ is 500 feet wide at the inner end and 1,010 feet wide at the outer end. For Runway 8-26, the RPZ begins 200 feet from the runway threshold and extends for 1,000 feet at both ends; the RPZ is 500 feet wide at the inner end and 700 feet wide at the outer end.

The land uses not recommended by FAA to be within the RPZ are residences and places of public assembly (churches, schools, hospitals, office buildings, shopping centers, and other uses with similar concentrations of persons typifying places of public assembly). The FAA recommends the Sponsor (Cochise County) control the RPZs through fee simple ownership or avigation easements.

2.13.8 Summary of Existing Design Standards

In summary, the FAA has numerous design standards in which airports must comply with. A review of the existing design standards for Bisbee Douglas International's runways and taxiways are depicted in **Table 2-9** and **Table 2-10**.

Table 2-9 Existing Dimensional Standards – Runways

	Runway 17-35		Runway 8-26	
Design Standards	**Existing Dimension**	**Standard Dimension**	**Existing Dimension**	**Standard Dimension**
Runway Design Code (RDC)	--	C-I	--	B-I
Runway length	6,430’	--	4,966'	--
Runway width	100’	100’	60’	60’
Runway Safety Area (RSA) width	500’	500’	120’	120’
Runway Safety Area (RSA) length beyond runway end	1,000’	1,000’	240’	240’
Runway Object Free Area (ROFA) width	800’	800’	400’	250’
Runway Object Free Area (ROFA) length beyond runway end	1,000’	1,000’	240’	240’
Runway Obstacle Free Zone (ROFZ) width	400’	400’	250’	250’
Runway Obstacle Free Zone (ROFZ) length beyond runway end	200’	200’	200’	200’
Runway Protection Zone (RPZ) length	1,700’	1,700’	1,000’	1,000’
Runway Protection Zone (RPZ) inner width	500’	500’	500’	500’
Runway Protection Zone (RPZ) outer width	1,010’	1,010’	700’	700’

Source: FAA AC 150/5300-13A, *Airport Design*, 2014

Table 2-10 Existing Dimensional Standards – Taxiways

Design Standards	Existing Dimension	Design Standard Dimension
TDG 1 – Taxiway A-2		
Taxiway Width	25’	25'
Taxiway Safety Area (TSA) width	49’	49'
Taxiway Object Free Area (TOFA) width	89’	89'
Taxiway Centerline to Fixed or Movable Object	44.5’	44.5'
TDG 2 - Taxiway A-1, A-3 and A-4		
Taxiway Width	35’	35'
Taxiway Safety Area (TSA) width	79’	79'
Taxiway Object Free Area (TOFA) width	89’	89'
Taxiway Centerline to Fixed or Movable Object	65.5’	65.5'
TDG 5 - Taxiway A		
Taxiway Width	75’	75'
Taxiway Safety Area (TSA) width	214’	214'
Taxiway Object Free Area (TOFA) width	320’	320'
Taxiway Centerline to Fixed or Movable Object	**100'**[1]	160'

Note.[1] Red text indicates the design standard is not met.
Source: FAA AC 150/5300-13A, *Airport Design*, 2014

2.14 Title 14, Code of Federal Regulations (14 CFR) Part 77 Imaginary Surfaces

The 14 CFR Part 77 *Safe, Efficient Use, and Preservation of Navigable Airspace* establishes several imaginary surfaces that are used as a guide to provide a safe and unobstructed operating environment for aviation. These surfaces, which are typical for civilian airports, are shown in **Figure 2-6**. The primary, approach, transitional, horizontal and conical surfaces identified in 14 CFR Part 77 are applied to each runway at both existing and new airports on the basis of the type of approach procedure available or planned for that runway and the specific 14 CFR Part 77 runway category criteria. For the purpose of this section, a utility runway is a runway that is constructed for and intended for use by propeller driven aircraft of a maximum gross weight of 12,500 pounds or less. A larger than utility runway is a runway constructed for and intended for the use of aircraft of a maximum gross weight of 12,500 pounds or greater. A visual runway is a runway intended for the operation by aircraft of any weight and using only visual approach procedures, with no straight-in instrument approach procedure and no 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 runway is a runway with an approved or planned straight-in instrument approach procedure.

Runway 17-35 and Runway 8-26 are the two runways currently in use at Bisbee Douglas International Airport. Runway 17 is classified as a larger than utility, non-precision instrument runway and has a RNAV (GPS) and a VOR/DME non-precision instrument approach. Runway 35 is classified as a larger than utility, visual runway. Runway 8-26 is a visual-utility runway and is used for Visual Flight Rules (VFR) operations during daylight hours only. The existing 14 CFR Part 77 surfaces at Bisbee Douglas International Airport include a non-precision approach, larger than utility runway, i.e. (>12,500 pounds) for Runway 17, a larger than utility runway visual approach for Runway 35, and a visual-utility approach for Runway 8-26. The 14 CFR Part 77 imaginary surfaces for these classifications are further described below.

2.14.1 Primary Surface

The primary surface is an imaginary surface of specific width, longitudinally centered on a runway. The primary surface extends 200 feet beyond each end of the paved surface of runways, but does not extend past the end of soft field 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 is 1,000 feet for precision runways, 500 feet for visual larger than utility runways, and 250 feet for visual-utility runways.

2.14.2 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, with approach gradients of 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 14 CFR Part 77 runway classification criteria. At Bisbee Douglas International Airport, these dimensions are 500 feet by 3,500 feet by 10,000 feet, with a 34:1 approach surface gradient for Runway 17, 500 feet by 1,500 feet by 5,000 feet, with a

20:1 approach surface gradient for Runway 35, and 250 feet by 1,250 feet by 5,000 feet, with a 20:1 approach surface gradient for Runways 8 and 26.

2.14.3 Transitional Surface

The transitional surface extends 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.

2.14.4 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 14 CFR 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.

2.14.5 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.

2.14.6 Summary of Dimensional Criteria

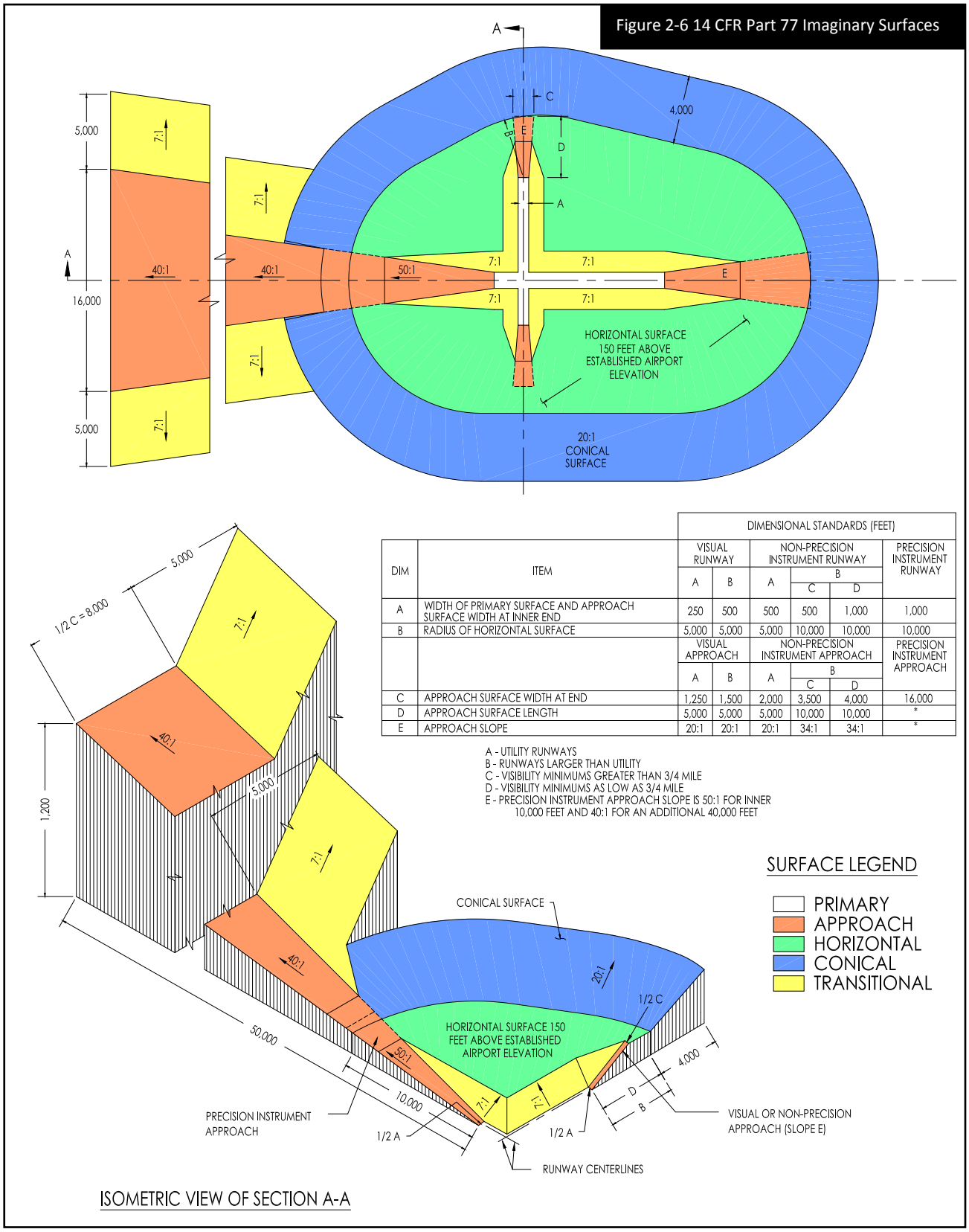
The 14 CFR Part 77 imaginary surfaces described above for the Bisbee Douglas International Airport are summarized in **Table 2-11**.

Table 2-11 14 CFR Part 77 Imaginary Surfaces

	Runway 17-35	Runway 8-26
Primary surface width	500'	250'
Primary surface beyond RW end	200'	200'
Approach surface dimensions	RW 17 (500' x 3,500' x 10,000') RW 35 (500' x 1,500' x 5,000')	250' x 1,250' x 5,000'
Approach surface slope	RW 17 (34:1) RW 35 (20:1)	20:1
Transitional surface slope	7:1	7:1

Source: 14 CFR, Part 77 *Safe, Efficient Use, and Preservation of Navigable Airspace*, 2013

Figure 2-6 14 CFR Part 77 Imaginary Surfaces



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

Source: 14 CFR, Part 77 *Safe, Efficient Use, and Preservation of Navigable Airspace*, 2013

2.15 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 Rules (VFR) or Instrument Flight Rules (IFR) requirements. These requirements include combinations of operating rules, aircraft equipment and pilot certification and vary depending on the Class of airspace. These rules 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*. A graphical representation of the different airspace classes is shown in **Figure 2-7**. General definitions of the classes of airspace are provided below:

- **Class A Airspace** - Airspace from 18,000 feet 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.
- **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 Omni-directional Range receivers (VORs).

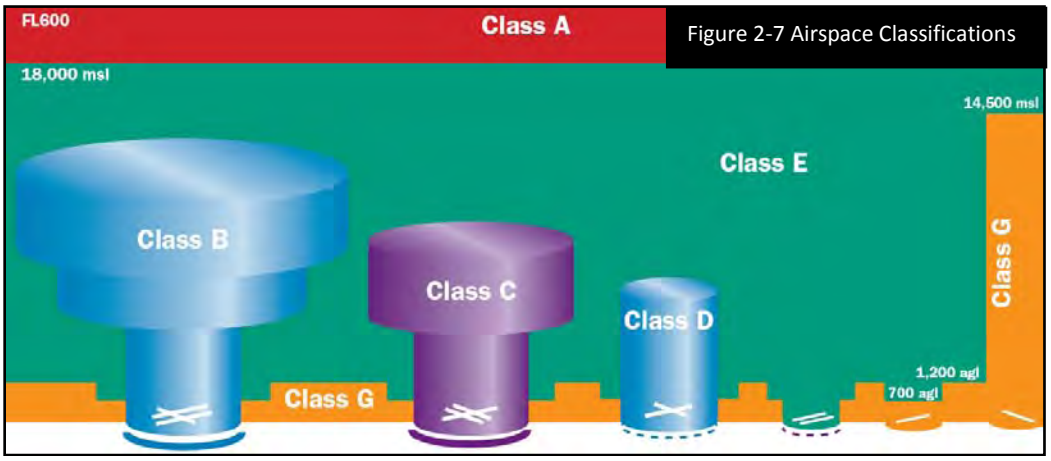


Figure 2-7 Airspace Classifications

Source: Aircraft Owners and Pilots Association, 2013

Bisbee Douglas International Airport is situated under Class E airspace starting at the surface and continuing up to 18,000 feet MSL. Pilots should check Notices to Airmen (NOTAMs) or the Airport/Facility Directory (A/FD) for Class E (surface) effective hours.

The traffic patterns at Bisbee Douglas International Airport are standard left traffic for Runway 17-35 and Runway 8-26. Traffic Pattern Altitude (TPA) is 5,150 feet MSL (1,000 feet AGL) for all aircraft. There are currently no noise abatement procedures in place at the Airport.

A Victor Airway is a special kind of Class E airspace and is like a “highway” in the sky. Many powered aircraft follow these routes. The routes connect VOR stations that radiate a signal in all directions. These stations are usually located at or near airfields. North-South Victor Airways have odd numbers while East-West airways have even numbers. These federal or Victor Airways are used by both IFR and VFR aircraft. The airspace set aside for a Victor Airway is eight miles wide with a floor at 1,200 feet AGL and extend up to FL 180 (18,000 feet MSL).

Victor Airway 66 (V-66) is a highway in the sky that connects the Douglas (DUG) VORTAC located on the airfield with the Tucson (TUS) VORTAC located approximately 79 nautical miles (nm) northwest of the Airport at Tucson International Airport. Increased air traffic can be expected in and around Victor Airways and the originating and terminating VOR.

The location of the Airport and the various airspace classifications which surround it can be seen on the VFR Phoenix Sectional Chart in **Figure 2-8**.

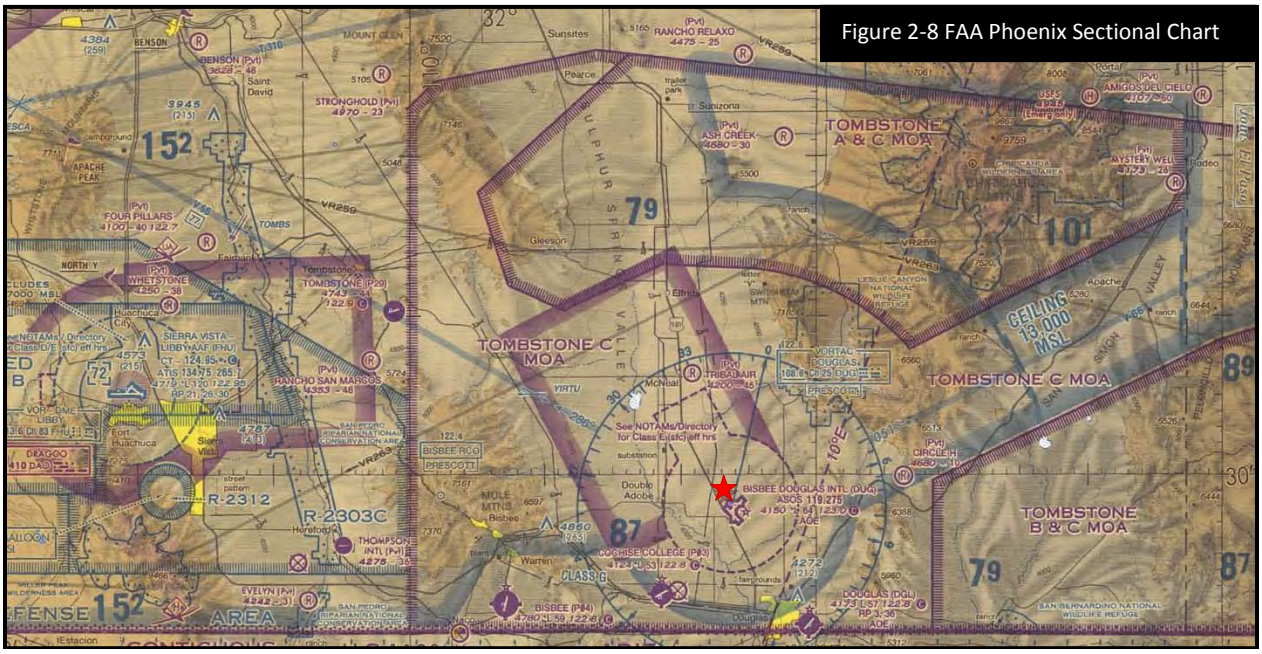


Figure 2-8 FAA Phoenix Sectional Chart

Source: www.VFRmap.com, retrieved 2013

2.15.1 Airspace Jurisdiction

Bisbee Douglas International 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 en route.

2.15.2 Airspace Restrictions

Military Operation Areas (MOAs) and Military Training Routes (MTRs) are established for the purpose of separating certain military training activities, which routinely necessitate acrobatic or abrupt flight maneuvers, from 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. Restricted areas are defined as “airspace designated under FAR Part 73, within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Most restricted areas are designated joint-use and IFR/VFR operations in the area may be authorized by the controlling ATC facility when it is not being utilized by the using agency.” Restricted areas are typically associated with military operations and indicate the existence of unusual, often invisible, hazards to aircraft such as artillery firing, aerial gunnery, or guided missiles.

Bisbee Douglas International Airport is located near three MOAs. The Airport lies under the Tombstone C MOA. The Tombstone C MOA covers the surrounding area and includes the airspace from 14,500 feet MSL to, but not including, flight level 180. The Tombstone A and B MOAs are located north and east of the Airport and include the airspace from 500 feet AGL to, but not including, 14,500 feet MSL. Above the

Tombstone C MOA is an Air Traffic Control Assigned Airspace (ATCAA) which extends from flight level 180 to flight level 510. The controlling agency for the Tombstone MOA/ATCAA is Albuquerque Center. All three MOAs are active Monday through Friday from 6:00 a.m. until 9:00 p.m. The Tombstone MOA/ATCAA may be scheduled active at other times by issuing a Notice to Airmen (NOTAM), as is done for weekend or night missions.

Aerial refueling (AR) occurs above Bisbee Douglas International Airport and may be scheduled independent of Tombstone MOA activation. AR-639A is authorized for refueling between 13,000 and 28,000 feet MSL and AR-639 is authorized for refueling between 16,000 and 28,000 feet MSL. Albuquerque Center is the controlling authority for both. The Airport may also be over flown by VFR or IFR military aircraft at fairly low altitudes transitioning to/from Sierra Vista Municipal Airport-Libby Army Airfield and the Tombstone MOA.

The Airport is also located approximately 20 nm east of the R-2303C restricted airspace. R-2303C is part of restricted airspace that surrounds the U.S. Army Post Fort Huachuca and includes the airspace from 15,000 feet MSL to 30,000 feet MSL.

Bisbee Douglas International Airport is located approximately 8 nm from the U.S. border with Mexico. Aircraft flying into the U.S. are required to follow the procedures of the Air Defense Identification Zone (ADIZ). An ADIZ is an area of airspace defined by a nation where an aircraft must identify themselves and their location in the interest of national security. An aircraft entering an ADIZ is required to contact ATC and state their planned course, destination and any other information about their trip through the ADIZ.

In addition to MOAs and Restricted airspace, Military Training Routes (MTR) pose a potential hazard to civilian aircraft. 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. Increased vigilance is recommended for pilots operating in the vicinity of these training routes. There are two MTRs in the vicinity of the Bisbee Douglas International Airport. Within 13 nm of the Airport, the centerline of the Visual MTR VR-263 arcs around the Airport from the east-northeast through north to the west-southwest. Between 085 degrees magnetic through 005 degrees magnetic, VR-263 is 23 nm wide (10 nm north and 13 nm south of centerline) and extends from 100 feet AGL to 1,500 feet AGL. In this area, the closest southern border of VR-263 lies approximately 6 nm from the Airport (051 degrees magnetic). Between 005 degrees through 255 degrees magnetic, VR-263 is 4 nm wide (2 nm north and 2 nm south of centerline) and is at a fixed altitude of 8,500 feet MSL. In this area, the closest southern border of VR-263 lies approximately 10 nm northwest of the Airport (320 degrees magnetic). The centerline of the second Visual MTR VR-259 is 6 nm wide (3 nm north and 3 nm south of centerline) and extends from 300 feet AGL to 1,500 feet AGL. The closest southern border of VR-259 is 13 nm north of the Airport (350 degrees magnetic).

Special Conservation Areas are also located in the vicinity of the Airport. This type of airspace surrounds many national parks, wildlife refuges, and other noise sensitive areas. Pilots are requested to avoid flight below 2,000 feet AGL in these areas. The San Pedro Riparian National Conversation Area is located approximately 25 nm west of the Airport, and the Leslie Canyon National Wildlife Refuge is located approximately 16 nm northeast of the Airport. Additionally, the Chiricahua Wilderness Area is located approximately 35 nm northeast of the Airport.

2.15.3 INSTRUMENT APPROACH PROCEDURES

Airport safety and capacity are greatly enhanced at airports where instrument approach procedures (IAP) are available during times of inclement weather. As the ceiling and visibility around an airport decreases, electronic guidance provided by specialized equipment to aircraft (also equipped with specialized equipment) allows pilots to safely operate and land in weather where visibility is restricted. Additionally, the availability of instrument approach capabilities at an airport increases capacity by allowing continued use of the airport by aircraft equipped to fly instrument procedures because they can still land at the airport while aircraft which can only fly during visual conditions cannot.

The instrument approach capabilities of an airport are typically broken into three categories: precision, non-precision, and visual. Precision instrument approach procedures provide very accurate electronic lateral and vertical guidance to aircraft. Non-precision instrument approach procedures also provide electronic guidance to aircraft, but the accuracy is less refined and is mainly limited to lateral guidance only. The type and accuracy of an instrument approach is highly dependent upon the airspace obstructions in the vicinity of the airport. Runways with no instrument approach capabilities are considered visual runways. Airports with published instrument approach procedures are known as Instrument Flight Rules (IFR) airports while airports with no published instrument approach procedures are considered Visual Flight Rules (VFR) airports.

The most common type of precision approach in use today is the Instrument Landing System (ILS). Non-precision approach capabilities have been greatly increased by the evolution of satellite technology, specifically Global Positioning System (GPS). The FAA has recently developed new approach procedures know as Localizer, or Lateral, Performance with Vertical Guidance (LPV). This new capability utilizes the Wide Area Augmentation System (WAAS). While not considered a precision approach, LPV provides vertical guidance to aircraft to “near precision” accuracy. Another type of instrument approach is area navigation (RNAV). This is a method of instrument flight rules (IFR) navigation that allows an aircraft to choose any course within a network of navigation beacons, rather than navigating directly to and from the beacons. RNAV can be defined as a method of navigation that permits aircraft operation on any desired course within the coverage of station-referenced navigation signals or within the limits of a self-contained system capability, or a combination of these. This can conserve flight distance, reduce congestion, and allow flights into airports without navigational beacons.

Instrument approach procedures are developed by the FAA. GPS/RNAV and/or LPV approaches require no ground based equipment; thus, the FAA can now develop approach procedures at airports where it was previously not economically feasible. Combined with evolving technology, more and more aircraft are able to safely operate in more airport environments.

The types of instrument approaches found at the Airport were described in Section 2.14. To view the published instrument approach procedures for the Airport, please see **Appendix G**.

2.16 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 varies 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 RDC is shown in **Table 2-12**. The allowable crosswind component and corresponding wind coverage percentage for Bisbee Douglas International Airport is shown in **Table 2-13**.

Historical wind data from the Douglas Automated Surface Observing System (ASOS) located on the airfield at Bisbee Douglas International Airport was used to create a wind rose and corresponding wind coverage data as seen in **Figure 2-9**. The existing runway configuration provides 99.0 percent crosswind coverage for 10.5 knots and 99.8 percent for 13.0 knots. This is more than the recommended 95 percent coverage for A-I and B-I aircraft and meets the recommended coverage for A-II and B-II aircraft.

Table 2-12 Crosswind Component

Allowable Crosswind	Runway Design Code
10.5 knots	A-I & B-I
13 knots	A-II & B-II
16 knots	A-III, B-III & C-I through D-III
20 knots	A-IV through D-VI, E-I through E-VI

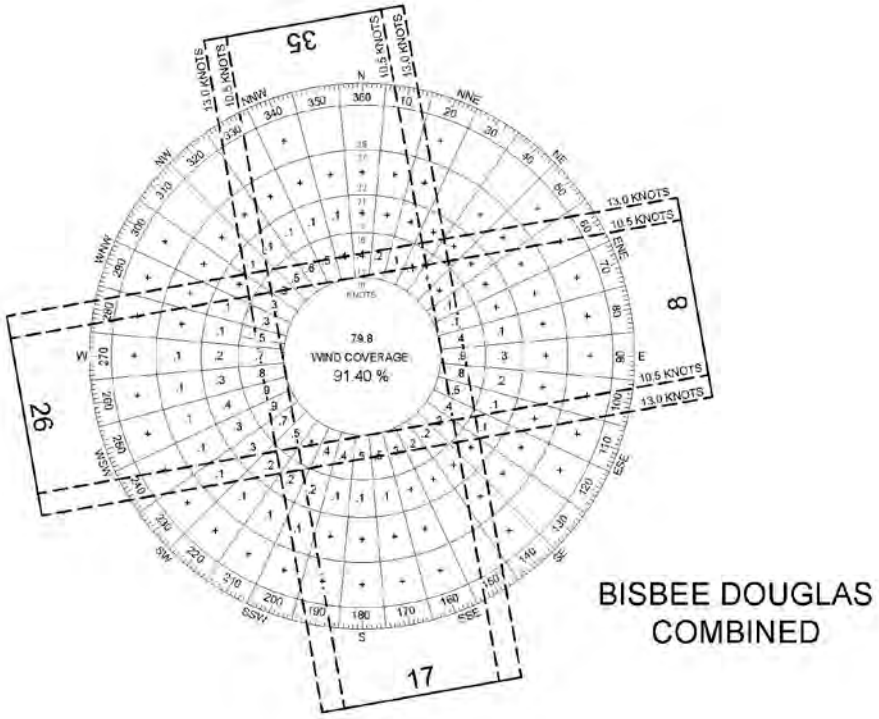
Source: FAA AC 150/5300-13A, *Airport Design*, 2014

Table 2-13 Wind Coverage – All Weather

Runway	Crosswind (knots)	Wind Coverage
17-35	10.5	87.6%
17-35	13.0	92.8%
8-26	10.5	91.2%
8-26	13.0	95.1%
Combined	10.5	99.0%
Combined	13.0	99.8%

Note. KDUG ASOS; 4,150' MSL; Time Period: 1999-2008; 78,405 wind observations
Source: Bisbee Douglas International Airport ASOS, 2013

Figure 2-9 Wind Rose



Source: ACI, 2013

2.17 EXISTING AIRSIDE FACILITY INVENTORY

The definition of airside is that portion of the airport (typically within the public safety and security fenced perimeter) in which aircraft, support vehicles, and equipment are located, and in which aviation-specific operational activities take place. The inventory of airside facilities provides the basis for the airfield demand/capacity analysis and the determination of any facility change requirements that might be identified. The various airside facilities are depicted on **Exhibit A** at the end of this section.

2.17.1 RUNWAYS

There are two active runways at Bisbee Douglas International Airport: Runway 17-35 and Runway 8-26. Runway 17-35 is 6,430 feet long, 100 feet wide, orientated in a north-south direction and serves as the primary runway. Runway 17-35 is constructed of asphalt; it also had a rubberized friction seal coat applied in 2013. The existing pavement strength ratings, or weight bearing capacity, for Runway 17-35 are 30,000 pounds gross weight single-wheel landing gear, 160,000 pounds gross weight dual-wheel landing gear, and 250,000 pounds gross weight dual-tandem wheel landing gear. Pavement markings and lighting for Runway 17-35 are discussed in Section 2.17.5. Runway 17-35 is in good condition.

Runway 8-26 is 4,966 feet long, 60 feet wide, oriented in an east-west direction and serves as the crosswind runway. According to the FAA's *Airport Master Record,* Form 5010-1 for the Airport, four foot high brush has been noted 200 feet from the end of Runway 8, and 100 feet from the end of Runway 26. The runway is constructed of asphalt, and has a 12,500 pounds gross weight single-wheel pavement strength rating/weight bearing capacity. Pavement markings and lighting for Runway 8-26 are discussed in Section 2.17.5. Runway 8-26 is in fair condition.

An interesting design feature of the Airport is the placement of the Runways in relation to each other. The end of Runway 17 is adjacent to Runway 8-26, located nearly at the mid-point of Runway 8-26. There is threshold lighting and a hold bar pavement marking located at the end of Runway 17's threshold, thus technically the two runways do not intersect. They essentially form a "T" shape. In order to access the end of Runway 17, one must use Runway 8-26 as a taxiway. As a result of this configuration, the RSA for Runway 17-35 crosses Runway 8-26.

2.17.2 TAXIWAY SYSTEM

Taxiway A is the primary taxiway providing access to both ends of Runway 17-35. Taxiway A is 75 feet wide. Taxiway A begins at the far south end of the facility near the fuel service facility and terminal building and runs north the entire length of the airside/landside boundary, eventually curving to the northeast near three of the hangars. The southern portion of Taxiway A closest to the terminal building is in good condition (see **Figure 2-10**). However, the remainder of Taxiway A is in fair condition (see **Figure 2-10**). Taxiways A-1, A-2, A-3, and A-4 serve as runway entrance/exit taxiways and connect Runway 17-35 with Taxiway A. Taxiway A-5 has been abandoned. Taxiway A-2 was recently (2013) reconstructed and is in excellent condition; it is 25 feet wide. Taxiway A-1, A-3, and A-4 are all 35 feet wide. Taxiway A-3 is in good condition, Taxiway A-4 is in fair condition, and Taxiway A-1 is in poor condition (see **Figure 2-10**). It is important to note that currently no taxiway has access to either end of runway 8-26. There are currently two angled taxiway exits located at approximately the midpoint of

Runway 8-26 which access Taxiway A-4. It was observed that the taxiway pavement markings on Taxiway A-4 were faded in some locations, and no centerline is present.

2.17.3 Aircraft Apron

The aircraft apron is constructed of asphalt and encompasses approximately 31,000 square yards. According to airport operations staff, there are 10 tie-down spaces for based and transient aircraft. The portion of the apron closest to the terminal building and fuel farm is in good condition (see **Figure 2-10**). However, the portion of the apron located further from the terminal building near Runway 35 is in poor condition; large ruts and loose aggregated were observed. A helicopter parking area is located to the southwest of the main apron and is in fair condition. The helicopter parking area is also constructed of asphalt and measures approximately 50 feet in diameter.

2.17.4 Pavement Condition Index (PCI)

According to the Arizona Department of Transportation (ADOT), the airport system in Arizona is a multimillion dollar investment of public and private funds that must be protected and preserved. The Arizona Pavement Preservation Program (APPP) has been established to assist in the preservation of the Arizona airport system infrastructure. Every year ADOT's Aeronautics Group, using the Airport Pavement Management System (APMS), identifies airport pavement maintenance projects eligible for funding for the upcoming five years. These projects will appear in the state's Five-Year Airport Capital Improvement Program. Once a project has been identified and approved for funding by the State Transportation Board, the airport sponsor may elect to accept a state grant for the project and not participate in the APPP, or the airport sponsor may sign an inter-government agreement (IGA) with the Aeronautics Group to participate in the APPP.

ADOT also conducts pavement surveys using the procedure as documented in the following publications:

- The FAA's Advisory Circular 150/5380-6B, *Guidelines and Procedures for Maintenance of Airport Pavements*.
- The American Society for Testing and Material's (ASTM's) standard D-5340, *Standard Test Method for Airport Pavement Condition Index Surveys*.

The PCI procedure is the standard used by the aviation industry to visually assess pavement condition. It was developed to provide engineers with a consistent, objective, and repeatable tool to represent the overall pavement condition. During a PCI survey, visible signs of deterioration within a selected sample area are identified, recorded, and analyzed.

According to ADOT, the results of a PCI evaluation provide an indication of the structural integrity and functional capabilities of the pavement. However, it should be recognized that during a PCI inspection only the top layer of the pavement is examined and that no direct measure is made of the structural capacity of the pavement system. Nevertheless, the PCI does provide an objective basis for determining maintenance and repair needs as well as for establishing rehabilitation priorities in the face of constrained resources. Furthermore, the results of repeated PCI monitoring over time can be used to

determine the rate of deterioration and to estimate the time at which certain rehabilitation measures can be implemented.

Pavement defects are characterized in terms of type of distress, severity level of distress, and amount of distress. This information is then used to develop a composite index (PCI number) that represents the overall condition of the pavement in numerical terms, ranging from 0 (failed) to 100 (excellent). In general terms, pavements above a PCI of 85 that are not exhibiting significant load-related distress will benefit from routine maintenance actions, such as periodic crack sealing or patching. Pavements with a PCI of 56 (65 for PCC pavements) to 85 may require pavement preservation, such as a surface treatment, thin overlay, or PCC joint resealing. Often, when the PCI is 55 or less, major rehabilitation, such as a thick overlay, or reconstruction are the only viable alternatives due to the substantial damage to the pavement structure.

For Bisbee Douglas International Airport, **Figure 2-10** depicts the most recent PCI inspection reported in the 2013 APMS update. **Figure 2-11** depicts how the appropriate repair type varies with the PCI of a pavement section.

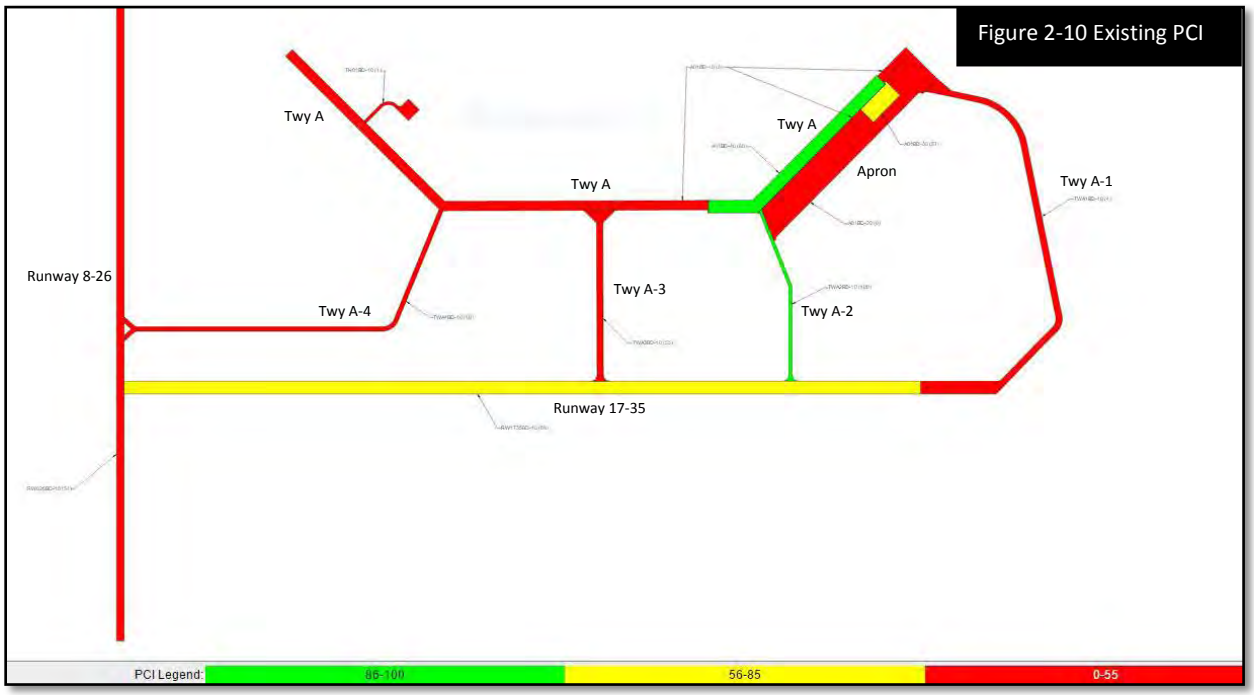
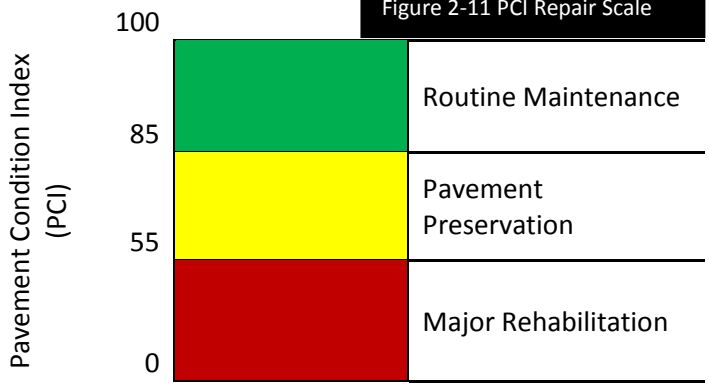


Figure 2-10 Existing PCI

Source: ADOT MPD – Aeronautics Group, retrieved 2014 from ADOT APMS IDEA website http://wwwa.azdot.gov/applications/Airports/APTech_DAP/index.html#path=3/4

Figure 2-11 PCI Repair Scale



Source: ADOT MPD – Aeronautics Group, *2010 Arizona APMS Update Statewide Summary Report,* retrieved 2014

2.17.5 Airfield Lighting, Signage, and Visual Aids

Runway 17-35 is equipped with Medium Intensity Runway Lights (MIRL) that appear to be in good condition. A 2-box VASI (Visual Approach Slope Indicator) is located to the left of Runway 17. The unit is an older model VASI and is in fair condition. Runway 17-35 is equipped with threshold lights at the end of each runway. However, Runway 17 has four threshold lights per side of the runway, while Runway 35 only has three threshold lights per side of the runway. Both the runway edge lights and VASI can be controlled by pilots by using the Common Traffic Advisory Frequency (CTAF) for operation at night. Runway 17-35 has non-precision markings that are in good condition. Runway 8-26 is used for VFR operations only during daylight hours. As such, it was noted that the runway edge lights for Runway 8-26 have been abandoned. Runway 8-26 has basic markings that are in poor condition. The runway designation numbers and centerline are highly faded.

The majority of Taxiway A is equipped with Medium Intensity Taxiway Lights (MITL). The overall condition of the lights is good. However, it was noted that around the mid-point of Taxiway A, the MITL ceased. The remainder of Taxiway A does not have any edge lighting. Taxiway A-2 is equipped with MITL that were recently installed in 2013; these lights are in excellent condition. Taxiway A-3 is also equipped with MITL and these lights are in good condition. A representation of the MITL located on the airfield is depicted in **Figure 2-12**. Taxiways A-1 and A-4 are not lit or marked with retro-reflectors. All taxiway pavement edge markings and centerlines (with the exception of Taxiway A-2) are in fair to poor condition due to fading.

Lighted airfield destination signs are installed at some of the connector taxiways. These signs are in good condition as depicted in **Figure 2-13**. Other unlighted directional signs are also located near the taxiway entrances and are also in good condition as depicted in **Figure 2-14**. Although these signs are in relatively good condition, it was noted that there are some inconsistencies with the language on the sign (i.e. taxiway locations) and what actually exists on the airfield. For example, the location sign for Taxiway A-4 also indicates a direction to Taxiway B; there is currently no taxiway in use on the airfield designated as Taxiway B. Recommendations for replacing the airfield signage in the short and long-term will be discussed further in the Facility Requirements chapter.

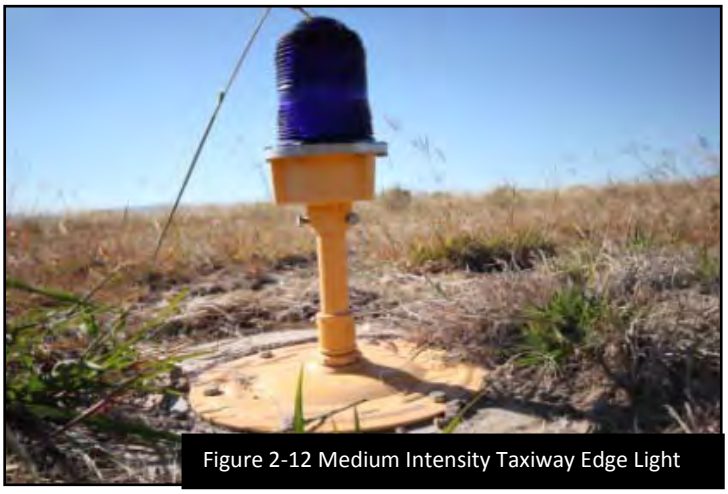


Figure 2-12 Medium Intensity Taxiway Edge Light

Source: ACI, 2013

Figure 2-13 Lighted Directional Sign

Source: ACI, 2013

Figure 2-14 Retro-Reflective Directional Sign

Source: ACI, 2013

It was noted that there is no signage on Runway 8-26 indicating the approach to Runway 17-35. Furthermore, the runway hold sign for Runway 8-26 on Taxiway A-4 is faded and cracked and is in poor condition as depicted in **Figure 2-15**.

The rotating beacon is located on top of a wood-framed hangar on the east side of the airport near the terminal building. The beacon utilizes alternating white-green lenses, indicating the airport is a lighted land airport. The beacon is in good condition, although it is outdated and should be replaced with a more energy efficient unit. The existing wind cone and segmented circle are located on the south portion of the airport property near Taxiway A-1. The wind cone is lighted and is in fair condition; the cone fabric is slightly faded. The segmented circle is in poor condition; most of it is not visible due to the overgrown vegetation and the paint is faded.

Figure 2-15 Retro-Reflective Runway Hold Sign

Source: ACI, 2013

2.17.6 Weather Reporting Systems

Automated airport weather stations are automated sensor suites which are designed to serve aviation and meteorological observing needs for safe and efficient aviation operations, weather forecasting and climatology. There are several types of automated airport weather reporting stations. These include the Automated Weather Observing System (AWOS), the Automated Surface Observing System (ASOS), and the Automated Weather Sensor System (AWSS). During the inventory of Bisbee Douglas International Airport, it was observed that the airport has an ASOS. These units are operated and controlled cooperatively in the United States by the National Weather Service (NWS), the FAA, and the Department of Defense (DOD). These systems generally report at hourly intervals, but also report special observations if weather conditions change rapidly and cross aviation operation thresholds. They generally report all the parameters of the AWOS-III (barometric pressure, altimeter setting, wind speed and direction, temperature and dew point in degrees Celsius, density altitude, visibility, and cloud ceiling), while also having the additional capabilities of reporting temperature and dew point in degrees Fahrenheit, present weather, icing, lightning, sea level pressure and precipitation accumulation. Data

dissemination is usually via an automated VHF air band radio frequency (108-137 MHz) at each airport, broadcasting the automated weather observation. This is often via the Automatic Terminal Information Service (ATIS). Most automated weather stations also have discrete phone numbers to retrieve real-time observations over the phone or through a modem. There is no ATIS frequency at the Airport, however the radio frequency for the Bisbee Douglas ASOS is 119.275, and the phone number is (520) 364-7208. The ASOS is located on the south-west portion of airport property, closest to the end of Runway 35, near Highway 191. There is an access road from Highway 191 to the ASOS station that can be reached through a locked gate. The ASOS is in good working condition.

2.17.7 Radio Navigational Aids

A Navigational Aid (NAVAID) is any ground based visual or electronic device used to provide course or altitude information to pilots. Radio NAVAIDs include Very High Omni-directional Range (VORs), Very High Frequency Omni-directional Range with Tactical Information (VOR-TACs), Non-directional Beacons (NDBs), and Tactical Air Navigational Aids (TACANs), as examples. The Douglas VORTAC is located on the north-central part of the airfield near the end of Runway 17. The Cochise VORTAC is located approximately 49 nm miles north. The Libby VOR/DME is located at Sierra Vista Municipal/Libby Army Airfield approximately 39 nm west. The Dragoo NDB is also located at Sierra Vista Municipal/Libby Army Airfield.

1 RUNWAY 17/35
2 RUNWAY 8/26
3 TAXIWAY
4 APRON
5 APRON
6 FUEL STORAGE & DISPENSING
7 LIGHTED WIND CONE WITH SEGMENTED CIRCLE
8 AIRPORT BEACON
9 AUTOMATED SURFACE OBSERVATION SYSTEM
10 VISUAL APPROACH SLOPE INDICATOR(VASI)
11 VOR TAC / DME
AIRPORT PROPERTY LINE (E)
ARIZONA DEPARTMENT OF CORRECTIONS (A.D.O.C.)
N. BDI BLVD.
N. AIR TERMINAL RD.
TAXIWAY A
TAXIWAY A1
TAXIWAY A2
TAXIWAY A3
TAXIWAY A4
RUNWAY 17/35
RUNWAY 8/26
HIGHWAY 191
EXHIBIT A
0 500 1000
SCALE IN FEET
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DATE: 03/2014
DRAWN: LDS
FILE: 6170601
CHK'D: JZP
JOB NO.: 136170

2.18 Existing Landside Facility Inventory

The definition of landside is that portion of the airport designed to serve passengers or other airport users typically located outside of the public safety and security fenced perimeter; landside facilities include terminal buildings, parking areas, entrance roadways, and other buildings that may not necessarily conduct aviation related activities. The inventory of landside facilities provides the basis for the airfield demand/capacity analysis and the determination of any facility change requirements that might be identified. The various landside facilities are depicted on **Exhibit B** at the end of this section.

2.18.1 Terminal Building

A 6,250 square foot terminal building is located on the southeast portion of the airfield, along the east side of the aircraft parking apron. The terminal building was originally built in the early 1940's, and remodeled in late 1949. The space includes a large public seating area, restrooms, a pilot lounge, a space for a restaurant (although one is currently not in operation), and several offices. The airport operations staff and three airport tenants use the building for their office space. Besides airport operations, the U.S. Forest Service, the USDA's Natural Resource Conservation Service, and the Arizona State Forestry Division are located in the building. Although dated, the building structure appears to be in good condition, but could use renovation in order to bring it up to current standards.

2.18.2 Airport Services/Fixed Base Operator

A Fixed Base Operator (FBO) is usually a private or commercial 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. These services frequently include aircraft fueling, minor maintenance and repair, aircraft rental and/or charter services, flight instruction, pilot lounge and flight planning facilities, and aircraft tie-down and/or hangar storage. There is currently no FBO present at Bisbee Douglas International Airport; however, the following services are provided by the County: weather briefing and flight planning, pilot lounge, and restrooms. Again, these facilities are in good condition, but should be updated and remodeled.

2.18.3 Hangars

There are currently four original 1940's era hangars still in use at the Airport. The first hangar is located to the east of the Taxiway A and A-2 intersection. It is approximately 40,000 square feet and is a wood-framed structure. The airport rotating beacon is located on the roof of this hangar. The hangar is in fair to poor condition. A second hangar is located further north on Taxiway A near the Taxiway A-4 intersection. This hangar is approximately 12,500 square feet and is a steel-framed structure. The frame of the hangar is in good condition, but the metal siding is in poor condition. A large depression in the pavement outside of the hangar doors was noted; this type of condition contributes to poor drainage during any type of heavy precipitation and could possibly overflow into the hangar. A third hangar is also located several hundred feet from the second one, towards the end of Taxiway A. It is approximately 12,500 square feet and is also a steel-framed structure. Again, the steel-frame is in good condition, but the metal siding is in poor condition. One airport tenant is conducting routine aircraft maintenance from this hangar. Several aircraft are inside the hangar, but according to the tenant, none are actually based on the airfield. The fourth remaining hangar is located several hundred feet behind the third hangar. It is

approximately 12,500 square feet and is also a steel-framed structure. This hangar is in good overall condition, more so than the other three.

2.18.4 Other Miscellaneous Buildings

There are several other buildings located on the landside portion of the airport that should be noted. Most of the buildings do not serve any aeronautical type of activity or function. For example, there is a large rectangular building immediately to the east of the airport access road when approaching the terminal building. This building appears to be original to the airfield and is abandoned and boarded up. The condition of the building is poor. Next to this building is another large rectangular shaped building. Although it also appears to be original to the airfield, it is in better condition than the aforementioned building. A large portion of the building is empty, and looks as if it had plans to be remodeled, but work was never completed. It was observed that some of the Arizona State Forestry equipment is being stored in an area where there is a covered awning attached to the building. The other half of the building is currently being occupied by Ames Diversified Services, LLC. This is a company who offers animal cremation services to the Animal Health Care Center, the local animal shelter for the City of Douglas and parts of southeastern Arizona, as well as to participating veterinary offices throughout Arizona. At approximately mid-field near Taxiway A, there is a small concrete block building that houses high-voltage equipment. It appears from the overhead power lines that this is the source of power for the nearby hangars. From the outside the building appears to be in good condition. Finally, there are two newer steel frame storage sheds located on the southeast portion of the airfield adjacent to the Ames Diversified Services building. They are in fair condition.

2.18.5 Access Roads and Signage

Bisbee Douglas International Airport can be accessed from Highway 191 from either direction. The main airport access road is well marked with a large white sign with the name of the airport on it. Two other signs are also located at the main entrance road; one for the USDA Natural Resource Conservation Service and one for the Arizona Department of Corrections State Prison Complex – Douglas. A cattle guard is also present at the entrance to the main airport access road. The access road is paved and in good condition. The access road terminates at the parking area for the airport terminal.

2.18.6 Automobile Parking

There are approximately six paved parking spaces located on the landside entrance to the terminal building. The asphalt pavement is in good condition.

2.18.7 Utilities

Electricity, water, sewer, refuse, telephone, and Internet services are available at the airport. Electrical service is provided by Arizona Public Service (APS). The County provides the water. The City of Douglas provides sewer service, and Waste Management Disposal provides refuse collection. Centurylink is the telephone utility provider and Transworld Network Services provides Internet service.

2.18.8 Fencing and Security

At present, there is no fencing at Bisbee Douglas International Airport separating the airside from the landside facilities. Access to the aircraft apron, and essentially all other airside locations on the airfield like the taxiways, runways, and hangars is easily accessible from the main airport access road. There is a small chain-link fence that surrounds the terminal building, but again, this does not prevent access to the apron. The only fencing that is apparent is a small five-strand barbed wire fence south of the airfield encompassing the airport property line along Highway 191. The other noticeable fence is that of the State prison on the east side of the airport property. The small property fence is depicted in **Figure 2-16**.

Figure 2-16 Airport Perimeter Fence

Source: ACI, 2013

2.18.9 Aviation Fuel Facilities

There are currently two fuel storage tanks on the Airport that are owned by the County and are operated by the airport operations staff. Each fuel tank has a capacity of 10,000 gallons; 100LL AvGas and Jet A are available. A self-service system is not available. The normal business hours for fueling are 7:30am to 4:00pm. After hours fueling is available, but for a fee. Two fuel trucks are available, one with 100LL AvGas and one with Jet A. Each fuel truck has a capacity of 1,200 gallons. A Spill Prevention, Control and Countermeasure (SPCC) Plan is on location with airport operations staff.

2.18.10 Emergency Services

Emergency response is provided by the Elfrida Fire Department; Elfrida is a small unincorporated community located 18 miles north of the Airport. The Fire Department has one full-time fire fighter and 15 volunteer firefighters, as well as three auxiliary members. Elfrida Fire is available for response to aircraft and airport facility emergencies using standard response equipment such as fire trucks,

ambulatory services, and hazardous material containment equipment. The average response time is 20 minutes. Should the need arise, Elfrida Fire Department may call upon assistance from the Douglas Fire Department or the Bisbee Fire Department, which has an average response time of 30-40 minutes to the Airport. The closest facility that can provide medical emergency services is the Southeast Arizona Medical Center located approximately 10 miles south in Douglas, Arizona. The Medical Center is a fully staffed hospital with 24-hour emergency room service.

2.18.11 Airport Support and Maintenance

There is one airport support and maintenance equipment building located on the Airport. It is located on the south portion of the airfield next to the fuel storage tanks and the terminal building. It mostly consists of a large covered awning and a small garage sized enclosed area. The garage has several small maintenance related equipment inside. The small fuel service trucks and a large tractor with a mower attachment are located underneath the large awning. The steel structure itself is in good condition. The large tractor and mower attachment are in fair condition. The airport support, maintenance, and other required equipment is provided by Cochise County. All the equipment is operated by airport operations staff or other Facilities Management Department County employees. No other support or maintenance equipment that is actively being used was observed.

Trucks:

1) 1970's era dual-wheel Ford Jet A fuel truck
2) 1970's era dual-wheel Ford AVGas 100LL fuel truck

Maintenance equipment:

1) 1980's era Ford 5610 diesel tractor used for mowing
2) 1990's era Ford Broce Broom

2.18.12 Airport Sustainability

The FAA began focusing on sustainability at airports in 2010, and has said that their objective is to make sustainability a core objective in airport planning. The FAA has provided airports across the United States with funding to develop comprehensive sustainability planning documents. These documents, called sustainability master plans and airport sustainability plans, include initiatives for reducing environmental impacts, achieving economic benefits, and increasing integration with local communities. To date, the FAA has funded 45 airports across the United States.

The FAA Reform and Modernization Act of 2012, Section 133 of H.R. 658, requires airport master plans to address the feasibility of solid waste recycling at an airport, minimizing the generation of waste, operation and maintenance requirements, the review of waste management contracts, and the potential for cost savings or revenue generation. The FAA is in the process of crafting guidance for airport sponsors to use in developing a recycling program at their airport as part of an airport master plan. Solid waste is being collected from the terminal building and disposed of by a waste collection company, however, it is not known if any recycling is taking place by any of the airport tenants. Recommendations for ways to implement a recycling program and other sustainability practices will be discussed in the Facility Requirements chapter.

EXHIBIT B

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BISBEE DOUGLAS INT'L AIRPORT
Bisbee, Arizona

EXISTING LANDSIDE FACILITIES

SCALE:	PER BAR SCALE	DATE:	03/2014
DRAWN:	LDS	FILE:	6170601
CHK'D:	JZP	JOB NO.:	136170

2.19 ENVIRONMENTAL INVENTORY

In the airport master planning process, planners are required to identify potential key environmental impacts of the various airport development alternatives so that those alternatives can avoid or minimize impacts on sensitive resources. The evaluation of potential environmental impacts should only be done to the level necessary to evaluate and compare how each alternative would involve sensitive environmental resources. The data compiled in this section will be used in evaluating proposed airport development alternatives and to identify any required environmental permits for the recommended projects. Letters were sent to various federal and state agencies who oversee the environmental topics described within this section asking for any information pertaining to the Airport and its surrounding area. The names of the agencies, as well as a sample letter that was sent to each agency, can be viewed in **Appendix C**. Any responses received from the agencies can also be found in Appendix C.

2.19.1 AIR QUALITY

The U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) based on health risks for six pollutants: carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, ozone, and two sizes of particulate matter (PM) measuring 10 micrometers or less in diameter and PM measuring 2.5 micrometers in diameters.

According to the EPA, an area with ambient air concentrations exceeding the NAAQS for a criteria pollutant is said to be a nonattainment area for the pollutant's NAAQS, while an area where ambient concentrations are below the NAAQS is considered an attainment area. The EPA requires areas designated as nonattainment to demonstrate how they will attain the NAAQS by an established deadline. To accomplish this, states prepare State Implementation Plans (SIPs) which are typically a comprehensive set of reduction strategies and emissions budgets designed to bring the area into attainment. A graphical illustration of counties designated nonattainment for NAAQS is depicted in **Figure 2-17**.

In a 1990 clarification, the Douglas-Paul Spur Group I Area was specified to include all or part of eight contiguous townships in and around the City of Douglas and the Paul Spur unincorporated area. Consistent with EPA's PM-10 grouping scheme, the Douglas-Paul Spur Group I Area was designated and classified as a moderate PM-10 nonattainment area upon enactment of the 1990 Clean Air Act (CAA) amendments. The Arizona Department of Environmental Quality (ADEQ) is currently developing a maintenance plan and request for re-designation for the Douglas-Paul Spur PM-10 nonattainment Area. A graphical illustration of the ADEQ nonattainment and attainment areas are depicted in **Figure 2-18**.

It appears that the Bisbee Douglas International Airport is partially located in the Sulphur Dioxide Attainment area with a maintenance plan, and the PM-10 Attainment area with a maintenance plan, as shown in **Figure 2-19**. Further evaluation of potential air quality impacts will be discussed in the Environmental Overview chapter.

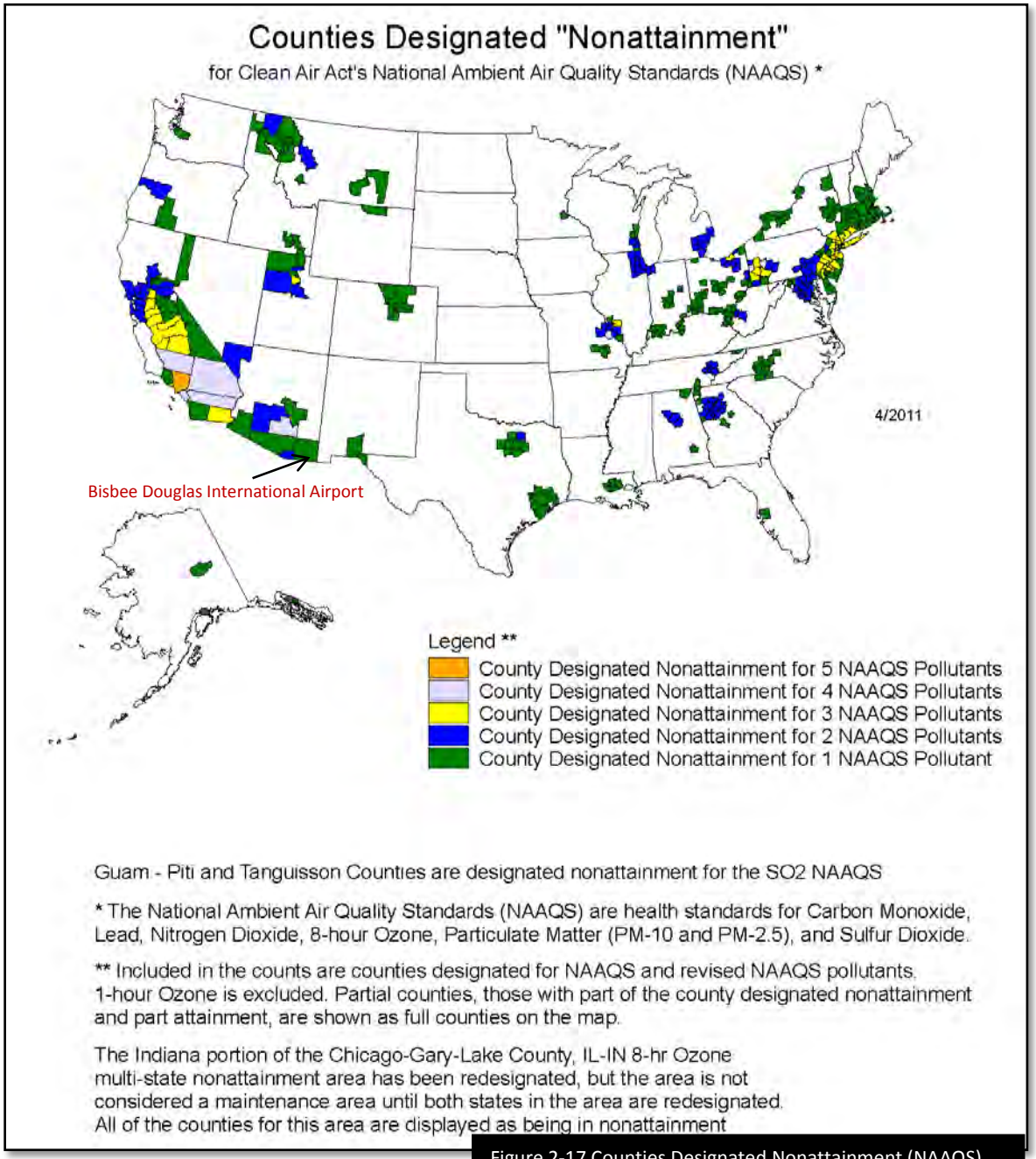


Figure 2-17 Counties Designated Nonattainment (NAAQS)

Source: U.S. EPA, 2013

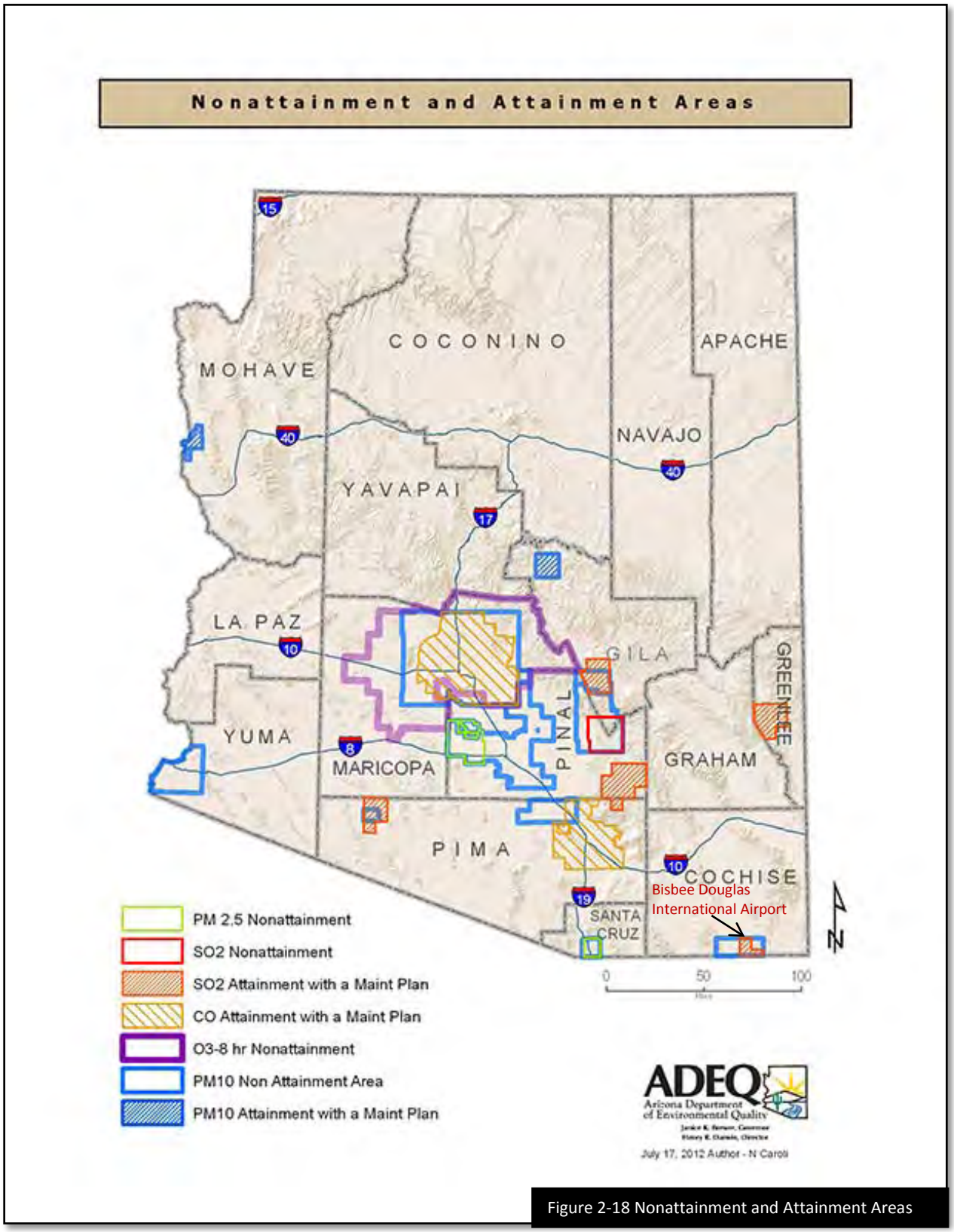


Figure 2-18 Nonattainment and Attainment Areas

Source: ADEQ, 2013

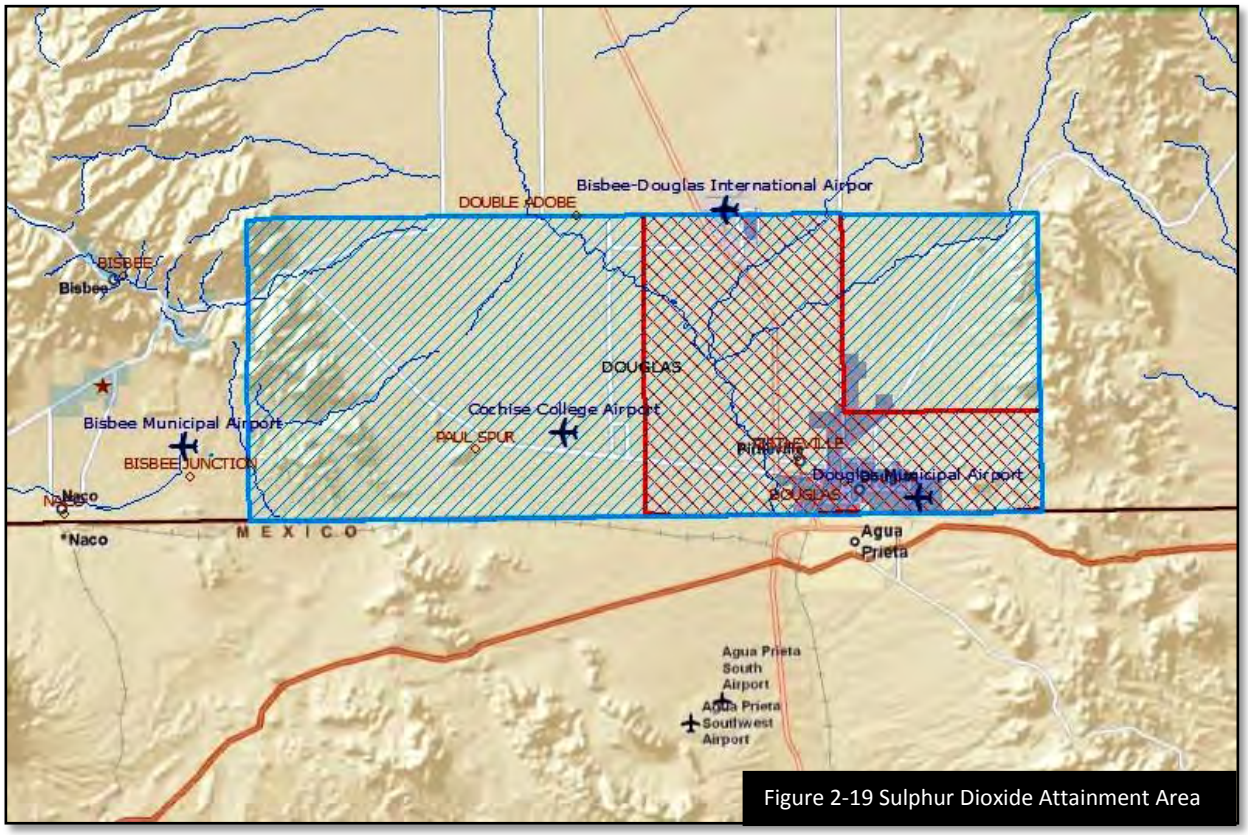


Figure 2-19 Sulphur Dioxide Attainment Area

Source: ADEQ, 2013

2.19.2 Biotic Communities/Endangered and Threatened Species of Flora and Fauna

Consideration of biotic communities and endangered and threatened species is required for all proposals under the Endangered Species Act as Amended. Section 7 of the Endangered Species Act as Amended requires each Federal agency to insure that any action the agency carries out "is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat" of critical species.

All of the federally listed threatened and endangered species within Cochise County are shown in **Table 2-14**. Cochise County encompasses a large area, and therefore all of the threatened and endangered species listed on Table 2-14 are not necessarily found at Bisbee Douglas International Airport.

Table 2-14 Threatened, Endangered, and Candidate Species - Cochise County, Arizona

Common Name	Scientific Name	Status
Arizona treefrog	*Hyla wrightorum*	Candidate
Beautiful shiner	*Cyprinella formosa*	Federally Threatened
Canelo hill ladies'-tresses	*Sprianthes dielitescens*	Federally Endangered
Chiricahua leopard frog	*Rana chiricahuensis*	Federally Threatened
Cochise pincushion cactus	*Coryphantha robbinsorum*	Federally Threatened
Desert pupfish	*Cyprinodon macularius*	Federally Endangered
Gila chub	*Gila intermedia*	Federally Endangered
Gila topminnow	*Poeciliopsis*	Federally Endangered
Huachuca springsnail	*Pyrgulopsis thompsoni*	Candidate
Huachuca water-umbel	*Lilaeopsis schaffneriana var. recurva*	Federally Endangered
Jaguar	*Panthera onca*	Federally Endangered
Lesser long-nosed bat	*Leptonycteris curasoae yerbabuenae*	Federally Endangered
Loach minnow	*Tiaroga cobitis*	Federally Endangered
Mexican spotted owl	*Strix occidentalis lucida*	Federally Threatened
New Mexico ridenose rattlesnake	*Crotalus willardi obscurus*	Federally Threatened
Northern aplomado falcon	*Falcon femoralis septenrionalis*	Federally Endangered
Northern Mexican gartersnake	*Thamnophis eques megalops*	Proposed Threatened
Ocelot	*Leopardus pardalis*	Federally Endangered
San Bernadino springsnail	*Pyrgulopsis bernadina*	Federally Threatened
Sonora tiger salamander	*Ambystoma tigrinum*	Federally Endangered
Sonoran desert tortoise	*Gopherus morafkai*	Candidate
Southwestern willow flycatcher	*Empidonax traillii*	Federally Endangered
Spikedace	*Meda fulgida*	Federally Endangered
Sprague's pipit	*Anthus spragueii*	Candidate
Yaqui catfish	*Ictalurus pricei*	Federally Threatened
Yaqui chub	*Gila purpurea*	Federally Endangered
Yaqui topminnow	*Poeciliopsis occidentalis*	Federally Endangered
Yellow-billed cuckoo	*Coccyzus americanus*	Proposed Threatened

Source: US Fish and Wildlife Service, October 2014

2.19.3 Coastal Zone Management Program and Coastal Barriers

Bisbee Douglas International Airport is not located within or adjacent to a coastal zone. Any proposed action and reasonable alternatives will not adversely impact the coastal zone natural resources protected by the National Oceanic and Atmospheric Administration (NOAA) regulations under 15 CFR Part 930.

2.19.4 Department of Transportation (DOT) Act, Section 4(f)

Section 4(f) of the DOT Act places restrictions on the use of any publicly-owned recreational land, public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance. There are no Section 4(f) resources in the vicinity of the Bisbee Douglas International Airport. The nearest Section 4 (f) resource is the Douglas Golf Course which is located over 6 miles south of the Airport.

2.19.5 FARMLAND

The Farmland Protection Policy Act (Public Law 97-98) directs federal agencies to use criteria developed by the U.S. Department of Agriculture to identify and analyze impacts related to the conversion of farmland to nonagricultural uses. According to the U.S. Department of Agriculture, Natural Resources Conservation Services (NRCS), the airport consists of the following soils:

- 13-Bonita-Forrest complex (Farmland of unique importance)
- 56-Elgin-McAllister-Stronghold complex (Prime farmland if irrigated)
- 79-Guest silty clay loam (Nonprime farmland)

It is important to note that there are currently no active farming activities taking place on the Airport property. According to the Farmland Protection Policy Act, the regulation does not apply to land already committed to "urban development or water storage," i.e., airport developed areas, regardless of its importance as defined by the NRCS. The farmland soil classifications in the vicinity of the Bisbee Douglas International Airport are shown in **Figure 2-20**.

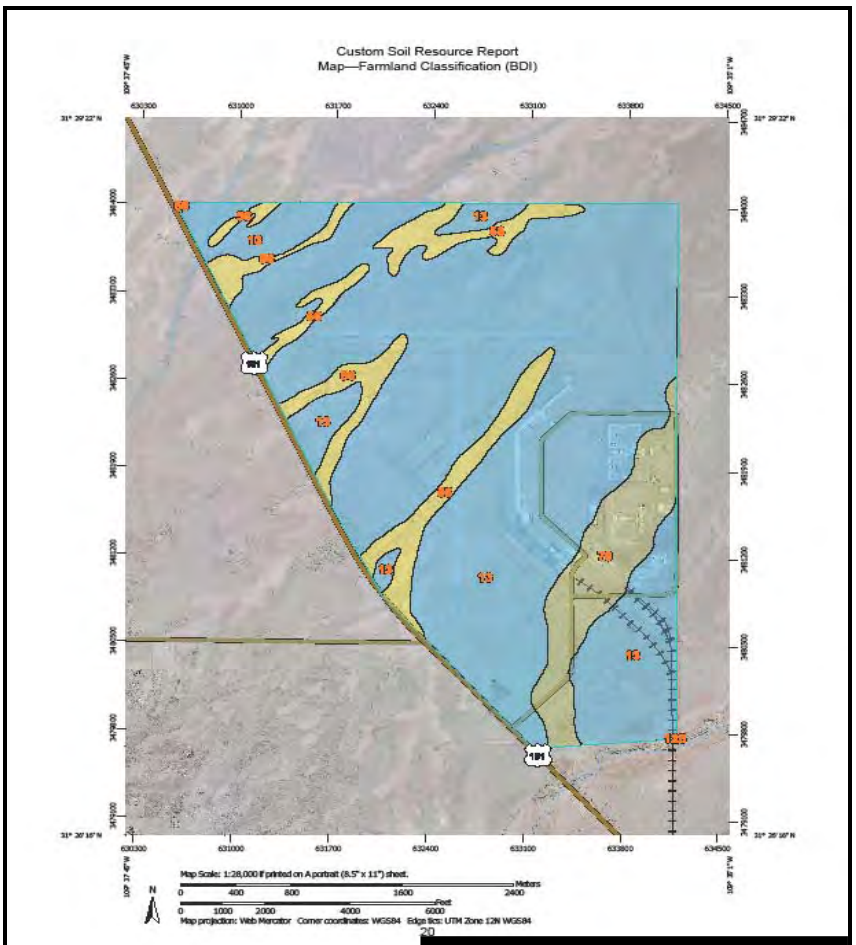


Figure 2-20 Farmland Soil Classification

Source: U.S. Department of Agriculture, Natural Resources Conservation Services, 2013

2.19.6 FLOODPLAINS

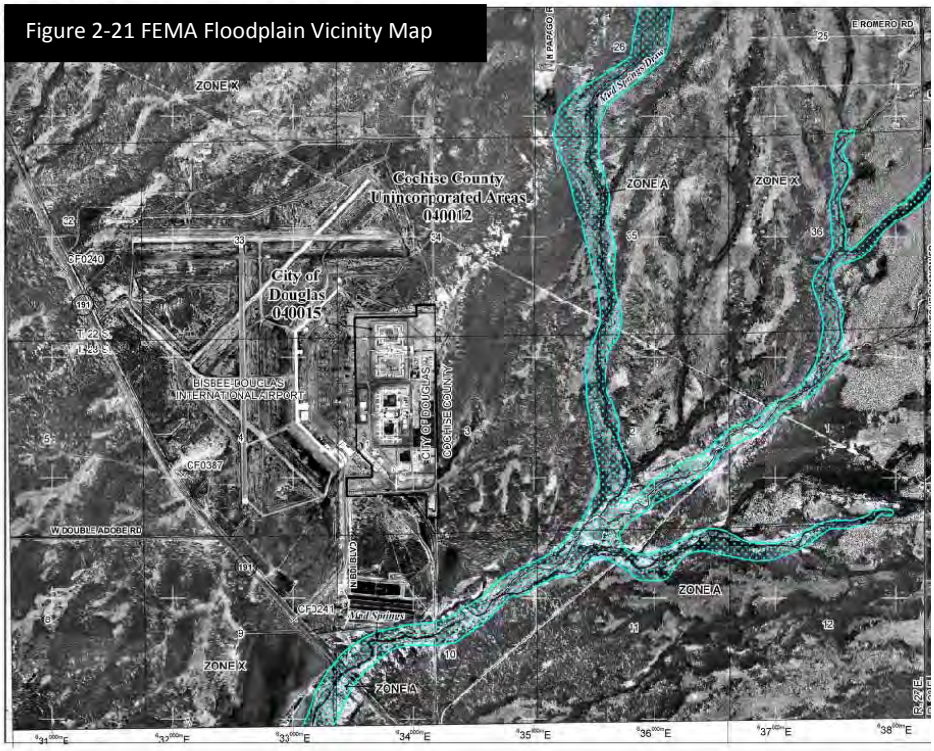
Floodplains are defined as "the lowland and relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year."

The Threshold of Significance (TOS) is exceeded when there is an encroachment on a base floodplain (100-year flood). An encroachment involves:

- A considerable probability of loss of life;
- Likely future damage associated with encroachment that could be substantial in cost or extent, including interruption of service or loss of vital transportation facilities; or
- A notable adverse impact on natural and beneficial flood plain values.

According to the Federal Emergency Management Agency (FEMA) National Flood Insurance Rate Map, Bisbee Douglas International Airport is not located in a floodplain. The airport is adjacent to a Special Flood Hazard Area which is located southeast of the airport property. The FEMA designated floodplains in the vicinity of the Bisbee Douglas International Airport are illustrated in **Figure 2-21**.

Figure 2-21 FEMA Floodplain Vicinity Map



Source: FEMA, 2013

2.19.7 Historic, Architectural, Archeological, and Cultural Resources

The National Historic Preservation Act (NHPA) of 1966, as amended, requires that an initial review be made to determine if any properties that are 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 Archeological and Historic Preservation Act (AHPA) of 1974 provides for the survey, recovery, and preservation of significant scientific, prehistoric, historical, archeological, or paleontological data when such data may be destroyed or irreparably lost due to a federally licensed or funded project.

To date, a cultural resource survey at the Bisbee Douglas International Airport has not been completed. There are several original steel-framed and wood-framed aircraft hangars, along with other long-standing structures at the Airport that may be eligible for the National Register of Historic Places (NRHP). An agency coordination letter was sent to the Arizona State Historic Preservation Office (SHPO) in order to determine if any of the proposed projects would potentially have an effect on a property which has been identified as having historical, architectural, archeological, or cultural significance. Based on a telephone conversation with the Arizona SHPO, they indicated that a written response would not be provided, and recommended that a review of their online database be preformed. Prior to any modifications or demolition to any of the existing structures on the airfield, a review of the database by the County will be necessary.

2.19.8 Noise

Most land uses are considered to be compatible with airport noise that does not exceed 65 decibels (dB), although FAR Part 150 declares that "acceptable" sound levels should be subject to local conditions and community decisions. Nevertheless, 65 dB is generally identified as the threshold level of aviation noise which is "significant." The FAA has established 65 DNL as the threshold above which aircraft noise is considered to be incompatible with residential areas. In addition, the FAA has determined that a significant impact occurs if a proposed action would result in an increase of 1.5 DNL or more on any noise-sensitive area within the 65 DNL exposure areas.

The existing and forecast levels of traffic are below the current threshold of significance (90,000 annual propeller aircraft operations or 700 annual jet operations) for environmental analysis on federally-aided projects, as defined by FAA Order 1050.1E. Therefore, no noise analysis is required.

2.19.9 Land Use Compatibility

The compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of noise impacts related to that airport. There currently are no generated noise contours for the Airport due to the low activity. Should the Airport generate enough operations to warrant contours, those will have to be addressed and compatibility will have to be reviewed. Likewise, there are no existing non-compatible land uses on or near the Airport.

2.19.10 Light Emissions

Installation of all outdoor lighting fixtures (non-aviation related) must comply with Cochise County's Light Pollution Code, found within Article 1810 – Outdoor Lighting Standards of the County's Zoning Regulations. No impacts are known to occur based on the existing configuration of the airfield.

2.19.11 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...a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas..."

As depicted on **Figure 2-22**, and according to the U.S. Fish and Wildlife Service's National Wetlands Inventory, no wetlands presently exist on or adjacent to the Airport property.

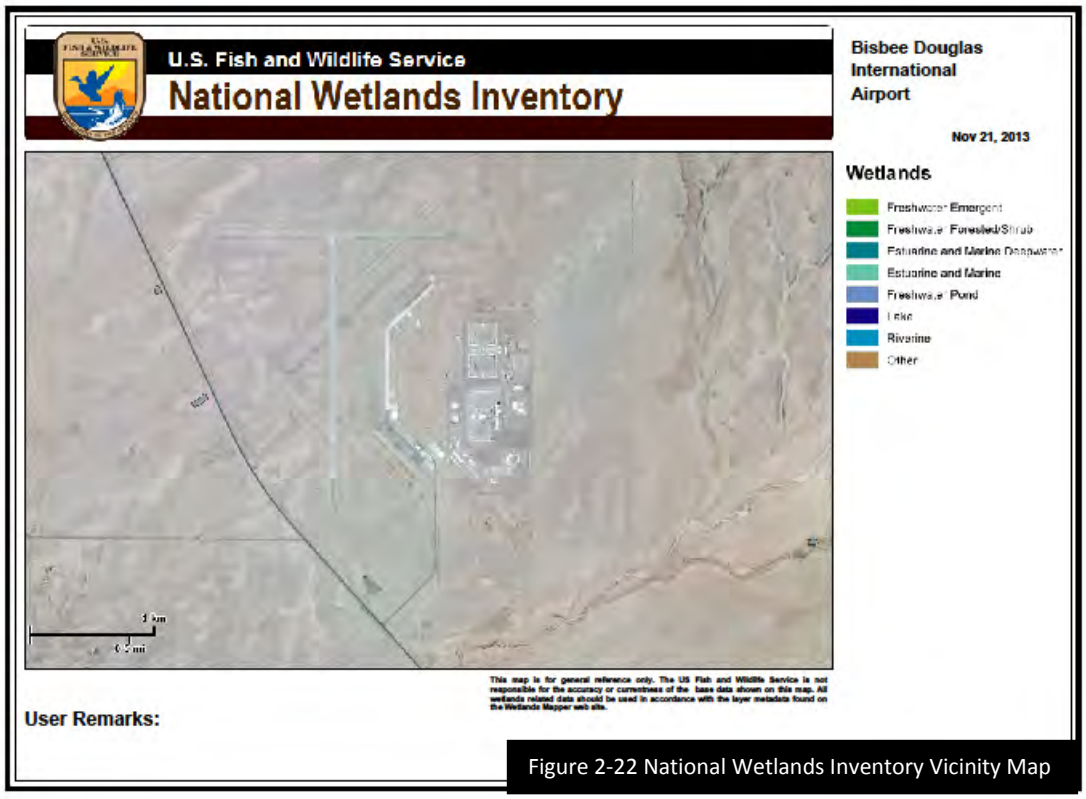


Figure 2-22 National Wetlands Inventory Vicinity Map

Source: U.S. Fish and Wildlife Service, 2013

CHAPTER THREE

FORECASTS OF AVIATION ACTIVITY

COCHISE COUNTY

BISBEE DOUGLAS INTERNATIONAL AIRPORT

AIRPORT MASTER PLAN

ARMSTRONG

CHAPTER 3 – FORECASTS OF AVIATION ACTIVITY

3.1 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 potential 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 in order to promote the orderly development of aviation facilities at Bisbee Douglas International Airport.

At airports not served by air traffic control towers, approximations of existing aviation activity are necessary in order to form a basis for the development of reasonable forecasts. Unlike towered airports, non-towered general aviation airports have historically not tracked or maintained comprehensive logs of aircraft operations. Approximations of existing aviation activity are based on a review of based aircraft, available historical data, available local information and regional, state, and national data that form the baseline to which forecasted aviation activity trends are applied. The Arizona Department of Transportation (ADOT) requires the use of the *FAA Model for Estimating General Aviation Operations at Non-Towered Airports using Towered and Non- Towered Airport Data.* The model was discussed in Chapter 2, Section 2.11, Based Aircraft and Operations.

Activity projections are made based on estimated growth rates, area demographics, industry trends and other indicators. Forecasts are prepared for the short-term (0-5 years), the medium-term (6-10 years) and the long-term (11-20 years) planning periods. Using forecasts within these time frames allows airport improvements to be timed to meet demand.

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

Local operations - are defined as aircraft movements (departures or arrivals) for the purpose of training, pilot currency or leisure 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 leisure flights that originate and terminate at the airport under study.

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

Itinerant operations - are defined as 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 defined as the total operations made by aircraft other than those based at the airport under study. These operations typically consist of business or leisure 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.

3.2 National and General Aviation Trends

3.2.1 National Trends

The long-term future of civil aviation is bright according to a March 2012 FAA forecast, which predicted that the U.S. aviation industry would grow steadily over the next 20 years. The forecast indicated that there will be 1.2 billion passengers flying commercially by 2024, compared with 731 million in 2011. The FAA also indicated that cargo traffic on U.S. airlines will more than double during the same period, growing 4.9 percent annually on average. However, one downside noted was with fewer commercial aircraft currently in service due to the spike in fuel prices in 2008-2009, the airlines will be focusing on profitability as opposed to market share, thus new service options may not be as prevalent in the near future.

3.2.2 General Aviation Trends

A variety of factors, such as aircraft production, pilot activity, and hours flown, caused general aviation to reach 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 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 number of hours 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.

The FAA convenes a panel of aviation experts annually to develop forecasts for future activity in all areas of aviation, including general aviation. According to the *FAA Aerospace Forecast Fiscal Years 2013-2033,* in 2012 the general aviation market showed improvement especially in the agricultural airplane segment of turboprops and strong growth in the rotorcraft sector. Total operations at FAA and contract towers decreased for the fifth consecutive year, falling 0.3 percent, as activity declines in the air taxi and military categories offset increases in air carrier and general aviation activity.

The active general aviation fleet is projected to increase at an average annual rate of 0.5 percent during the 21-year forecast period, growing from an estimated 220,670 aircraft in 2012 to 246,375 aircraft by 2033. The fleet of jet turbine aircraft is expected to grow at an average of 2.8 percent per year over the 20-year forecast period. Turbine jet aircraft are forecasted to increase at an average rate of 3.5 percent

per year, reaching a total of 24,620 by 2033. **Figures 3-1** and **3-2** illustrate the existing and future general aviation fleet that is forecasted to occur over the 20-year planning period.

In 2005 a "light sport" aircraft category was created. At the end of 2011, a total of 6,645 aircraft were included in this category. The forecast assumes about 3.2 percent growth of the fleet by 2013. Thereafter, the rate of increase in the fleet slows to about two percent per year. By 2033, a total of 10,245 light sport aircraft are projected to join the fleet.

Figure 3-1 Existing GA Fleet

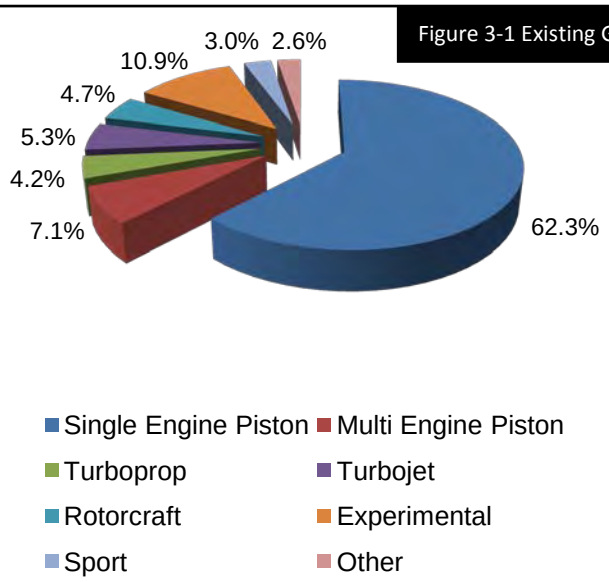
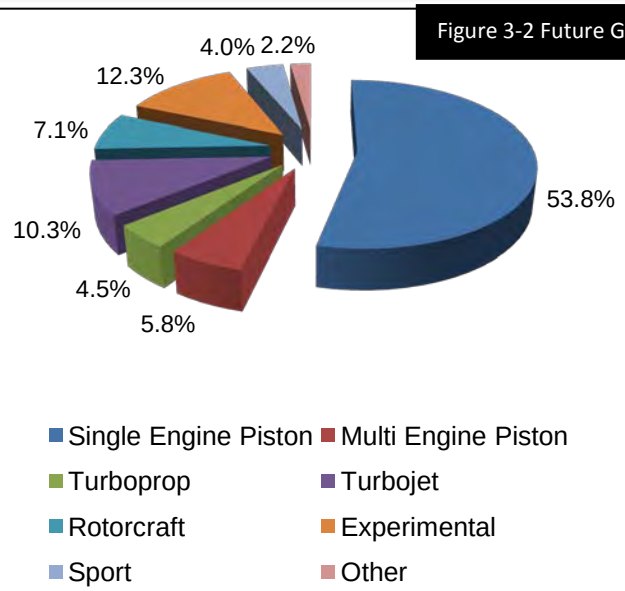


Figure 3-2 Future GA Fleet



Source: FAA, 2013

The General Aviation Manufacturers Association (GAMA) produces activity forecasts based on general aviation hours flown. As shown in **Table 3-1**, the greatest increase is for turbo jet and light sport aircraft at 5.3 percent and 3.5 percent growth respectively from 2013 through 2032. Both fixed wing piston aircraft categories are forecasted to decline slightly through the forecast period.

Table 3-1 Aircraft Hours Flown (thousands)

	Fixed Wing				Rotorcraft					
Year	Single Engine	Multi Engine	Turbo Prop	Turbo Jet	Piston	Turbine	**Experimental**	**Light Sport Aircraft**	**Other**	**Total General Aviation Fleet**
2013	11,091	1,758	2,471	4,330	834	2,611	1,315	356	183	24,728
2014	10,820	1,744	2,523	4,605	858	2,674	1,401	372	183	25,180
2015	10,594	1,728	2,554	4,865	881	2,739	1,462	388	184	25,396
2016	10,409	1,703	2,591	5,106	903	2,819	1,525	404	185	25,645
2017	10,285	1,689	2,624	5,321	924	2,903	1,591	421	185	25,943
2018	10,205	1,678	2,657	5,558	944	2,988	1,627	438	186	26,281
2019	10,150	1,668	2,685	5,774	965	3,071	1,664	455	187	26,619
2020	10,125	1,667	2,704	6,009	986	3,156	1,702	473	188	27,009
2021	10,092	1,665	2,723	6,251	1,006	3,242	1,731	487	188	27,387
2022	10,124	1,667	2,745	6,516	1,028	3,336	1,761	501	189	27,866
2023	10,159	1,668	2,762	6,802	1,051	3,431	1,791	515	190	28,368
2024	10,247	1,673	2,782	7,102	1,075	3,531	1,821	530	190	28,951
2025	10,391	1,675	2,802	7,420	1,099	3,636	1,851	544	191	29,610
2026	10,545	1,684	2,822	7,726	1,124	3,742	1,882	559	192	30,276
2027	10,708	1,696	2,841	8,044	1,149	3,852	1,913	574	193	30,970
2028	10,866	1,709	2,859	8,381	1,174	3,963	1,944	590	193	31,678
2029	10,997	1,719	2,879	8,753	1,200	4,076	1,975	605	194	32,398
2030	11,145	1,729	2,897	9,149	1,225	4,191	2,007	621	195	33,159
2031	11,300	1,743	2,912	9,557	1,250	4,313	2,039	637	196	33,948
2032	11,467	1,760	2,930	9,987	1,275	4,438	2,071	654	197	34,779
Avg. Annual Growth	-0.20%	-0.10%	1.10%	5.30%	2.30%	2.70%	2.60%	3.50%	0.40%	1.70%

Source: FAA 2013-2033 Aerospace Forecast

The number of active general aviation pilots (excluding air transport pilots) is projected to be 510,295 in 2032, an increase of 39,335 (up 0.4 percent yearly) over the forecast period. Commercial pilots are projected to increase from 119,200 in 2012 to 130,100 in 2032, an average annual increase of 0.5 percent. The number of student pilots is forecast to decrease at an average annual rate of 0.03 percent over the forecast period, declining from 117,340 in 2012 to 116,720 in 2032. The number of private pilots is projected to grow at an average yearly rate of 0.3 percent over the forecast period from 188,001 in 2012 to a total of 199,300 in 2032.

The FAA is also projecting that by the end of the forecast period, a total of 13,900 sport pilots will be certified. It is estimated that the number of sport pilot certificates issued in 2012 was 4,800, reflecting a growing interest in this new "entry level" pilot certificate that was recently created in 2005.

3.2.3 Other Aviation Industry Trends

Other aviation industry trends in the U.S. include new emerging technologies and the acknowledgement of the importance aviation has on the economy. New technologies such as NextGen and unmanned aerial vehicles (UAV) continue to expand in a positive direction. Likewise, the aviation industry continues to be economically beneficial for not only the U.S. as a whole, but also for the state of Arizona; the aviation industry has been found to contribute a sizable amount of jobs and money, either by primary or induced impacts, to the State. Both new emerging technologies and studies documenting the economic impacts of aviation are anticipated to remain trends within the industry in the near future.

Next Generation Air Transportation System (NextGen) is a new era in flight that is transforming how aircraft navigate the sky and is a replacement to the World War II era technology that has until recently been the primary navigation technology. NextGen utilizes satellite technology which allows pilots to know the precise locations of other aircraft around them. This allows more planes to operate in the sky while enhancing the safety of air travel. Satellite landing procedures also allow pilots to arrive at airports more efficiently by providing more direct flight routes. **Figure 3-3** highlights the airports in the United States currently benefitting from NextGen technology.

Source: 2011 General Aviation Manufacturers Association Statistical Databook & Industry Outlook

Figure 3-3 NextGen Precision

The FAA is also in the process of selecting sites throughout the United States to serve as research and development hubs for unmanned aerial vehicles (UAV). UAVs are aircraft which operate with no pilot on board. The aircraft can either be remote controlled or fly autonomously based on pre-programmed flight plans on more complex dynamic automation systems. The FAA has adopted the acronym UAS (Unmanned Aircraft System) to reflect the fact that these complex systems include ground stations and other elements besides actual air vehicles. There are various types of UAVs, such as the Global Hawk, Predator A, Predator B, X-47A, X-47B, Mariner, Altair, Fire Scout, ER/MP UAS, Hunter, I-GNAT, Army IGNAT ER, etc. **Figure 3-4** depicts just two of the many UAVs in use today.

Source: www.avionics-intelligence.com, 2013

Figure 3-4 Typical UAVs

ADOT has published several reports on the economic impact aviation has on the state of Arizona. According to a 2012 ADOT report, 409,000 jobs are directly or indirectly related to the industry and the total economic activity across the State was estimated at $57.9 billion. Aviation therefore plays an important role in the economic growth of the State.

3.3 Existing Aviation Activity and Projections

The first step in preparing an aviation forecast is to examine available historical and existing activity levels and based aircraft. There are typically sources of aviation activity forecasts available from the FAA and State. The FAA publishes the Terminal Area Forecast (TAF) annually, which forecasts airport activity and is commonly used for long term planning.

- For the Bisbee Douglas International Airport, the FAA TAF suggests that in 2013 there were 19 based aircraft and 19,650 annual operations at the airport. The TAF shows no growth over the 20-year planning period, which is not uncommon at general aviation airports similar to Bisbee Douglas International Airport.

- The 2009 Arizona State Airports System Plan (SASP) indicated 18 based aircraft and 3,800 annual operations in 2007.

- The previous 1997 Airport Master Plan suggested that by 2012 the airport would have 53 based aircraft and should experience nearly 40,467 annual operations.

- Based on discussions with the County and airport personnel, they reported that there were 5 based aircraft and approximately 1,920 annual operations in 2012. The activity reported by the County was collected by the onsite County airport employee Monday through Friday between the hours of 8:00 a.m. and 5:00 p.m.

3.3.1 Fleet Mix

Form 5010-1, *Airport Master Record*, is the official record kept by the 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 and depending on the sponsor's record keeping system, the accuracy will vary. The current FAA Form 5010-1 for Bisbee Douglas International Airport indicates 12 based aircraft and 19,700 annual aircraft operations. An operation is defined as a takeoff or a landing. A touch-and-go is considered two operations. This form breaks down the operations to 0 air carrier, 0 air taxi, 4,000 GA local, 10,000 GA itinerant, and 5,700 military operations. The existing fleet mix of aircraft as reported by Cochise County is shown in **Table 3-2**.

Table 3-2 Based Aircraft Fleet Mix

Aircraft Type	Based Aircraft	Fleet Mix Percentage (%)
Single-Engine	4	80%
Multi-Engine	1	20%
Jet	0	0%
Light Sport	0	0%
Gliders	0	0%
Ultra lights	0	0%
TOTAL	**5**	**100%**

Source: Cochise County, 2013

Bisbee Douglas International Airport serves a mix of single- and multi-engine piston aircraft, along with turboprop, turbojet, and helicopter aircraft. These users include business and recreational transport, air medevac, aerial firefighting, flight trainers, and some military operations. The Airport's service level and role, and the existing aviation activity are described in more detail in Chapter 2, Section 2.2 and 2.11.

The growth trends for the fleet mix at Bisbee Douglas International Airport will likely mirror the national trends. Single-engine piston aircraft are projected to continue to account for the majority of based aircraft and at the same time decrease as a percentage of the overall total number of based aircraft. It is anticipated that other types of aircraft will grow at a moderate pace. According to the SASP, in Arizona 79 percent of all based aircraft are single-engine aircraft and multi-engine follow with 11 percent. Helicopter and jet aircraft account for four percent each of the state total. Gliders and other aircraft make up the remaining two percent. It is anticipated that the fleet mix will generally remain the same as the existing fleet mix (**Table 3-2**) for the 20-year planning period.

3.3.2 Historical Based Aircraft and Operations

The 1997 Airport Master Plan for the Bisbee Douglas International Airport estimated 3,285 annual operations and 24 based aircraft at the airport in 1996. Operations were estimated by reference to an informal record of traffic observations kept by airport management. The log included 199 days of record for a 12 month period. The survey was limited to the hours between 8:00 a.m. and 4:30 p.m.

3.3.3 Factors Influencing Aviation Demand

Factors influencing aviation demand at the airport are directly related to any future development on or adjacent to the airport as a result of the recently executed (September 2013) memorandum of understanding (MOU) between Cochise County and the City of Douglas for non-exclusive use of the non-movement areas on the airport property.

In addition, there has been continued growth of the Cochise College Flight Training Program and the potential development of other flight testing and training programs. The flight training activity may have a positive impact on future aviation demand at Bisbee Douglas International Airport.

The Bisbee Douglas International Airport is located in a unique geographical location due to the proximity to the U.S./Mexico border. The U.S. Customs and Border Protection (CBP) have 10 Ports of Entry in Arizona. Ports of Entry are responsible for daily port specific operations, such as immigration control and agricultural inspections. The Douglas Port of Entry is the closest to the Bisbee Douglas International Airport. It is feasible that the Douglas Port of Entry may potentially affect aviation activities at the Airport either with an increase in recreational visitors or business visitors, or a combination of both.

3.4 Existing Forecasts

3.4.1 Arizona State Airports System Plan Forecast

The 2009 Arizona SASP forecast of based aircraft at Bisbee Douglas International Airport was evaluated. Three forecasting methodologies were used to generate a low, medium, and high forecast for based aircraft in Arizona. The SASP concludes that the medium forecast was selected based on historic based aircraft growth and FAA industry forecasts. The SASP projected a statewide compound average growth rate of 1.71 percent through 2030, and 0.7 percent through 2030 for the Bisbee Douglas International Airport. Using a base year of 2007, the SASP reflects 18 based aircraft and a forecast of 21 based aircraft at the Bisbee Douglas International Airport by 2030.

3.4.2 Bisbee Douglas International Airport Master Plan

The 1997 Bisbee Douglas International Airport Master Plan forecast of based aircraft indicated that the number of based aircraft would increase from 24 to 63 based aircraft at an average rate of 5.2 percent over the 19 year planning period from 1997 to 2016. The master plan indicates that the based aircraft forecast assumed significant airport improvements would take place to enhance the aviation market share of the airport.

3.5 Forecasts of Aviation Activity

3.5.1 Based Aircraft Forecasts

It is widely accepted within the aviation industry that the number of based aircraft at a given airport is the most basic indicator of general aviation demand. According to FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS),* when forecast data is not available, a

satisfactory procedure is to forecast based aircraft using the statewide based aircraft growth rate from the current FAA Terminal Area Forecast (TAF) and develop activity statistics by estimating annual operations per based aircraft. The first forecasting method for based aircraft used the FAA's January 2013 TAF annual growth rate for the State of Arizona of 1.6 percent between 2013 and 2033. This method resulted in a forecast of 7 based aircraft at Bisbee Douglas International Airport in 2033. The results of the FAA TAF method are shown in **Table 3-3**.

Table 3-3 FAA TAF Method

Year	TAF for Arizona Based Aircraft[1]	Average Growth Rate	Based Aircraft
2013	5,422	1.6%	**5**
2018	5,858	1.6%	**6**
2023	6,338	1.6%	**6**
2028	6,869	1.6%	**7**
2033	7,437	1.6%	**7**

Note. [1]FAA TAF data
Source: ACI, 2013

The second forecasting method for based aircraft was developed using a market share analysis based on the number of based aircraft within the U.S. general aviation fleet mix compared to the number of based aircraft at Bisbee Douglas International Airport (**Table 3-4**). This method was then applied to the general aviation fleet mix aircraft projections provided by the 2012 GAMA Statistical Databook & Industry Outlook. This resulted in 6 based aircraft at Bisbee Douglas International Airport in 2033.

Table 3-4 Market Share Method

Year	Total U.S. General Aviation Fleet Mix[1]	Market Share Aircraft
2013	222,690	**5**
2018	225,490	**5**
2023	231,145	**5**
2028	240,570	**5**
2033	253,205	**6**

Note. [1]GAMA data
Source: ACI, 2013

The third method utilized a bottom-up per capita approach that projected the number of based aircraft in direct proportion to the projected population of Cochise County (**Table 3-5**) using the Arizona Department of Administration population statistics (medium series). This resulted in 6 based aircraft at Bisbee Douglas International Airport in 2033.

Table 3-5 Per Capita Method

Year	Population[1]	Aircraft
2013	130,753	**5**
2018	137,452	**5**
2023	145,592	**6**
2028	153,257	**6**
2033	160,682	**6**

Note. [1]Arizona Department of Administration data
Source: ACI, 2013

It is anticipated that Bisbee Douglas International Airport's based aircraft growth rate will likely trend closer to the Per Capita Method. Recognizing that all of the above methods do not vary significantly, the Per Capita Method (indicating 6 based aircraft by 2033) was selected as the preferred based aircraft forecast (**Figure 3-5**).

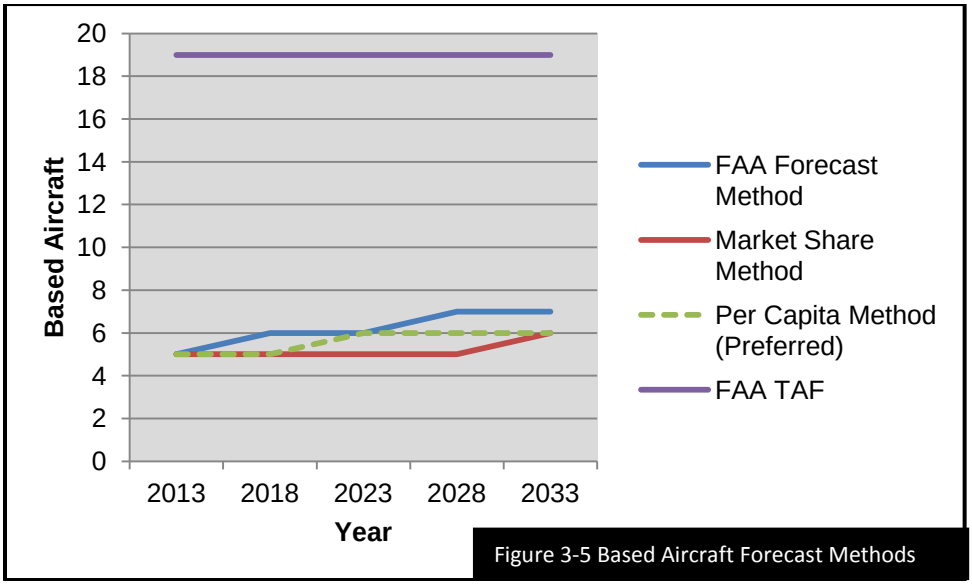


Figure 3-5 Based Aircraft Forecast Methods

Source: ACI, 2013

3.5.2 Annual Aircraft Operations Forecast

In order to develop a preferred method of forecasting aircraft operations at Bisbee Douglas International Airport, a number of methods were analyzed. Each method used the preferred based aircraft forecast of 6 based aircraft in 2033, and then multiplied the corresponding operations per based aircraft (OPBA) number; this provided the forecasted total annual operations.

The methods are as follows:

Method 1: Existing operations and based aircraft (380 OPBA)

Method 2: FAA Order 5090.3C (750 OPBA)

Method 3: FAA Advisory Circular 150/5300-13A (538 OPBA)

Method 4: Arizona State Airports System Plan and existing based aircraft (528 OPBA)

1. The first method used the annual operations (minus military operations) of 1,902 and the base year level of 5 based aircraft provided by Bisbee Douglas International Airport management to determine the OPBA (1,902/5 equals 380 OPBA). Multiplying 380 OPBA by the preferred 6 based aircraft results in 2,280 forecasted annual operations in 2033.

2. For the second method, the general guideline from FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)* of 750 OPBA was applied to the based aircraft forecast. Multiplying 750 OPBA by the preferred 6 based aircraft results in 4,500 forecasted annual operations in 2033.

3. The third method, as outlined in FAA Advisory Circular 150/5300-13, *Airport Design*, applied 538 OPBA (for non-NPIAS public use airports) to the preferred 6 based aircraft forecast. Multiplying 538 by the preferred 6 based aircraft results in 3,228 forecasted annual operations in 2033.

4. The fourth method used the Arizona SASP level of operations forecast for 2030 (3,165) and divided the number by the forecast number of 6 based aircraft. This provided an OPBA of 528. Multiplying 528 OPBA to the preferred based aircraft forecast for 2018, 2023, 2028, and 2033 results in the forecast operations in those given years.

These projections provide a likely range of activity for future operations at Bisbee Douglas International Airport and are shown in **Figure 3-6**. Aircraft operations can be expected to increase with the additional based aircraft; therefore it is reasonable to anticipate that the OPBA will remain fairly constant over the 20-year planning period.

The selected forecast (Method 3) of 3,228 annual operations in 2033 will be used for further analysis. The selected forecast represents a conservative increase in annual operations over the 20–year planning period and given the size and current activities at the airport, is considered a reasonable forecast for planning purposes. The other methods were considered, but dismissed as not being the most likely representative of the potential aviation demand.

3.5.3 Itinerant and Local Operations

The various types of aircraft operations were presented at the beginning of this chapter. For the Bisbee Douglas International Airport the split in itinerant and local operations used for planning purposes will be in accordance with the SASP. According to the SASP, the existing split of 79 percent local operations and 21 percent itinerant operations is assumed to remain constant throughout the 20-year planning period.

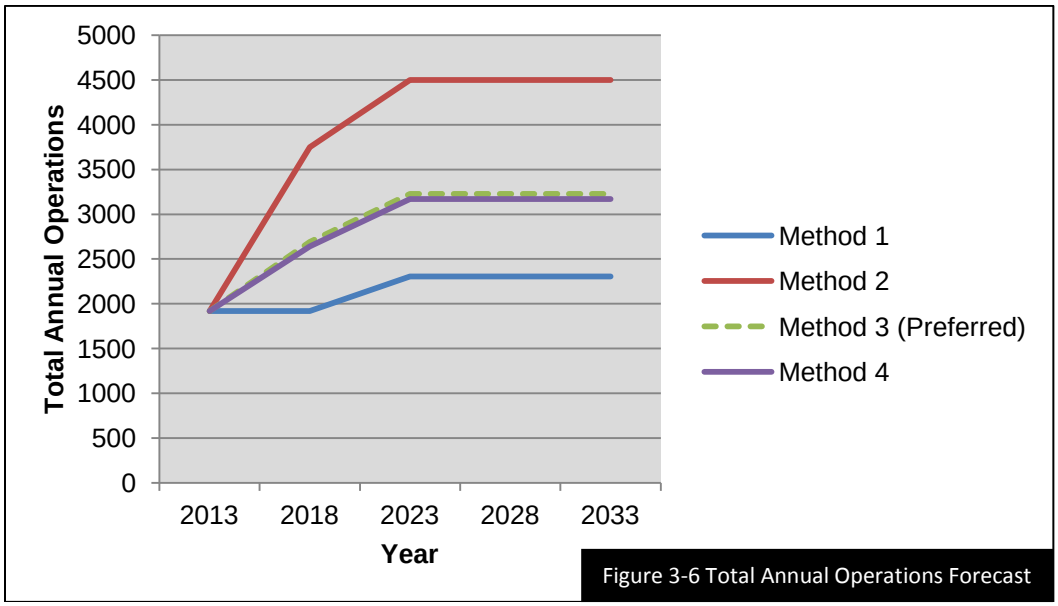


Figure 3-6 Total Annual Operations Forecast

Source: ACI, 2013

3.5.4 Instrument Operations

An instrument approach, as defined by the FAA, is an approach to an airport with the intent to land an aircraft in accordance with an Instrument Flight Rule (IFR) flight plan, when visibility is less than three miles and/or when the cloud ceiling is at or below the minimum initial approach altitude. An aircraft landing at an airport must follow one of the published instrument approach procedures to qualify as an instrument approach.

According to the FAA TAF, 21 percent of the total aircraft operations in Arizona are instrument operations. This number is forecasted to increase to 26 percent by 2030. 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. Instrument operations will at most compromise approximately 2.5 percent of total operations at general aviation airports with an instrument approach and little or no commercial service or military activity.

3.6 Preferred Forecasts of Aviation Activity

The preferred aviation demand forecast activity for Bisbee Douglas International Airport is depicted in **Table 3-6**.

Table 3-6 Preferred Forecasts of Aviation Activity

Year	Based Aircraft	Local Operations	Itinerant Operations	Total Operations	Instrument Operations
2013	5	1,517	403	1,920	48
2018	5	2,125	565	2,690	67
2023	6	2,550	678	3,228	81
2028	6	2,550	678	3,228	81
2033	6	2,550	678	3,228	81

Source: ACI, 2013

3.7 Airport Seasonal Use Determination

Seasonal fluctuations in aircraft operations may occur 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 general aviation airports generally experience a substantially higher number of operations in summer months than off-season 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 mentioned, seasonal fluctuation is more pronounced at non-towered airports than at towered airports. The seasonal use trend for towered airports was adjusted to approximate seasonal use trends at non-towered airports.

A review of Bisbee Douglas International Airport's total monthly fuel sales from June 2009 through June 2013 provided a reasonable depiction of the airport's seasonal use trends. The greatest quantity of fuel was sold between April and June, with a second smaller spike in the November timeframe. AvGas (100LL) is used predominantly by piston-powered aircraft and varies the most with each season, but the month of June did see higher sales.

Some activity at Bisbee Douglas International Airport that contributes to large fuel sales is based on annual training by the U.S. military in the world's largest multinational personnel recovery exercise known as Angel Thunder. Angel Thunder demonstrates the broad range of capabilities and inherent flexibility in rescue forces across the spectrum of work and the range of potential contingencies. The two week-long Angel Thunder, sponsored by Air Combat Command, is an exercise with the objective of training personnel to perform isolated personnel recovery, mass casualty operations, and post-disaster operations. The annual training occurs in the spring, typically in April.

During the peak of the fire season in Arizona (May through July), the U.S. Forest Service uses the airport as a base of operations and will typically bring in large tankers and helicopters on an as needed basis. The 2013 fire season was not a record year in terms of the number of wildfires and acres burned; however, the need for the U.S. Forest Service's protection in Arizona, and at Bisbee Douglas International Airport, will remain indefinitely into the future.

Other activity at the Bisbee Douglas International Airport which may have an influence on the seasonal use is flight training activity from nearby Cochise College Airport. The typical non-towered seasonal use trend may be altered to a certain extent due to higher activity levels by students during the spring and fall semesters compared to the activity in the summer time.

The general seasonal use trends of U.S. airports at both non-towered and towered airports are illustrated in **Table 3-7**. Although every airport will vary, the non-towered percentages contained in Table 3-7 will be used to calculate the monthly, daily, and hourly peaking characteristics; in other words, the times when the airport is the busiest.

Table 3-7 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%

Source: ACI, 2013

3.8 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 was used as a tool to determine the peaking characteristics for the Bisbee Douglas International 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. A detailed description of the formula can be found in **Appendix F**.

The calculations were made for each month of each phase of the planning period. The results of the calculations are shown in **Table 3-8**. The Design Day and Design Hour peak demand in the planning years occurs in the months of June and July (highlighted in bold in each Table), and ranges from 12 - 15 daily operations, and approximately 1 operation per hour throughout the 20-year planning period.

Table 3-8 Estimated Hourly Demand Per Month

Planning Year: 2018 Operations: 2,690					Planning Year: 2023 Operations: 3,228				
	%	Operations				%	Operations		
Month	**Use**	**Monthly**	**Daily**	**Hourly**	**Month**	**Use**	**Monthly**	**Daily**	**Hourly**
January	3.5	94	3	0	January	3.5	113	4	0
February	4	108	4	0	February	4	129	5	0
March	4.8	129	4	0	March	4.8	155	5	0
April	7.5	202	7	1	April	7.5	242	8	1
May	11.3	304	10	1	May	11.3	365	12	1
June	**13.5**	**363**	**12**	**1**	**June**	**13.5**	**436**	**15**	**1**
July	**14.8**	**398**	**13**	**1**	**July**	**14.8**	**478**	**15**	**1**
August	13	350	11	1	August	13	420	14	1
September	10	269	9	1	September	10	323	11	1
October	8	215	7	1	October	8	258	8	1
November	5.8	156	5	0	November	5.8	187	6	1
December	3.8	102	3	0	December	3.8	123	4	0
Planning Year: 2028 Operations: 3,228					Planning Year: 2033 Operations: 3,228				
	%	Operations				%	Operations		
Month	**Use**	**Monthly**	**Daily**	**Hourly**	**Month**	**Use**	**Monthly**	**Daily**	**Hourly**
January	3.5	113	4	0	January	3.5	113	4	0
February	4	129	5	0	February	4	129	5	0
March	4.8	155	5	0	March	4.8	155	5	0
April	7.5	242	8	1	April	7.5	242	8	1
May	11.3	365	12	1	May	11.3	365	12	1
June	**13.5**	**436**	**15**	**1**	**June**	**13.5**	**436**	**15**	**1**
July	**14.8**	**478**	**15**	**1**	**July**	**14.8**	**478**	**15**	**1**
August	13	420	14	1	August	13	420	14	1
September	10	323	11	1	September	10	323	11	1
October	8	258	8	1	October	8	258	8	1
November	5.8	187	6	1	November	5.8	187	6	1
December	3.8	123	4	0	December	3.8	123	4	0

Source: ACI, 2013

3.9 FORECAST SUMMARY

The Airport Master Plan forecasts were prepared in order to determine projected aviation activity levels. The activity estimates were prepared for annual operations and aircraft fleet mix.

The total annual operations forecasted in the Master Plan are lower than the latest FAA TAF, which projected a constant 19,650 total annual operations over the planning period. The proposed 2013 base year forecasted total annual operations presented in this Master Plan are 1,920 (90 percent lower than the TAF); the difference between the five and ten-year projections presented in this Master Plan vary by approximately 84 percent lower than the TAF projections over the same planning period. These differences are greater than the ten percent and 15 percent allowances FAA recommends for the five and ten-year planning horizons. Aircraft operations at Bisbee Douglas International Airport have remained relatively constant over the last several years with no significant growth. The current projections in the TAF do not accurately reflect the present operations at the airport. As such, the forecasts presented in this Master Plan reflect a more realistic growth rate based on updated operational numbers and based aircraft information as reported by airport personnel.

The recommended forecasts for the Airport were submitted to the FAA for review and approval. The FAA approved these forecasts for airport planning purposes, including Airport Layout Plan development, in February 2014. A copy of the FAA approval letter can be found in **Appendix D**. The recommended forecasts for Bisbee Douglas International Airport will be used throughout the remainder of the Airport Master Plan and are summarized in **Table 3-9.** The next step in the planning process is to determine the capacity of the existing facilities and to determine what facilities will be needed to meet future aviation demand.

Table 3-9 Detailed Forecast Summary

			Itinerant Operations			Local Operations			
Year	**Based Aircraft**	**Peak Hourly Flow**	**GA**	**Military**	**Total**	**GA**	**Military**	**Total**	**Total Operations**
2013	5	1	403	0	403	1,517	0	1,517	1,920
2018	5	1	565	0	565	2,125	0	2,125	2,690
2023	6	1	678	0	678	2,550	0	2,550	3,228
2028	6	1	678	0	678	2,550	0	2,550	3,228
2033	6	1	678	0	678	2,550	0	2,550	3,228

Source: ACI, 2013

CHAPTER FOUR

FACILITY REQUIREMENTS

COCHISE COUNTY

BISBEE DOUGLAS INTERNATIONAL AIRPORT

AIRPORT MASTER PLAN

ARMSTRONG

CHAPTER 4 – FACILITY REQUIREMENTS

4.1 INTRODUCTION

This chapter identifies the requirements for airfield and landside facilities to accommodate the forecast demand levels at Bisbee Douglas International Airport. In order to meet the demand levels, an assessment of the ability of existing airport facilities to meet current and future demand was conducted. The facility requirements were based on information derived from capacity and demand calculations, information from FAA advisory circulars and design standards, the sponsor's vision of the future of the airport, the condition and functionality of existing facilities, and other pertinent information.

Facility requirements have been developed for the various airport functional areas listed below:

- General aviation requirements
- Support facilities
- Ground access, circulation, and parking requirements
- Infrastructure and utilities
- Land use compatibility and control

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 years) planning 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. Most important to consider is that a good plan is one that is based on actual demand at an airport rather than time-based predictions. Actual activity at the airport will vary over time and may be higher or lower than what the demand forecast predicts. Using the three planning milestones (short-term, medium-term, and long-term) the airport sponsor can make an informed decision regarding the timing of development based on the actual demand. This approach will result in a financially responsible and demand-based development of the Bisbee Douglas International Airport.

4.2 DESIGN STANDARDS

Airport design standards provide basic guidelines for a safe, efficient, and economic airport system. The standards cover the wide range of size and performance characteristics of aircraft that are anticipated to use an airport. Various elements of airport infrastructure and their functions are also covered by these standards. Choosing the correct aircraft characteristics for which the airport will be designed needs to be done carefully so that future requirements for larger and more demanding aircraft are taken into consideration, while at the same time remaining mindful that designing for large aircraft that may never serve the airport is not economical.

As discussed previously in Chapter 2, Section 2.13.2, the Runway Design Code (RDC) is one component of the FAA's design standards. The RDC can be used to determine the necessary facility requirements. Examples of various aircraft meeting the design standards for a RDC of A-I and B-I are illustrated on **Table 4-1**, and examples of aircraft meeting design standards for a RDC of A-II and B-II are depicted in **Table 4-2.** Lastly, examples of aircraft that meet RDC standards of C-I and C-II are shown in **Table 4-3**.

For the purpose of this Chapter, examples of the remaining Airplane Design Group (ADG) categories of C-III and above, and D and E aircraft and their corresponding approach categories (I, II, III, etc.) are not depicted due to their infrequent use of the Airport; the sample aircraft provided below are those that are likely to use the Airport on a regular basis.

Table 4-1 RDC of A-I or B-I (Sample Aircraft)

Aircraft	Approach Speed (kts)	Wingspan (ft)	Tail Height (ft)	Max. Take Off Weight (lbs)
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	36.0	9.8	2,200
Cessna 177	64	35.5	8.5	2,500
Cessna 182	64	36.0	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	35.0	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 150/5300-13A, *Airport Design*, 2014

Table 4-2 RDC of A-II or B-II (Sample Aircraft)

Aircraft	Approach Speed (kts)	Wingspan (ft)	Tail Height (ft)	Max. Take Off Weight (lbs)
Air Tractor 802F	105	58.0	11.2	16,000
Beech King Air 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	65.0	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 150/5300-13A, *Airport Design*, 2014

Table 4-3 RDC of C-I or C-II (Sample Aircraft)

Aircraft	Approach Speed (kts)	Wingspan (ft)	Tail Height (ft)	Max. Take Off Weight (lbs)
Learjet 24	128	35.1	12.3	13,001
Learjet 25	137	35.6	12.6	15,000
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
Rockwell 980	121	52.1	14.9	10,325
Cessna Citation 650	126	53.6	16.8	23,000
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
Falcon 900 EX	126	63.5	24.2	48,300

Source: FAA AC 150/5300-13A, *Airport Design*, 2014

As discussed in Chapter 2, the existing RDC for Runway 17 is C/I/5000, Runway 35 is C/I/VIS, and the Runways 8-26 are B/I/VIS. The existing design aircraft for Runway 17-35 is a small corporate jet, such as the LearJet 25, and the existing design aircraft for Runway 8-26 is a light, twin-engine propeller aircraft, such as the Piper Navajo. Based on existing and forecasted demand levels, these aircraft represent the most likely types of aircraft to use the facility in the planning period, and it is reasonable to maintain the existing RDCs over the course of the planning period and apply them to the existing and ultimate development plans for the Airport. This applies with the exception of Runway 35; a recommendation to create a RNAV/GPS instrument approach is discussed in a later chapter, in which case the future RDC for Runway 35 would change to C/I/5000.

4.3 Airfield Capacity

The airfield capacity analysis is determined by using an airport's annual service volume (ASV). An airport's ASV has been defined by the FAA as "a reasonable estimate of an airport's annual capacity. It accounts for differences in runway use, aircraft mix, weather conditions, etc., that would be encountered over a year's time." ASV is a function of the hourly capacity of the airfield and the annual, daily, and hourly demands placed upon it. According to FAA Advisory Circular (AC) 150/5060-5, *Airport Capacity and Delay*, the ASV for a single runway configuration is approximately 230,000 operations, and approximately 260,000 operations for an airfield configuration similar to Bisbee Douglas International.

At Bisbee Douglas International Airport the ASV is estimated to be 1,920 aircraft operations (landings and takeoffs) for present conditions. Compared to the projected 3,228 operations by the year 2033, it is evident that airfield capacity will not be a constraining factor to growth of the airport. No additional runways are needed (from a capacity perspective) to accommodate the existing or forecasted activity. **Table 4-4** summarizes the ASV relationship developed in this section.

Table 4-4 Annual Service Volume Summary

Year	Annual Operations	Annual Service Volume[1]	Annual Capacity Ratio
2013	1,920	260,000	>1%
2023	3,228	260,000	1.2%
2033	3,228	260,000	1.2%

Note. [1]FAA AC 150/5060-5, *Airport Capacity and Delay* data
Source: ACI, 2013

4.4 AIRSIDE FACILITY REQUIREMENTS

All airports are comprised of both airside and landside facilities as presented in Chapter 2. Airside facilities consist of those facilities that are related to aircraft arrival, departure, and ground movement, along with all associated navigational aids, airfield lighting, pavement markings, and signage.

4.4.1 RUNWAY LENGTH

There are many factors that may determine the runway length for an airport. FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*, provides guidance for determining runway length requirements. The information required to determine the recommended runway length(s) includes airfield elevation, mean maximum temperature of the hottest month, and the effective gradient for the runway. Also, the performance characteristics and operating weight of an aircraft impacts the amount of runway length needed. The following information for the Bisbee Douglas International Airport was used for the analysis:

- Field elevation: 4,150 feet mean sea level (MSL)
- Mean maximum temperature of hottest month (June): 95° F
- Effective Runway 17-35 gradient: 35 feet
- Effective Runway 8-26 gradient: 34 feet
- Performance characteristics and operating weight of aircraft

The process to determine recommended runway lengths for a selected list of critical design aircraft begins with determining the weights of the critical aircraft that are expected to use the airport on a regular basis. For aircraft weighing 60,000 pounds or less, the runway length is determined by family groupings of aircraft having similar performance characteristics. The first family grouping is identified as small aircraft, which is defined by the FAA as airplanes weighing 12,500 pounds or less at maximum takeoff weight (MTOW). The second family grouping is identified as large aircraft, which is defined by the FAA as aircraft exceeding 12,500 pounds but weighing less than 60,000 pounds. For aircraft weighing more than 60,000 pounds, the required runway length is determined by aircraft-specific length requirements. **Table 4-5** depicts the aircraft weight categorization as recommended by the FAA.

Table 4-5 Airplane Weight Categorization for Runway Length Requirements

Airplane Weight Category MTOW			Aircraft Grouping
≤ 12,500 Pounds	Approach Speed < 30 knots		Family groupings of small airplanes
	Approach Speed ≥ 30 knots, but < 50 knots		Family groupings of small airplanes
	Approach Speed ≥ 50 knots	With < 10 Passengers	Family groupings of small airplanes
		With ≥ 10 Passengers	Family grouping of small airplanes
Over 12,500 pounds, but < 60,000 pounds			Family groupings of large airplanes
≥ 60,000 pounds or more, or Regional Jets[1]			Individual large airplane

Note. [1]All regional jets, regardless of their MTOW, are assigned to the 60,000 pounds or more weight category.

Source: FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*, 2005

Recommended runway lengths are determined using charts in AC 150/5325-4B based on the seating capacity and the mean daily maximum temperature of the hottest month of the year at the airport. The small airplanes with the approach speed of greater than or equal to 50 knots with less than 10 passengers seats and a MTOW less than 12,500 pounds recommends a runway length of 5,450 feet in order to accommodate 95 percent of the fleet; the 95 percent of fleet category applies to airports that are primarily intended to serve medium size population communities with a diversity of usage and greater potential for increased aviation activities. Also included in this category are those airports that are primarily intended to serve low-activity locations, small population communities and remote recreational areas. The approach speed of greater than or equal to 50 knots with less than 10 passenger seats and a MTOW less than 12,500 pounds recommends a runway length of 5,760 feet in order to accommodate 100 percent of the aircraft fleet. The 100 percent of fleet category is a type of airport that is primarily intended to serve communities located on the fringe of a metropolitan area or a relatively large population remote from a metropolitan area. With an existing runway length of 6,430 feet, Runway 17-35 can accommodate 100 percent of the small airplanes.

Recommended runway lengths to serve large aircraft weighing over 12,500 pounds, but less than 60,000 pounds, are determined using a certain percentage of the useful load. The term useful load, as defined by the FAA, is the difference between the maximum allowable structural gross weight and the operating empty weight. A typical operating empty weight includes the airplane's empty weight, crew, baggage, other crew supplies, removable passenger service equipment, removable emergency equipment, engine oil and unusable fuel. According to the above referenced Advisory Circular, 75 percent of fleet at 60 and 90 percent useful load requires runway lengths of 6,810 and 9,000 feet respectively. The Advisory Circular indicates that 100 percent of fleet at 60 and 90 percent useful load requires runway lengths of 9,670 and 11,090 feet respectively. To accommodate 75 percent of aircraft at 60 percent useful load weighing 60,000 pounds or less, a runway length of 6,810 feet is recommended.

Based on the analysis, the potential need to extend the runway in the planning period exists. However, if the types and frequencies of operations change significantly at the airport, the need to revisit the runway length analysis may be warranted. The Development Alternatives chapter will present various concepts for achieving the recommended runway length taking into consideration any site constraints and potential environmental impacts. **Table 4-6** provides the recommended runway length information.

Table 4-6 Recommended Runway 17-35 Length

Description	Runway Length (ft)
Existing Runway 17-35 Length	**6,430**
Recommended to accommodate:	
Small Aircraft (<12,500 lbs.,< 10 passenger)	
75 percent of these small airplanes	4,150
95 percent of these small airplanes	5,450
100 percent of these small airplanes	**5,760**
Large Aircraft (<60,000 lbs.)	
75 percent of these planes at 60 percent useful load	**6,810 (recommended)**
75 percent of these planes at 90 percent useful load	9,000
100 percent of these planes at 60 percent useful load	9,670
100 percent of these planes at 90 percent useful load	11,090
Aircraft more than 60,000 lbs.	6,470 (approx.)

Source: FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*, 2005

Takeoff Distance Requirements: When determining runway length requirements for an airport, it is necessary to consider the types of aircraft (aircraft design group and critical aircraft) that will be using the airport and their respective takeoff distance requirements. Examples of takeoff distance requirements for several aircraft likely to use the primary runway at Bisbee Douglas International Airport are illustrated in **Figure 4-1**. Examples of takeoff distance requirements for the crosswind runway are not provided as Runway 17-35 (the primary runway) is viewed as the most important runway to drive growth at the airport.

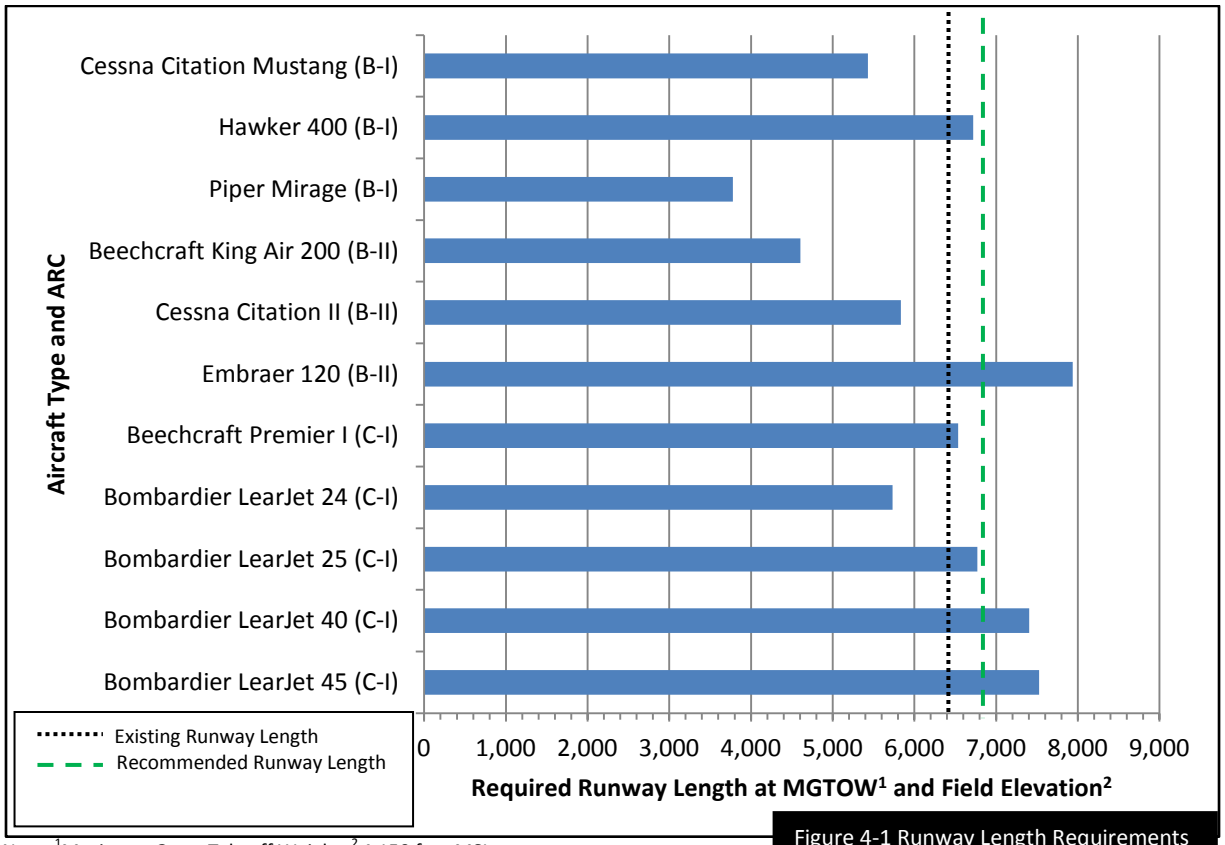


Figure 4-1 Runway Length Requirements

Note. [1]Maximum Gross Takeoff Weight; [2] 4,150 feet MSL
Source: ACI, 2013

4.4.2 Runway Orientation

The FAA recommends that a runway's orientation provide at least 95 percent crosswind coverage according to AC 150/5300-13A, *Airport Design*. Based on the wind data presented in Table 2-13 in Chapter 2, Runway 17-35 only provides 87.6 percent wind coverage for A-I and B-I aircraft (10.5 knots) and 92.8 percent wind coverage for B-II aircraft (13 knots).

With the addition of the existing Runway 8-26, the combined wind coverage is 99.0 percent and 99.8 percent for 10.5 knots and 13 knots respectfully. The existing airfield configuration exceeds the FAA's recommended crosswind coverage of 95 percent. Therefore, additional runways are not needed over the course of the planning period.

The FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*, recommends the same guidelines be followed to determine the recommended runway length for crosswind runways. Small aircraft weighing less than 12,500 pounds primarily have less crosswind performance capabilities. As such, it is usually recommended that a crosswind runway accommodate 100 percent of small aircraft. The current runway length of 4,966 feet can accommodate approximately 86 percent of small aircraft weighing less than 12,500 pounds. According to AC 150/5325-4B, to accommodate 100 percent of small aircraft weighing less than 12,500 pounds, Runway 8-26 would need to be a lengthened to 5,760 feet.

At this time, it is not recommended to lengthen Runway 8-26 based upon existing and forecasted aircraft operations. The existing length is considered adequate for the planning period. However, if the types and frequencies of operations change significantly for Runway 8-26, the need to revisit the runway length may be warranted. **Table 4-7** provides the Runway 8-26 length analysis.

Table 4-7 Runway 8-26 (Crosswind) Analysis

Description	Runway Length (ft)
Existing Runway 8-26 Length	**4,966**
Recommended to accommodate:	
Small Aircraft (<12,500 lbs.,< 10 passenger)	
75 percent of these small airplanes	4,150
95 percent of these small airplanes	5,450
100 percent of these small airplanes	5,760
Large Aircraft (<60,000 lbs.)	
75 percent of these planes at 60 percent useful load	6,750
75 percent of these planes at 90 percent useful load	8,940
100 percent of these planes at 60 percent useful load	9,610
100 percent of these planes at 90 percent useful load	11,030
Aircraft more than 60,000 lbs.	6,470 (approx.)

Source: FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*, 2005

4.4.3 Runway Width

The required runway width is a function of airplane approach category, airplane design group, and the approach minimums for the design aircraft expected to use the runway on a regular basis. The existing runway pavement widths of 100 feet for Runway 17-35 and 60 feet for Runway 8-26 meet the existing and future FAA design standards and should be maintained over the planning period.

4.4.4 Runway Pavement Strength

According to FAA guidance on pavement strength, the aircraft types and the critical aircraft expected to use the airport during the planning period are used to determine the required pavement strength, or weight bearing capacity, of airfield surfaces. The required pavement design strength is an estimate based on average levels of activity and is expressed in terms of aircraft landing gear type and configurations. Pavement design strength is not the maximum allowable weight; limited operations by heavier aircraft other than the critical aircraft may be permissible. It is important to note that frequent operations by heavier aircraft will shorten the lifespan of the pavement.

The existing runway pavement strengths are reported to be:

- Runway 17-35 - 30,000 pounds gross weight single-wheel landing gear and 160,000 pounds gross weight dual-wheel landing gear.
- Runway 8-26 - 12,500 pounds gross weight single-wheel landing gear.

Based on the existing and planned RDCs for each runway and the aircraft most likely to use the airport on a regular basis (illustrated in Tables 3-1, 3-2, and 3-3), the pavement strength ratings for both Runways 17-35 and 8-26 are adequate. Many B-I aircraft likely to use Runway 8-26 have a maximum takeoff weight of 12,500 pounds or less. Likewise, the majority of C-I type aircraft likely to use Runway 17-35 have a maximum takeoff weight far below the 160,000 pounds dual-wheel landing gear rating for the runway. For planning purposes, the existing pavement strengths for both runways should be maintained over the planning period.

4.4.5 Taxiway and Taxilane Requirements

By definition, a taxiway is a defined path established for the taxiing of aircraft from one part of an airport to another. A taxilane is a taxiway designated for low speed and precise taxiing. Taxilanes are usually, but not always, located outside the movement area, providing access from taxiways to aircraft parking positions, hangars, and terminal areas.

FAA AC 150/5300-13A, *Airport Design*, provide planners with guidance on recommended taxiway and taxilane layouts to avoid runway incursions and to enhance the overall safety at the airport. According to the FAA, a runway incursion is "any occurrence at an airport involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and takeoff of aircraft."

According to *Airport Design*, "good airport design practices keep taxiway intersections simple by reducing the number of taxiways intersecting at a single location and allows for proper placement of airfield markings, signage, and lighting." Existing taxiway geometry should be improved whenever feasible with emphasis on "hot spots," and to the extent practical, the removal of existing pavement to correct confusing layouts is advisable.

As discussed previously in Chapter 2, Section 2.13.3, to arrive at the TDG, the undercarriage dimensions of the aircraft are used. The TDG design standards are based on the overall main gear width (MGW) and the cockpit-to-main gear (CMG) distance. Taxiway/taxilane width and fillet standards, and in some instances, runway-to-taxiway and taxiway/taxilane separation requirements, are determined by the TDG. The FAA advises that it is appropriate for a series of taxiways on an airport to be built to a different TDG standards based on anticipated use.

Taxiway A2 at the Airport was recently reconstructed in 2013 to meet TDG 1 standards. Although it was designed under the previous FAA AC 150/5300-13 (Change 17), *Airport Design*, the existing standard still applies under the new FAA AC 150/5300-13A, *Airport Design*. Based on the design aircraft such as the Piper Navajo and the LearJet 25, and the RDCs for Runways 17-35 and 8-26, it is recommended that all future taxiways should meet TDG 1 design standards for the Bisbee Douglas International Airport. The Development Alternatives chapter will consider various taxiway and taxilane layout configurations to improve access to and from the aprons, hangars, and the terminal building.

4.4.6 Aircraft Apron

An aircraft apron is typically located in the non-movement area of an airport near or adjacent to the terminal area. The function of an apron is to accommodate aircraft during loading and unloading of

passengers and/or cargo. Activities such as fueling, maintenance, and short to long-term parking take place on an apron. The layout and size of an apron depends on aircraft and ground vehicle circulation needs and specific aircraft clearance requirements. There are several types of aircraft aprons:

Terminal/itinerant aircraft apron – These aprons are adjacent to the terminal where passengers board and deplane from the aircraft. The apron also accommodates multiple activities such as fueling, maintenance, limited aircraft service, etc. Itinerant aprons handle itinerant aircraft activities which are usually only on the airport for a few days. At general aviation airports, this type of apron can also provide some tie-down locations for both itinerant and based aircraft.

Tie-down apron – An apron area for both short-term and long-term aircraft parking (based and itinerant aircraft).

Other services apron – Apron areas that will accommodate aircraft servicing, fueling, and the loading/unloading of cargo.

Hangar aprons – This is an area on which aircraft move into and out of a storage hangar.

FAA AC 150/5300-13A, *Airport Design*, provides design criteria to assist in apron layout and capacity. For the purpose of calculating the aircraft apron size, the following planning criterions were used:

- 800 square yards of apron per aircraft for single-engine and multi-engine aircraft
- 1,500 square yards per aircraft for turboprops and business jets
- 5,000 square yards per aircraft for larger fire fighting aircraft
- 20% of single-engine (forecasted) based aircraft will require apron parking
- 10% of multi-engine (forecasted) based aircraft will require apron parking
- Itinerant aircraft apron requirements are based on the design hour operations

Based on the above criterion, additional aircraft apron is not required for the planning period. Beyond 2028, additional apron may be needed; this need cannot be accurately predicted today, but unanticipated growth and other circumstances may occur beyond 2028 which may in turn create the need for additional apron pavement. Cochise County should monitor the utilization of the apron and based on the above criterion, make adjustments in the apron size as needed. It is recommended that reconstruction and pavement maintenance projects take place on the existing apron as needed. **Table 4-8** depicts the aircraft apron requirements for the Airport. The best course of action regarding excess aircraft apron pavement will be included in the Development Alternatives chapter.

Table 4-8 Aircraft Apron Requirements

Aircraft Apron Requirements	Year				
	Available in 2013	2018	2023	2028	2033
Existing Parking Positions	10	-	-	-	-
Parking Positions for SE/ME Aircraft	-	8	8	10	10
Parking Positions for Turboprops and Business Jets	-	2	2	4	4
Parking for Fire Fighting Aircraft	-	2	2	2	2
Based Aircraft Apron Area (sy)[1]	-	19,400	19,400	24,000	24,000
Itinerant Aircraft Apron Area (sy)[1]	-	1,200	1,500	1,500	1,500
Total Aircraft Apron Area (sy)[1]	31,000	20,600	20,900	25,500	25,500

Note. Apron development will depend on actual demand
[1]Apron requirements based on 800 square yards x the design hour operations
Source: ACI, 2013

4.4.7 Instrument Aids to Navigation

The airport has non-precision, GPS and VOR/DME instrument approach procedures to Runway 17. These approaches provide for visibility minimums as low as one mile and cloud ceiling down to 500 feet. These approaches should be maintained in the future as they provide all-weather capabilities for the airport.

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, and 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 with typical approach minimums of 350-foot ceilings and one mile visibility. An instrument approach increases the utility of the airport by providing for the capability to operate in inclement weather conditions. This is especially important for air ambulance, physician transport, and business flights. It is also useful for conducting training and maintaining instrument currency.

Development of an Area Navigation (RNAV) approach with one mile visibility minimums to Runway 35 is recommended, as it would provide enhanced safety and utility during hours of darkness and adverse weather conditions. Visibility minimums of lower than ¾-mile are not recommended for Runway 17-35. The cost of installing and maintaining the Medium-Intensity Approach Lighting System (MALSR) required for lower visibility minimums is prohibitive as the benefit from the lower visibility minimums is not anticipated to outweigh the costs.

4.4.8 Airfield Lighting, Signage, Markings, and Visual Aids to Navigation

Based on findings from the airport inventory as discussed in Chapter 2, several recommendations for improvements to the airfield lighting, signage, markings, and visual aids to navigation are recommended for Bisbee Douglas International Airport. These recommendations include the following:

Rotating beacon – The existing beacon is dated but in working condition. The age of the unit, along with the readily available newer, more energy efficient units, make it a candidate for replacement within the short-term planning period (0-5 years). The unit is recommended to be replaced with a tip down tower model, which will eliminate the need to climb the tower or use a bucket-truck to replace parts or conduct maintenance. The Development Alternatives chapter will discuss recommended location(s) for a new airport beacon.

Wind cone and segmented circle – The existing lighted wind cone is reaching the end of its useful lifecycle and should be replaced with an FAA approved lighted wind cone assembly. A new segmented circle should also be installed in accordance with FAA AC 150/5340-5D, *Segmented Circle Airport Marker System*.

Ceilometer – With the operation of the existing ASOS, the abandoned ceilometer is no longer needed and could be removed.

Runway 17-35 edge lights – The existing medium intensity runway lights (MIRL) are in good condition. However, it is anticipated that they will need to be replaced at some point during the planning period. Recommendation for replacement of the MIRL would likely be sometime within the medium-term planning period (5-10 year timeframe). Furthermore, the threshold lights associated with the end of Runway 17 may need to be replaced during this time period as well. It is recommended that all incandescent lighting be replaced with more energy efficient light emitting diode (LED) lighting; this is recommended for all future runway and taxiway lighting.

Runway 35 threshold lights – The outermost outbound threshold light fixtures are currently missing. The remaining threshold lights are in poor condition. New based mounted threshold lights should be installed; LED models are recommended.

Runway 8-26 edge lights – The existing MIRL have been abandoned. New MIRL should be installed and connected to the pilot-controlled airfield lighting system to enhance safety and increase the reliability of the airport when crosswind conditions warrant use of the runway at night. LED models are recommended.

Runway end identifier lights (REIL) – These lights are strobe lights located near the runway threshold on both sides of the runway. The lights provide rapid identification of the runway threshold. The FAA recommends that a REIL system be installed at runway ends that do not have, or are not planning to have, an approach lighting system (ALS). It is recommended that a REIL system be installed on both ends of Runway 17-35 and Runway 8-26. LED models are recommended for both REIL systems.

Runway 17 Visual Approach Slope Indicator (VASI) – The existing 2-box VASI is reaching the end of its useful lifecycle and should be upgraded to a 2-box Precision Approach Path Indicator (PAPI) system. A 2-box PAPI system is also recommended for Runway 35 and at both ends of Runway 8-26.

Taxiway edge lights and signage – There are many locations on the airfield where no taxiway edge lights exist or only taxiway reflectors and retro-reflective signage are in place. To enhance safety and increase the reliability of the airport during nighttime operations, all taxiways should have medium intensity taxiway lights (MITL) and lighted airfield signage installed. LED models of MITL are recommended.

Runway 8-26 hold sign panel – The markings on the existing retro-reflective sign panel are deteriorated and the panel should be replaced. Lighted, frangible signs are recommended to be installed in various required locations for Runway 8-26.

Runway 17-35 pavement markings – All runway pavement markings should be repainted.

Runway 8-26 pavement markings – All runway pavement markings should be repainted.

Taxiway and apron pavement markings – Taxiway and apron pavement markings (with the exception of Taxiway A2) should be repainted. Also, several hold-lines are faded and should also be repainted.

4.4.9 Weather Aids

The existing ASOS is in good working condition as stated in the Inventory Chapter. It is operated and controlled by the National Weather Service (NWS), the FAA, and the Department of Defense (DOD), and no upgrades or other modifications are needed or eligible for FAA funding (if upgrades or modifications were necessary). The sponsor should continue to maintain the grass and brush around the ASOS to allow for easier maintenance of the system and to prevent any disruption in service.

4.5 Landside Facility Requirements

Landside facilities are another important aspect of any airport as they handle aircraft and passengers while on the ground at the airport. Landside facilities serve as the processing interface between two modes of transportation – air and ground. Likewise, landside facilities also offer travelers the first impression of the airport and the local community.

The capacity, condition, and functionality of the various facilities were examined in relation to the anticipated aviation demand presented in Chapter 3 to identify future facility needs.

4.5.1 Terminal Building

The terminal building at general aviation airports typically offers various 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 lounge area, and information regarding airport services. The existing terminal building at the Bisbee Douglas International Airport is utilized by airport management and transient or local aircraft operators. It is recommended that an airport's terminal building be able to satisfy the forecasted peak hour general aviation pilot and passenger demand.

The accepted methodology used to project terminal building facility needs for general aviation airports is based on the number of airport users anticipated to use the facility during the design hour. The design hour is typically defined as the peak hour of an average day of the peak month. The design hour measures the number of passengers departing or arriving on aircraft in an elapsed hour of a typical busy (design) day. Estimating design hour passengers is typically a three-step process involves the following:

- Determine the peak month,

- Determine the design day to be used, and
- Estimate the amount of daily activity that occurs in the design hour.

The number of peak hour passengers and pilots was derived by assuming 3.4 passengers and pilots per design hour. The terminal function size is based on providing 150 square feet per peak design hour. This process is applied to both the existing (base year) and conditions as well as activity in future years. **Table 4-9** depicts the terminal building requirements.

Table 4-9 General Aviation Terminal Building Requirements

Year	Design Hour Operations	Peak Hour Pilots and Passengers	Terminal Function Size (sf)
2013	1.5	5	750
2018	1.5	5	750
2023	1.8	6	900
2028	1.8	6	900
2033	1.8	6	900

Source: ACI, 2013

The existing 6,250 square-foot terminal building meets the space requirements through the planning period. Overall the building appears to be in good condition, although it is very dated (originally built in the early 1940s and renovated in the mid-1960s). It is likely that typical energy and water efficiency improvements for a mid-century building will be required such as: mechanical, electrical, and plumbing upgrades. In addition, windows, doors, interior wall finishes, and flooring should be replaced. The age of the existing roof is not known, but it is assumed that it will require some level of maintenance and/or replacement in the planning period. Energy efficient exterior lighting which meets the County's light pollution code should be installed to enhance safety and reduce energy costs. The Development Alternatives chapter will consider various terminal concepts and will present additional recommendations.

Access from the vehicle parking area and from the aircraft apron to the terminal is adequate. The concrete sidewalk from the airside allows passengers easy access to the terminal building. Native/drought tolerant landscaping should be added around the terminal building to enhance the overall esthetics. In addition, rainwater harvesting (rain-barrels) could be added to take advantage of the annual monsoons.

After the terminal building is renovated, a recycling program should be put in place to reduce the solid waste that will be generated. The program should also be suggested as a requirement for each tenant. The County should also make sure that the dumpsters for the terminal building are adequately sized and coordinated with tenant activities to keep the overall number of dumpsters to a minimum, thereby reducing the waste haulers maneuvers and emissions on airport property.

4.5.2 HANGAR FACILITIES

The existing four hangars present a challenge for the Airport. The largest of the four is 40,000 square feet, and the other three hangars are each approximately 12,500 square feet. The total square footage of all hangars far exceeds the forecasted demand presented in Chapter 3. The Development Alternatives chapter will discuss potential options for either renovation or demolition of the hangars.

Prefabricated conventional and T-hangar units are available from a variety of manufacturers throughout the nation. Storage space for based aircraft was determined using guidelines suggested in manufacturer's literature. Typical aircraft sizes were also reviewed in light of the evolution of business aircraft sizes.

Conventional hangar standards:

- 1,200 square feet for single-engine aircraft
- 1,400 square feet for multi-engine aircraft
- 1,800 square feet for turboprop or turbojet aircraft

T-hangar standards:

- 1,400 square feet for single- and multi-engine aircraft

The above hangar criterion was applied to the based aircraft forecasts to determine the actual hangar area requirements for each hangar type. **Table 4-10** depicts the assumptions that were made regarding the type of hangar needed for each type of aircraft.

Table 4-10 Breakdown of Aircraft Storage Types

Percent of Aircraft Type	Type of Storage
100% of turbojet	Conventional hangar
55% of multi-engine	Conventional hangar
35% of multi-engine	T-hangar
10% of multi-engine	Parking apron
20% of single-engine	Conventional hangar
60% of single-engine	T-hangar
20% of single-engine	Parking apron

Source: ACI, 2013

Using the above criterion, combined with consideration of the potential fleet mix, **Table 4-11** depicts the demand requirements for hangar space at Bisbee Douglas International Airport. It should be noted that these requirements are not rigid, meaning that shifting of the space requirements between conventional and T-hangars is something that the County will need to consider as operations fluctuate and the need to satisfy user's specific requirements are identified. The Development Alternatives chapter will consider various hangar modifications/configurations to maximize the potential use of the existing hangars. If it is determined that the existing hangars are not salvageable, new hangar configurations will be proposed and evaluated.

Table 4-11 Aircraft Hangar Requirements

	Year				
	2013	2018	2023	2028	2033
Based Aircraft	5	5	6	6	6
Total Aircraft to be Hangared (approx. 70%)	3	3	4	4	4
T-hangared Aircraft (approximation)	0	2	3	3	3
Conventional Hangared Aircraft (approximation)	3	1	1	1	1
Hangar Size Requirements					
T-hangar 4 to 8 bays (sf)[1]	-	10,000	10,000	10,000	10,000
Conventional Hangar (sf)[1]	-	10,000	10,000	10,000	10,000
Total Hangar Storage (sf)	-	20,000	20,000	20,000	20,000

Note. Hangar development will depend on actual demand
[1] A minimum hangar size of approximately 10,000 square feet is recommended
Source: ACI, 2013

4.5.3 Aviation Fuel Facilities

As discussed in Chapter 2, there are currently two fuel storage tanks on the Airport that are owned by the County and are operated by the airport operations staff. Each fuel tank has a capacity of 10,000 gallons; 100LL AvGas and Jet A are available. A self-service system with a credit card reader is not currently available, but is recommended. Self-service fueling is becoming more of an expectation by pilots using small GA airports.

Additional fuel storage capacity should be planned when the airport is unable to maintain an adequate supply and reserve. For general aviation airports such as Bisbee Douglas International Airport, typically a 14 day supply is common. The presence of a Fixed Based Operator (FBO) on the airport would help in determining when additional fuel storage may be needed. If the need for additional fuel storage becomes necessary, additional tanks should be added in 10,000 or 12,000 gallon increments. These increments will be the most economical to install.

4.5.4 Airport Access and Vehicle Parking

The Bisbee Douglas International Airport is accessed from U.S. Highway 191 and is located approximately ten miles north of the City of Douglas. Traffic approaching the airport on U.S. Highway 191 is directed off the highway and on to the airport entrance road, which is also used to access the Arizona Department of Correction's (ADOC) State Prison Complex - Douglas. The two lane entrance road leads to a vehicle parking area adjacent to the airport terminal building. The existing entrance road is expected to be adequate to accommodate current and future activity for the planning period.

The existing parking area can accommodate approximately six vehicles. Normally, an airport's vehicle parking should be able to satisfy the forecasted peak hour (design hour) general aviation pilot and passenger demand. Using planning methods commonly accepted for calculating parking space

requirements, **Table 4-12** depicts the vehicle parking space requirements for the 20-year planning period.

Table 4-12 Vehicle Parking Requirements

Year	Parking Space Requirements	Parking Lot Requirements[1] (sy)
2018	5	175
2023	6	210
2028	6	210
2033	6	210

Note: Parking space requirements = forecasted based aircraft
[1]Each parking space = 35 square yards
Source: ACI, 2013

Based on the vehicle parking requirements, the existing parking area should be adequate for the planning period. If the County experiences periods where additional parking is warranted, there is sufficient area near the terminal building to expand the parking area as necessary.

4.5.5 Fencing

According to FAA AC 150/5300-13A, *Airport Design*, the primary purpose of airport fencing is to restrict inadvertent entry to the airport by unauthorized people and wildlife. There are several types of airport fencing that are eligible for FAA funding as part of the AIP program depending on the airport's classification (commercial service, GA, etc.) and fencing needs. The different types include wire fencing (with wooden or steel posts), chain-link fencing with steel posts, and wildlife deterrent fencing. Wildlife deterrent fencing usually consists of installing chain-link fence fabric along an existing chain-link fence and constructing concrete pads at existing fence gates.

The Airport has a five-strand barbed wire fence with steel posts around the perimeter. A few wire-filled, steel gates with manual access are also located along the fence line adjacent to Highway 191. The fencing encompasses the entire airport property and appears to be in good condition. The existing perimeter fencing is currently adequate for the needs of the Airport; however, the County may want to consider an upgrade to either six-foot or eight-foot high chain-link fencing with three-strand barbed wire in the future. If wildlife in the area becomes an issue, wildlife deterrent fencing may also be an option. The specific location, extent, type, and height of wildlife deterrent fencing shall be designed for the purpose intended based on and in general conformance with accepted guidelines and recommendations of the Arizona Game and Fish Department or other recognized public wildlife specialists for preventing intrusion of the specific targeted animals known to inhabit the area.

As previously mentioned in Chapter 2, the Airport currently does not have any type of fencing which prohibits access to the AOA (Air Operations Area). The Airport is not required to have security fencing in place to separate the AOA from the landside portions of the airfield because it does not conform to FAR Part 139 and Title 49 CFR, Part 1542. However, in order to enhance safety on the airfield and prevent unauthorized access to aircraft and other airside facilities, it is recommended that chain-link fencing and electrified, mechanical access gates be installed in the vicinity of the terminal and other nearby public areas.

4.5.6 Security

There are several programs designed to increase general aviation airport security. For example, the Aircraft Owners and Pilots Association (AOPA) Airport Watch program created an around the clock telephone hotline answered by federal authorities for pilots and other airport users to report suspicious activity at GA airports. Also, the Transportation Security Administration's (TSA) *Security Guidelines for General Aviation Airports* provides a set of federally-endorsed recommendations to enhance security for municipalities, owners, operators, sponsors, and other entities charged with oversight of general aviation airports. The TSA's guidance provides nationwide consistency with regard to security at general aviation facilities, as well as a rational method for determining when and where these enhancements may be appropriate based upon the operational profile of differing airports. The guidelines offer an extensive list of options, ideas, suggestions, and proven best practices for the airport operator, sponsor, tenant and/or user to choose from when considering security enhancements. The TSA's guidelines are updated and modified as new security enhancements are developed and as input from the general aviation community is received. It is recommended that Cochise County review the latest version of the TSA's *Security Guidelines for General Aviation Airports* in order to assess the suggested security enhancements, if any, at Bisbee Douglas International Airport.

4.5.7 Aircraft Rescue and Fire Fighting (ARFF) Equipment

According to FAA guidance, operators of Part 139 certificated airports must provide Aircraft Recue and Fire Fighting (ARFF) services. Bisbee Douglas International Airport is not a Part 139 certificated airport, therefore ARFF equipment is not required. Local municipal or volunteer fire departments typically provide fire protection to general aviation airports in their district. Mutual aid agreements may also be provided and developed with 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 most likely emergency situations at general aviation airports are an aircraft accident, fuel or aircraft fire, or a hazardous material (fuel) spill. The level of protection recommended in FAA AC 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. It is recommended that the Elfrida Fire Department maintain compliance with the recommendations contained in FAA AC 150/5210.6D, *Aircraft Fire and Rescue Facilities and Extinguishing Agent*, if they are currently noncompliant.

4.5.8 Airport Support and Maintenance Building

As mentioned in the Inventory chapter, an airport support and maintenance building is located adjacent to the terminal building. The steel frame of the structure is in good condition, but it is recommended that the metal siding of the building be replaced at some point in the planning period. The large tractor and mower attachment are in fair condition, and one fuel truck is rather antique. This equipment, along with any other pertinent equipment the County finds essential to the upkeep and maintenance of the airfield and airport property, should be evaluated to determine if it has reached the end of its useful lifecycle. After evaluation, any piece of equipment that has reached the end of its lifecycle should be replaced in a timely fashion.

4.6 INFRASTRUCTURE NEEDS

The existing electric, water, and telecommunication utilities are considered adequate for the existing facility. Upgrades and improvements to the existing utilities are recommended, as needed, in order to accommodate recommended development. The need for additional utilities, or modifications to existing utilities, will be evaluated in more detail in the Development Alternatives chapter, if applicable.

4.7 LAND USE COMPATIBILITY AND CONTROL

As previously discussed in Chapter 2, Section 2.14, 14 CFR Part 77 establishes several imaginary surfaces that are used as a guide to provide a safe and unobstructed operating environment for aviation. In addition to ensuring that penetrations to these imaginary surfaces are avoided or appropriately marked and lighted, the FAA recommends that the airport sponsor make reasonable efforts to prevent incompatible land uses, such as residential encroachment, from developing in the immediate area of the airport. Many times this can be achieved by the municipality creating an airport overlay zone. It is recommended that the County consider creating an airport overlay zone to preserve compatible land uses around the airport. The Airport Layout Plan (ALP) drawing set will include a land use plan that will depict any recommended changes to the current land uses.

Private development proposals should also be reviewed to ensure compatibility in the vicinity of the airport. 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 use is reviewed in four zones surrounding the airport; the Runway Protection Zone (RPZ), the Approach Zone, Airport Influence Zone, and the Traffic Pattern Zone. The RPZ is a trapezoidal area extending 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. The approach zone generally falls within the 14 CFR Part 77 approach surface area. Within the approach zone, public land uses, such as schools, libraries, hospitals, and churches should be avoided. Any new residential developments should include avigation easements and disclosure agreements. The Traffic Pattern Zone is generally the area within one mile of the airport. Within the Traffic Pattern Zone, avigation easements should be considered for residential and public uses and disclosure statements should be required. The Airport Influence Zone is the area where aircraft are transitioning to or from en route altitude or airport over-flight altitude to or from the standard traffic pattern altitude.

In addition, according to FAA Advisory Circular 150/5200-33B, *Hazardous Wildlife Attractants On or Near Airports,* landfills and/or transfer stations are incompatible land uses with airports. According to the FAA, 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 powered aircraft. Furthermore, the FAA recommends that 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. It does not appear that any current land uses surrounding the airport create wildlife attractants, but the County should remain diligent to ensure future land use remains compatible with airport facilities.

4.7.1 Airport Property

The existing airport property encompasses approximately 3,000 acres according to Cochise County property records. All of the existing Runway Protection Zones (RPZs) are controlled via fee simple, with the exception of approximately four acres in the outer portion of the Runway 8 RPZ. The land within this RPZ contains undeveloped state land.

It is not anticipated that any additional land will be required for the future development of the airport; however, the Development Alternatives chapter will identify any needed land and/or avigation easements.

4.7.2 Airport Zoning

Airport zoning ordinances should include height restrictions and land use compatibility regulations. Development around airports can pose certain hazards to air navigation if appropriate steps are not taken to ensure that existing, as well as future, buildings and other types of structures do not penetrate 14 CFR Part 77 imaginary surfaces.

The FAA recommends that airport sponsors implement height restrictions in the vicinity of the airport to protect all 14 CFR Part 77 imaginary surfaces. The existing airport is zoned accordingly for airport use and is considered to be adequate for the planning period. There are currently no incompatible land uses in the vicinity of the airport. The surrounding land uses and zoning are compatible with airport operations.

4.8 Summary of Facility Requirements

The facility requirements for the Bisbee Douglas International Airport are summarized in **Table 4-13**. The recommendations are based on the types and volume of aircraft currently using, and expected to use, the airport in the short- and long-term time frames. In the next chapter, Development Alternatives, various airside and landside improvements will be presented and evaluated, which will in turn lead to the recommended preferred development airside and landside alternatives for the Airport. The recommended facilities will enable the airport to continue to serve its current and future users in a safe and efficient manner.

Table 4-13 Facility Requirements Summary

Item	Base Year (2013)	Short-Term	Medium-Term	Long-Term
Runways				
17-35				
Runway Design Code (RDC)	C-I	Same as existing		
Length (ft)	6,430	Recommend lengthening to 6,810		
Width (ft)	100	Same as existing		
Pavement Strength (lbs)	30,000 S, 160,000 D, 250,000 DT	Same as existing		
Lighting	MIRL	Same as existing	Replace	Maintain
Markings	Non-precision	Repaint	Maintain	
8-26				
Runway Design Code (RDC)	B-I	Same as existing		
Length (ft)	4,966	Same as existing		
Width (ft)	60	Same a existing		
Pavement Strength (lbs)	12,500 S	Same as existing		
Lighting	No	Install MIRL	Maintain	
Markings	Visual	Repaint	Maintain	
Taxiways				
Taxiway A-2				
Taxiway Design Group (TDG)	TDG - 1	Same as existing		
Width (ft)	25	Same as existing		
Lighting	MITL	Same as existing		
Markings	Centerline	Repaint	Maintain	
Taxiway A-3 and A-4				
Taxiway Design Group (TDG)	TDG - 2	Reconstruct to TDG-1		
Width (ft)	35	Reconstruct to 25		
Lighting	Some retro-reflectors	Install MITL		
Markings	Centerline	Paint centerline		
Taxiway A				
Taxiway Design Group (TDG)	TDG – 5	Reconstruct to TDG-1		
Width (ft)	75	Reconstruct to 25		
Lighting	Some MITL	Install MITL		
Markings	Centerline	Paint centerline		
Navigational and Weather Aids				
ASOS	Yes	Maintain existing		
Rotating Beacon	Yes	Replace	Maintain	
Approaches	Yes (GPS & VOR/DME Runway 17)	Add RNAV/GPS Runway 35	Maintain	
Visual Aids				
REIL	No	Install on Runways 17-35 & 8-26	Maintain	
VASI	Yes	Remove 17-35	-	
PAPI	No	Install on Runways 17-35 & 8-26	Maintain	
Wind cone/segmented circle	Yes	Replace	Maintain	

Table 4-13 Facility Requirements Summary Continued			
Terminal			
General Aviation (sf)	6,250	Same as existing	
Hangars[1]			
Conventional (sf)	77,500	Recommend 10,000	
T-hangars (sf)	0	Recommend 10,000	
Total	77,500	Recommend 20,000	
Aprons[1]			
Tie-down/transient (sy)	31,000	Recommend 21,000 to 26,000	
Vehicle Parking (spaces)			
GA Itinerant & Based Users	5	Same as existing	
Public	1	Same as existing	
Total	6	Same as existing	
Fuel Facility			
Jet A (gal)	10,000	Same as existing	
AVGAS (100LL) (gal)	10,000	Same as existing	
Total (gal)	20,000	Same as existing	
Self-fueling/Credit card reader	No	Install	Maintain
Fencing			
Perimeter	Yes	Replace/Install	Maintain
Abbreviations: S = Single-wheel landing gear, D = Dual-wheel landing gear, DT = Dual-tandem landing gear			

Note. [1]Hangar and apron development will depend on actual demand
Source: ACI, 2013

CHAPTER FIVE

DEVELOPMENT ALTERNATIVES

COCHISE COUNTY

BISBEE DOUGLAS INTERNATIONAL AIRPORT

AIRPORT MASTER PLAN

ARMSTRONG

CHAPTER 5 – DEVELOPMENT ALTERNATIVES

5.1 INTRODUCTION

This chapter contains the description and evaluation of various development alternatives for the Bisbee Douglas International Airport. The basis for the airside and landside alternatives were derived from the recommendations contained in the Facility Requirements chapter.

According to FAA AC 150/5070-6B, *Airport Master Plans*, each identified alternative's technical feasibility, economic and fiscal soundness, and aeronautical utility should be examined. Ultimately, development alternatives will only be considered that meet the County's planning needs and those that the FAA or County will be realistically able to implement.

5.2 DEVELOPMENT CONCEPTS

The overall objective of the alternatives analysis is to 1) review the facility requirements that have been determined necessary to meet FAA design standards, and to safely and efficiently accommodate aviation demand over the planning period and 2) evaluate the best way to implement the facility requirements as presented in Chapter 4.

A range of airside and landside alternatives are typically created and evaluated in both a quantitative and qualitative manner for implementing the different facility requirements. In other instances where less robust development is anticipated, the selection of a preferred development plan can result from a more logical evaluation of the various options resulting from discussions with the sponsor, Technical Advisory Committee (TAC), and input from the public.

The following best planning tenets, as recommended in FAA AC 150/5070-6B, *Airport Master Plans*, apply to the evaluation of the development alternatives:

- Conforms to best practices for safety and security.
- Conforms to the intent of FAA and other appropriate design standards.
- Provides for the "highest and best" land use on and off airport.
- Allows for forecast growth throughout the planning period.
- Provides for growth beyond the planning horizon.
- Provides balance between developmental elements.
- Provides flexibility to adjust to unforeseen changes.
- Conforms to the airport owner's strategic vision.
- Conforms to relevant local, regional, and state transportation plans.
- Is technically and financially feasible.
- Is socially and politically feasible.
- Satisfies user's needs.

After evaluating the demonstrated needs in a qualitative manner, the future development needs and recommendations are presented herein for implementing the facility requirements described in Chapter 4.

A combination of effective airside and landside planning is essential to the successful development of the airport. Airside components for the most part include areas of the airfield where aircraft takeoff or land, taxi, and park. Landside components generally consist of a system of buildings, fueling facilities, roadways, and vehicle parking areas.

An alternative for Cochise County involving both the airside and landside portions of the Airport is a scenario where no improvements, alterations, or enhancements are made to the airfield at all, i.e. the airport remains in its current state with the existing airfield configuration and existing facilities. This would be considered a no-action alternative for development at the airport. However, over the last decade, the FAA, ADOT, and Cochise County have made a continuous investment in the airport infrastructure. To preserve the infrastructure and to ensure that additional federal funding is received, it is in the best interest of the County to maintain the airport and make any necessary improvements. For example, there are three taxiways that exceed the recommended TDG 1 design standards that should be reconstructed. The pavement conditions of the taxiways vary from good to poor, but each will require rehabilitation and/or reconstruction in the planning period. Finally, the intersection of the end of Runway 17 and Runway 8-26 should be addressed to enhance safety on the airfield.

5.3 Airside Development

Airside development is typically the most critical and physically dominant feature of airport development and therefore a focal point of an airport's planning process. This section discusses the airside development alternatives and addresses the needs of the existing and future aviation demand identified in Chapter 4, Facility Requirements.

Alternative Considerations – Airside Development

- Maintain FAA design standards for RDC C-I and B-I
- Extension of Runway 17-35 by 380 feet
- Resolve Runway 17 threshold and Runway 8-26 intersection issue
- Maintain FAA design standards for TDG 1
- Identify areas to expand the existing aircraft parking apron
- Addition of parallel taxiways and bypass taxiways
- Remove aligned taxiway serving the approach end of Runway 35

5.3.1 Runway Development

As previously identified in Table 4-6, a 380-foot extension to Runway 17-35 is recommended in the planning period. If implemented, the extension would ultimately make the runway 6,810 feet long.

Two alternatives and one additional concept were evaluated when considering the proposed lengthening to Runway 17-35. After discussion with Cochise County, the two leading alternatives are:

- Alternative 1: No-action
- Alternative 2: Extend Runway 17 threshold by 380 feet

Alternative 1: The no-action alternative represents a scenario where Runway 17 is not extended at all and remains in its current configuration.

Alternative 2: The physical location of the Runway 17 threshold is located at the edge of pavement on Runway 8-26, thereby creating a 90 degree intersection. In order to enhance the overall safety on both runways, it is recommended that Runway 17-35 be extended. In addition, the existing location of the Runway 17 threshold also prevents the construction of a full parallel taxiway to Runway 17-35.

Alternative 2 proposes the end of Runway 17 be extended north to accommodate a future parallel taxiway for both Runway 17-35 and Runway 8-26. Given the geometry of the runway intersection, FAA AC 150/5300-13A, *Airport Design*, recommends that the minimum distance the pavement would need to be extended is equal to the required runway centerline to taxiway centerline separation plus half the taxiway width. With a RDC of B-I for Runway 8-26, the required minimum distance would equal 237.5 feet (225-foot separation for a RDC of B-I and half of the 25-foot taxiway width for a TDG 1 (12.5 feet)). Thus, by extending Runway 17 to the north by the entire 380 feet needed, an aircraft will be able to taxi to the end of Runway 17 and also remain outside of the Runway 8-26 RSA, OFA, and 14 CFR Part 77 primary surface.

Consideration was also given to a third concept, which involved shifting the Runway 17 threshold far enough south so that there would be an adequate separation between the Runway 17 threshold and Runway 8-26. However, shifting Runway 17-35 south the required distance needed to remain outside of the existing Runway 8-26 safety area and the future Runway 8-26 parallel taxiway safety area, in addition to adding the recommended runway length of 380 feet to the end of Runway 35, would result in the new extended RSA and OFA extending across Highway 191. Runway 8-26 would also remain in the RPZ of Runway 17. Therefore, this potential concept was dismissed from further consideration.

Between the alternatives considered, Alternative 2 is recommended because it addresses the demonstrated needs of the airport for the planning period by enhancing airfield safety and it is considered to be the most reasonable development alternative. Alternative 2 is illustrated on **Exhibit C**.

5.3.2 Taxiway Development

Taxiway A presently serves the three most northern aircraft storage hangars on the airport. The taxiway is 75 feet wide and exceeds the recommended design standards for a TDG 1. Given the overall condition of the pavement and the excess pavement width, it is recommended that Taxiway A be reconstructed to meet TDG 1 design standards. The taxiway should also be reconfigured (as needed) to provide access to either the existing hangars if they are refurbished, or newly constructed hangars as the demand for them increases.

Taxiway A-1 should be abandoned (removed if possible) because its location and condition is inconsistent with typical airfield configurations. The configuration of Taxiway A-1 was practical when additional crosswind runways were active at the airport; however, with many of the old runways now gone, the configuration of Taxiway A-1 does not meet current FAA design standards.

Taxiway A-2 was constructed in 2013 to meet TDG 1 design standards. No modifications to this taxiway are recommended at this time beyond normal pavement maintenance.

Taxiway A-3 is located on an area of the airfield that provides efficient access from Runway 17-35 to the landside facilities. This taxiway should remain in its current location for the planning period. Although the taxiway is 35 feet wide and is presently in good condition, once the pavement reaches the end of its useful life, it should be reconstructed to a width of 25 feet to meet TDG 1 design standards.

Runway 17-35 is not served by a full length parallel taxiway. Taxiway A-4 is a partial parallel taxiway to Runway 17-35 and is located 500 feet from the runway centerline. Taxiway A-4 is also 35 feet wide. This runway to taxiway distance exceeds the required separation of 300 feet based on the RDC of C-I. As presented in Chapter 2, Taxiway A-4 is in fair condition and will need some level of rehabilitation or reconstruction in the planning period. It is recommended that the taxiway be reconstructed (as needed) to meet RDC C-I runway centerline to taxiway centerline separation design standards and to a width of 25 feet meeting TDG 1 design standards (shown on **Exhibit C**).

Runway 8-26 could benefit from the construction of bypass taxiways at both runway ends. With bypass taxiways at both runway ends, construction of a full parallel to Runway 8-26 could be done later in the planning period, if needed. Bypass taxiways and a parallel taxiway for Runway 8-26 would be constructed to meet RDC B-I and TDG 1 design standards (shown on **Exhibit C**).

5.3.3 Aircraft Apron

Based on the recommendations from Chapter 4, Facility Requirements, the existing aircraft apron is considered adequate for the planning period. As discussed in Chapter 4, it is assumed that beyond 2028 additional apron may be needed that presently cannot be accurately predicted because of unanticipated growth or other circumstances. The County should monitor the utilization of the apron and make adjustments in the apron size as needed throughout the planning period.

As presented in Chapter 2, portions of the apron are in poor condition and will require either rehabilitation or reconstruction during the planning period. Alternative locations for adding additional apron are presented (for planning purposes only) to demonstrate where additional apron could be constructed if justified through a planning effort. New aircraft tie-down locations, including aircraft parking for transient aircraft are depicted on **Exhibit D**.

5.3.4 Instrument Approach Development

As previously described in Chapter 2, the Airport currently has non-precision, GPS and VOR/DME instrument approach procedures in place for Runway 17, and it is recommended that these approaches be maintained in the future. The existing approach procedures are considered adequate for the type of aircraft operations anticipated to occur at the airport over the planning period. However, it was suggested that the development of a GPS approach with area navigation (RNAV) with 1-mile visibility minimums, be added in the future for Runway 35. A GPS (RNAV) approach would provide enhanced safety and utility during hours of darkness and adverse weather conditions.

The costs associated with adding such an approach are considered minimal, and are primarily related to the completion of an aeronautical survey of the airport and its surrounding areas to verify the height and location of any obstructions. If any critical obstructions were found they would need to be mitigated.

5.3.5 Airfield Lighting and Signage

The existing taxiway lighting on Taxiway A-2 is base-mounted with conduit, Medium Intensity Taxiway Lights (MITL) and was installed in 2013. Taxiway A-3 and portions of Taxiway A also have direct burial MITL; the installation dates of these lights are unknown. The remaining existing taxiways are all unlit as discussed in Chapter 2. There are two alternatives being considered for the future lighting/marking of airfield taxiways. The first alternative consists of installing base mounted with conduit MITL along any new taxiways. The options for taxiway edge light fixtures include either incandescent bulbs or light emitting diodes (LEDs). The second alternative includes installing retro-reflectors along any new taxiways. This method of marking is inexpensive and requires little in the way of construction or maintenance. However, the downside is retro-reflectors are not as easily seen by pilots as MITL are. It is recommended that any new taxiway have MITL installed.

To improve the utility and reliability of Runway 8-26, it is recommended that Medium Intensity Runway Lights (MIRL) be installed. The type of fixture (incandescent or LED) is a choice that should be made during the design phase.

For both the MITL and MIRL, preference is given to LED fixtures as they will significantly reduce the County's energy costs and have superior light quality over incandescent bulbs. LED fixtures for taxiways and runways (MIRL only) are FAA approved. It is important to note that LED fixtures do have higher initial costs. During the design phase of a lighting project, the County along with the FAA and the design engineer can evaluate what type of light fixture (incandescent or LED) best meets the needs of the County.

The Inventory and Facility Requirements chapters briefly discussed the condition of some of the airfield signage and made recommendations for replacement and/or new installation where signage currently does not exist. In the short term, it is recommended that the County replace the retro-reflective airfield signs which were identified in the Inventory chapter as being in fair to poor condition. Also, where MITL currently exist on some taxiways, it is recommended that any retro-reflective signage be replaced with lighted signs (if not already in place). In the medium- to long-term planning period, as new taxiways are constructed/re-constructed and MITL are installed on the taxiways, it is recommended that lighted signage also be installed at the same time and all retro-reflective signage be removed.

Other airport signage that is not considered airfield signage may be added and/or removed as the County sees fit. If chain-link fencing and access gates in the terminal and surrounding areas are installed at some point in the planning period, the corresponding landside signage would be installed as part of that fencing project.

5.3.6 Miscellaneous Development Projects

The alternatives drawing (**Exhibit C**) will also depict the preferred location for the following additional recommended airfield improvements:

- Rotating beacon and self-supporting tower
- Lighted wind cone and segmented circle

- Installation of a Precision Approach Path Indicator (PAPI) at each end of Runway 17-35 and Runway 8-26
- Installation of Runway End Identifier Lights (REIL) at each end of Runway 17-35 and Runway 8-26

5.4 LANDSIDE DEVELOPMENT

Landside development is an important aspect of a well functioning airport. This section discusses the landside development alternatives and addresses the needs of the existing and future aviation demand identified in Chapter 4, Facility Requirements. The recommended landside development and other enhancements are illustrated on **Exhibits C** and **D**.

Alternative Considerations – Landside Development

- Areas to construct additional aircraft storage and T- hangars
- Locations for aeronautical and non-aeronautical related revenue generating parcels, i.e. FBO, etc.

5.4.1 TERMINAL BUILDING

Terminal buildings provide visitors with a first impression of an airport. The airport terminal building at Bisbee Douglas International Airport was constructed in the 1940's with only minor updates performed in 1949. At a minimum, the existing terminal building should be renovated to ensure that it meets current codes, and upgrades to the building should be considered as presented in Chapter 4, Facility Requirements. The facility requirements analysis concluded that the size of the terminal building is adequate for the planning period. Likewise, the location of the terminal building is considered sufficient and should be able to serve the needs of the Airport for the planning period. Therefore, alternatives for relocating the terminal to another part of the airport will not be included in this Master Plan.

5.4.2 HANGAR DEVELOPMENT

Hangar development is an important aspect at nearly every airport, including GA airports. When properly utilized, hangars are often a good source of revenue for the airport sponsor. As previously mentioned in Chapter 2, the Airport has four large conventional hangars that are not being utilized to their fullest capacity due to the limited number of aircraft presently based on the airfield. The largest of the four is approximately 40,000 square feet and is a wood-frame, metal-sided structure. The other three hangars are each approximately 12,500 square feet and are steel-frame, metal-sided structures. The total square footage of all hangars exceeds the current and forecasted demand presented in Chapter 3.

Currently all four hangars are located a significant distance away from the existing terminal building and fueling facilities. It is recommended that the land adjacent to the terminal building to the north, running parallel to Taxiway A, be preserved as future sites for shaded tie-downs and T-hangars/conventional hangars. The land from the terminal building up to the intersection of Taxiway A and A3 would be the ideal location for future hangar development.

The largest hangar (the 40,000 square-foot wood-frame, steel-sided one) is located the closest to the existing terminal building (at the intersection of Taxiway A and A2), however, it is also the hangar in the worst condition. The hangar currently houses a couple of based aircraft with room for more, and the location of the hangar is sufficient for the short-term planning period should demand for hangar space increase. Due to its present condition, it is recommended that the hangar be evaluated in depth to see if it could be refurbished. If not, the hangar could be torn down and the site could be developed with a new hangar.

If the demand for conventional hangar storage is not immediately needed, a practical and economical approach would be to construct shaded tie-down structures. Shaded tie-downs offer more protection from the elements than open tie-downs and are usually more affordable to aircraft owners than conventional or T-hangar storage. As illustrated on **Exhibit D**, a portion of land north of the existing apron has been reserved for future airfield pavement; this portion of the apron could also be used for shaded tie-downs or T-hangars, or a combination thereof.

Over the course of the planning period, most likely in the medium to long-range time period, if sufficient demand for hangar storage increases, the following approach to hangar development should be considered by the County. The first approach would be to leave the remaining three 12,500 square-foot steel-framed hangars in their current location until such a time that additional hangar storage is needed. At that point, it is recommended that one of the three hangars be disassembled and relocated to the area designated for future hangar development described above. As noted in the Inventory chapter, the steel-frames of each of the hangars appear to be in good condition. Thus, if the steel-frame of the hangar to be relocated was evaluated and found to be in structurally sound condition, it could be relocated and erected in the recommended hangar development area. The metal-siding would, in all likelihood, need to be replaced. In addition, new utility services would need to be brought to the new hangar site. This approach to hangar development could continue with the remaining two steel-framed hangars over the course of the planning period as demand warrants.

A second approach would be to demolish all the original hangars and construct new hangar facilities in the designated hangar development area as demand warrants. The hangars could be removed individually, or all at once. Typically, hangars are developed privately on land leased by the airport owner. The land just north of the terminal building could be leased for this purpose, or the County may decide to construct a County owned hangar. If all three hangars located on the farthest north portion of the airfield were removed concurrently, this would free up this area of land for other revenue generating opportunities.

It is important to note that regardless of which approach is selected, one of the 12,500 square-foot hangars is currently being leased to an aircraft maintenance business, so relocating or demolishing the hangar would require coordination with the lessee.

5.4.3 Airport Support and Maintenance

The support and maintenance building serves an important function for the Airport. The existing building is adequate for the planning period and should be maintained. Therefore, alternatives for relocating the Airport's support and maintenance building will not be included in this Master Plan. If additional covered storage is desired, the steel-framed structure could be enclosed with metal siding to

keep the equipment out of the elements, or the County could also replace the existing structure with a new facility if needed.

The existing airport electrical building is located a significant distance from the terminal building, and the building itself is outdated and in fair condition. It is recommended that a new electrical building be constructed closer to the terminal area, and that a new electrical service entrance also be reconfigured as part of the relocation and reconstruction of the new building.

5.4.4 Aeronautical Development

A fixed base operator (FBO) is usually a private or commercial 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 charter services, flight instruction, pilot lounge and flight planning facilities, and aircraft tie-down and/or hangar storage.

At general aviation airports, the location of the FBO is important to its users. For example, a FBO will normally be located near or adjacent to the terminal so passengers have more convenient access to the amenities the terminal building provides. At Bisbee Douglas International, the terminal building is located at the southern end of the airfield. It is recommended that a FBO also be planned and located in this general vicinity in the future.

Two development alternatives exist for the location of a future FBO on the Airport. One scenario would be to have the new FBO occupy the existing terminal building, giving the company the option to refurbish or renovate the building to the company's requirements and specifications. It is anticipated that County personnel and other airport tenants could remain within the building as well, as there is adequate space as determined within the Facility Requirements chapter. The second scenario would be for the prospective FBO to construct its own facility within the designated area reserved for aeronautical activity as shown on **Exhibit D**.

Bisbee Douglas International Airport is designated as a User Fee Airport by the U.S. Customs and Border Protection (CPB). This means the Airport has been approved by the Commissioner of CBP to receive, for a fee, the services of a CBP officer for the processing of aircraft entering the United States and their passengers and cargo. Currently, international operations are not sufficient enough to justify staffing a CBP officer at the Airport full time. When an international flight wants to land at the airport, the pilot must contact the airport sponsor (Cochise County) and give the details of their arrival at the airport. The County then in turn contacts CBP, who will then coordinate the arrival of the international flight. If international arrivals at the Airport were to increase at some point during the planning period, a permanent location on the Airport may be desired to accommodate a full-time CBP presence.

Two development alternatives exist for the location of a future CBP office on the Airport. One scenario would be to have CBP occupy the existing terminal building as a tenant with leased office space. The second scenario would be for CBP to construct its own facility within the designated area reserved for aeronautical activity as shown on **Exhibit D**.

5.4.5 Non-Aeronautical Development

In October of 2013, the City of Douglas and Cochise County executed a memorandum of understanding (MOU) for the non-exclusive commercial use of the Bisbee Douglas International Airport. According to the MOU, it grants the City a non-exclusive five year license to:

1. Encumber portions of the airport property for economic development purposes;
2. Enter into agreements with private parties, non-profit organizations and/or governmental entities for the lease of a certain portion the airport property; and
3. Allow the construction of any structure to facilitate economic development provided it is airport-related or airport-compatible.

Also according to the MOU, all actions taken by the City will be subject to FAA approval. The MOU also describes additional terms and conditions such as income sharing resulting from economic development sponsored or undertaken by the City as well as other pertinent clauses. The MOU can be found in **Appendix H** for further review.

As previously mentioned in Chapter 2, the Airport encompasses approximately 3,000 acres. This is an extremely large amount of space that served the airport well when it was a military training airfield; however, with today's existing aeronautical activities, the vast majority of the land is not necessary in order to serve the general flying public. The hangar development alternatives presented within this chapter, if implemented, would consolidate the landside portion of the airfield in one area. With the terminal building, maintenance support facility, fuel system, shaded and open tie-downs, and hangars all located within the same general vicinity, not only will the airfield become more operationally efficient, it will also free up unused, vacant land for the purpose of development, either for aeronautical or non-aeronautical use.

It is not known if there are any future expansion plans for the State prison (located just east of the airfield), but the land between the prison and the airfield is a good example of land that could be re-developed for non-aeronautical use assuming the land was approved for non-aeronautical use by the FAA and re-zoned as compatible land use adjacent to airports. This vacant land was once part of the original military base, thus some infrastructure may still exist that could support future development, although the size of utilities and condition of the infrastructure is unknown. There is also a large amount of unused land to the west of the airfield that could also be developed in the future. Unlike the land east of the airfield, this land has had no previous development of any kind. If either or both areas were to be redeveloped for non-aeronautical use, it is important that the vacant land be compatible with the airport as defined by the FAA.

5.4.6 Miscellaneous Development Projects

The installation of enhanced perimeter fencing and associated gates along the existing airport boundary is recommended to restrict inadvertent entry to the Airport by unauthorized people and wildlife. In addition, chain-link fencing topped with three-strands of barbed wire and electric access control gates are recommend in the terminal area in order to separate the landside area from the air operations area (AOA).

As discussed in the Facility Requirements chapter, it is recommended that the fueling facility add a self-fueling option for airport users that need fuel outside of the normal business hours of the airport staff. This could be done by adding a credit card payment device at the fueling facility. In addition to the self-fueling option, it is also recommend that the County invest in a more sophisticated aviation fuel management and accounting software system in order to keep more accurate fuel sales data. Several companies in the aviation market provide this type of software and integrated systems, such as TouchStar, Varec FuelsManager, and MyFBO, just to name a few. The County should conduct research into the various software systems and select one that best meets their current and future needs for fuel sale tracking at the Airport.

5.5 Environmental Impacts

The proposed development will likely cause limited short-term effects resulting from construction activities. These short-term construction impacts would not persist beyond the construction period, and no long-term impacts are expected as a result of the proposed development at the Airport. The proposed projects are not expected to exceed the significant impact threshold for the impact resource categories defined by FAA Order 5050.4B, *National Environmental Protection Act (NEPA) Implementing Instructions for Airport Projects* and FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures.*

As mentioned in Chapter 2, Section 2.19.1, Air Quality, the Bisbee Douglas International Airport is partially located in the Sulphur Dioxide Attainment area with a maintenance plan, and the PM-10 Attainment area with a maintenance plan. The resource impact categories and potential environmental impacts are evaluated in more detail in Chapter 7, Environmental Overview.

5.6 Development Costs

The planning costs for the proposed development presented in this Chapter will be discussed in more detail in Chapter 8, Airport Development and Financial Plan. Development costs discussed in this Chapter are for planning purposes only, are based on 2014 dollars, and reflect level of magnitude costs. The costs in **Table 5-1** are derived from the consultant's knowledge of contactors, construction material suppliers, and work performed at comparable facilities. The costs presented are not intended to be the full range of costs associated with each project. Additional costs such as operating and maintenance are not included. The objective of quantifying construction costs is to aid the County in the decision making process. A recommended development phasing plan, along with refined probable costs, will be presented in Chapter 8.

Table 5-1 Development Costs Summary

Development Feature	Project Description	Probable Costs (2014 dollars)
Runway 17-35 Extension	Extend Runway 17, install edge lighting and signage	$ 600,000
Parallel Taxiway	Construct parallel taxiway to Runway 17-35, install edge lighting and signage	$ 2,200,000
Bypass Taxiway	Construct bypass taxiways on Runway 8-26, and install associated edge lighting and signage	$ 250,000
Parallel Taxiway	Construct parallel taxiway to Runway 8-26, and install edge lighting and signage	$ 2,500,000
Aircraft Apron	Construct aircraft parking apron, install edge lighting and signage (for planning purposes only)	$ 900,000[1]
Taxiway Reconstruction	Reconstruct Taxiway A-3 and A-4, install edge lighting and signage	$ 1,700,000
Taxiway Closure	Close and remove Taxiway A-1 and excess runway pavement	$ 95,000
Runway 8-26 Lighting	Install edge lighting and signage on Runway 8-26	$ 300,000
Visual and Navigational Aids	Install REILs on Runway 17-35 and Runway 8-26 (both ends) Install PAPIs on Runway 17-35 and Runway 8-26 (both ends) Install wind cone and segmented circle Install rotating beacon and tower	$ 150,000 $ 500,000 $ 65,000 $ 80,000
Fencing	Install airfield fencing, gates, and appurtenances	$ 550,000[2]
Hangar Development	Construct aircraft storage hangars (average square-foot cost)	$ 80 to $100 per SF[3]
Terminal Building	Upgrade/renovate existing terminal building (average square-foot cost)	$ 20 to $80 per SF[4]
Relocate Electrical Building	Relocate electrical service entrance to airport and construct a new electrical building	$600,000
Fuel Facility Credit Card Payment Device	Install a credit card payment device on the existing fuel facility	$20,000

Note. [1]The need for additional apron does not currently exist based on the Facility Requirements; [2]Wildlife fence is based on an average cost of $13 per foot; [3] Hangar development will depend on actual demand; [4] Unit costs per square-foot will vary depending on the level of renovation.
Source: ACI, 2014

5.7 Alternative Development Summary

Development alternatives presented in this Chapter addressed both airside and landside needs for the planning period. Airside alternatives include a proposed extension to Runway 17-35 in order to meet design standards and to satisfy runway length recommendations presented in the Facility Requirements chapter. Additionally, taxiway and runway lighting alternatives are suggested in order to enhance safety on the airfield, along with several other airside improvements. Landside alternatives include proposed hangar and land development locations and enhancements to the existing terminal building, fueling facility, and airfield fencing.

The recommended development alternatives will be carried forward and incorporated into the Airport Layout Plan (ALP) based on input that was gathered from the Sponsor (Cochise County), the FAA, and the Technical Advisory Committee (TAC) during a scheduled alternative development review meeting.

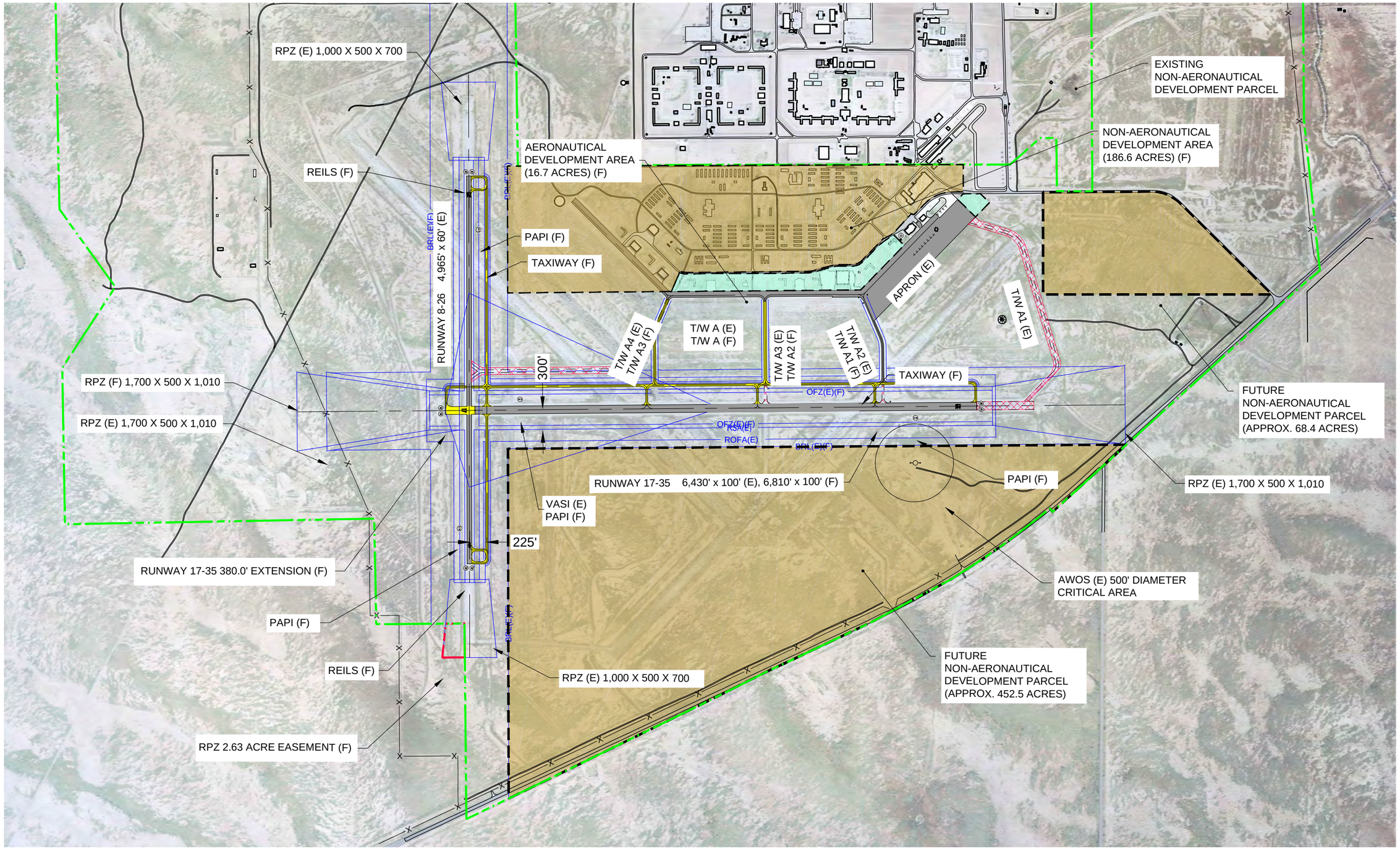


EXHIBIT C

LEGEND

- FUTURE DEVELOPMENT AREA
- FUTURE AIRFIELD PAVEMENT
- TO BE REMOVED
- EXISTING PROPERTY LINE
- FUTURE PROPERTY LINE

0 1200 2400
SCALE IN FEET

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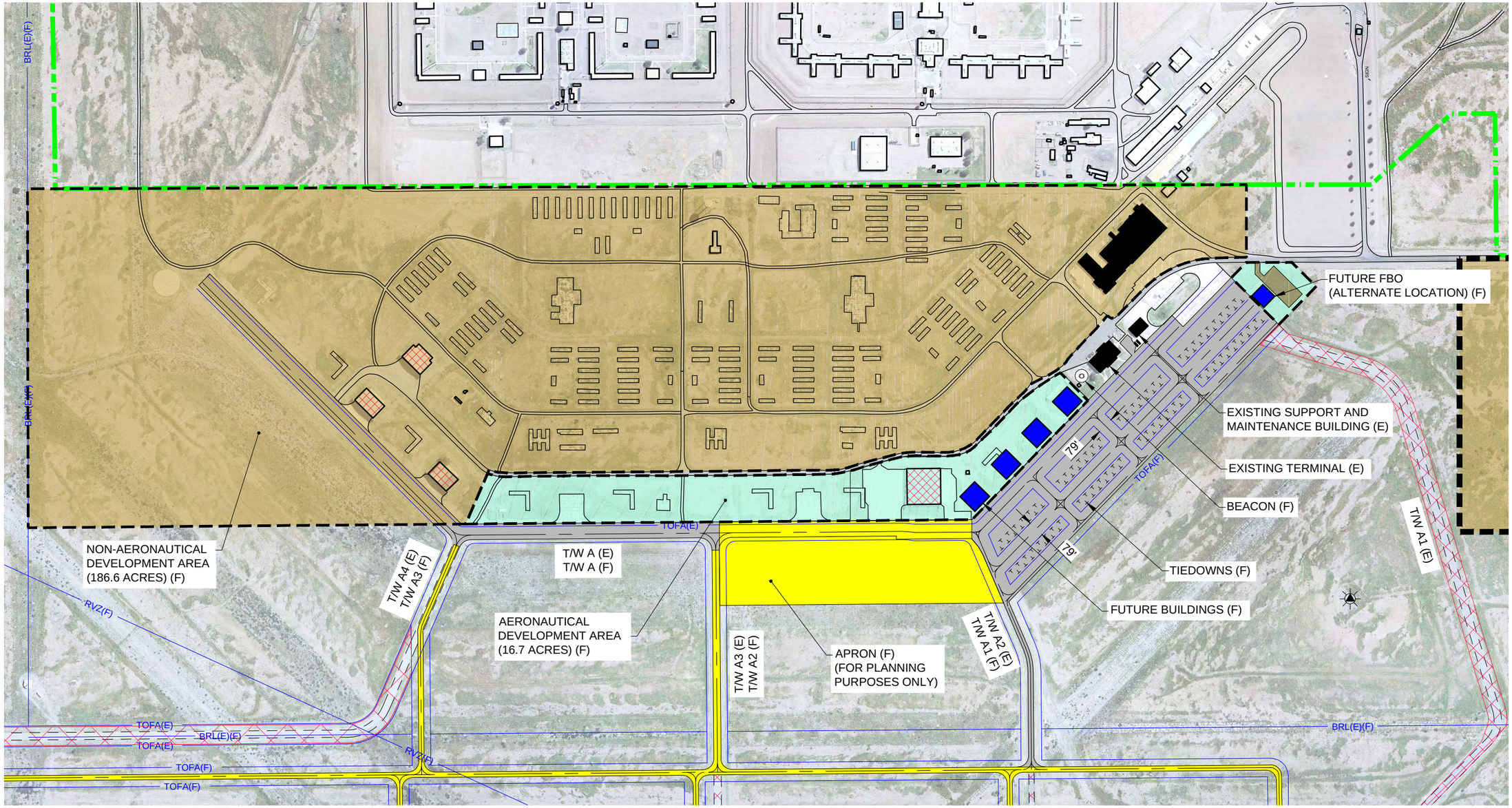
BISBEE DOUGLAS INT'L AIRPORT
Bisbee, Arizona

FUTURE AIRSIDE DEVELOPMENT

SCALE: PER BAR SCALE	DATE: 03/2014
DRAWN: LDS	FILE: 6170601-AIRSIDE
CHK'D: JZP	JOB NO.: 136170



LEGEND

- FUTURE DEVELOPMENT AREAS
- FUTURE AIRFIELD PAVEMENT
- FUTURE BUILDING/FACILITY
- FUTURE VEHICLE PARKING
- TO BE REMOVED
- EXISTING PROPERTY LINE
- FUTURE PROPERTY LINE
- FUTURE BEACON

0 500 1000
SCALE IN FEET

EXHIBIT D

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BISBEE DOUGLAS INT'L AIRPORT
Bisbee, Arizona

FUTURE LANDSIDE DEVELOPMENT

SCALE:	PER BAR SCALE	DATE:	03/2014
DRAWN:	LDS	FILE:	6170601-LANDSIDE
CHK'D:	JZP	JOB NO.:	136170

CHAPTER SIX

AIRPORT LAYOUT PLAN DRAWING SET

COCHISE COUNTY

BISBEE DOUGLAS INTERNATIONAL AIRPORT

AIRPORT MASTER PLAN

ARMSTRONG

CHAPTER 6 – AIRPORT LAYOUT PLAN DRAWING SET

6.1 AIRPORT LAYOUT PLAN DRAWING SET CONTENTS

This chapter contains the ALP drawing set. There are fourteen drawings, or sheets, which make up the entire set. The drawings within the set adhere to the guidelines set forth in the FAA's Standard Operating Procedures entitled *FAA Review and Approval of Airport Layout Plans (ALPs)* and *FAA Review of Exhibit 'A' Airport Property Inventory Maps* (ARP SOP 2.00 and 3.00). After the cover sheet, the remaining sheets include the following:

- Airport Layout Plan
- Airport Data Sheet
- Terminal Area Drawing
- 14 CFR Part 77 Airspace Drawing
- 14 CFR Part 77 Profile
- Runway 17 inner approach (Existing and Future)
- Runway 35 Inner Approach (Existing and Future)
- Runway 8 Inner Approach (Existing and Future)
- Runway 26 Inner Approach (Existing and Future)
- On Airport Land Use
- Off Airport Land Use
- Exhibit A Airport Property Inventory Map
- Aerial Photograph

BISBEE DOUGLAS INTERNATIONAL AIRPORT
BISBEE, ARIZONA

AIRPORT LAYOUT PLANS

PREPARED BY:

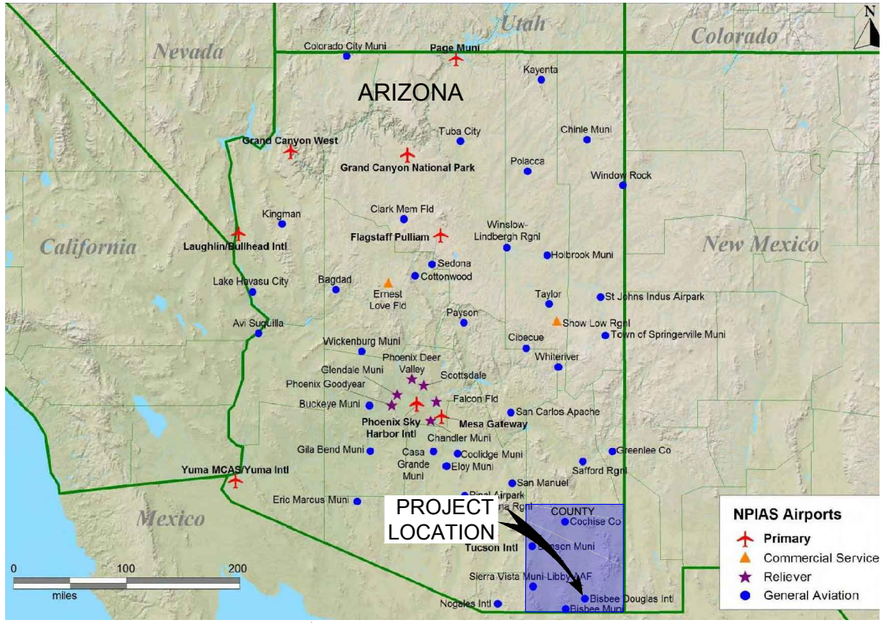
ARMSTRONG CONSULTANTS, INC.

A.I.P. No. 3-04-0013-008-2013
ADOT No. E4F3D
A.C.I. PROJECT NO. 136170
DATE: OCTOBER, 2014

INDEX TO SHEETS

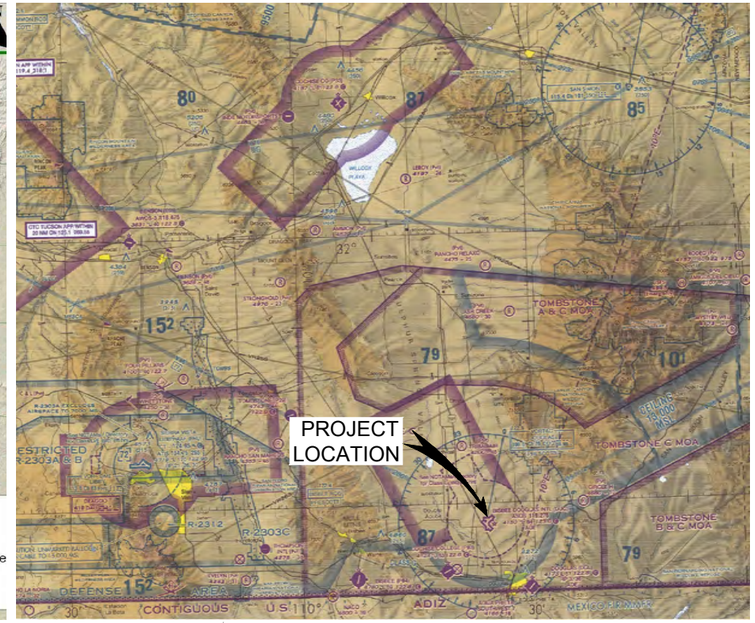
DRAWING	SHEET	REVISION DATE
COVER SHEET	1	10/2014
AIRPORT LAYOUT PLAN	2	10/2014
AIRPORT DATA SHEET	3	10/2014
TERMINAL AREA DRAWING	4	10/2014
14 CFR PART 77 AIRSPACE DRAWING	5	10/2014
14 CFR PART 77 PROFILE	6	10/2014
RUNWAY 17 INNER APPROACH (E)(F)	7	10/2014
RUNWAY 35 INNER APPROACH (E)(F)	8	10/2014
RUNWAY 8 INNER APPROACH (E)(F)	9	10/2014
RUNWAY 26 INNER APPROACH (E)(F)	10	10/2014
ON AIRPORT LAND USE	11	10/2014
OFF AIRPORT LAND USE	12	10/2014
EXHIBIT "A" AIRPORT PROPERTY INVENTORY MAP	13	10/2014
AERIAL PHOTOGRAPH	14	10/2014

(E = EXISTING, F = FUTURE)



LOCATION MAP

NTS



VICINITY MAP

NTS

6170501

No.	Project No.	Date	Revision / Description	File	Drwn.	Chkd.	Apprvd.
0	136170	10/2014	ORIGINAL ISSUE	6170501	LDS	CM	JZP

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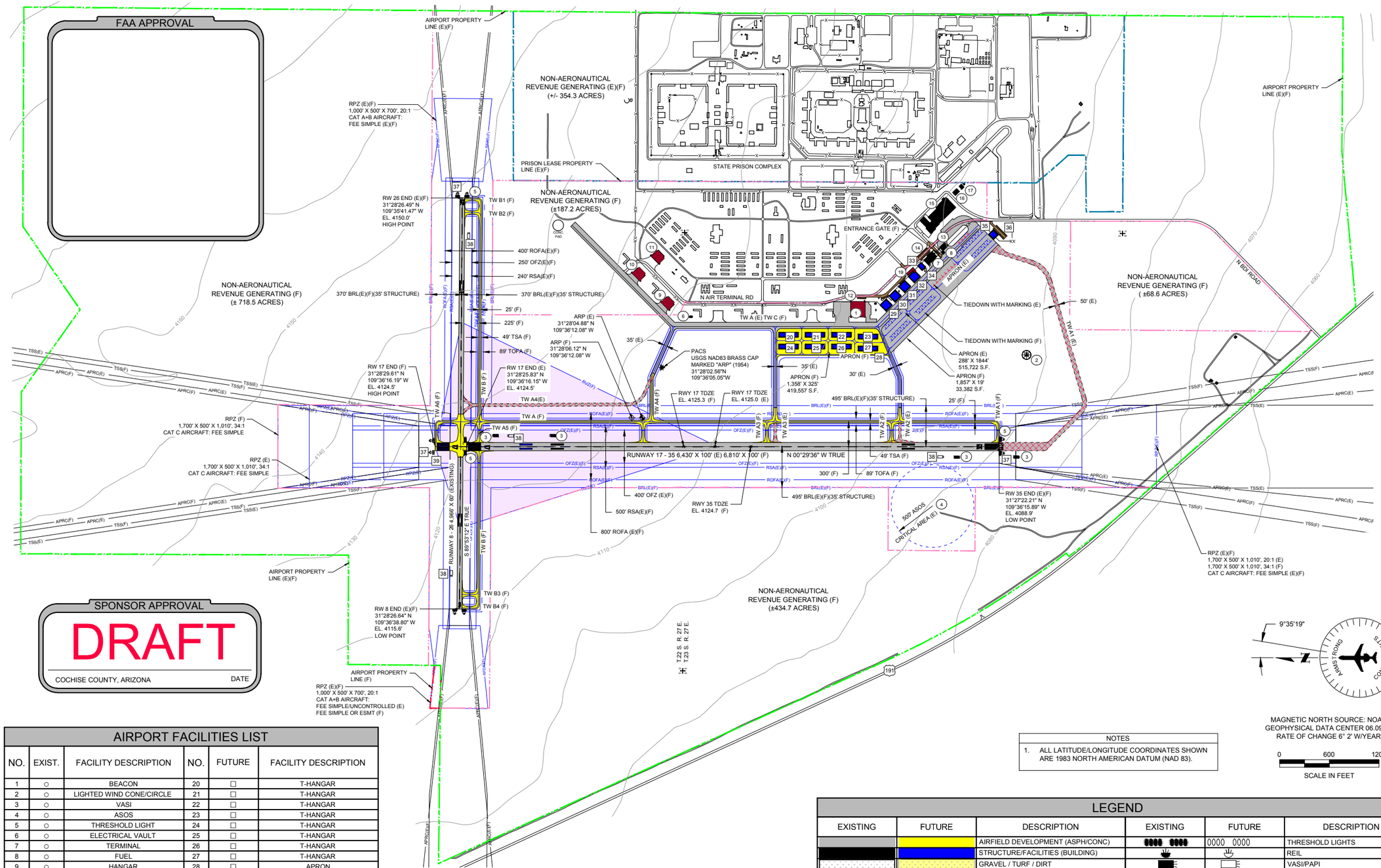
FAA APPROVAL

SPONSOR APPROVAL

DRAFT

COCHISE COUNTY, ARIZONA DATE



AIRPORT FACILITIES LIST					
NO.	EXIST.	FACILITY DESCRIPTION	NO.	FUTURE	FACILITY DESCRIPTION
1	○	BEACON	20	□	T-HANGAR
2	○	LIGHTED WIND CONE/CIRCLE	21	□	T-HANGAR
3	○	VASI	22	□	T-HANGAR
4	○	ASOS	23	□	T-HANGAR
5	○	THRESHOLD LIGHT	24	□	T-HANGAR
6	○	ELECTRICAL VAULT	25	□	T-HANGAR
7	○	TERMINAL	26	□	T-HANGAR
8	○	FUEL	27	□	T-HANGAR
9	○	HANGAR	28	□	APRON
10	○	HANGAR	29	□	HANGAR
11	○	HANGAR	30	□	HANGAR
12	○	HANGAR	31	□	HANGAR
13	○	EQUIPMENT STORAGE	32	□	HANGAR
14	○	AIRPORT PARKING	33	□	CUSTOMS BUILDING
15	○	COUNTY BUILDING	34	□	BEACON
16	○	COUNTY BUILDING	35	□	FBO BUILDING
17	○	COUNTY BUILDING	36	□	FBO PARKING
18	○	COUNTY BUILDING	37	□	REILS
19	○	COUNTY BUILDING	38	□	PAPI
			39	□	THRESHOLD LIGHT

NOTE: SEE TERMINAL AREA DRAWING FOR ESTIMATED ELEVATIONS.

NOTES
1. ALL LATITUDE/LONGITUDE COORDINATES SHOWN ARE 1983 NORTH AMERICAN DATUM (NAD 83).

9°35'19"

MAGNETIC NORTH SOURCE: NOAA GEOPHYSICAL DATA CENTER 06.09.14
RATE OF CHANGE 6° 2' W/YEAR

0 600 1200
SCALE IN FEET

LEGEND					
EXISTING	FUTURE	DESCRIPTION	EXISTING	FUTURE	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPH/CONC)		0000 0000	THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)			REIL
		GRAVEL / TURF / DIRT			VASI/PAPI
		AIRPORT PROPERTY LINE (APL)			AIRPORT BEACON
		LAND USE LINE			WIND CONE & SEGMENTED CIRCLE
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)			AWOS
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			LIGHTED WINDCONE
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)		N/A	SECTION CORNER
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)			DRAINAGE/CULVERT
BRL(E)	BRL(F)	BUILDING RESTRICTION LINE (BRL)		N/A	CONTOURS
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)			ROADS
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)			MARKINGS
RVZ(E)	RVZ(F)	RUNWAY VISIBILITY ZONE (RVZ)	X	XX	FENCING
		AIRPORT REFERENCE POINT (ARP)			HELIPAD
		PACS/SACS MONUMENT			
		TO BE REMOVED			

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BISBEE DOUGLAS INTERNATIONAL AIRPORT
DOUGLAS, ARIZONA

A.I.P. No. 3-04-0013-008-2013
AIRPORT LAYOUT PLAN

No.	Project No.	Date	Revision / Description	File	Drwn.	Chkd.	Apprvd
3							
2							
1				6170502	LDS	CM	JZP
0	136170	10/2014	ORIGINAL ISSUE				

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AIRPORT LAYOUT PLAN

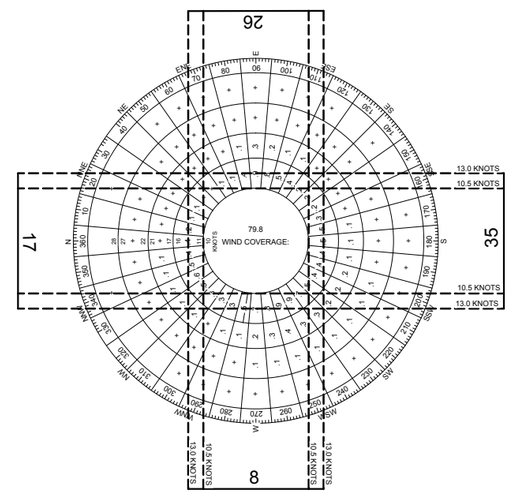
RUNWAY DATA

ITEM		RW 17/35 - EXISTING (E)		RW 17/35 - FUTURE (F)		RW 8/26 - EXISTING (E)		RW 8/26 - FUTURE (F)	
RUNWAY IDENTIFICATION		17	35	17	35	8	26	8	26
RUNWAY DESIGN CODE (RDC) / RUNWAY VISUAL RANGE (RVR)		C-I/5000	C-I/VIS	C-I/5000	C-I/5000	B- I/VIS	B- I/VIS	B- I/VIS	B- I/VIS
DEPARTURE REFERENCE CODE (DPRC)		C-I/5000	C-I/VIS	C-I/5000	C-I/5000	B- I/VIS	B- I/VIS	B- I/VIS	B- I/VIS
SURFACE MATERIAL, PAVEMENT STRENGTH & MATERIAL TYPE	SURFACE MATERIAL	ASPHALT		ASPHALT		ASPHALT		ASPHALT	
	STRENGTH BY WHEEL LOADING (LBS)	30,000 SW / 160,000 DW /250,000 DTW		30,000 SW / 160,000 DW /250,000 DTW		12,500 SW		12,500 SW	
	PCN (FOR BEARING STRENGTH OF 12,500 LBS OR GREATER)	N/A		N/A		N/A		N/A	
	SURFACE TREATMENT	NONE		NONE		NONE		NONE	
RUNWAY GRADIENT	EFFECTIVE (%)	0.84		0.84		0.69		0.69	
	MAXIMUM (%)	0.84		0.84		0.69		0.69	
	LINE OF SIGHT MET (Y OR N)	Y		Y		Y		Y	
PERCENT WIND COVERAGE	A-I / B-I - 10.5 KTS	87.6%		87.6%		91.2%		91.2%	
	A-II / B-II - 13 KTS	92.8%		92.8%		95.1%		95.1%	
RUNWAY DIMENSIONS									
RUNWAY DIMENSIONS (FT)		100' X 6,430'		100' X 6,810'		60' X 4,966'		60' X 4,966'	
RUNWAY SAFETY AREA (RSA)	WIDTH (FT)	500'		500'		120'		120'	
	LENGTH BEYOND RUNWAY END (FT)	1,000'	1,000'	1,000'	1,000'	240'	240'	240'	240'
RUNWAY COORDINATES (NAD 83)	RUNWAY END LATITUDE	31°28'25.835" N	31°27'22.218" N	31°28'29.61" N	31°27'22.218" N	31°28'26.64" N	31°28'26.49" N	31°28'26.64" N	31°28'26.49" N
	RUNWAY END LONGITUDE	109°36'16.152" W	109°36'15.895" W	109°36'16.19" W	109°36'15.895" W	109°36'38.82" W	109°35'41.49" W	109°36'38.82" W	109°35'41.49" W
	DISPLACED THRESHOLD LAT.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	DISPLACED THRESHOLD LONG.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RUNWAY ELEVATIONS (FT) (NAVD 88)	RUNWAY END	4124.5	4088.9	4124.5	4088.9	4115.6	4150.0	4115.6	4150.0
	DISPLACED THRESHOLD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	TOUCHDOWN ZONE (TDZ)	4125.0	N/A	4125.3		N/A	N/A	N/A	N/A
	HIGH POINT	4124.5		4124.5		4150.0		4150.0	
	LOW POINT	4088.9		4088.9		4115.6		4115.6	
RUNWAY LIGHTING TYPE		MIRL		MIRL		NONE		MIRL	
RUNWAY PROTECTION ZONE (RPZ) (FT)		1,700' X 500' X 1,010'	1,700' X 500' X 1,010'	1,700' X 500' X 1,010'	1,700' X 500' X 1,010'	1,000' X 500' X 700'	1,000' X 500' X 700'	1,000' X 500' X 700'	1,000' X 500' X 700'
RUNWAY MARKING TYPE		NPI	NPI	NPI	NPI	BASIC	BASIC	BASIC	BASIC
14 CFR PART 77 APPROACH SURFACES	APPROACH TYPE	NON-PRECISION (GPS)	VISUAL	NON-PRECISION (GPS)	NON-PRECISION (GPS)	VISUAL	VISUAL	VISUAL	VISUAL
	VISIBILITY MINIMUMS (MI)	> 3 / 4	VIS	> 3 / 4	> 3 / 4	VIS	VIS	VIS	VIS
	APPROACH SLOPE DIMENSIONS (FT)	500' X 3,500' X 10,000'	500' X 1,500' X 5,000'	500' X 3,500' X 10,000'	500' X 3,500' X 10,000'	250' X 1,250' X 5,000'	250' X 1,250' X 5,000'	250' X 1,250' X 5,000'	250' X 1,250' X 5,000'
	APPROACH CATEGORY (SLOPE)	34:1	20:1	34:1	34:1	20:1	20:1	20:1	20:1
TYPE OF AERONAUTICAL SURVEY REQUIRED FOR APPROACH		SEE AC 150-5300-18							
RUNWAY DEPARTURE SURFACE (YES OR N/A)		YES	N/A	YES	N/A	N/A	N/A	N/A	N/A
RUNWAY OBJECT FREE AREA (ROFA)	WIDTH (FT)	800'	800'	800'	800'	400'	400'	400'	400'
	LENGTH BEYOND RUNWAY END (FT)	1,000'	1,000'	1,000'	1,000'	240'	240'	240'	240'
OBSTACLE FREE ZONE (OFZ)	WIDTH (FT)	400'	400'	400'	400'	250'	250'	250'	250'
	LENGTH BEYOND RUNWAY END (FT)	200'	200'	200'	200'	200'	200'	200'	200'
THRESHOLD SITING SURFACE (TSS)	DIMENSIONS (FT)	800' X 3,800' X 10,000'	400' X 1,000' X 10,000'	800' X 3,800' X 10,000'	800' X 3,800' X 10,000'	400' X 1,000' X 10,000'	400' X 1,000' X 10,000'	400' X 1,000' X 10,000'	400' X 1,000' X 10,000'
	SLOPE	20:1	20:1	20:1	20:1	20:1	20:1	20:1	20:1
	PENETRATIONS	NO TSS PENETRATIONS	NO TSS PENETRATIONS	NO TSS PENETRATIONS	NO TSS PENETRATIONS	NO TSS PENETRATIONS	NO TSS PENETRATIONS	NO TSS PENETRATIONS	NO TSS PENETRATIONS
VISUAL AND INSTRUMENT NAVAIDS									

AIRPORT DATA

ITEM		EXISTING (E)	FUTURE (F)
AIRPORT REFERENCE CODE (ARC)		C-I	C-I
MEAN MAX. TEMP OF HOTTEST MONTH (°F) (JULY)		95°	95°
AIRPORT ELEVATION (MSL, FT) (NAVD 88) *		4,150.0 MSL	4,150.0 MSL
AIRPORT NAVIGATIONAL AIDS		VORTAC (FAA) Beacon (County)	VORTAC (FAA) Beacon (County)
AIRPORT REFERENCE POINT (ARP) COORDINATES (NAD 83)	LATITUDE	31° 28' 04.88" N	31° 28' 06.12" N
	LONGITUDE	109° 36' 12.08" W	109° 36' 12.08" W
MISCELLANEOUS FACILITIES		ASOS, MITL, LIGHTD WIND CONE	ASOS, MITL, LIGHTD WIND CONE
ARC AND CRITICAL AIRCRAFT	ARC	C-I	C-I
	AIRCRAFT	LEARJET 25	LEARJET 25
	WINGSPAN (FT)	35	35
	UNDERCARRIAGE (FT)	17	17
	APPROACH SPEED (KTS)	121 TO 141	121 TO 141
AIRPORT MAGNETIC VARIATION	VARIATION	9° 35' 19" E	9° 35' 19" E
	DATE	6 - 09-2014	6 - 09-2014
	SOURCE	NOAA	NOAA
NPIAS SERVICE LEVEL		GENERAL AVIATION	GENERAL AVIATION
STATE EQUIVALENT SERVICE		GA - RURAL	GA - RURAL

* ELEVATIONS FROM FAA/NFDC SURVEY DATA DATED 10 / 17 /14.



ALL WEATHER WIND ROSE

RUNWAY	10.5 KNOT	13 KNOT
17/35	87.6%	92.8%
17/35	91.2%	95.1%

WIND DATA SOURCE: BDI ASOS FROM 1999 TO 2008, 78,405 WIND OBSERVATIONS

TAXIWAY AND TAXILANE DIMENSIONS

TAXIWAYS AND TAXLINES	EXISTING (ALL)			FUTURE (ALL)
TAXIWAY AND TAXILANE DESIGN GROUP (TDG)	TDG -1	TDG -2	TDG -5	TDG - 1
TAXIWAY AND TAXILANE APL DESIGNATION	A-2	A-1, A-3, A-4	A-5	A-1,A-2,A-3,A-4,A-5
TAXIWAY AND TAXILANE WIDTH (FT)	25, 35, 75	35	75	25
TAXIWAY AND TAXILANE SAFETY AREA (FT)	49, 79, 214	79	214	49
TAXIWAY AND TAXILANE OBJECT FREE AREA (FT)	89/79	131/115	320/276	89/79
TAXIWAY AND TAXILANE SEPARATION (FT)	70	70	70	70
TAXIWAY AND TAXILANE LIGHTING	MITL	A-3 MITL	-	MITL

HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 (DAD 83); VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88).
EXISTING ELEVATIONS & RUNWAY END COORDINATES FROM FAA NATIONAL FLIGHT DATA CENTER.

DECLARED DISTANCES

ITEM	EXISTING		FUTURE		FAA APPROVAL DATE
	RW 17 / 35	RW 8 / 26	RW 17 / 35	RW 8 / 26	
TAKEOFF RUN AVAILABLE (TORA) (FT)	N/A	N/A	N/A	N/A	N/A
TAKEOFF DISTANCE AVAILABLE (TODA) (FT)	N/A	N/A	N/A	N/A	N/A
ACCELERATE-STOP DISTANCE AVAILABLE (ASDA) (FT)	N/A	N/A	N/A	N/A	N/A
LANDING DISTANCE AVAILABLE (LDA) (FT)	N/A	N/A	N/A	N/A	N/A

MODIFICATION TO STANDARDS APPROVAL

DESCRIPTION	STANDARD TO BE MODIFIED	EXISTING	PROPOSED	PROPOSED ACTION	AIRSPACE CASE NO.	APPROVAL DATE
NONE REQUIRED						

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BISBEE DOUGLAS INTERNATIONAL AIRPORT
DOUGLAS, ARIZONA

A.I.P. No. 3-04-0013-008-2013
AIRPORT LAYOUT PLAN

No.	Project No.	Date	Revision / Description	File	Drwn.	Chkd.	Apprvd.
3							
2							
1							
0	136170	10/2014	ORIGINAL ISSUE	6170502	LDS	CM	JZP

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THIS PLAN IS NOT A RATIFICATION OF ANY ENVIRONMENTAL ASSESSMENT OR OTHER ENVIRONMENTAL REVIEW. ALL ACTIVITIES MUST BE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS

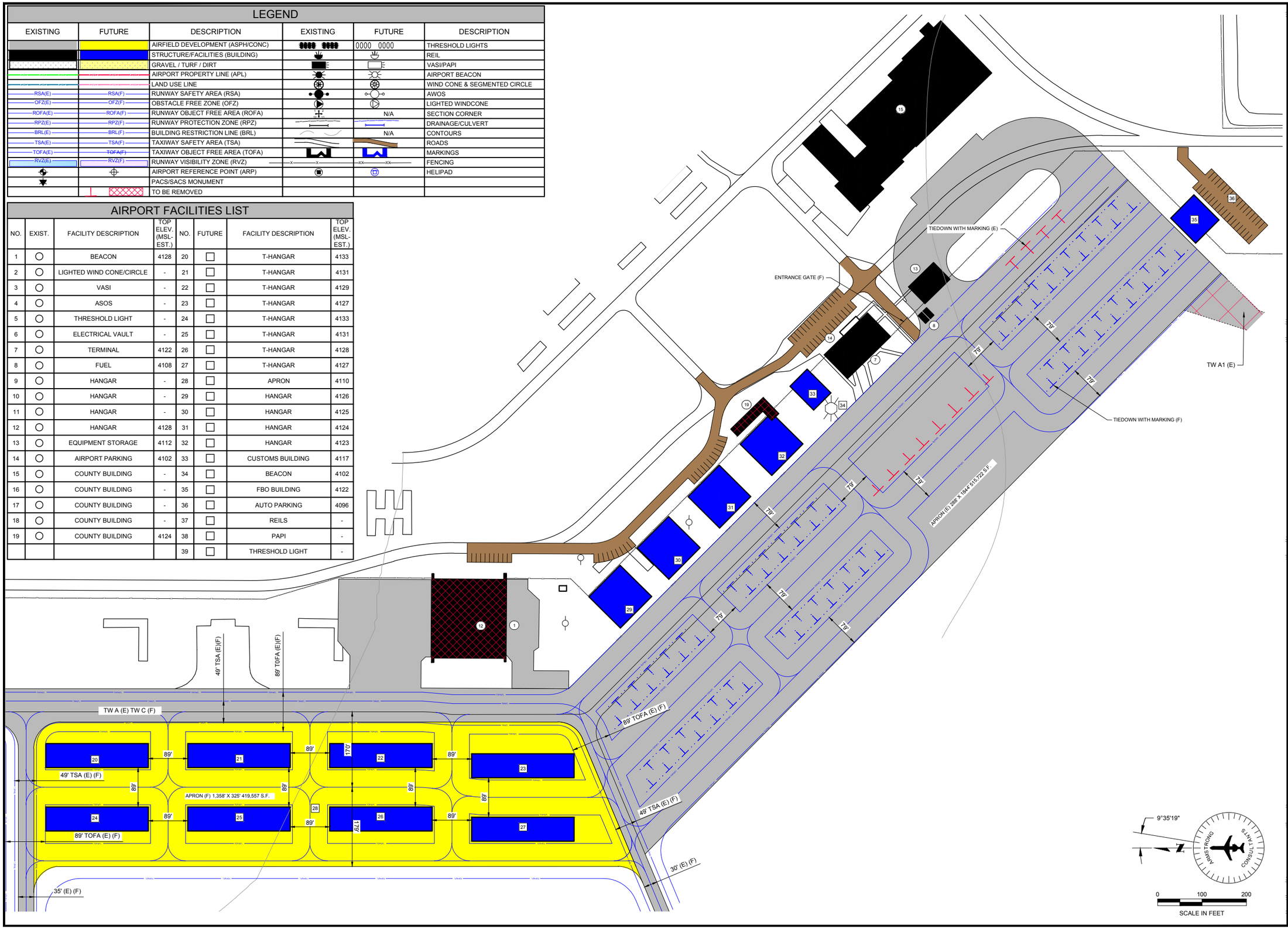
AIRPORT DATA SHEET

LEGEND

EXISTING	FUTURE	DESCRIPTION	EXISTING	FUTURE	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPH/CONC)		0000 0000	THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)			REIL
		GRAVEL / TURF / DIRT			VASI/PAPI
		AIRPORT PROPERTY LINE (APL)			AIRPORT BEACON
		LAND USE LINE			WIND CONE & SEGMENTED CIRCLE
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)			AWOS
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			LIGHTED WINDCONE
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)		N/A	SECTION CORNER
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)			DRAINAGE/CULVERT
BRL(E)	BRL(F)	BUILDING RESTRICTION LINE (BRL)		N/A	CONTOURS
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)			ROADS
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)			MARKINGS
RVZ(E)	RVZ(F)	RUNWAY VISIBILITY ZONE (RVZ)			FENCING
		AIRPORT REFERENCE POINT (ARP)			HELIPAD
		PACS/SACS MONUMENT			
		TO BE REMOVED			

AIRPORT FACILITIES LIST

NO.	EXIST.	FACILITY DESCRIPTION	TOP ELEV. (MSL-EST.)	NO.	FUTURE	FACILITY DESCRIPTION	TOP ELEV. (MSL-EST.)
1	○	BEACON	4128	20	□	T-HANGAR	4133
2	○	LIGHTED WIND CONE/CIRCLE	-	21	□	T-HANGAR	4131
3	○	VASI	-	22	□	T-HANGAR	4129
4	○	ASOS	-	23	□	T-HANGAR	4127
5	○	THRESHOLD LIGHT	-	24	□	T-HANGAR	4133
6	○	ELECTRICAL VAULT	-	25	□	T-HANGAR	4131
7	○	TERMINAL	4122	26	□	T-HANGAR	4128
8	○	FUEL	4108	27	□	T-HANGAR	4127
9	○	HANGAR	-	28	□	APRON	4110
10	○	HANGAR	-	29	□	HANGAR	4126
11	○	HANGAR	-	30	□	HANGAR	4125
12	○	HANGAR	4128	31	□	HANGAR	4124
13	○	EQUIPMENT STORAGE	4112	32	□	HANGAR	4123
14	○	AIRPORT PARKING	4102	33	□	CUSTOMS BUILDING	4117
15	○	COUNTY BUILDING	-	34	□	BEACON	4102
16	○	COUNTY BUILDING	-	35	□	FBO BUILDING	4122
17	○	COUNTY BUILDING	-	36	□	AUTO PARKING	4096
18	○	COUNTY BUILDING	-	37	□	REILS	-
19	○	COUNTY BUILDING	4124	38	□	PAPI	-
				39	□	THRESHOLD LIGHT	-



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BISBEE DOUGLAS INTERNATIONAL AIRPORT
DOUGLAS, ARIZONA

A.I.P. No. 3-04-0013-008-2013
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3							
2							
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0	136170	10/2014	ORIGINAL ISSUE	6170503	LDS	CM	JZP

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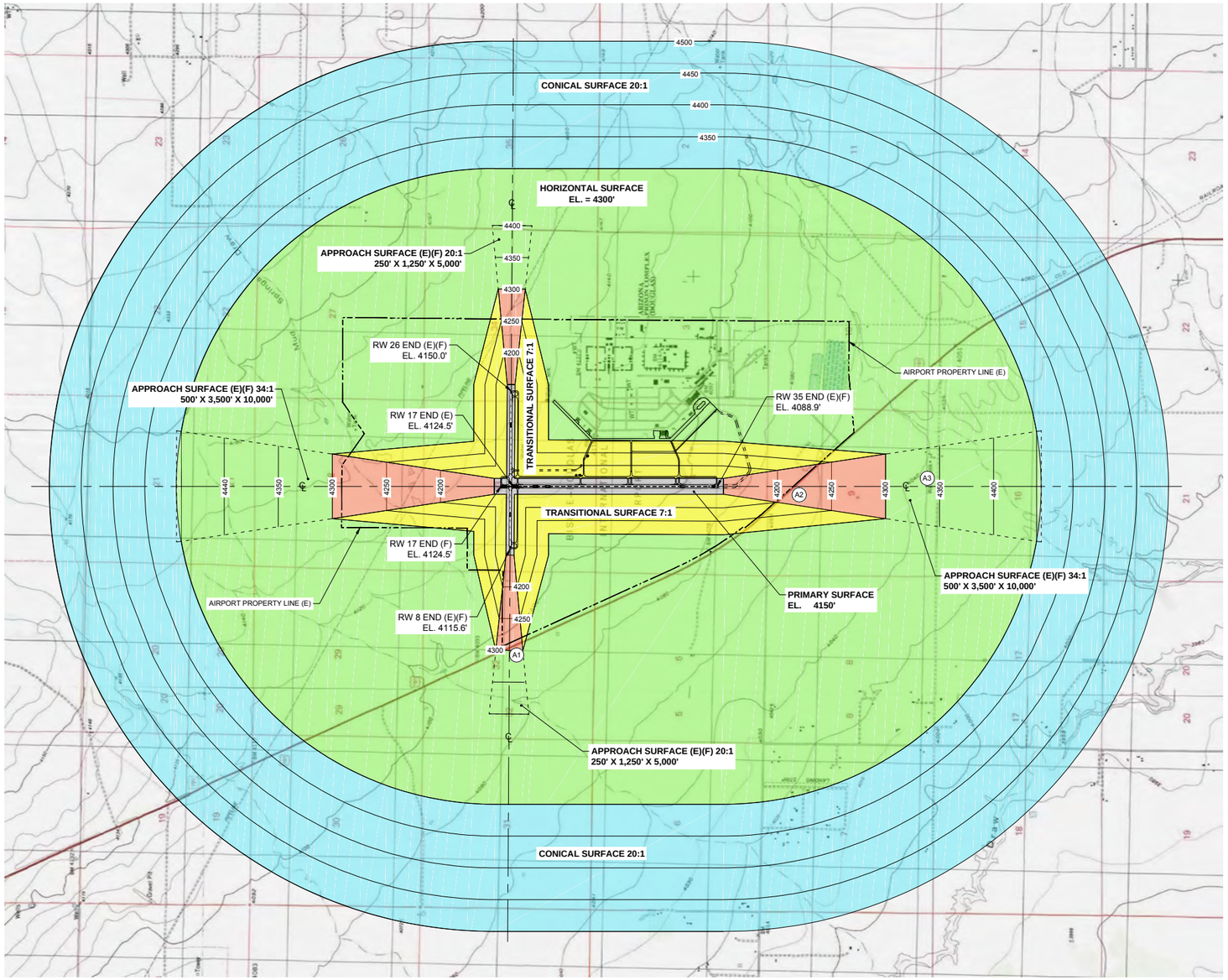
TERMINAL AREA DRAWING



OBSTRUCTION DATA TABLE

PART 77 SURFACE	ITEM No.	DESCRIPTION	ESTIMATED TOP ELEVATION (MSL)	PENETRATION (FEET)	REMARKS
PRIMARY		NONE	N/A	N/A	NONE
APPROACH	A1	ROAD	+/- 4092	NONE	NONE
	A2	ROAD	+/- 4065	NONE	NONE
	A3	ROAD	+/- 4039	NONE	NONE
7:1 TRANSITIONAL		NONE	N/A	N/A	NONE
HORIZONTAL		NONE	N/A	N/A	NONE
CONICAL		NONE	N/A	N/A	NONE

NOTES:

GROUND ELEVATION DATA UNITED STATES ELEVATION DATA 30 METER RESOLUTION, DATE UNKNOWN

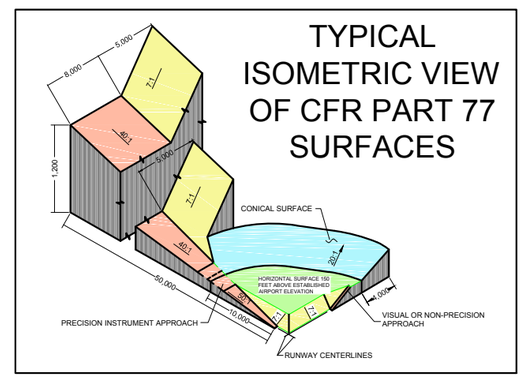
NOTES

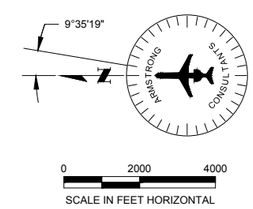
A) REFER TO "INNER PORTION OF THE APPROACH SURFACE" DRAWINGS FOR DETAILS ON ANY CLOSE-IN APPROACH OBSTRUCTIONS.

B) 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.

C) APPROACH SURFACES BASED ON ULTIMATE CONDITION.

HORIZONTAL SURFACE
TRANSITIONAL SURFACE
CONICAL SURFACE
APPROACH SURFACE
PRIMARY SURFACE
TERRAIN PENETRATION





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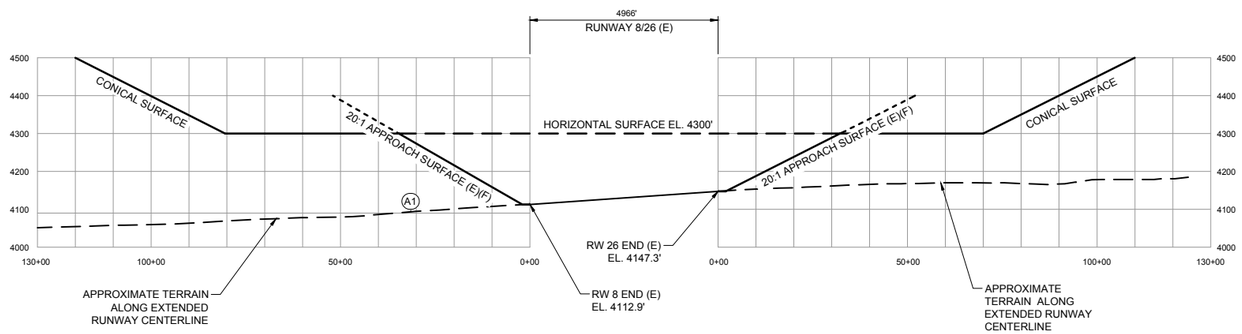
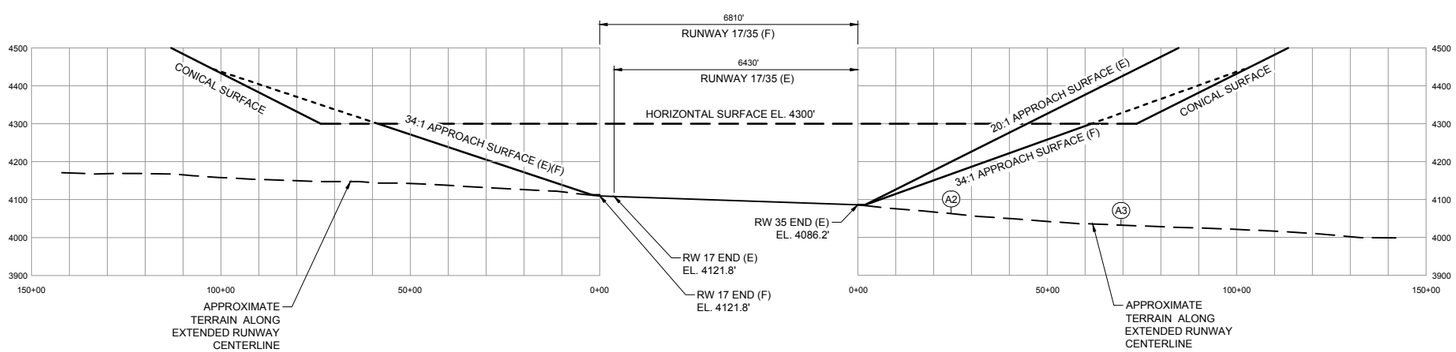
14 CFR
PART 77
AIRSPACE
PLAN
DRAWING



RUNWAY 8/26 PROFILE (E)(F)

SCALE: PER BARSCALE



RUNWAY 17/35 PROFILE (E)(F)

SCALE: PER BARSCALE

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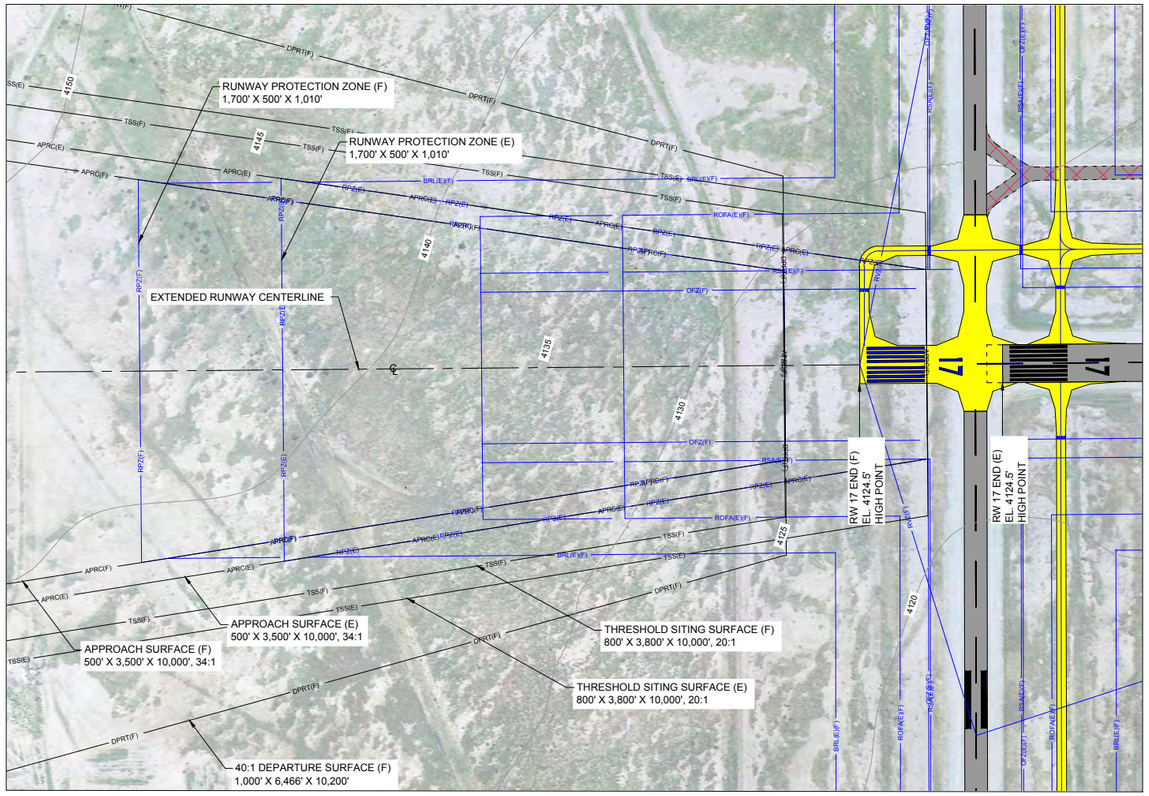
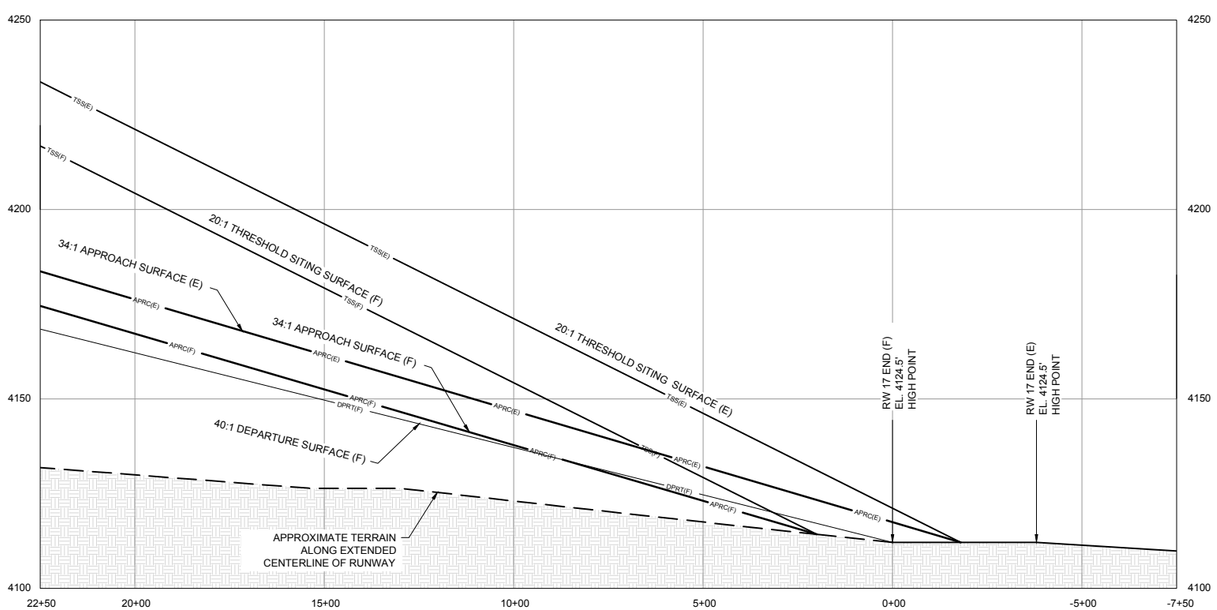
14 CFR
PART 77
AIRSPACE
PROFILE
DRAWING



PLAN - RUNWAY 17 END (E)(F)

SCALE: PER BARSCALE



PROFILE - RUNWAY 17 END (E)(F)

SCALE: PER GRID

APPROACH / DEPARTURE SURFACE PENETRATION TABLE

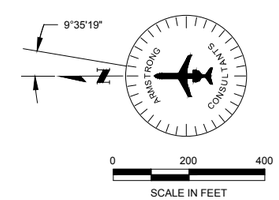
No.	OBJECT	EST. GRADE HT.	EST. OBJECT HT.	20:1 TSS SURFACE PEN.	34:1 APRC SURFACE PEN.	40:1 DEPT SURFACE PEN.	REMARKS
N/A	NONE	N/A	N/A	NONE	NONE	NONE	NONE

NOTE: OBJECT ELEVATIONS IN FEET MSL (VERTICAL DATUM NAVD88).
* = OBJECT ELEVATIONS ARE ESTIMATED AND NOT BASED ON A SURVEY.

ELEVATION DATA UNITED STATES ELEVATION DATA 30 METER RESOLUTION, DATE UNKNOWN

\- = OBJECT IS NOT LOCATED WITHIN THIS SURFACE.
● = OBJECT PENETRATION LOCATION

EST. = ESTIMATED; ELEV. = ELEVATION; HT. = HEIGHT; PEN. = PENETRATION;
N/A = NOT APPLICABLE; O.L. = OBSTRUCTION LIGHT; APRC = APPROACH SURFACE;



LEGEND

EXISTING	FUTURE	DESCRIPTION	EXISTING	FUTURE	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)	APRC(E)	APRC(F)	APPROACH SURFACE
		STRUCTURE/FACILITIES (BUILDING)	DPRT(E)	DPRT(F)	DEPARTURE SURFACE
		GRAVEL / TURF / DIRT	TSS(E)	TSS(F)	THRESHOLD SITING SURFACE
		AIRPORT PROPERTY LINE (APL)	GQS(E)	GQS(F)	GLIDE PATH QUALIFICATION SURFACE
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)			THRESHOLD LIGHTS
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			REIL
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)			DRAINAGE/CULVERT
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)		N/A	CONTOURS
BRL(E)	BRL(F)	BUILDING RESTRICTION LINE (BRL)			ROAD
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)			MARKINGS
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)	X	XX	FENCE
		TO BE REMOVED			CUT / FILL

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BISBEE DOUGLAS INTERNATIONAL AIRPORT
DOUGLAS, ARIZONA

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0	136170	10/2014	ORIGINAL ISSUE	6171505	LDS	CM	JZP

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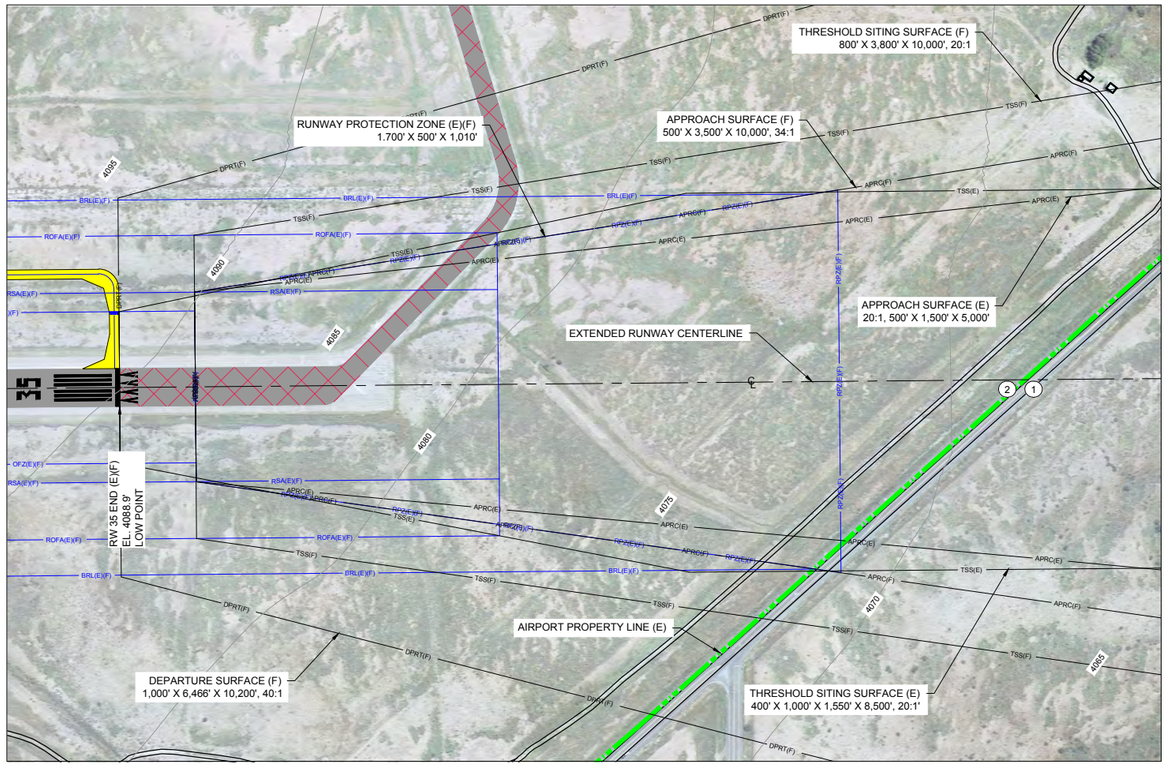
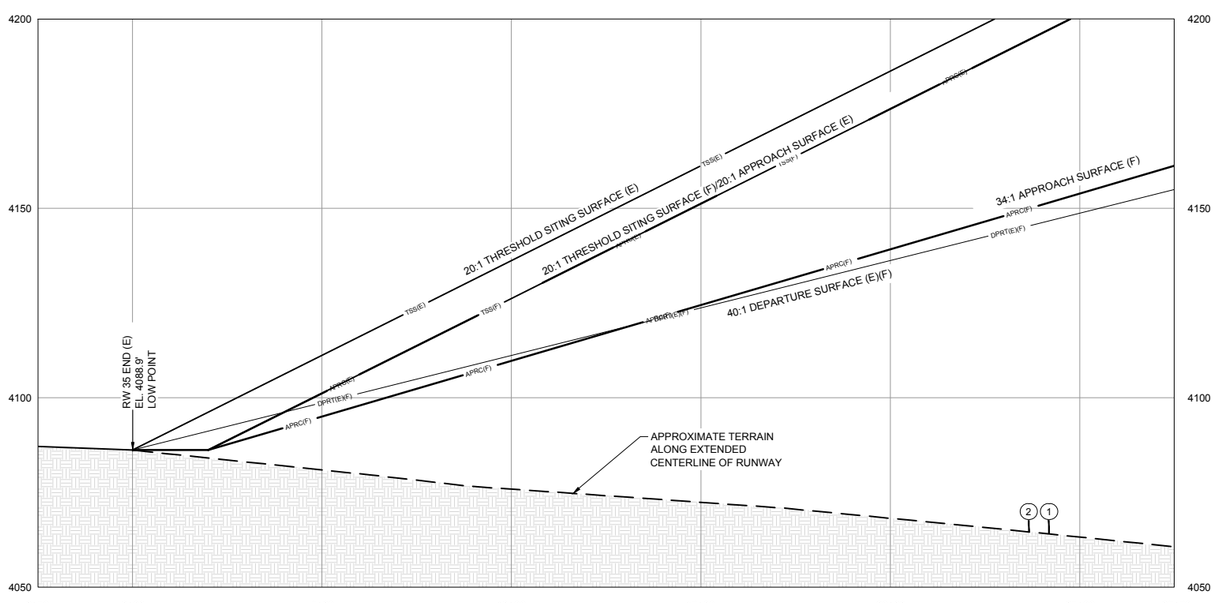
RW 17(E)(F)
INNER
APPROACH
DRAWING



PLAN - RUNWAY 35 END (E)(F)

SCALE: PER BARSCALE



PROFILE - RUNWAY 35 END (E)(F)

SCALE: PER BARSCALE

APPROACH / DEPARTURE SURFACE PENETRATION TABLE							
No.	OBJECT	EST. GRADE HT.	EST. OBJECT HT.	20:1 TSS SURFACE PEN.	34:1 APRC SURFACE PEN.	40:1 DEPT SURFACE PEN.	REMARKS
1	ROAD	4067	4082	NONE	NONE	NONE	NONE
2	FENCE	4067	4071	NONE	NONE	NONE	NONE

NOTE: OBJECT ELEVATIONS IN FEET MSL (VERTICAL DATUM NAVD88).
* = OBJECT ELEVATIONS ARE ESTIMATED AND NOT BASED ON A SURVEY.

ELEVATION DATA UNITED STATES ELEVATION DATA 30 METER RESOLUTION, DATE UNKNOWN

- = OBJECT IS NOT LOCATED WITHIN THIS SURFACE.
● = OBJECT PENETRATION LOCATION

EST. = ESTIMATED; ELEV. = ELEVATION; HT. = HEIGHT; PEN. = PENETRATION;
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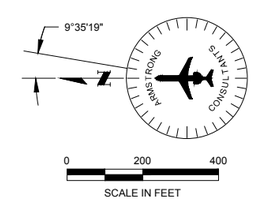

LEGEND					
EXISTING	FUTURE	DESCRIPTION	EXISTING	FUTURE	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)	APRC(E)	APRC(F)	APPROACH SURFACE
		STRUCTURE/FACILITIES (BUILDING)	DPRT(E)	DPRT(F)	DEPARTURE SURFACE
		GRAVEL / TURF / DIRT	TSS(E)	TSS(F)	THRESHOLD SITING SURFACE
		AIRPORT PROPERTY LINE (APL)	GQS(E)	GQS(F)	GLIDE PATH QUALIFICATION SURFACE
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)			THRESHOLD LIGHTS
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			REIL
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)			DRAINAGE/CULVERT
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)		N/A	CONTOURS
BRL(E)	BRL(F)	BUILDING RESTRICTION LINE (BRL)			ROAD
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)			MARKINGS
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)	X	XX	FENCE
		TO BE REMOVED			CUT / FILL

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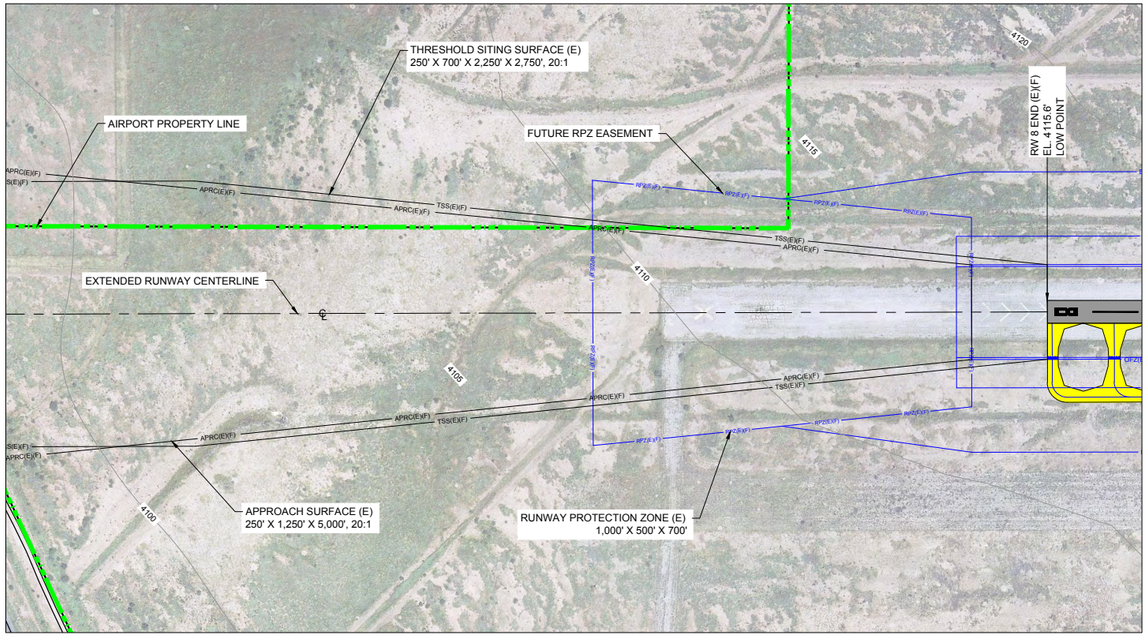
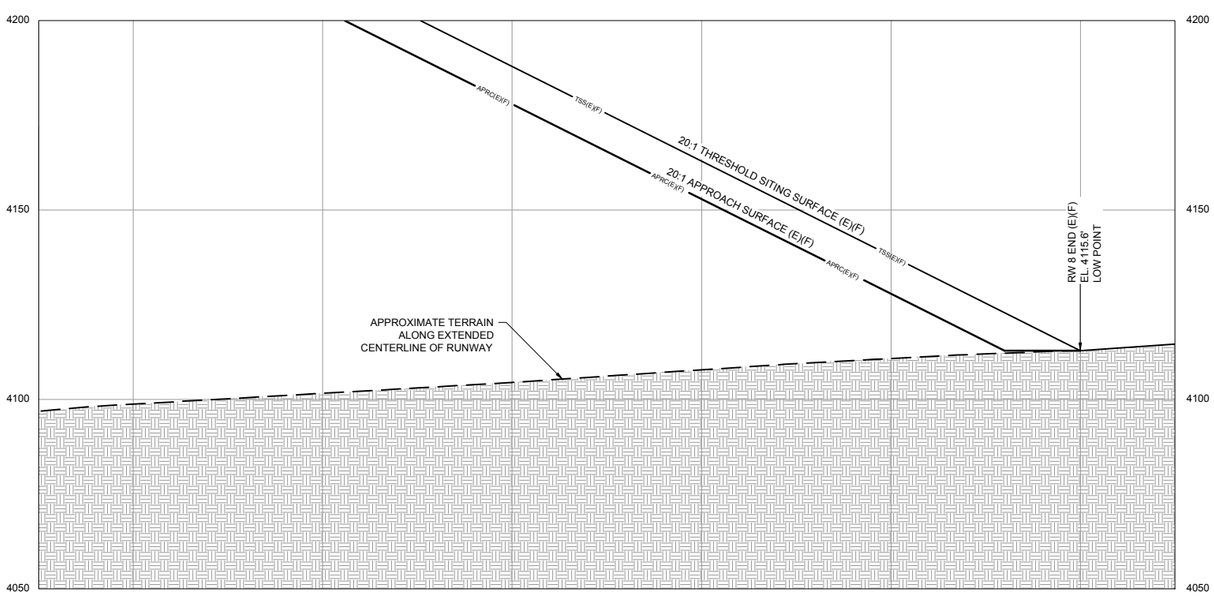
RW 35 (E)(F)
INNER
APPROACH
DRAWING



PLAN - RUNWAY 8 END (E)(F)

SCALE: PER BARSCALE



PROFILE - RUNWAY 8 END (E)(F)

SCALE: PER GRID

APPROACH / DEPARTURE SURFACE PENETRATION TABLE						
No.	OBJECT	EST. GRADE HT.	EST. OBJECT HT.	20:1 TSS SURFACE PEN.	20:1 APRC SURFACE PEN.	REMARKS
N/A	NONE	NONE	NONE	NONE	NONE	NONE

NOTE: OBJECT ELEVATIONS IN FEET MSL (VERTICAL DATUM NAVD88).
* = OBJECT ELEVATIONS ARE ESTIMATED AND NOT BASED ON A SURVEY.

ELEVATION DATA UNITED STATES ELEVATION DATA 30 METER RESOLUTION, DATE UNKNOWN

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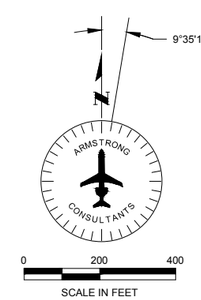

LEGEND					
EXISTING	FUTURE	DESCRIPTION	EXISTING	FUTURE	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)	APRC(E)	APRC(F)	APPROACH SURFACE
		STRUCTURE/FACILITIES (BUILDING)	DPRT(E)	DPRT(F)	DEPARTURE SURFACE
		GRAVEL / TURF / DIRT	TSS(E)	TSS(F)	THRESHOLD SITING SURFACE
		AIRPORT PROPERTY LINE (APL)	GQS(E)	GQS(F)	GLIDE PATH QUALIFICATION SURFACE
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)			THRESHOLD LIGHTS
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			REIL
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)			DRAINAGE/CULVERT
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)		N/A	CONTOURS
BRL(E)	BRL(F)	BUILDING RESTRICTION LINE (BRL)			ROAD
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)			MARKINGS
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)	X	XX	FENCE
		TO BE REMOVED			CUT / FILL

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A.I.P. No. 3-04-0013-008-2013
AIRPORT LAYOUT PLAN

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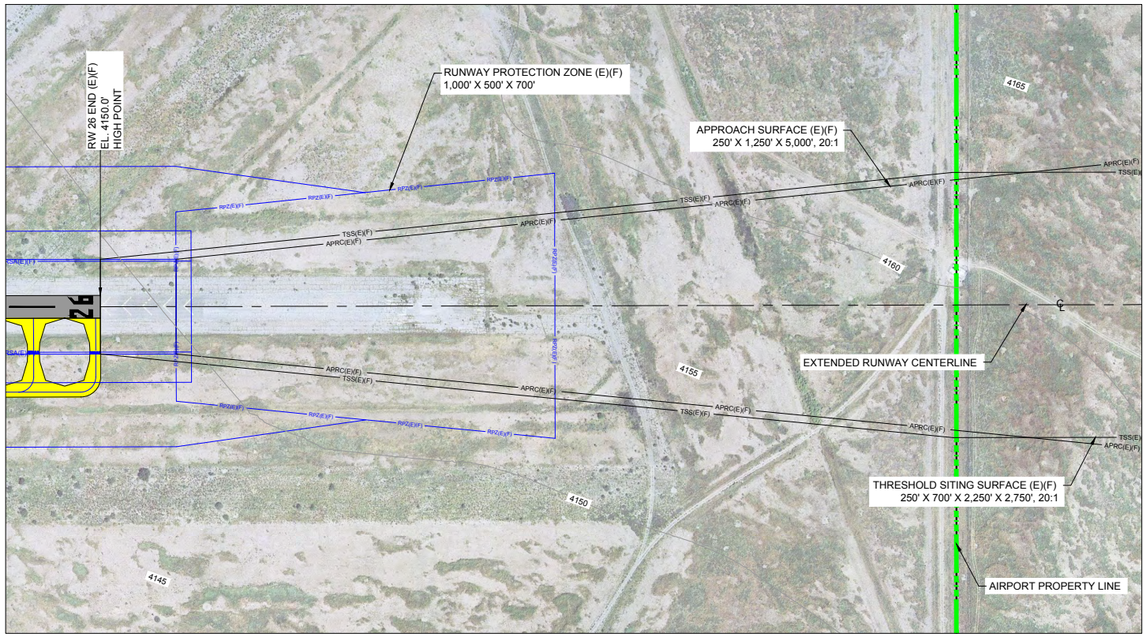
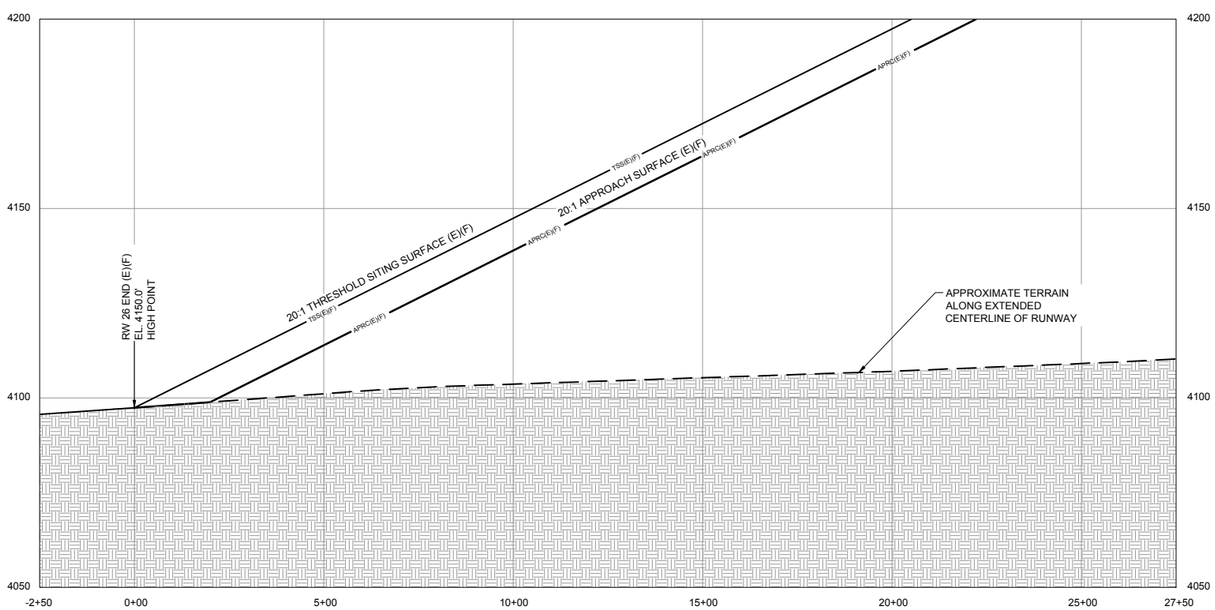
RW 8 (E)(F)
INNER
APPROACH
DRAWING

Sheet: 9 of: 14



PLAN - RUNWAY 26 END (E)(F)

SCALE: PER BARSCALE



PROFILE - RUNWAY 26 END (E)(F)

SCALE: PER GRID

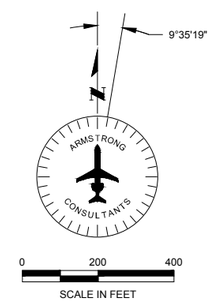
APPROACH / DEPARTURE SURFACE PENETRATION TABLE						
No.	OBJECT	EST. GRADE HT.	EST. OBJECT HT.	20:1 TSS SURFACE PEN.	20:1 APRC SURFACE PEN.	REMARKS
N/A	NONE	NONE	NONE	NONE	NONE	NONE

NOTE: OBJECT ELEVATIONS IN FEET MSL (VERTICAL DATUM NAVD88).
* = OBJECT ELEVATIONS ARE ESTIMATED AND NOT BASED ON A SURVEY.

ELEVATION DATA UNITED STATES ELEVATION DATA 30 METER RESOLUTION, DATE UNKNOWN

\- = OBJECT IS NOT LOCATED WITHIN THIS SURFACE.
● = OBJECT PENETRATION LOCATION

EST. = ESTIMATED; ELEV. = ELEVATION; HT. = HEIGHT; PEN. = PENETRATION;
N/A = NOT APPLICABLE; O.L. = OBSTRUCTION LIGHT; APRC = APPROACH SURFACE;



LEGEND					
EXISTING	FUTURE	DESCRIPTION	EXISTING	FUTURE	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)	APRC(E)	APRC(F)	APPROACH SURFACE
		STRUCTURE/FACILITIES (BUILDING)	DPRT(E)	DPRT(F)	DEPARTURE SURFACE
		GRAVEL / TURF / DIRT	TSS(E)	TSS(F)	THRESHOLD SITING SURFACE
		AIRPORT PROPERTY LINE (APL)	GQS(E)	GQS(F)	GLIDE PATH QUALIFICATION SURFACE
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)			THRESHOLD LIGHTS
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			REIL
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)			DRAINAGE/CULVERT
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)		N/A	CONTOURS
BRL(E)	BRL(F)	BUILDING RESTRICTION LINE (BRL)			ROAD
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)			MARKINGS
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)	X	XX	FENCE
		TO BE REMOVED			CUT / FILL

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RW 26 (E)(F)
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APPROACH
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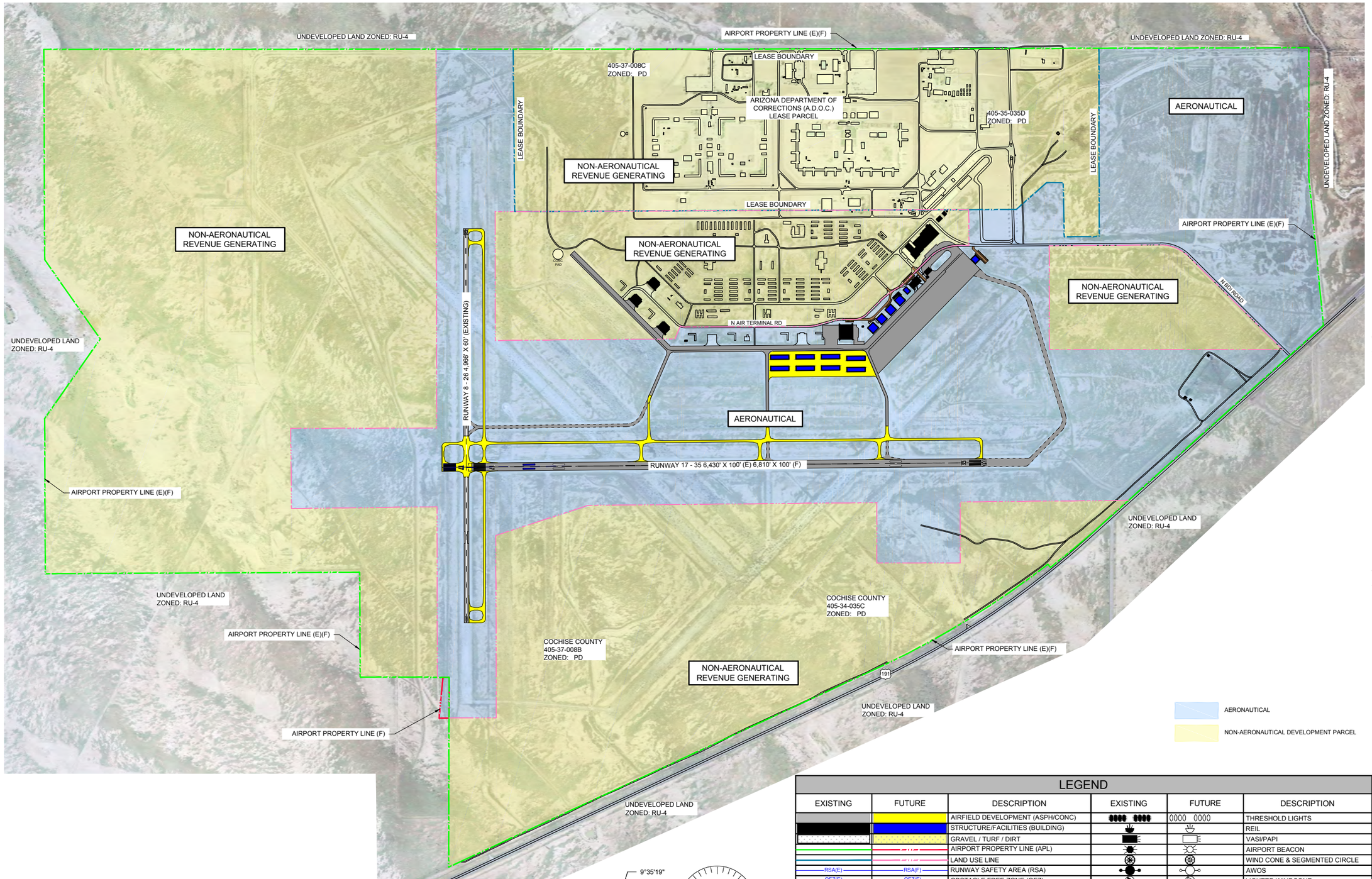

AERONAUTICAL

NON-AERONAUTICAL DEVELOPMENT PARCEL

LEGEND

EXISTING	FUTURE	DESCRIPTION	EXISTING	FUTURE	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPH/CONC)	0000 0000	0000 0000	THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)			REIL
		GRAVEL / TURF / DIRT			VASI/PAPI
		AIRPORT PROPERTY LINE (APL)			AIRPORT BEACON
		LAND USE LINE			WIND CONE & SEGMENTED CIRCLE
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)			AWOS
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			LIGHTED WINDCONE
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)		N/A	SECTION CORNER
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)			DRAINAGE/CULVERT
BRL(E)	BRL(F)	BUILDING RESTRICTION LINE (BRL)		N/A	CONTOURS
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)			ROADS
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)			MARKINGS
RVZ(E)	RVZ(F)	RUNWAY VISIBILITY ZONE (RVZ)			FENCING
		AIRPORT REFERENCE POINT (ARP)			HELIPAD
		PACS/SACS MONUMENT			
		TO BE REMOVED			

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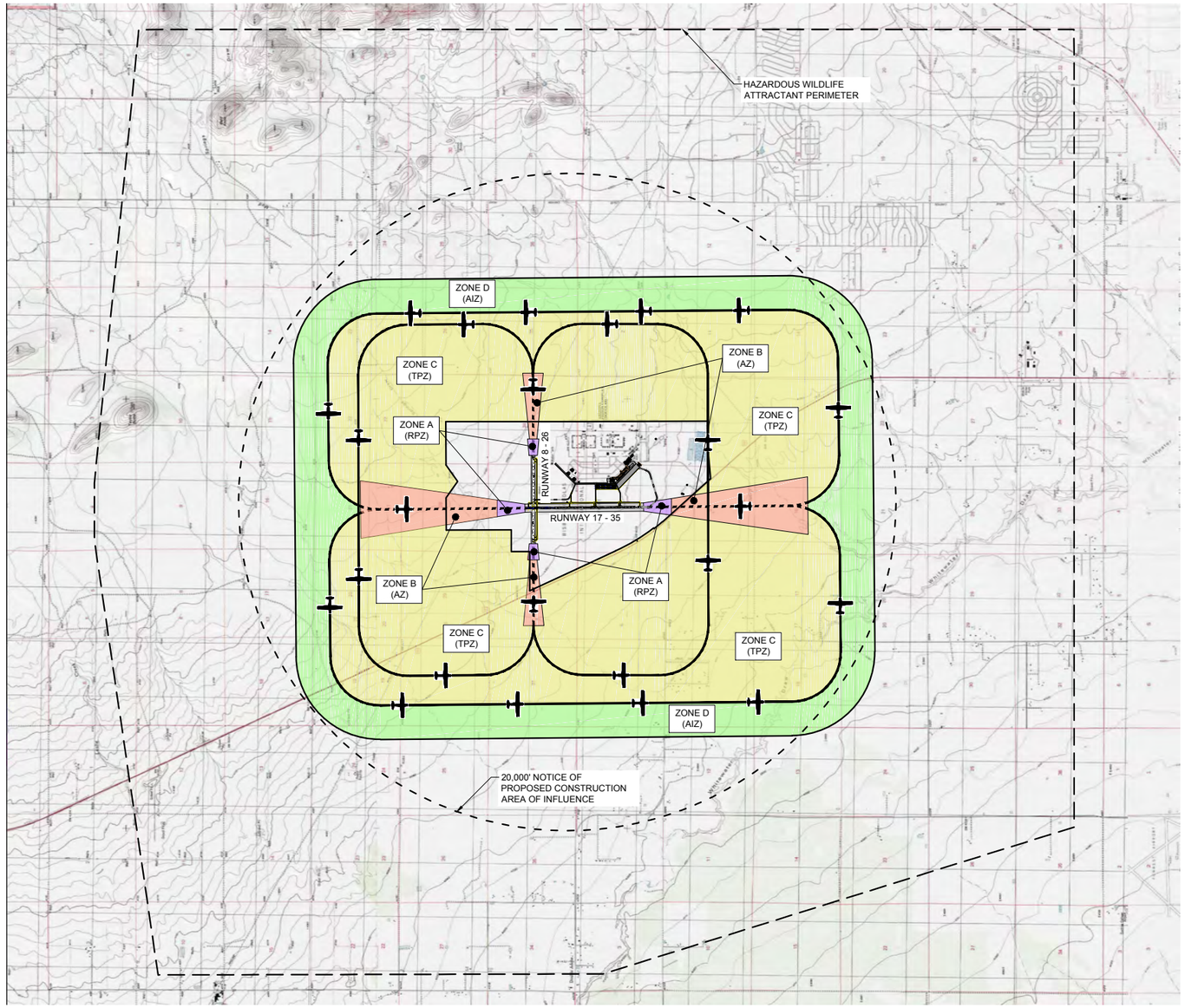
ON-AIRPORT LAND USE DRAWING



PLAN

SCALE: PER BARSCALE

LAND USE COMPATIBILITY GUIDELINES

Land Use Category	ZONE D Airport Influence (AIZ)	ZONE C Traffic Pattern (TPZ)	ZONE B Approach (AZ)	ZONE A Runway Protection (RPZ)
Residential				
single-family, nursing homes, mobile homes, multi-family, apartments, condominiums	++	++	++	++
transient lodging, hotel, motel	++	++	++	++
Public				
schools, libraries, hospitals	++	++	++	++
churches, auditoriums, concert halls	++	++	++	++
transportation, parking, cemeteries	++	++	++	++
Commercial and Industrial				
offices, retail trade, service commercial, wholesale trade, warehousing, light industrial, general manufacturing, utilities, extractive industry	++	++	++	++
Agricultural and Recreational				
cropland	++	++	++	++
livestock breeding	++	++	++	++
parks, playgrounds, zoos, golf courses, riding stables, water recreation	++	++	++	++
outdoor spectator sports	++	++	++	++
amphitheaters	++	++	++	++
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 Conditionally Acceptable	If appropriate disclosure avigation easements and density limitations are put in place, residential uses and uses involving indoor public assemblies are acceptable.
- 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.

LEGEND

- 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.
- EXISTING AIRPORT PROPERTY LINE
- FUTURE AIRPORT PROPERTY LINE
- NO HAZARDOUS WILDLIFE ATTRACTANT PERIMETER
- CHURCH
- HOSPITAL
- SCHOOL
- PARK

TYPICAL TRAFFIC PATTERN DIRECTION AND FLIGHT TRACK AREA.

NOTES

No land fills within 5 miles of the airport.

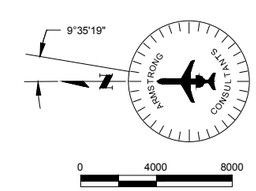
No section 4f land affected by the airport.

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.

AIRPORT OVERLAY ZONING IN EFFECT

NONE



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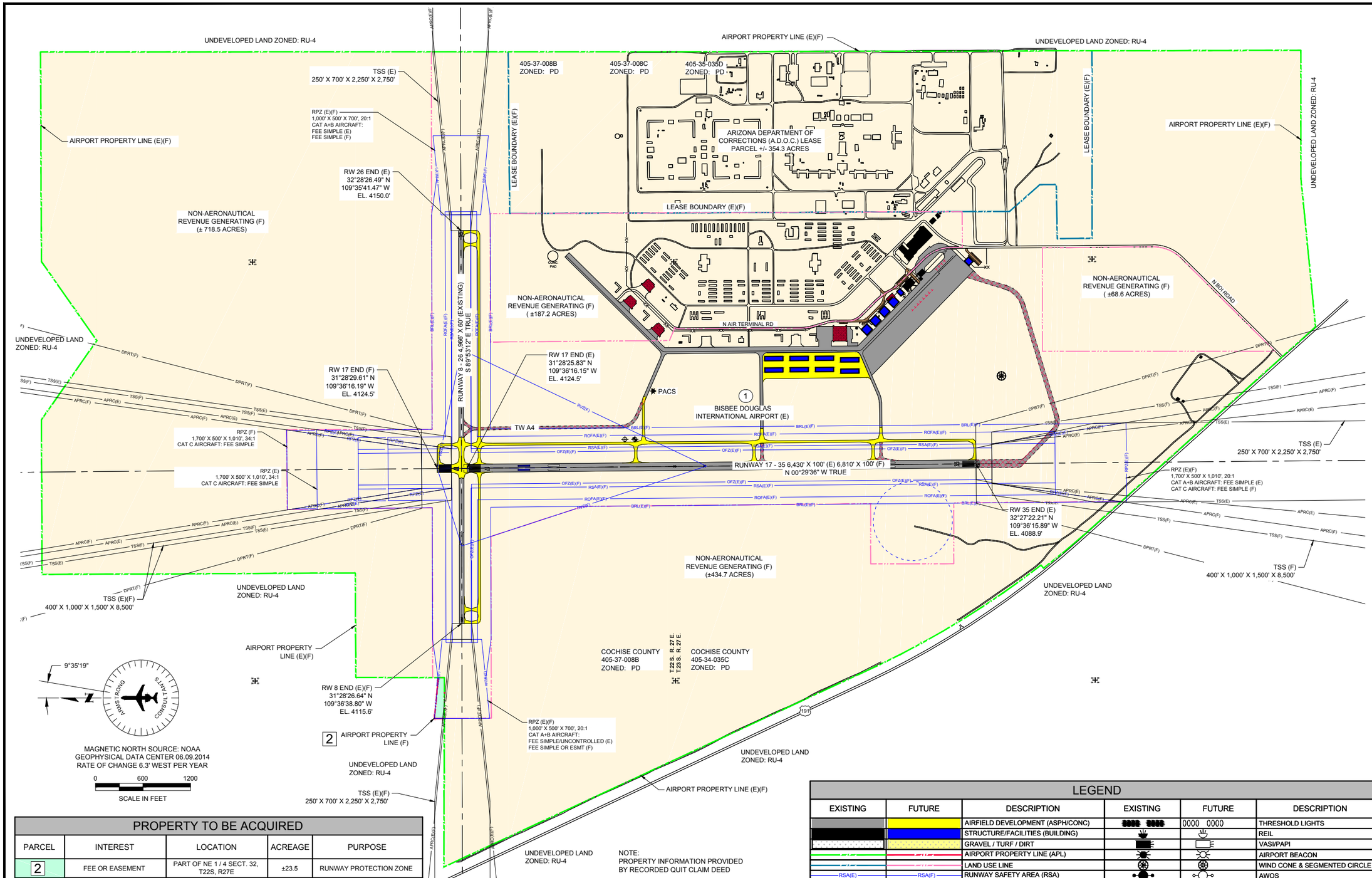
OFF-AIRPORT LAND USE DRAWING



PROPERTY TO BE ACQUIRED

PARCEL	INTEREST	LOCATION	ACREAGE	PURPOSE
2	FEE OR EASEMENT	PART OF NE 1 / 4 SECT. 32, T22S, R27E	±23.5	RUNWAY PROTECTION ZONE

EXISTING AIRPORT PROPERTY

PARCEL	CURRENT OWNER	INTEREST	LOCATION	BOOK/PAGE	DATE	ACREAGE	FEDERAL PARTICIPATION
1	COCHISE COUNTY	FEE SIMPLE	PORTIONS OF SECT. 27, 28, 32, 33, 34, T22S R27E, ALONG WITH PORTIONS OF SECT. 3, 4, 5, 9, 10 T23S R27E, COCHISE COUNTY ARIZONA.	DOCKET 25, PAGE 540-559	APR 1, 1949	±2,665.9	NONE

LEGEND

EXISTING	FUTURE	DESCRIPTION	EXISTING	FUTURE	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPH/CONC)		0000 0000	THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)			REIL
		GRAVEL / TURF / DIRT			VASI/PAPI
		AIRPORT PROPERTY LINE (APL)			AIRPORT BEACON
		LAND USE LINE			WIND CONE & SEGMENTED CIRCLE
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)			AWOS
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			LIGHTED WINDCONE
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)		N/A	SECTION CORNER
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)			DRAINAGE/CULVERT
BRL(E)	BRL(F)	BUILDING RESTRICTION LINE (BRL)		N/A	CONTOURS
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)			ROADS
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)			MARKINGS
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EXHIBIT "A"
PROPERTY
MAP

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AERIAL PHOTOGRAPH

CHAPTER SEVEN

ENVIRONMENTAL OVERVIEW

COCHISE COUNTY

BISBEE DOUGLAS INTERNATIONAL AIRPORT

AIRPORT MASTER PLAN

ARMSTRONG

CHAPTER 7 - ENVIRONMENTAL OVERVIEW

7. 1 INTRODUCTION

In addition to identifying airport development that is financially and technically feasible, an important part of the master planning process is ensuring that any future airport development minimizes impacts to the environment. Council on Environmental Quality (CEQ) regulation 1501.2 states, "agencies shall integrate the NEPA process with other planning at the earliest possible time to insure that planning decisions reflect environmental values, avoid delays later in the process, and head off potential conflicts."

The environmental overview has been prepared to identify potential environmental impacts associated with the proposed airport improvement projects and to discuss potential mitigation measures that will be considered to minimize these impacts. This overview does not replace the need for an environmental clearance document, such as an environmental assessment (EA) or an environmental impact statement (EIS), which may be required for the proposed actions resulting from a master plan. To obtain environmental clearance for any proposed projects at the Airport, documentation is required to be prepared in accordance with United States Department of Transportation (USDOT) policy, FAA Order 5050.4B, FAA Order 1050.1E, and CEQ Regulations.

Additionally, the environmental overview was conducted in accordance with FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions,* FAA Order 1050.1E Change 1, *Environmental Impacts: Policies and Procedures,* and the FAA's *Environmental Desk Reference for Airport Actions*, which requires the analysis of the following environmental resource categories prior to project implementation:

- Air quality, including green house gases (GHGs) and climate
- Biotic resources/federally-listed endangered and threatened species
- Coastal barriers and coastal zone management
- Compatible land use/noise impacts
- Construction impacts
- Cumulative impacts
- Department of Transportation Act, Section 4 (f)
- Energy supplies, natural resources, and sustainable design
- Farmlands
- Floodplains
- Hazardous materials
- Historical, architectural, archeological, and cultural resources
- Light emissions and visual effects
- Secondary (induced) impacts
- Social impacts/environmental justice
- Solid waste
- Water quality
- Wetlands
- Wild and scenic rivers

FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, describes the types of impacts and thresholds that determine if an impact is considered to be significant. The proposed development projects will require a determination to be made regarding which of the following environmental clearance documents would be required prior to project implementation. These environmental clearance documents include the following:

Categorical Exclusions (CATEX) – Projects or actions that are found, based on past experience with similar projects, or actions, that do not normally require an EA or EIS because they do not individually or cumulatively have a significant effect on the environment.

Environmental Assessment (EA) – Preparation of a concise document used to describe a proposed project's anticipated environmental impacts and mitigation measures.

Environmental Impact Statement (EIS) – Preparation of a clear, concise, and appropriately detailed document that provides the agency, decision makers, and the public with a full and fair discussion of significant environmental impacts of the proposed project and reasonable alternatives.

Ultimately, the FAA will determine whether the proposed development project constitutes a major federal action subject to NEPA, or whether it is a Categorical Exclusion from NEPA because it is not expected to have a significant adverse effect on the environment.

7. 2 Environmental Overview

The purpose of an environmental overview is to identify significant thresholds for the resource categories contained in Federal Aviation Administration (FAA) Order 1050.1E, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementation Instructions for Airport Actions.* The environmental overview for Bisbee Douglas International Airport is illustrated in **Table 7-1**.

7.3 Environmental Overview Summary

After reviewing Table 7-1, one finds that future development at the Airport has the potential to impact the following environmental resources, directly or indirectly:

- Air quality
- Construction impacts
- Solid waste

The potential environmental impacts on any future proposed action will be identified and gauged against the baseline conditions. When and if a threshold of significance as defined in FAA Order 1050.1E, Appendix A, has been exceeded, further analysis may be required in a subsequent NEPA document.

Table 7-1 Environmental Overview for Bisbee Douglas International Airport

NEPA Resource Category	Order 1050.1E Threshold of Significance	Potential Environmental Impacts	Oversight Agencies	Permits/ Certificates Anticipated	Anticipated Impact Level ✓ None ○ Some ● Significant
Air Quality, including greenhouse gases (GHGs) and climate	**For Air Quality:** When a project or action exceeds one or more of the National Ambient Air Quality Standards (NAAQS) **For GHGs:** Aviation Emissions and Air Quality Handbook Version 3, dated July 2014, provides 1) guidance and procedures for preparing FAA Air Quality Assessments 2) help to ensure the assessments meet NEPA and CAA Requirements and 3) determines when an Air Quality Assessment is necessary and what is appropriate.	Construction emissions, specifically dust, are not a long-term factor. The necessary permits will be obtained before construction begins and construction projects will conform to FAA Advisory Circular (AC) 150/5370-10G, *Standards for Specifying Construction of Airports*. The following Best Management Practices (BMP) 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. Temporary air pollution may occur as a result of future construction projects. The design and construction of the proposed improvements will incorporate BMP to reduce air quality impacts, including minimizing land disturbance, using water trucks for dust suppression, covering trucks when hauling soil, and the use of wind breaks. These practices will be selected based on the site's characteristics. No significant air quality impacts are anticipated for any future proposed development. In addition, the Aviation Emissions and Air Quality Handbook Version 3, dated July 2014, provides guidance on following a 4-step approach so users can: 1. Determine when an air quality assessment is warranted, 2. Formulate an appropriate approach to preparing the assessment, 3. Conduct the assessment, and 4. Document the results. There is no single, universal criterion for determining what type of analysis is appropriate for FAA supported projects or actions.	U.S. Environmental Protection Agency (EPA)	None	○
Biotic Communities/Endangered and Threatened Species of Flora and Fauna	A significant impact to Federally-listed threatened and endangered species would occur when the FWS or NMFS determines that the proposed action would be likely to jeopardize the continued existence of the species in question, or would result in the destruction or adverse modification of Federally-designated critical habitat in the affected area.	**Table 2-14** depicts the threatened, endangered, and candidate species potentially occurring within Cochise County, Arizona as of October 2014. Prior to actually implementing any of the recommended development projects, the required environmental clearance documentation will evaluate the likelihood of any impact to either Federally listed or non-listed species.	U. S. Department of the Interior (DOI), Fish and Wildlife Services (FWS), and National Marine Fisheries Service (NMFS)	A Biological Opinion is required if an action may affect a Federally-protected species.	✓

NEPA Resource Category	Order 1050.1E Threshold of Significance	Potential Environmental Impacts	Oversight Agencies	Permits/ Certificates Anticipated	Anticipated Impact Level ✓ None ○ Some ● Significant
Coastal Barriers and Coastal Zone Management (CZM)	No thresholds are established.	The Airport is not located within or adjacent to a coastal zone. Any proposed action and reasonable alternatives will not adversely impact the coastal zone natural resources protected by the National Oceanic and Atmospheric Administration (NOAA) regulations under 15 CFR Part 930.	FWS, Federal Emergency Management Agency (FEMA), NOAA, and state CZM Agency	Not applicable	✓
Compatible Land Use/Noise	**For most areas:** When the noise analysis indicates that, pursuant to NEPA, a significant noise impact will occur over noise sensitive areas within the DNL 65 dB contour, **or** when an action, compared to the no-action alternative for the same timeframe, would cause noise sensitive areas located at or above DNL 65 dB to experience a noise increase of at least DNL 1.5 dB. An increase from DL 63.5 dB to DNL 65 dB over a noise sensitive area is a significant impact. **For national parks, national wildlife refuges, and historic sites, including traditional cultural properties:** FAA officials must give special consideration to these resources. The 65 dB DNL threshold may not adequately address noise impacts on visitors to these areas.	The existing and forecast levels of traffic are below the current threshold of significance (90,000 annual propeller aircraft operations or 700 annual jet operations) for environmental analysis on Federally-aided projects, as defined by FAA Order 1050.1E. Furthermore, there are currently no generated noise contours for the Bisbee Douglas International Airport due to low activity. Therefore, a noise analysis is not required. Based on a review of the existing and forecasted operations and a review of the surrounding land uses adjacent to the airport, significant noise impact is not anticipated to occur. The airport is primarily surrounded by undeveloped open space. If activity at the Airport increases in the future and generates enough operations to warrant noise contours, a noise analysis may need to be conducted and the land use surrounding the Airport will have to be reviewed.	Federal Aviation Administration (FAA) and EPA	None	✓
Construction Impacts	Significant impacts would most likely occur when unusual circumstances exist (e.g. construction-induced traffic congestion that would substantially degrade air quality) and when the severity the impact cannot be mitigated below FAA's threshold levels for the affected resource.	No significant impacts are anticipated to occur. For additional discussion about measures that would be taken by a contractor, refer to the Air Quality resource category.	EPA or a state which EPA delegated National Pollution Discharge Elimination System (NPDES) authority exists; FAA and Council on Environmental Quality (CEQ)	NPDES storm water permit for construction	○
Cumulative Impacts	The significance threshold for cumulative impacts varies according to the affected resource. The responsible FAA official will determine if a project impacts added to those of past, present, and reasonably foreseeable future actions trigger the significance threshold for the resource analyzed.	None anticipated. A cumulative impact analysis would be conducted as part of an environmental clearance document to demonstrate that cumulative impacts could be mitigated.	CEQ and FAA	None	✓

NEPA Resource Category	Order 1050.1E Threshold of Significance	Potential Environmental Impacts	Oversight Agencies	Permits/ Certificates Anticipated	Anticipated Impact Level ✓ None ○ Some ● Significant
Department of Transportation (DOT) Act, Section 4(f)	When the proposed action involves a physical use that would be more than minimal or a constructive use would occur. In either case, mitigation is not enough to sustain the resource's designated use.	Any proposed projects would be located on existing airport property on previously disturbed land, and would not use any land from a public park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance. The nearest Section 4 (f) resource is the Douglas Golf Course which is located over 6 miles south of the Airport. In the event that un-known resources are found during construction, all applicable federal and state laws regarding such findings will be followed.	Department of Transportation (DOT) and FAA	National Park Service (NPS) approval is required to convert Section 4(f) resources required or developed using funds under Section 6(f).	✓
Energy Supplies, Natural Resources, and Sustainable Design	When an action's construction, operation, or maintenance would cause demands that would exceed available or future (project year) natural resource or energy supplies.	None anticipated. Planned development projects at the Airport are not anticipated to result in a demand for natural resources or energy consumption beyond what is available by service providers.	CEQ and FAA	None required.	✓
Farmlands	When the combined score on Form AD-1006 ranges between 200 and 260, a significant impact would likely occur. Total scores continuing to range between 200 and 260 are significant impacts. Impact severity increases as the score approaches 260.	According to the U.S. Department of Agriculture's Natural Resources Conservation Services (NRCS), three types of soil can be found on the Airport property; the soil types are classified as "non-prime farmland," "prime farmland if irrigated," and "farmland of unique importance." Small scattered parcels of "prime farmland if irrigated" and "non-prime farmland" exists on the property. The majority of the Airport's property falls within the "farmland of unique importance." However, according to the Farmland Protection Policy Act, the regulation does not apply to land already committed to "urban development or water storage," i.e., airport developed areas, regardless of its importance as defined by the NRCS. In addition, no farming activity currently takes place on the Airport's property. As such, future development and construction projects are not expected to impact any USDA designated farmland.	U.S. Department of Agriculture's (USDA) Natural Resource Conservation Service (NRCS)	Farmland Conversion Impact Rating Form (AD-1006) is required, or a completed Land Evaluation Site Assessment, if applicable.	✓
Floodplains	When notable adverse impacts on natural and beneficial floodplain values would occur.	According to the Federal Emergency Management Agency (FEMA) National Flood Insurance Rate Map, Bisbee Douglas International Airport is not located in a floodplain. However, the airport is adjacent to a Special Flood Hazard Area which is located southeast of the airport property.	FEMA, FAA, DOT, and State and local agencies	Actions within a base floodplain may require authorization from the Army Corps of Engineers, FEMA, and State and local agencies.	✓
Hazardous Materials	• The action involves a property on, or eligible for, the National Priority List (NPL) • The sponsor would have difficulty meeting applicable local, state, or Federal laws and regulations on hazardous materials • There is an unresolved issue regarding hazardous materials	None anticipated. If hazardous materials are encountered during construction on future projects, the Arizona Department of Environmental Quality will be contacted regarding procedures for the handling and the disposal of the hazardous materials.	EPA, Arizona Department of Environmental Quality (ADEQ), and FAA	Comprehensive Environmental Response Compensation and Liability Act (CERCLA) or Resource Conservation and Recovery Act (RCRA) permits, as appropriate	✓

NEPA Resource Category	Order 1050.1E Threshold of Significance	Potential Environmental Impacts	Oversight Agencies	Permits/ Certificates Anticipated	Anticipated Impact Level ✓ None ○ Some ● Significant
Historical, Architectural, Archaeological, and Cultural Resources	When an action adversely affects a protected property and the responsible FAA official determines that information from the state and/or tribal Historic Preservation Officer addressing alternatives to avoid adverse effects and mitigation warrants further study	There are several original steel-framed and wood-framed aircraft hangars, along with other long-standing structures at the Airport that may be eligible for the National Register of Historic Places (NRHP). An agency coordination letter was sent to the State Historic Preservation Office to determine if any future proposed projects will cause an adverse effect on a property which has been identified as having historical, architectural, archaeological, or cultural significance. A verbal response from the agency implied there are no historic, architectural, archeological, or cultural resources on Bisbee Douglas International Airport property. However, a Cultural Resource Survey at the Airport has not been completed.	Advisory Council and Historic Preservation (ACHP), FAA, and State Historic Preservation Office (SHPO)	No formal permits are required except under ARPA 16 USC, Sections 470aa-470mm.	✓
Light Emissions and Visual Effects	None established, although factors to consider include: **For light emissions:** When an action's light emissions create annoyance to or interfere with normal activities. **For visual effects:** When consultation with Federal, State or local agencies, tribes or the public shows these effects contract with existing environments and the agencies state the effect is objectionable.	Installation of all outdoor lighting fixtures (with the exception of those used for navigational purposes on the airfield) must comply with Cochise County's Light Pollution Code, found within Article 1810 – Outdoor Lighting Standards of the County's Zoning Regulations. No impacts are known to occur based on the existing configuration of the airfield.	Cochise County	None, however state, regional, local, and Tribal agency approvals may be needed.	✓
Secondary (Induced) Impacts	Induced impacts will normally not be significant except where there are also significant impacts in other categories, especially noise, land use, or direct social impacts.	None anticipated. The proposed development is not expected to create significant adverse noise, land use, or social impacts. Additional information can be found in each of those resource categories.	Cochise County	None	✓
Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health Risks and Safety Risks	**For socioeconomic issues:** When an action would cause: • Extensive relocation, but sufficient replacement housing is unavailable • Extensive relocation of community businesses that would cause severe economic hardship for affected communities. • Disruption of local traffic patterns that substantially reduce the Levels of Service of roads serving the airport and its surrounding communities. • A substantial loss in community tax base. **For Environmental Justice issues:** When an action would cause disproportionately high and adverse human health or environmental effects on minority and low income populations, a significant impact may occur. **For Children's Health & Safety Risks:** An action causing disproportionate health and safety risks to children may indicate a significant impact.	**For socioeconomic issues:** None. All proposed development would occur on the Airport property and would not result in the relocation of housing or community businesses, disruption of local traffic patterns, or a loss in community tax base. **For Environmental Justice issues:** None. No impacts to minority and low income populations would occur as a result of the proposed actions. All proposed projects would occur on the Airport property. **For Children's Health & Safety Risks:** None. No impacts to the health and safety of children would occur as a result of the proposed actions. All proposed projects would occur on the Airport property.	CEQ, FAA, and Task Force on Health Risks and Safety to Children	Typically, FAA needs no formal Federal permits, certifications, or approvals when social impacts occur.	✓

NEPA Resource Category	Order 1050.1E Threshold of Significance	Potential Environmental Impacts	Oversight Agencies	Permits/ Certificates Anticipated	Anticipated Impact Level ✓ None ○ Some ● Significant
Solid Waste	No thresholds have been established.	Solid waste generated during future project construction would be contained in designated areas and receptacles and removed once the project is completed. Pollution related to construction activities (i.e. dust) would be minimal and would not adversely affect the Airport as a whole. The sponsor should provide assurances that it will meet applicable solid waste disposal requirements.	EPA, FAA, State or local agencies responsible for managing solid waste	None	○
Water Quality	When an action has the potential to exceed water quality standards, there are water quality problems that cannot be avoided or satisfactorily mitigated, or there would be difficulty in obtaining a permit or authorization, there may be a significant impact.	Construction best management practices would be implemented to mitigate any temporary impacts to water quality for any future construction activities at the Airport. The contractor would comply with requirements outlined in FAA Advisory Circular 150/5370-10F, *Standards for Specifying Construction of Airports*. Water quality would be protected by installing and maintaining soil erosion and sediment controls, properly sequencing construction operations, and stabilizing exposed earth as soon as practicable during construction. An airport Storm Water Pollution Prevention Plan (SWPPP) should be created by the County for Bisbee Douglas International Airport if one currently does not exist.	EPA, State, or Tribal water quality agencies; FWS	NPDES permit from EPA or State under Section 402 of the CWA; and a Section 404 permit from the ACE	✓
Wetlands	When an action would: • Adversely affect a wetland's function to protect the quality or quantity of a municipal water supply. • Substantially alter the hydrology needed to sustain the affected wetland's values and functions or those of a wetland to which it is connected. • Substantially reduce the affected wetland's ability to retain floodwaters or storm runoff, thereby threatening public health, safety or welfare. • Adversely affect the maintenance of natural systems supporting wildlife and fish habitat or economically important timber, food, or fiber resources of the affected area surrounding wetlands. • Promote development of secondary activities or services that would affect the above functions.	None. According to the U.S. Fish and Wildlife Service's National Wetlands Inventory, no wetlands exist on, or adjacent to, the Airport property.	DOT, EPA, Army Corps of Engineers (ACE), State Environmental Agencies, and FWS/State Wildlife Agencies	Section 404 permit	✓
Wild and Scenic Rivers	No thresholds have been established.	Future proposed projects on the airport would not affect any portion of the free-flowing characteristics of a Wild and Scenic River, Study River, or adjacent areas that are part of such rivers, as listed in the National Park Service (NPS) Wild and Scenic Rivers Inventory. The closest Wild and Scenic Rivers in Arizona are the Verde River and Fossil Creek, which are located approximately 320 and 340 miles to the northwest of the Airport.	DOI, USDA, NPS, FWS, Bureau of Land Management (BLM), US Forest Service (USFS), FAA, and CEQ	Notifying the appropriate agency via Section 7 Consent Determination	✓

CHAPTER EIGHT

AIRPORT DEVELOPMENT AND FINANCIAL PLAN

COCHISE COUNTY

BISBEE DOUGLAS INTERNATIONAL AIRPORT

AIRPORT MASTER PLAN

ARMSTRONG

CHAPTER 8 – AIRPORT DEVELOPMENT AND FINANCIAL PLAN

8.1 INTRODUCTION

The final chapter of a master plan is intended to provide guidance on what will be required to demonstrate the airport sponsor's ability to fund the projects in the master plan. A more general discussion of the funding of medium and long-term projects is more reasonable because of the uncertainty of future Federal and State funding and possible shifts in the overall importance of those projects in reaction to aviation demand at the airport and changes in the economic climate in a community. The County's ability to fund the recommended projects is a major consideration in preparing the Capital Improvement Plan (CIP). The recommended development plan for the Bisbee Douglas International Airport is based on the facility requirements as presented in Chapter 4.

The proposed funding plan contained in this chapter assumes the continuation of the FAA's Airport Improvement Program (AIP), and the growth of the Airport's aviation activity as depicted in the approved forecasts.

The intrinsic value that a well-maintained airport brings to a community or region goes far beyond the day-to-day operational costs. In other words, the money spent and benefits received in the community or region by individuals and businesses that use the airport equals or exceeds the expenses, which are a result of operations at the airport.

8.2 AIRPORT DEVELOPMENT PLAN

Future airport development at Bisbee Douglas International Airport is included in this Airport Master Plan and covers a 20-year planning period. Development items are grouped into three phases:

- Phase I, Short-term (1-5 years)
- Phase II, Medium-term (6-10 years)
- Phase III, Long-term (11-20 years)

The refined development costs contained in this chapter are based on the proposed improvements as shown on the Airport Layout Plan**,** and are included for each item in the financial development plan. The phasing of projects assists the airport sponsor in budgetary planning for future construction projects. **Table 8-1** outlines the 20-year financial development plan. The sequence in which the projects are completed is important, as the ultimate configuration of the Airport will require numerous projects.

Table 8-1 Financial Development Plan Over 20 Years

Phase I, Short-term Development		Total	FAA Share	State Share	Local Share
A1	Install new MIRL on Runway 8-26	$300,000	$273,180	$13,410	$13,410
A2	Install new airfield visual and navigational aids	$360,000	$327,816	$16,092	$16,092
A3	Renovate existing terminal building[1]	$450,000	$0	$0	$450,000
A4	Install fuel facility credit card payment device	$20,000	$0	$0	$20,000
A5	Realign/reconstruct existing Taxiway A4	$500,000	$455,300	$22,350	$22,350
A6	Reconstruct existing Taxiway A3	$500,000	$455,300	$22,350	$22,350
A7	Reconstruct existing Taxiway A	$1,300,000	$1,183,780	$58,110	$58,110
A8	Install perimeter fencing and gates	$1,000,000	$910,600	$44,700	$44,700
	Total Short-term Development Cost	**4,430,000**	**3,605,976**	**$177,012**	**$647,012**
Phase II, Medium-term Development					
B1	Construct Runway 8-26 bypass taxiways	$300,000	$273,180	$13,410	$13,410
B2	Conduct Environmental Assessment (EA) for Runway 17 extension	$250,000	$227,650	$11,175	$11,175
B3	Runway 17 extension with construction of full parallel taxiway; removal of non-standard existing Taxiway A1 & A4[2]	$3,300,000	$3,004,980	$147,510	$147,510
B4	Relocate and/or demolish existing aircraft hangars	$500,000	$0	$0	$500,000
	Total Medium-term Development Cost	**$4,350,000**	**$3,505,810**	**$172,095**	**$672,095**
Phase III, Long-term Development					
C1	Construct full parallel taxiway to Runway 8-26	$1,500,000	$1,365,900	$67,050	$67,050
C2	Land acquisition (approx. 4 acres) for Runway 8 RPZ	$5,000	$4,553	$224	$223
C3	Expand existing aircraft parking apron	$4,000,000	$3,642,400	$178,800	$178,800
	Total Long-term Development Cost	**$5,505,000**	**$5,012,853**	**$246,074**	**$246,073**
	TOTAL DEVELOPMENT COST	**$14,285,000**	**$12,124,639**	**$595,181**	**$1,565,180**

Prepared by: Armstrong Consultants, Inc., 2014
Note. All costs are calculated in 2014 dollars and are for planning purposes only. Assumes 91.06 percent funding for FAA eligible development and 4.47 percent funding for State eligible development (with 4.47 percent match by Sponsor (Local)); if State funding is not eligible, Sponsor's share is 8.94 percent.
[1]The terminal building is not eligible for FAA or State grant funds. [2] Includes the addition of a RNAV/GPS instrument approach to Runway 35 as part of the project.

8.3 Funding Sources

Potential funding sources for the development plan indentified in Chapter 5, Development Alternatives, provides the basis for financial analysis. Funding comes from the FAA and local entity contributions. This section will identify and quantify the expected sources of capital funds. As previously indicated, FAA funds represent the majority of expected capital; however, a number of sources are identified and indicated below.

8.3.1 Federal Aviation Administration

The most recent legislation affecting federal funds for airports across the country was enacted on February 17, 2012, and is entitled *The FAA Modernization and Report Act of 2012.* The law authorizes the FAA's Airport Improvement Program (AIP) at $3.35 billion for fiscal years 2012 through 2015. Eligible airports, which include those in the National Plan of Integrated Airports System (NPIAS), can apply for AIP grants on an annual basis.

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

For large and medium primary hub airports, AIP grants cover 75 percent of eligible costs (or 80 percent for noise program implementation). For small primary, reliever, and general aviation airports, the grants cover 90 - 95 percent of eligible costs, based on statutory requirements.

Entitlements - The term "entitlements" refers to the passenger, cargo service, and state apportionments (including non-primary apportionments when applicable) available to sponsors and states based on formulas found within the Modernization Act. Funds apportioned for any non-hub or non-primary airport remain available for obligation during the fiscal year for which the amount was apportioned and the three fiscal years immediately following that year. Apportioned funds that have been unused are protected and carryover for the airports through the three or four year periods. Non-primary entitlement funds are specifically for general aviation airports listed in the latest NPIAS that demonstrate needed airfield development. General aviation airports with an identified need are eligible to receive annually the lesser value of the following:

- 20 percent of the 5-year cost of their current NPIAS value, or
- $150,000 per year

A funding condition of the non-primary entitlement is that Congress must appropriate $3.2 billion or more for non-primary entitlement funds to exist in the fiscal year.

State Apportionment - If the AIP has funding available equal to, or more than $3.2 billion, a total of 20 percent (or if the AIP has funding available under $3.2 billion, a total of 18.5 percent) of the annual amount made available for obligation is apportioned for use at non-primary commercial service, general aviation, and reliever airports within the States.

Discretionary - Airport capacity, safety, and security projects are funded on a national priority system based on need. Many of the most expensive projects in the CIP such as runway extensions are expected to be funded from discretionary funds. Other CIP projects may be eligible for FAA discretionary dollars, but are ranked lower or have portions of the project that may be funded from discretionary funds. Discretionary funds provide 91.06 percent of the cost of eligible projects.

8.3.2 STATE FUNDING PROGRAM

In Arizona under the current legislation, capital improvement projects are funded 91.06 percent by the FAA and 8.94 percent by the sponsor for fiscal year 2012 through 2015 (with the exception of some commercial service airports and some airports located in economically distressed areas). Beyond fiscal year 2015, the FAA will go through the re-authorization process, or pass continuing resolution(s) to continue funding the Aviation Trust Fund. The State's airport-assistance program for the five-year Airport Capital Improvement Plan (ACIP) includes two funding splits for grants based upon whether or not the FAA is participating. When the FAA participates, the Arizona Department of Transportation (ADOT) provides 50 percent of a sponsor's share. Current sponsor obligations on federal projects are

8.94 percent of a project's total cost, making the state share 4.47 percent. Each year, the ADOT ACIP program sets aside between $3.5 million (in FY 2011) to about $4.5 million (in FY 2014) to match federal grants. As airport sponsors receive a federal grant, they apply to the state for the matching funds.

To fund revenue generating developments at airports, ADOT established the Arizona Development Loan Program. The program is designed to be a flexible funding mechanism to assist eligible airport sponsors in improving the economic status of their respective airports.

Eligible Applicants - The state, city, town, county, district, authority or other political subdivisions of the state, which owns and operates an airport(s), open to the public on a nondiscriminatory basis, is eligible for assistance under the Loan Program. Eligible airports must be identified in the ADOT State Airports System Plan dated November 2009 (or most current version).

Eligible Projects - Typical eligible projects included airport related construction projects for runways, taxiways, aircraft parking ramps, aircraft storage facilities (hangars), fueling facilities, general aviation terminal buildings or pilot lounges, utility services (power, water, sewer, etc.) to the airport runway or taxiway lighting, approach aids (electronic or visual), ramp lighting, airport fencing, airport drainage, land acquisition, planning studies, and under certain conditions, the preparation of plans and specifications for airport construction projects. In addition, projects not eligible for funding under other programs and those designed to improve the airport self-sufficiency, may also be considered.

Pavement Maintenance Program - As introduced in Chapter 2, the Arizona Pavement Preservation Program (APPP) has been established to assist in the preservation of the Arizona airport system infrastructure. Every year ADOT's Aeronautics Group, using the Airport Pavement Management System (APMS), identifies airport pavement maintenance projects eligible for funding for the upcoming five-year ACIP. These projects will appear in the state's Five-Year Airport Development Program. Once a project has been identified and approved for funding by the State Transportation Board, the airport sponsor may elect to accept a state grant for the project and not participate in the APPP, or the airport sponsor may sign an inter-government agreement (IGA) with the Aeronautics Group to participate in the APPP.

The County has taken advantage of the pavement maintenance program at the Bisbee Douglas International Airport. Provided the program continues, it is recommended that the County continue to leverage this program to preserve the overall integrity of the airfield pavement.

8.3.3 Local Funding

Airport Rates and Charges - FAA Order 5190.6B, *FAA Airport Compliance Manual*, provides comprehensive guidance on the legal requirement that airport fees be fair, reasonable, and not unjustly discriminatory. The objective of the policy is to provide guidance to airports in establishing rates and charges that will help the airport work towards financial sustainability.

Several revenue generating activities that the County is already doing at Bisbee Douglas International Airport will continue to enhance revenues at the airport, such as:

- Aircraft hangar rental

- Aircraft tie-down rental
- Fuel sale mark-up

Other more conventional methods of securing funding and financing alternatives the County could consider include:

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.

Force Accounts, In-kind Service, and 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. For example, private developers may be persuaded to invest in hangar development. A suggestion would be for the City to 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.

The airport funds some or all of the cost of capital projects by generating revenue from tenants, users and other sources. These airport funds can come from annual surplus, reserves, or borrowing. While capital projects are usually funded from variety of sources, in the end, airport contributed funds have a

role in almost all projects, particularly as seed money to initiate projects and to provide the match of FAA funds.

8.4 Pavement Maintenance Plan

Periodic maintenance is necessary to prolong the useful life of the airport pavements. The affects of weather, oxidation, and usage cause the pavement to deteriorate. The accumulation of moisture in the pavement causes heaving and cracking, and is one of the greatest causes of pavement distress. The sun's ultraviolet rays oxidize and break down the asphalt binder in the pavement mix, which in turn accelerates raveling and erosion and can reduce asphalt thickness.

The appropriate pavement maintenance will minimize the effects of weather damage and oxidation. Crack sealing is performed to keep moisture from accumulating inside and underneath the pavement and should be done at least every five years prior to fog sealing or overlaying the pavements. Fog seals, slurry seals, and coal tar emulsion (fuel resistant) seals are spread over the entire paved area to replenish the binder lost through aggregate to increase the friction coefficient of the pavement. Asphalt overlays are performed near the end of the useful life of the pavement. A layer of new asphalt is placed over the existing pavement to renew the life of the pavement and to recover lost strength due to deterioration. Unless specially designed, the overlay is not intended to increase the weight bearing capacity of the pavement. Overlays may be supplemented with a porous friction course of grooving to increase friction and minimize hydroplaning. Remarking of the pavement is required following a fog seal or overlay.

The recommended pavement maintenance cycle time frames are listed below in **Table 8-2**. It should be noted that the time frames are recommendations only. Actual pavement deterioration will be affected by use of the Airport and weather exposure. Maintenance actions should be scheduled as necessary through close monitoring and inspection of the pavements.

Table 8-2 Pavement Maintenance Schedule

Pavement Maintenance Cycle	Approximate Time Frames
Crack Seal Pavement	1 - 2 years
Crack Seal, Seal Coat, and Remark Pavements	3 - 8 years
Overlay Pavements	15 - 18 years
Seal Concrete Joints	6 - 8 years

Source: ACI, 2014

8.5 Financial Plan Recommendations

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 Bisbee Douglas International 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. The County should consider implementing additional airport revenue generating opportunities in order to gain self-sufficiency.

Based on the historical and projected operating revenues and expenses, it is likely that the airport will not operate profitably for the planning period, as shown on **Table 8-3**. The ability of Cochise County to generate additional revenue is directly related to enhancing the airfield to attract additional aircraft traffic along with looking for ways to leverage un-used portions of the airport property, i.e., revenue generating aeronautical and non-aeronautical development. It is important to note that all non-aeronautical development on or adjacent to the airport must be compatible with the airport.

Table 8-3 Projected Annual Airport Revenues and Expenses (Based on Historical Data)

	Historical	**Projected[1]**		
	2014	Phase I	Phase II	Phase III
Operating Revenues				
Fuel sales	$70,952	$100,000	$120,000	$120,000
Hangar and other leases	$91,601	$128,250	$154,000	$154,000
Water sales – DOC	$159,485	$160,000	$160,000	$160,000
Total Operating Revenue	$322,038	$388,250	$434,000	$434,000
Operating Expenses				
Operations, maintenance, and utilities	$413,700	$413,700	$413,700	$413,700
Fuel and supplies	$50,371	$71,000	$85,000	$85,000
Total Operating Expense	$464,071	$484,700	$498,700	$498,700
Net Operating Expense/Revenue	-$142,033	-$96,450	-$64,700	-$64,700

Prepared by: ACI, 2014
Note: Does not include capital improvement projects and assumes no additional development occurs.
[1]The increase in revenue and expenses are based on an increase in forecasted airport activity.

8.5.1 Airport Revenue Opportunities

Airport revenues are generally produced from the use of land leases, user fees, and property taxes generated from on-airport improvements. Examples of airport revenue generators include:

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.

Tie-Down Fees - A fee is typically established for the use of fixed ramp tie-downs 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.

Airport Usage Fee - This fee is typically imposed on charter aircraft and can be waived if the operator purchases a minimum amount of fuel.

Commercial Activity Fee - This fee is typically imposed on commercial activities operating "for profit" at the airport. Typical commercial activities may include fixed base operators, testing and training, maintenance services, and retail or other goods and services which may be provided at the airport.

Non-Aeronautical Revenue Generating - This fee is imposed on leases of land that are allocated as airport property but do not have access and/or use for aeronautical activities (i.e. non-aeronautical use). The fee for these areas must be setup at fair market value and all revenue generated from these leases must remain within the airport fund.

In accordance with FAA and Arizona grant assurances, all revenues generated by the airport must be expended by the airport for the capital or operating costs of the airport. No revenue generated on the airport may go into the County's general fund.

8.6 Airport Development Recommendations

Based on the findings of the planning process, the following recommendations are provided for the County to consider for development of the Airport to meet the needs of the community:

1. The County has the unique advantage over many airports of having considerable excess land that is not needed for aviation related purposes. Over the long-term, the County should continue looking for non-aeronautical development opportunities on the land that has been designated for such activities on the ALP. The County will have multiple options for developing non-aeronautical lands through the land release process. We recommend that once a developer presents conceptual plans to the County, that a meeting be arranged with the FAA Western-Pacific Region Phoenix Airports District Office (PHX ADO) to discuss the proposed development and evaluate the various land release options.

2. The installation of a credit card payment device to provide self-service fueling at the fueling facility will enhance fuel sales. This enhancement will provide access to fuel to pilots after-hours, thereby making the airport more competitive with other airports in the region.

3. Locations for additional nested T-hangars and individual box hangars have been identified on the Terminal Area Drawing (TAD) included in ALP drawing set. The investment in additional hangars will make the airport more competitive with other airports in the region and will provide the airport will additional revenue.

4. Continued monitoring of the airport's financial status is necessary in order to adapt and adjust to changing conditions.

8.7 CONTINUOUS PLANNING PROCESS

Airport planning is a continuous process that does not end with the completion of a major capital project. The fundamental issues upon which these airport master plans are based are expected to remain valid for several years; however, several variables such as annual aircraft operations and socioeconomic conditions, are likely to change over time. The continuous planning process necessitates that Cochise County 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 as recommended within the Airport Master Plan. 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 the 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 airport. The continuous airport planning process is a valuable tool in achieving the strategic plans and goals for the Airport.

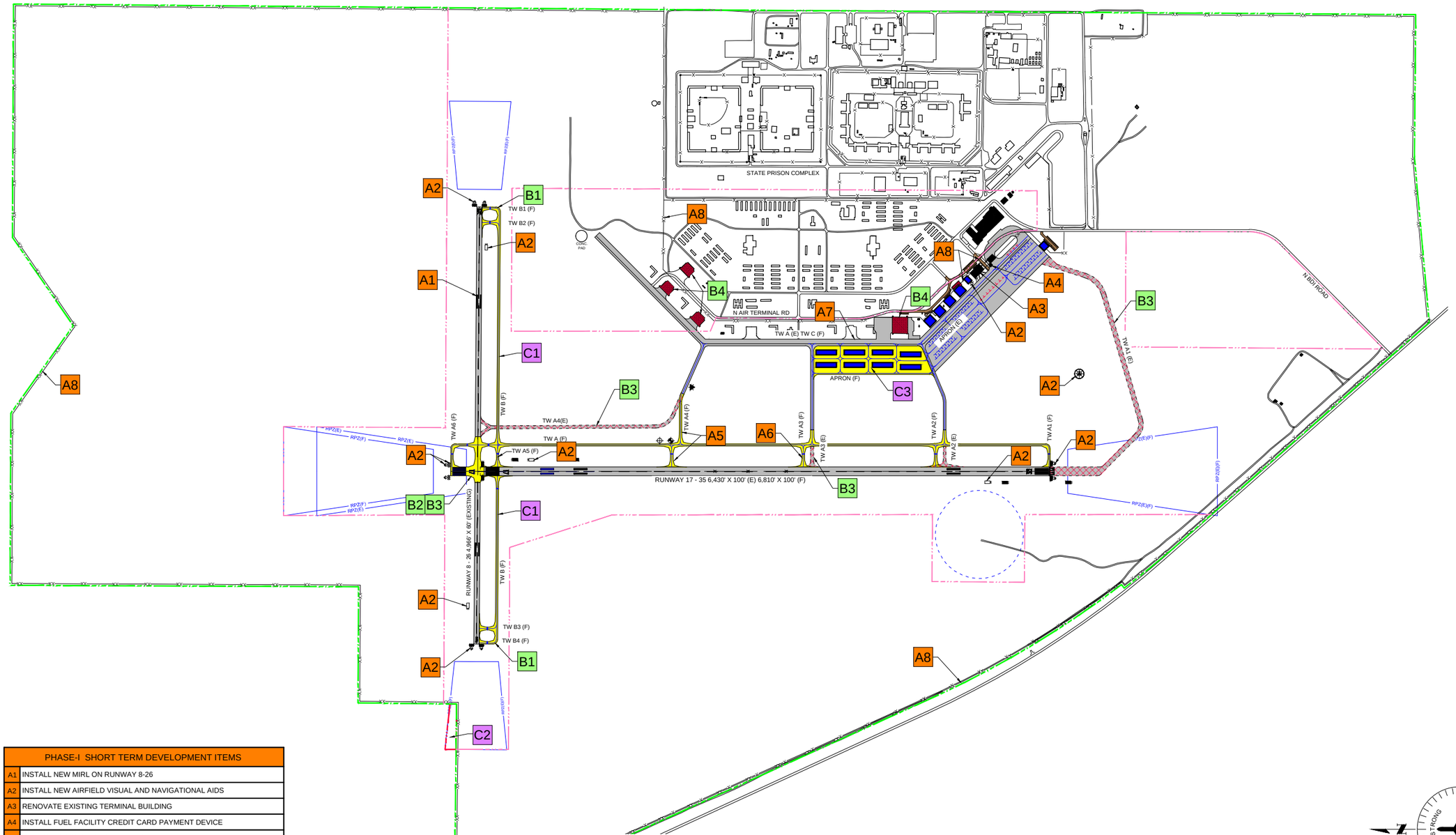
8.8 CONCLUSION

This chapter has laid out the recommended capital improvement projects and their financial implications for improving the Bisbee Douglas International Airport over the 20-year planning period. A total of 15 CIP projects have been identified (Table 8-1), which are all programmed within the 20-year planning period, as shown on **Exhibit E** at the end of this chapter.

This Airport Master Plan has documented the existing and anticipated aviation demand based on existing conditions, as well as provided a practical and implementable development plan based on input and guidance from the Technical Advisory Committee (TAC), FAA, and ADOT.

This financial analysis is based on the continuation of FAA Airport Improvement Program (AIP) funding at the current levels. However, there is a competition for FAA funds, so the Airport will need to aggressively communicate its Capital Improvement Plan (CIP) needs to the FAA and other relevant agencies as opportunities arise.

Based on the assumptions and the financial analysis presented herein, the development plan presented on the ALP along with the CIP are considered feasible, and the airport should be able to construct the necessary aviation facilities as recommended herein.



PHASE-I SHORT TERM DEVELOPMENT ITEMS	
A1	INSTALL NEW MIRL ON RUNWAY 8-26
A2	INSTALL NEW AIRFIELD VISUAL AND NAVIGATIONAL AIDS
A3	RENOVATE EXISTING TERMINAL BUILDING
A4	INSTALL FUEL FACILITY CREDIT CARD PAYMENT DEVICE
A5	REALIGN/RECONSTRUCT EXISTING TWY A4
A6	RECONSTRUCT EXISTING TWY A3
A7	RECONSTRUCT EXISTING TWY A
A8	INSTALL PERIMETER FENCING AND GATES
PHASE-II MEDIUM-TERM DEVELOPMENT ITEMS	
B1	CONSTRUCT RUNWAY 8-26 BYPASS TAXIWAYS
B2	CONDUCT ENVIROMENTAL ASSESSMENT (EA) FOR RUNWAY 17 EXTENSION
B3	RUNWAY 17 EXTENSION WITH CONSTRUCTION OF FULL PARALLEL TAXIWAY; REMOVAL OF NON-STANDARD EXISTING TAXIWAY A1 & A4
B4	RELOCATE AND/OR DEMOLISH AIRCRAFT HANGARS
PHASE-III LONG-TERM DEVELOPMENT ITEMS	
C1	CONSTRUCT FULL PARALLEL TAXIWAY TO RUNWAY 8-26
C2	LAND ACQUISITION (APPROX. 4 ACRES) RUNWAY 8 RPZ
C3	EXPAND EXISTING AIRCRAFT PARKING APRON

LEGEND

EXISTING	FUTURE	DESCRIPTION	EXISTING	FUTURE	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPH/CONC)			THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)			REIL
		GRAVEL / TURF / DIRT			VASI/PAPI
		AIRPORT PROPERTY LINE (APL)			AIRPORT BEACON
		LAND USE LINE			WIND CONE & SEGMENTED CIRCLE
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)			AWOS
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			LIGHTED WINDCONE
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)		N/A	SECTION CORNER
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)			DRAINAGE/CULVERT
BRL(E)	BRL(F)	BUILDING RESTRICTION LINE (BRL)		N/A	CONTOURS
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)			ROADS
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)			MARKINGS
RVZ(E)	RVZ(F)	RUNWAY VISIBILITY ZONE (RVZ)			FENCING
		AIRPORT REFERENCE POINT (ARP)			HELIPAD
		PACS/SACS MONUMENT			
		TO BE REMOVED			

0 600 1200
SCALE IN FEET

EXHIBIT E

ARMSTRONG
PLANNING ENGINEERING CONSTRUCTION

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APPENDIX A

ACRONYMS/GLOSSARY OF TERMS

COCHISE COUNTY

BISBEE DOUGLAS INTERNATIONAL AIRPORT

AIRPORT MASTER PLAN

ARMSTRONG

Acronyms

AGL	Above Ground Level
ADIZ	Air Defense Identification Zone
AOA	Air Operations Area
ARTCC	Air Route Traffic Control Center
ATC	Air Traffic Control
ATCT	Air Traffic Control Tower
ATCAA	Air Traffic Control Assigned Airspace
AAC	Aircraft Approach Category
AOPA	Aircraft Owners and Pilots Association
ARFF	Aircraft Rescue and Fire Fighting
ADG	Airplane Design Group
ACIP	Airport Capital Improvement Plan
AIP	Airport Improvement Program
APMS	Airport Pavement Management System
ARC	Airport Reference Code
A/FD	Airport/Facility Directory
ARP	Airport Reference Point
ASV	Annual Service Volume
AFFF	Aqueous Film Forming Foam
AHPA	Archeological and Historic Preservation Act
RNAV	Area Navigation
ADOC	Arizona Department of Corrections
ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
APPP	Arizona Pavement Preservation Program
ASASP	Arizona State Airports System Plan
ACI	Armstrong Consultants, Inc.
ASOS	Automated Surface Observing System
AWOS	Automated Weather Observing System
AWSS	Automated Weather Sensor System
ATIS	Automatic Terminal Information Service
BMP	Best Management Practices
BLM	Bureau of Land Management
CIP	Capital Improvement Plan
CATEX	Categorical Exclusion
CAA	Clean Air Act
CZM	Coastal Zone Management
CMG	Cockpit-to-Main Gear
CTAF	Common Traffic Advisory Frequency
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CEQ	Council on Environmental Quality
DNL	Day-night Average Sound Level

dB	Decibel
DOD	Department of Defense
ESA	Endangered Species Act
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EAS	Essential Air Service
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FEMA	Federal Emergency Management Agency
FBO	Fixed Base Operator
FL	Flight Level
FSS	Flight Service Station
GAO	General Accounting Office
GA	General Aviation
GAMA	General Aviation Manufacturers Association
GARA	General Aviation Revitalization Act
GO	General Obligation
GPS	Global Positioning System
GHGs	Green House Gases
IAP	Instrument Approach Procedure
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IGA	Inter-governmental Agreement
I-10	Interstate 10
LED	Light-emitting Diode
LPV	Localizer/Lateral Performance with Vertical Guidance
MGW	Main Gear Width
MTOW	Maximum Takeoff Weight
MSL	Mean Seal Level
MIRL	Medium Intensity Runway Lighting
MITL	Medium Intensity Taxiway Lighting
MOU	Memorandum of Understanding
MOA	Military Operations Area
MTR	Military Training Route
NAS	National Airspace System
NAAQS	National Ambient Air Quality Standards
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service

NPIAS	National Plan of Integrated Airport Systems
NPDES	National Pollution Discharge Elimination System
NPL	National Priority List
NRHP	National Register of Historic Places
NWS	National Weather Service
NM	Nautical Mile
NAVAID(S)	Navigational aid(s)
NextGen	Next Generation Air Transportation System
NDB	Non-directional beacon
NOTAM	Notice to Airmen
OFA	Object Free Area
OFZ	Obstacle Free Zone
OPBA	Operations per Based Aircraft
PCI	Pavement Condition Index
PM	Particulate Matter
PHX ADO	Phoenix Airports District Office
PAPI	Precision Approach Path Indicator
RIASP	Regional Integrated Airport System Planning
RCRA	Resource Conservation and Recovery Act
RDC	Runway Design Code
REIL	Runway End Identifier Lights
ROFA	Runway Object Free Area
RPZ	Runway Protection Zone
RSA	Runway Safety Area
RVR	Runway Visual Range
SPCCP	Spill Prevention, Control, and Countermeasure Plan
SHPO	State Historic Preservation Office/Officer
SIP	State Implementation Plan
SIASP	Statewide Integrated Airport System Planning
SWPPP	Storm Water Pollution Prevention Plan
TACAN	Tactical Air Navigation
TDG	Taxiway Design Group
TOFA	Taxiway Object Free Area
TSA	Taxiway Safety Area
TAC	Technical Advisory Committee
TAD	Terminal Area Drawing
TAF	Terminal Area Forecast
TOS	Threshold of Significance
TPA	Traffic Pattern Altitude
TSA	Transportation Security Administration
US	United States
USACE	United States Army Corps of Engineers

USCBP	United States Customs and Border Protection
USDA-NCRS	United States Department of Agriculture - Natural Conservation Resource Service
USDOI	United States Department of the Interior
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
USFS	United States Forest Service
UAS	Unmanned Aerial System
UAV	Unmanned Aerial Vehicle
VHF	Very High Frequency
VOR/DME	VHF Omnidirectional Range/Distance Measuring Equipment
VORTAC	VHF Omnidirectional Range/Tactical Area Navigation
VASI	Visual Approach Slope Indicator
VFR	Visual Flight Rules
WAAS	Wide Area Augmentation System

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 non-regulative guidance and information in a variety of subject areas.

Airplane Design Group (ADG) – A classification of aircraft based on wingspan and tail height.

Airport Improvement Program (AIP) - The Airport and Airway Improvement Act of 1982, as amended. Under this program, the FAA provides funding assistance for the 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 representation, 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) – Equipment that 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 - An imaginary line on an airport's ALP 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 Surface - 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.

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 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.

Displaced Threshold - A threshold that is located at a point on the runway beyond the beginning of the runway.

Federal Aviation Administration (FAA) - The federal agency responsible for the safety and efficiency of the national airspace and air transportation system.

14 CFR Part 77 - airspace surrounding runways that the FAA requires protection 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 - Fees 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 commercial 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 14 CFR Part 77, *Safe, Efficient Use, and Preservation of 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.

Knots - Nautical miles per hour, equal 1.15 statute miles per hour.

Large Airplane - An airplane that weighs more than 12,500 pounds maximum certified takeoff weight.

Local Operations – Operation 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 (ALP).

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) – Airfield lighting used on the edges of VFR runways or runways with a non-precision instrument flight rule (IFR) procedure for either a 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 - 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 involving the understanding of 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, non-precision 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 to Air Navigation - An object of greater height than any of the heights or surfaces presented in Subpart C of Title 14 CFR Part 77, *Standards for Determining Obstructions to Air Navigation or Navigational Aids or Facilities.*

Parking Apron - An area of pavement 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 which 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 the glide path.

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 Design Code (RDC) - A code signifying the design standard to which the runway is to be built.

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 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 undershot, overshot, or excursion from the runway.

Segmented Circle - A basic marking device used to aid pilots in locating airports.

Small Aircraft - An airplane that weighs 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.

Taxiway Design Group (TDG) - A classification of airplanes based on outer to outer Main Gear Width (MGW) and Cockpit to Main Gear distance (CMG).

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. “Threshold” always refers to landing, not the start of takeoff.

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 - Surfaces that 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. Services

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.

APPENDIX B

PUBLIC OUTREACH

COCHISE COUNTY

BISBEE DOUGLAS INTERNATIONAL AIRPORT

AIRPORT MASTER PLAN

ARMSTRONG

Bisbee Douglas International Airport
Airport Master Plan Update

Project Kick-off Meeting

October 22, 2013
Cochise County Executive Conference Room

MEETING SUMMARY

Purpose: Present the Airport Master Planning process to the Technical Advisory Committee (TAC) and obtain feedback pertaining to the schedule, process, and expected deliverables.

Technical Advisory Committee members:

Name	Affiliation	Present
Ann English	Cochise County	Yes
Jim Vlahovich	Cochise County	Yes
Richard Searle	Cochise County	Yes
Elda Orduno	Cochise County	Yes
Eddie Levins	Cochise County	Yes
Mike Turisk	Cochise County	Yes
Karen Lamberton	Cochise County	Yes
Lisa Marra	Cochise County	Yes
Lauren Ortega	City of Douglas	Yes
Sam Place	Resident	Yes
Belinda Burnett	Cochise College	No
Jared Raymond	FAA PHX AFO	No
Kenn Potts	ADOT	No
William Gillies	U.S. Air Force	No
Ruben Ojeda	AZ State Land Department	No
Consultants:		
Justin Pietz	Armstrong Consultants, Inc.	Yes
Charlie McDermott	Armstrong Consultants, Inc.	Yes
Jenny Watts	Armstrong Consultants, Inc.	Yes

A TAC project kickoff meeting was held on October 22, 2013 to present the Airport Master Planning (AMP) process to the TAC. Attendance at the meeting comprised of representatives from Cochise County, City of Douglas, local residents, and Armstrong Consultants, Inc (ACI).

ACI began the meeting giving a brief overview of the federal and state grant funding history for the airport. A table summarizing the grant history over the past ten years for Bisbee Douglas International Airport (KDUG) was provided to the group.

ACI presented the AMP study objectives and process, and discussed the importance of why an AMP study is conducted. The role of the TAC was explained, and the importance of receiving input from the community was also emphasized. Additionally, ACI presented the proposed

schedule for the entire project, as well as the first deliverables. The components of working paper #1 were discussed; working paper #1 will include the inventory and aviation forecast chapters. ACI anticipates producing working paper #1 to the TAC for review before the 2013 Thanksgiving holiday.

Following working paper #1, the next phase of the AMP is the facility requirements and development alternatives chapters. The next TAC meeting will be held after working paper #2 and #3 are distributed for review by the TAC, FAA and ADOT. The FAA and ADOT are invited to attend all TAC meetings to ensure agency support of selected alternatives.

Additionally, the technical aspects of the AMP were discussed by ACI. FAA design standards, types of aircraft, approach categories and design dimension were explained. According to FAA Advisory Circulars, the FAA requires 250 takeoffs and 250 landings per year of the largest aircraft in order to assign the Runway Design Code (RDC). The current RDC for Runway 17/35 is C-I, and the current RDC for Runway 8/26 is B-I.

During the presentation a discussion took place regarding the pavement strength of the runway and taxiways at KDUG and why there is a discrepancy between the two. ACI noted the concern and indicated that with the review of the airport's critical design aircraft and RDC during the AMP process, any design discrepancies will be reviewed, and if needed, the proper recommendations to change design standards will be made.

Planning considerations were further discussed, specifically aviation demand and land use compatibility. ACI stated the importance of the Airport Layout Plan (ALP) and the need to be realistic about future development. The ALP drawing set depicts the existing and future layout of the airport from several different viewpoints. The FAA requires future capital improvement projects to be shown on the ALP in order to be eligible for FAA grant funding. A question was raised about FAA funding for certain projects. ACI stated the FAA's highest project priority starts at the runway and meeting design standards related to safety. Typically the further the development is from the runway the lower the priority for FAA funding, with the exception of fencing which generally falls into the safety category. One TAC member expressed interest in possibly designating the airport as a Free Trade Zone, and wished to ACI to learn more about this process. A question was asked about how the land north of Runway 3/21 could be used if the runway were to remain closed indefinitely. This question lead to a discussion of land use on and off of airport property and how it is classified. ACI described the difference between aeronautical and non-aeronautical land use activities, and the TAC felt that it was important that ACI review the current aeronautical and non-aeronautical land use on the existing airport property and determine whether or not it is being utilized properly and in the most efficient manner. Furthermore, another TAC member inquired about what steps or process was needed to have several abandoned buildings on the airport property removed. ACI mentioned that no specific permissions were needed to have county owned buildings removed, however, that from an environmental prospective, one might have to consult whether or not some of the buildings may meet National Historic Registry requirements before being removed.

The importance of public involvement with the AMP was discussed. The TAC is an important way to incorporate public involvement. Potential venues for public involvement were discussed as well as appropriate public notice methods including the local paper and an Internet webpage. The suggestion was made that all ACI produced documents regarding the Bisbee Douglas International Airport Master Plan update were made available to the public via the County's webpage. The County indicated that they would work with their IT department to have this available, and would inform ACI when this site was up and running. The TAC also decided that Lisa Marra, Grants Administrator for Cochise County, would be the primary point of contact for any concerns or questions. A brief discussion of whether several other individuals should be added to the committee took place. Ms. Marra indicated that she will follow up with those individuals.

Again, ACI reiterated the next step for the AMP will be providing working paper #1 to the TAC, FAA and ADOT. When the first working paper is complete, ACI will begin formulating the facility requirements and recommended development for the alternatives (Chapters 3 and 4). This information will later be distributed in the form of a working paper to the TAC for review and comment. After the dissemination and review of the second and third working papers by the TAC, FAA and ADOT, a meeting will be held to discuss and present the information and receive input based on the future layout and configuration. A public information meeting is scheduled to be held at this time as well.

A copy of the meeting sign-in sheet is attached hereto and made of part hereof.

Meeting Sign-In Sheet

Project:	Bisbee Douglas International Airport Master Plan Kickoff Meeting	**Meeting Date:**	October 22, 2013

Name	Title	Affiliation	Phone	Fax	E-mail
Justin Pietz	Principal	Armstrong Consultants, Inc.	970-242-0101	970-241-1769	justin@armstrongconsultants.com
Charlie McDermott, LEED AP	Project Manager	Armstrong Consultants, Inc.	602-803-7079	480-632-0760	cmcdermott@armstrongconsultants.com
Jenny Watts	Airport Planner	Armstrong Consultants, Inc.	602-803-7079	480-632-0760	jwatts@armstrongconsultants.com
Ann English	Bd of Supervisors	Cochise Co.	520-432-5202		aenglish@cochise.az.gov
Eddie Levins	Facilities	Cochise County	520-508-2298		elevins@cochise.az.gov
Lisa Marra	Grants Admin	Cochise County	520-432-9742		Lmarra@cochise.az.gov
Lauren Ortega	PW Director/City Eng.	City of Douglas	520 417 7329	520 417 7149	lauren.ortega@douglasaz.gov
Sam Place	Business to Airport		520-508-8152	520 364-2690	SJR@THERIVER.com
Elda Ordono	Deputy County Atty	Cochise County	520-432-8700		eordono@cochise.az.gov
Richard Searle	BOS	Cochise Co	508-2201		rsearle@cochise.az.gov
Jim Vlahovich	BOS		520-432-9206		jvlahovich@cochise.az.gov

Vlahovich

Meeting Sign-In Sheet

Project:	Bisbee Douglas International Airport Master Plan Kickoff Meeting	**Meeting Date:**	October 22, 2013

Name	Title	Affiliation	Phone	Fax	E-mail
MIKE TURISK	PLANNING MGR	COCHISE CO. /PNZ	432.9248		MTURISK@COCHISE.AZ.GOV
Karen Lamberton	transportation planner	Cochise County	432-9300		klamberton@cochise.az.gov

Bisbee Douglas International Airport
Airport Master Plan Update

TAC Meeting No. 2

April 24, 2014
Cochise County Headquarters

MEETING SUMMARY

Purpose: Present a brief review of the aviation demand forecasts and the facility requirements from Working Paper No. 1 and Working Paper No. 2, and to present the airport development alternatives from Working Paper No. 3 to the Technical Advisory Committee (TAC) and obtain feedback pertaining to the proposed development plans.

Technical Advisory Committee members:

Name	Affiliation	Present
Ann English	Cochise County	Yes
Jim Vlahovich	Cochise County	No
Richard Searle	Cochise County	No
Elda Orduno	Cochise County	No
Eddie Levins	Cochise County	Yes
Mike Turisk	Cochise County	No
Karen Lamberton	Cochise County	Yes
Lisa Marra	Cochise County	Yes
Lauren Ortega	City of Douglas	Yes
Sam Place	Resident	No
Belinda Burnett	Cochise College	No
Jared Raymond	FAA PHX AFO	No
Kenn Potts	ADOT	No
Lt. Col. David Stine	Arizona Air National Guard	No
Tim Bolton	AZ State Land Department	No

Consultants:

Justin Pietz	Armstrong Consultants, Inc.	Yes
Charlie McDermott	Armstrong Consultants, Inc.	Yes
Jenny Watts	Armstrong Consultants, Inc.	Yes

Non-TAC Members Present:

Michael Ortega	Cochise County
Scott Ries	Developer

A second TAC meeting was held on April 24, 2014, to briefly review the aviation demand forecasts and the facility requirements found in Working Papers No. 1 and No. 2, and to present the airport development alternatives from Working Paper No. 3 to the TAC. Attendance at the meeting comprised of representatives from Cochise County, City of Douglas, members of the public, and Armstrong Consultants, Inc (ACI).

ACI began the meeting giving a brief overview of the Airport Master Plan (AMP) study objectives and process, and discussed the importance of why an AMP study is conducted. The role of the TAC was also explained. Additionally, ACI presented the progress made to date with the project schedule and explained the next steps and deliverables. The immediate next steps include the development of the Draft Airport Layout Plan drawing set (Chapter Five) and the Capital Improvement and Financial Plan and Environmental Overview (Chapters Six and Seven) by ACI.

After the AMP recap, a brief summary of the aviation demand forecasts generated for the airport and the recommended facility requirements needed to accommodate the future demand at the airport was presented. The summary explained why aviation demand forecasts are generated and how they are used in the AMP. The summary also included the based aircraft preferred forecast for Bisbee Douglas International Airport and the methods used to obtain it. Likewise, the total annual operations preferred forecast was presented along with the methods used to obtain it. The facility requirements summary explained how consultants use the demand forecasts to identify the facilities needed to accommodate the forecasted demand levels at the airport. The facility requirements are largely based on the FAA airport design standards, in particular the runway design code (RDC). ACI briefly reviewed the RDC for each runway at the airport (Runway 17-35 and Runway 8-26). Lastly, major facility requirement recommendations for the airport were summarized in a table format and presented by ACI.

Finally, the development plans (and alternatives) created for the airport were presented by ACI. An airside development plan was reviewed, along with a terminal/landside development plan. After each plan was explained, ACI encouraged the committee members to express their comments and any further recommendations.

During this time, several discussions ensued. Ms. English asked ACI for further clarification and justification for the lengthening of Runway 17 by 380 feet. ACI explained how the runway length was determined using calculations from the FAA to determine runway length. The decision to lengthen the runway at the Runway 17 end was considered because it would alleviate the current “T-bone” runway intersection made by Runway 17-35 and Runway 8-26, which is seen by the FAA as an airfield safety concern. Furthermore, adding length to the end of Runway 35 would result in the RPZ extending across Highway 191 and off of airport property. The FAA would require that additional property be acquired either by easements or in fee-simple to completely control the RPZ. This explanation was deemed acceptable by the TAC members. The discussion of runway length did prompt Ms. Lamberton to question the justification for the length of Runway 17-35 based upon the graphic provided within Working Paper No. 2. She suggested the graphic be revised to include more C-I aircraft so that the extension of the runway would be more justified; as currently pictured, the graph does not capture the amount of C-I aircraft that may potentially use the runway, and therefore lacks the justification for it to be lengthened.

From here, the discussion turned to the possibility of using some of the airport property for non-aeronautical uses. Ms. English and several others suggested ACI verify the property line. Ms. English also suggested that the development plan drawing show more of the land north of Runway 8-26 as non-

aeronautical use. The other TAC members agreed with her comment. Mr. Reis suggested the County "test the market" to see if any aircraft storage and/or MRO (Maintenance, Repair, and Overhaul) companies may be interested in the airport and its large amount of available land. Most TAC members seemed receptive to this idea. Mr. Levins asked for some clarification with regards to the land release process. Mr. Ortega was also interested in how the land release process would benefit the County. ACI will in turn provide additional information to the TAC regarding the land release process.

When reviewing the landside development plan, a discussion regarding the four existing original hangars at the airport ensued. The different options regarding the large, wood-framed, steel-side hangar and the three steel-framed, steel-sided hangars were discussed. The County will need to determine if there is any value in the hangars and how they plan to proceeded once that determination is made. It was also recommended that more land be designated for private box and T-hangar development and added to the development plan drawing.

A final discussion item was brought forward by Mr. Reis. He suggested the County verify if the airport can act as a Port of Entry with CPB (Customs and Border Protection) and perform custom services at the airport, and if so, he recommended the County market this service better to pilots. After a brief discussion, the TAC agreed this is a valuable service for the airport and that it should be promoted more in order to increase business/aircraft operations at the airport.

It was concluded that ACI would make some of the recommended changes to both the report and the development drawings. Again, ACI reiterated the next step for the AMP will be providing Working Paper No. 4 to the TAC, FAA and ADOT. After the dissemination and review of Working Paper No. 4 by the TAC, FAA and ADOT, a draft final report will be created and assembled for review.

A copy of the meeting sign-in sheet is attached hereto and made a part hereof.

Meeting Sign-In Sheet

Project:	Bisbee Douglas International Airport Master Plan Meeting No. 2	**Meeting Date:**	April 24, 2014

Name	Title	Affiliation	Phone	Fax	E-mail
Justin Pietz	Principal	Armstrong Consultants, Inc.	[redacted]	[redacted]	[redacted]
Charlie McDermott, LEED AP	Project Manager	Armstrong Consultants, Inc.	[redacted]	[redacted]	[redacted]
Jenny Watts	Airport Planner	Armstrong Consultants, Inc.	[redacted]	[redacted]	[redacted]com
SCOTT RIES	PRES	Bearinger Cities Land Corp	[redacted]	—	[redacted]
Lauren Ortega	Douglas PW Director ~~City of Douglas~~	City of Douglas	[redacted]	[redacted]	[redacted]
Eddie Levins	Facilities Director	Cochise County	[redacted]		[redacted]
Ann English	Board of Supervisors	Cochise County	[redacted]		[redacted]
Karen Lambert	Transportation Planner	Cochise County	[redacted]		[redacted]
Lisa Marra	Grants Director	Cochise County	[redacted]		[redacted]
MICHAEL J. ORTEGA	COUNTY ADMINISTRATOR	" "	[redacted]		

Cochise County - Airport Master Plans

Bisbee Douglas International Airport
FAA No: 3-04-0013-008-2013
ADOT No: E4F3D

Cochise County Airport
FAA No: 3-04-0049-004-2013
ADOT No: E4F3E

FAA/ADOT Project Briefing

May 16, 2014
10:00 am
FAA Phoenix ADO Offices

BRIEFING SUMMARY

Purpose: Provide a brief overview of TAC meeting No. 2 which occurred April 23/24, 2014, for Bisbee Douglas International Airport and Cochise County Airport for the FAA and ADOT. Also, present the alternative development drawings to the FAA and ADOT for both airports and obtain feedback pertaining to the proposed development plans.

Meeting attendees:

Name	**Affiliation**
Eddie Levins	Cochise County
Lisa Marra	Cochise County
Jared Raymond	FAA, Western-Pacific Region, Phoenix ADO
Holly Dixon	FAA, Western-Pacific Region, Phoenix ADO
Kenn Potts	ADOT – MPD, Aeronautics Group
Consultants:	
Charlie McDermott	Armstrong Consultants, Inc.
Jenny Watts	Armstrong Consultants, Inc.

Bisbee Douglas International Airport

- Charlie McDermott from Armstrong gave a brief overview of the presentation that was given during the second BDI TAC meeting which took place on April 24, 2014 at Cochise County headquarters in Bisbee, Arizona.

- Following the presentation overview, Mr. McDermott proceeded to present the alternative development drawings for both the airside and landside portions of BDI Airport, and provide the justifications and conclusions for the development plans that were included within Working Paper No. 3.
- The following are highlights from the discussion which ensued during the alternative development plan presentation:
    - The Runway 17 extension and the crosswind runway intersection issue were discussed in detail; justification as to why Runway 17 was chosen to be extended was provided by Mr. McDermott. Mr. Raymond suggested the runways at Winslow Airport be reviewed to see how a similar issue is being addressed.
    - FAA/ADOT gave no objections to the amount of land that has been reserved for non-aeronautical use as shown on the drawings.
    - A brief discussion on the land release process for BDI occurred
        - ADOT and FAA confirmed that any land that the County wishes to release would require Congressional approval.
- A suggestion was made to include a potential location for a U.S. Customs and Border Protection building on the alternative drawing plans.

<u>Cochise County Airport</u>

- Charlie McDermott from Armstrong gave a brief overview of the presentation that was given during the second Cochise County Airport TAC meeting which took place on April 23, 2014 at the airport in Willcox, Arizona.
- Following the presentation overview, Mr. McDermott proceeded to present the alternative development drawings for both the airside and landside portions of Cochise County Airport, and provide the justifications and conclusions for the development plans that were included within Working Paper No. 3.
- The following are highlights from the discussion which ensued during the alternative development plan presentation:
    - The crosswind runway (Runway 14-32) was discussed in detail; an explanation for determining its length and location were provided by Mr. McDermott.
    - Mr. Raymond and Ms. Dixon suggested Taxiway A-2 be shown on the development drawing shifted, or off-set, from the apron as per FAA design standards.
    - Mr. Raymond encouraged the County to submit for PAPIs, REILs, beacon, and AWOS projects using entitlement funds in the near future.
    - A short discussion on airport property and the land release process also occurred; it was concluded that any revenue generated from airport property that is used for either aeronautical or non-aeronautical purposes would have to be reinvested in the airport.

Meeting adjourned at 11:45 am.

Cochise County - Airport Master Plans

Bisbee Douglas International Airport
FAA No: 3-04-0013-008-2013
ADOT No: E4F3D

Cochise County Airport
FAA No: 3-04-0049-004-2013
ADOT No: E4F3E

Cochise County Board of Supervisors Project Briefing/TAC Meeting #3

October 28, 2014
2:30 pm
Cochise County Board of Supervisors Office

BRIEFING SUMMARY

Purpose: Provide a brief overview to the Cochise County Board of Supervisors on the status of the airport master plan updates for both Bisbee Douglas International and Cochise County Airports and the next steps leading to the completion of the master plans. This meeting also served as the third and final TAC and public meeting for the projects.

- A brief introduction about the status of each airport layout plan to date was given by Lisa Marra, Grants Director for Cochise County. Ms. Marra then turned briefing over to Mr. Charles McDermott, Senior Airport Project Manager from Armstrong Consultants, Inc.
- Mr. McDermott provided an update on each of the airport master plans; the following was mentioned:
    - No major changes to report from the last TAC meeting and meeting with the FAA and ADOT.
    - A brief overview of the ALP drawing set was given.
    - Mr. McDermott mentioned the FAA's new ALP checklist; review by the FAA may take a little longer due to the new checklist.
    - The next review for the TAC members for both airports will include the draft final report with the last two chapters and the ALP drawing set.
    - Again, the FAA review timeframe is unknown, but Armstrong will return to them as soon as possible.
    - Ended update. (A copy of the handout provided by Armstrong is attached).
- Supervisor English requested those in attendance state why they were there with regards to their interests in the reports.
    - Those in attendance gave brief statement regarding the personal importance of the reports.
    - A short discussion ensued after Lt. Col. David Stine, Airspace Manager for the 162nd Fighter Wing of the Arizona Air National Guard, presented his comments regarding the

airspace restrictions, Military Observation Areas (MOAs), and Military Training Routes (MTRs) for each airport.

- One question was asked regarding the status of the box hangar boiler plate lease language for Cochise County Airport; Mr. McDermott responded indicating that the sample leases had been sent to Mr. Levins; Ms. Marra would confirm with Mr. Levins to make sure he had received them.
- A request for any or questions or comments was made – none were provided.

The meeting adjourned at 3:00 pm. A copy of the handout provided by Armstrong and the attendance sign-in sheet are attached.

Cc: Lisa Marra, Grants Director, Cochise County

Cochise County
Board of Supervisors Briefing

October 28, 2014

Status

Comments were received from ADOT on October 23, 2014, for both airport master plans. Armstrong is in the process of reviewing the comments and will incorporate as appropriate. Based on a cursory review of the ADOT comments, the proposed development shown on the draft ALP remains supported.

TAC meeting 2 was held (for both master plans) in April 2014 to review Working Paper 3 and obtain feedback from the committee. Some key feedback included:

Cochise County Airport

- Add area for leased box hangars
- Additional land reserved for non-aeronautical development
- Add an aircraft wash pad
- Support from the TAC for the crosswind runway

Bisbee Douglas International Airport

- Provide a location for U.S. Customs and Border Protection
- Additional land reserved for non-aeronautical development
- Identify area for t-hangars

A meeting with the FAA PHX ADO and ADOT was held on May 16, 2014 to review Working Paper 3 and obtain feedback on the proposed development plans for both airports. After reviewing the plans and some discussion, both FAA and ADOT were in agreement with the (above) feedback from the TAC and the proposed development plans.

Schedule

Both master plan projects started in October 2013 and are both on track to be completed by the end of 2014.

Next steps

- Receive/incorporate feedback from BOS on October 28, 2014
- Receive/incorporate feedback from TAC on October 28, 2014
- Review/incorporate ADOT comments received on October 23, 2014
- Submit draft final report and ALP drawing set to Cochise County, FAA, and ADOT
- Incorporate comments and issue final report
- Prepare executive summary brochure

ATTENDANCE SHEET

Patrick Call

Date: 10/28/14

Type of Meeting:

☒ Work Session Subject: ~~BDX~~ Airport Plans

☐ Committee Name:

In attendance (please initial):

Richard Searle	✓	Patrick Call	✓	Ann English	✓
Michael Ortega	✓	Jim Vlahovich	✓	Arlethe Rios	✓

Name	Email	Telephone
Lisa Marra	lmarra@cochise.az.gov	520 432 9742
Jenny Watts	jwatts@armstrongconsultants.com	602-803-7079
Charlie McDermott	cmcdermott@armstrongconsultants.com	602-803-7079
Ted Soltis	tsoltise.willcoxcity.org	520·384·4271
Lauren Ortega	Lauren.Ortega@douglasaz.gov	520 417 7330
JESSE DRAKE	JDRAKE@COCHISE.AZ.GOV	520-432-9300
CARLOS A. DE LA TORRE	carlos.delatorre@douglasaz.gov	520-417-7302
Beverly Wilson	bjwilson@cochise.az.gov	432.9300
Karen Lamberton	klamberton@cochise.az.gov	520 432.9300
DAVID STINE, LTCOL	david.stine.1@angel.af.mil	520-295-7075

APPENDIX C

FEDERAL/STATE AGENCY COORDINATION AND CORRESPONDENCE

COCHISE COUNTY

BISBEE DOUGLAS INTERNATIONAL AIRPORT

AIRPORT MASTER PLAN

ARMSTRONG

List of Agencies Contacted as Part of the Environmental Inventory Data Collection Process (Chapter 2, Section 2.19):

- Arizona Air National Guard – 162nd Fighter Wing Airspace Management
- Arizona Department of Environmental Quality
- Arizona Game and Fish Department
- Arizona State Historic Preservation Office
- Arizona State Land Department
- U.S. Army Corps of Engineers – Arizona Regulatory Office
- U.S. Fish and Wildlife Services – Arizona Field Office

October 14, 2014

Ms. Laura Canaca
Arizona Game and Fish Department
WMHB – Project Evaluation Program
5000 W. Carefree Highway
Phoenix, AZ 85086-5000

RE: Bisbee Douglas International Airport – Airport Master Plan Update
FAA AIP No. 3-04-0013-008-2013 / ADOT No. E4F3D
ACI No. 136170

Dear Ms. Canaca:

On behalf of Cochise County, Armstrong Consultants, Inc. is currently preparing an Airport Master Plan for the Bisbee Douglas International Airport in Douglas, Arizona. An important task in the Airport Master Plan process will be to identify sensitive environmental areas within the airport property and vicinity. This effort would assist our planners in making environmentally sound recommendations for future development plans for the Airport as well as support the baseline information for subsequent environmental review at the federal and state level for specific proposed airport projects.

Please provide us with any comments, information, or mapping resources you may have regarding the project's potential to impact sensitive environmental areas, including, but not limited to, the categories identified in Federal Aviation Administration Order 1050.1E, *Environmental Impacts: Policies and Procedures* that are listed below:

- Air Quality
- Coastal Resources
- Compatible Land Use
- Construction Impacts
- Department of Transportation Act Section 4(f)
- Farmlands
- Fish, Wildlife, and Plants
- Floodplains
- Hazardous Materials, Pollution Prevention, and Solid Waste
- Historic, Architectural, Archeological, and Cultural Resources
- Light Emissions and Visual Impacts
- Natural Resources and Energy Supply
- Noise
- Secondary (Induced) Impacts

SAMPLE

- Socioeconomic Impacts, Environmental Justice, and Children's Health and Safety Risks
- Water Quality
- Wetlands
- Wild and Scenic Rivers

An aerial map of the airport has been included to assist you in identifying areas of potential impact. If you have any questions, please feel free to contact me at 602-803-7079, or cmcdermott@armstrongconsultants.com.

Sincerely,

ARMSTRONG CONSULTANTS, INC.

Charlie McDermott, LEED AP
Senior Project Manager

Cc: Lisa Marra, Cochise County w/encl.

SAMPLE

THE STATE OF ARIZONA
GAME AND FISH DEPARTMENT
5000 W. CAREFREE HIGHWAY
PHOENIX, AZ 85086-5000
(602) 942-3000 • WWW.AZGFD.GOV

GOVERNOR
JANICE K. BREWER
COMMISSIONERS
CHAIRMAN, J.W. HARRIS, TUCSON
ROBERT E. MANSELL, WINSLOW
KURT R. DAVIS, PHOENIX
EDWARD "PAT" MADDEN, FLAGSTAFF
JAMES R. AMMONS, YUMA
DIRECTOR
LARRY D. VOYLES
DEPUTY DIRECTOR
TY E. GRAY

February 7, 2014

Charlie McDermott
Armstrong
2345 Alma School Road, Suite 208
Mesa, AZ 85210

Re: Bisbee Douglas International Airport – Airport Master Plan Update
FAA AIP No. 3-04-0013-008-2013 / ADOT No. E4F3D
ACI No 136170

Dear Mr. McDermott:

The Arizona Game and Fish Department has received and reviewed your letter of January 29, 2014 regarding the above referenced project. I have searched our HDMS data base using the On-line Environmental Review Tool (receipt 20140206022437) and find that there are no species listed (or candidate) under the Endangered Species Act, within 2 miles of your project area.

The Department has no further questions at this time. If you have questions or concerns regarding this letter, please feel free to call me at 623 236-7513. Thank you for your cooperation.

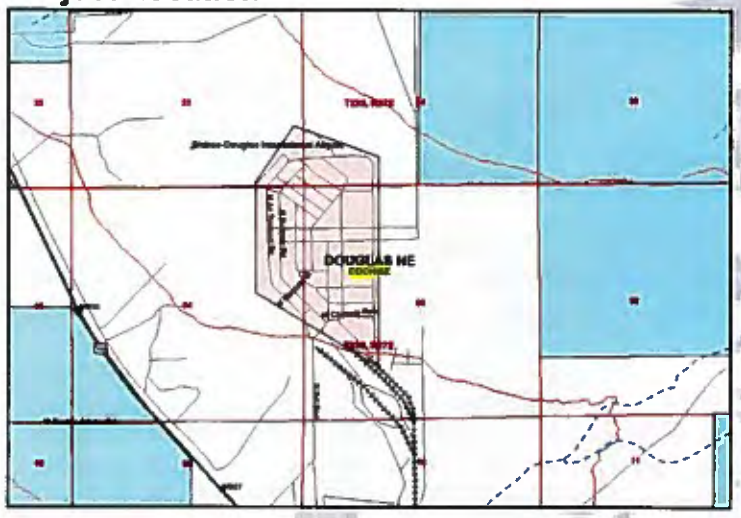
Sincerely,

Daniel E. Nelson

M14-01314718
CC: John Windes, AGFD; Debra Bills, USFWS

Arizona's On-line Environmental Review Tool
Search ID: 20140206022437
Project Name: Bisbee Douglas Airport
Date: 2/6/2014 10:05:07 AM

Project Location



Project Name: Bisbee Douglas Airport
Submitted By: PEP Project Evaluation Program
On behalf of: CONSULTING
Project Search ID: 20140206022437
Date: 2/6/2014 10:05:03 AM
Project Category: Transportation & Infrastructure,Airports,Construction of new runways, terminals/concourses, other facilities
Project Coordinates (UTM Zone 12-NAD 83): 633499.509, 3481794.859 meter
Project Area: 272.285 acres
Project Perimeter: 4342.332 meter
County: COCHISE
USGS 7.5 Minute Quadrangle ID: 1927
Quadrangle Name: DOUGLAS NE
Project locality is not anticipated to change

Location Accuracy Disclaimer

Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Receipt is solely responsible for the project location and thus the correctness of the Project Review Receipt content.

The Department appreciates the opportunity to provide in-depth comments and project review when additional information or environmental documentation becomes available.

Special Status Species Occurrences/Critical Habitat/Tribal Lands within 3 miles of Project Vicinity:

Name	Common Name	FWS	USFS	BLM	State
Sistrurus catenatus edwardsii	Desert Massasauga				WSC

 APPLICATION INITIALS: _____

Please review the entire receipt for project type recommendations and/or species or location information and retain a copy for future reference. If any of the information you provided did not accurately reflect this project, or if project plans change, another review should be conducted, as this determination may not be valid.

Arizona's On-line Environmental Review Tool:

1. This On-line Environmental Review Tool inquiry has generated recommendations regarding the potential impacts of your project on Special Status Species (SSS) and other wildlife of Arizona. SSS include all U.S. Fish and Wildlife Service federally listed, U.S. Bureau of Land Management sensitive, U.S. Forest Service sensitive, and Arizona Game and Fish Department (Department) recognized species of concern.
2. These recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation). These recommendations are preliminary in scope, designed to provide early considerations for all species of wildlife, pertinent to the project type you entered.
3. This receipt, generated by the automated On-line Environmental Review Tool does not constitute an official project review by Department biologists and planners. Further coordination may be necessary as appropriate under the National Environmental Policy Act (NEPA) and/or the Endangered Species Act (ESA).

The U.S. Fish and Wildlife Service (USFWS) has regulatory authority over all federally listed species under the ESA. Contact USFWS Ecological Services Offices: http://arizonaes.fws.gov/.

Phoenix Main Office
2321 W. Royal Palm Road, Suite 103
Phoenix, AZ 85021
Phone 602-242-0210
Fax 602-242-2513

Tucson Sub-Office
201 North Bonita, Suite 141
Tucson, AZ 85745
Phone 520-670-6144
Fax 520-670-6154

Flagstaff Sub-Office
323 N. Leroux Street, Suite 101
Flagstaff, AZ 86001
Phone 928-226-0614
Fax 928-226-1099

Disclaimer:

1. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area.
2. The Department's Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there.
3. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HDMS data contains information about species occurrences that have actually been reported to the Department.

Arizona Game and Fish Department Mission

To conserve, enhance, and restore Arizona's diverse wildlife resources and habitats through aggressive protection and

 APPLICATION INITIALS: _____

management programs, and to provide wildlife resources and safe watercraft and off-highway vehicle recreation for the enjoyment, appreciation, and use by present and future generations.

Project Category: Transportation & Infrastructure,Airports,Construction of new runways, terminals/concourses, other facilities

Project Type Recommendations:

Based on the project type entered; coordination with Arizona Department of Environmental Quality may be required (http://www.azdeq.gov/).

Based on the project type entered; coordination with County Flood Control districts may be required.

Based on the project type entered; coordination with State Historic Preservation Office may be required http://azstateparks.com/SHPO/index.html

Based on the project type entered; coordination with U.S. Army Corps of Engineers may be required (http://www.spl.usace.army.mil/regulatory/phonedir.html)

Based on the project type entered; coordination with U.S. Fish and Wildlife Service (Migratory Bird Treaty Act) may be required (http://arizonaes.fws.gov/)

Consider designs and tower modifications that reduce or eliminate impacts to migratory birds. Please refer to the U.S. Fish and Wildlife Service's page on cellular towers in Arizona http://www.fws.gov/arizonaes/CellTower.htm. On this page there are guidelines for tower siting, construction, operation, and decommissioning. Also see the Service's interim Guidelines for Recommendations on Communications Tower Siting, Construction, Operation, and Decommissioning, http://www.fws.gov/habitatconservation/communicationtowers.htm.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (including spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project

Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

Planning: consider impacts of lighting intensity on mammals and birds and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

The Department requests further coordination to provide project/species specific recommendations, please contact Project Evaluation Program directly.

Recommendations Disclaimer:

1. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project.
2. These recommendations are proposed actions or guidelines to be considered during **preliminary project development.**
3. Additional site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. The Department is interested in the conservation of all fish and wildlife resources, including those Special Status Species listed on this receipt, and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
6. **Further coordination requires the submittal of this initialed and signed Environmental Review Receipt with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map).**
7. Upon receiving information by AZGFD, please allow 30 days for completion of project reviews. Mail requests to:

Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366

Terms of Use

By using this site, you acknowledge that you have read and understand the terms of use. Department staff may revise these terms periodically. If you continue to use our website after we post changes to these terms, it will mean that you accept such changes. If at any time you do not wish to accept the Terms, you may choose not to use the website.

1. This Environmental Review and project planning website was developed and intended for the purpose of screening projects for potential impacts on resources of special concern. By indicating your agreement to the terms of use for this website, you warrant that you will not use this website for any other purpose.
2. Unauthorized attempts to upload information or change information on this website are strictly prohibited and may be punishable under the

 APPLICATION INITIALS: _____

Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act .
3. The Department reserves the right at any time, without notice, to enhance, modify, alter, or suspend the website and to terminate or restrict your access to the website.
4. This Environmental Review is based on the project study area that was entered. The review must be redone if the project study area, location, or the type of project changes. If additional information becomes available, this review may need to be reconsidered.
5. A signed and initialed copy of the Environmental Review Receipt indicates that the entire receipt has been read by the signer of the Environmental Review Receipt.

Security:

The Environmental Review and project planning web application operates on a complex State computer system. This system is monitored to ensure proper operation, to verify the functioning of applicable security features, and for other like purposes. Anyone using this system expressly consents to such monitoring and is advised that if such monitoring reveals possible evidence of criminal activity, system personnel may provide the evidence of such monitoring to law enforcement officials. Unauthorized attempts to upload or change information; to defeat or circumvent security measures; or to utilize this system for other than its intended purposes are prohibited.

This website maintains a record of each environmental review search result as well as all contact information. This information is maintained for internal tracking purposes. Information collected in this application will not be shared outside of the purposes of the Department.

If the Environmental Review Receipt and supporting material are not mailed to the Department or other appropriate agencies within six (6) months of the Project Review Receipt date, the receipt is considered to be null and void, and a new review must be initiated.

Print this Environmental Review Receipt using your Internet browser's print function and keep it for your records. Signature of this receipt indicates the signer has read and understands the information provided.

Signature:_____

Date: _____

Proposed Date of Implementation: _____

Please provide point of contact information regarding this Environmental Review.

Application or organization responsible for project implementation

Agency/organization:_____

Contact Name: _____

Address: _____

City, State, Zip: _____

 APPLICATION INITIALS: _____

Phone: _____

E-mail: _____

Person Conducting Search (if not applicant)

Agency/organization: _____

Contact Name: _____

Address: _____

City, State, Zip: _____

Phone: _____

E-mail: _____

 APPLICATION INITIALS: _____

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
3636 N CENTRAL AVE SUITE 900
PHOENIX AZ 85012-1939

March 14, 2014

Mr. Charlie McDermott
Armstrong Consultants, Inc.
2345 S. Alma School Road
Suite 208
Mesa, Arizona 85210

DETERMINATION OF NEED FOR A DEPARTMENT OF THE ARMY PERMIT

Dear Mr. McDermott:

I am responding to your request on behalf of Cochise County dated January 29, 2014, for comments or information pertaining to the Bisbee Douglas International Airport Master Plan, in Douglas, Cochise County, Arizona. The request has been assigned file number SPL-2014-00109-DB. Please refer to this file number in all future correspondence relating to this project.

The Corps is responsible for regulating activities that involve a discharge of dredged or fill material into waters of the United States under Section 404 of the Clean Water Act. The Corps' evaluation process for determining if you need a permit is based on whether or not the proposed project is located within or contains a water of the United States, and whether or not the proposed project includes an activity potentially regulated under Section 404 of the Clean Water Act. If both conditions are met, a permit would be required.

Based on the information you provided, I am unable to determine if any proposed projects would be regulated under Section 404 of the Clean Water Act or if waters of the U.S. occur on site. In order for me to complete a jurisdictional determination (JD), please provide the information requested on the attached additional information request form. Please note there are two types of JD you may request, an approved JD or a preliminary JD. An approved JD is appealable and is generally valid for five years per Regulatory Guidance Letter 05-02. A preliminary JD is advisory only and cannot be appealed (see attached preliminary JD form). A preliminary JD also may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

Notwithstanding this determination, your proposed project may be regulated under other Federal, State, and local laws.

If you have any questions, please contact me at 505-342-3221 or via e-mail at Donald.Borda@usace.army.mil.

Please be advised that you can now comment on your experience with Regulatory Division by accessing the Corps web-based customer survey form at: http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

Sincerely,

Donald Borda
for
Sallie Diebolt
Chief, Arizona Branch
Regulatory Division

Enclosures

1. Regulatory Guidance Letter 08

US Army Corps of Engineers

REGULATORY GUIDANCE LETTER

No. 08-02 **Date: 26 June 2008**

SUBJECT: Jurisdictional Determinations

1. Purpose. Approved jurisdictional determinations (JDs) and preliminary JDs are tools used by the U.S. Army Corps of Engineers (Corps) to help implement Section 404 of the Clean Water Act (CWA) and Sections 9 and 10 of the Rivers and Harbors Act of 1899 (RHA). This Regulatory Guidance Letter (RGL) explains the differences between these two types of JDs and provides guidance on when an approved JD is required and when a landowner, permit applicant, or other "affected party"[1] can decline to request and obtain an approved JD and elect to use a preliminary JD instead.

a. This guidance does not address which waterbodies are subject to CWA or RHA jurisdiction. For guidance on CWA and RHA jurisdiction, see Corps regulations, "Memorandum re: Clean Water Act (CWA) Jurisdiction Following U.S. Supreme Court Discussion in Rapanos v. United States," dated 19 June 2007, and the documents referenced therein.

b. This guidance takes effect immediately, and supersedes any inconsistent guidance regarding JDs contained in RGL 07-01.

2. Approved JDs. An approved JD is an official Corps determination that jurisdictional "waters of the United States," or "navigable waters of the United States," or both, are either present or absent on a particular site. An approved JD precisely identifies the limits of those waters on the project site determined to be jurisdictional under the CWA/RHA. (See 33 C.F.R. 331.2.)

a. The Corps will provide (subject to the limitation contained in paragraph 5.b. below) an approved JD to any landowner, permit applicant, or other "affected party" when:

(1) a landowner, permit applicant, or other "affected party" requests an approved JD by name or otherwise requests an official jurisdictional determination, whether or not it is referred to as an "approved JD";

[1] As defined at 33 CFR 331.2 "affected party" means a permit applicant, landowner, a lease, easement or option holder (i.e., an individual who has an identifiable and substantial legal interest in the property) who has received an approved JD, permit denial or has declined a proffered individual permit.

(2) a landowner, permit applicant, or other "affected party" contests jurisdiction over a particular water body or wetland, and where the Corps is allowed access to the property and is otherwise able to produce an approved JD; or

(3) the Corps determines that jurisdiction does not exist over a particular water body or wetland.

b. An approved JD:

(1) constitutes the Corps' official, written representation that the JD's findings are correct;

(2) can be relied upon by a landowner, permit applicant, or other "affected party" (as defined at 33 C.F.R. 331.2) who receives an approved JD for five years (subject to certain limited exceptions explained in RGL 05-02);

(3) can be used and relied on by the recipient of the approved JD (absent extraordinary circumstances, such as an approved JD based on incorrect data provided by a landowner or consultant) if a CWA citizen's lawsuit is brought in the Federal Courts against the landowner or other "affected party," challenging the legitimacy of that JD or its determinations; and

(4) can be immediately appealed through the Corps' administrative appeal process set out at 33 CFR Part 331.

c. The District Engineer retains the discretion to use an approved JD in any other circumstance where he or she determines that is appropriate given the facts of the particular case.

d. If wetlands or other water bodies are present on a site, an approved JD for that site will identify and delineate those water bodies and wetlands that are subject to CWA/RHA jurisdiction, and serve as an initial step in the permitting process.

e. Approved JDs shall be documented in accordance with the guidance provided in RGL 07-01. Documentation requires the use of the JD Form published on June 5, 2007, or as modified by ORM2 or subsequent revisions to the June 5, 2007 JD form approved by Corps Headquarters. Districts will continue to post approved JDs on their websites.

3. <u>A permit applicant's option to decline to request and obtain an approved JD</u>. While a landowner, permit applicant, or other "affected party" can elect to request and obtain an approved JD, he or she can also decline to request an approved JD, and instead obtain a Corps individual or general permit authorization based on either a preliminary JD, or, in appropriate circumstances (such as authorizations by non-reporting nationwide general permits), no JD whatsoever. The Corps will determine what form of JD is appropriate

for any particular circumstance based on all the relevant factors, to include, but not limited to, the applicant's preference, what kind of permit authorization is being used (individual permit versus general permit), and the nature of the proposed activity needing authorization.

4. Preliminary JDs. Preliminary JDs are non-binding ". . . written indications that there may be waters of the United States, including wetlands, on a parcel or indications of the approximate location(s) of waters of the United States or wetlands on a parcel. Preliminary JDs are advisory in nature and may not be appealed." (See 33 C.F.R. 331.2.)

a. A landowner, permit applicant, or other "affected party" may elect to use a preliminary JD to voluntarily waive or set aside questions regarding CWA/RHA jurisdiction over a particular site, usually in the interest of allowing the landowner or other "affected party" to move ahead expeditiously to obtain a Corps permit authorization where the party determines that is in his or her best interest to do so.

b. It is the Corps' goal to process both preliminary JDs and approved JDs within 60 days as detailed in paragraph 5 below, so the applicant or other affected party's choice of whether to use a preliminary JD or approved JD should not affect this goal.

c. A landowner, permit applicant, or other "affected party" may elect to use a preliminary JD even where initial indications are that the water bodies or wetlands on a site may not be jurisdictional, if the affected party makes an informed, voluntary decision that is in his or her best interest not to request and obtain an approved JD.

d. For purposes of computation of impacts, compensatory mitigation requirements, and other resource protection measures, a permit decision made on the basis of a preliminary JD will treat all waters and wetlands that would be affected in any way by the permitted activity on the site as if they are jurisdictional waters of the U.S.

e. Preliminary JDs are also commonly used in enforcement situations because access to a site may be impracticable or unauthorized, or for other reasons an approved JD cannot be completed in a timely manner. In such circumstances, a preliminary JD may serve as the basis for Corps compliance orders (e.g., cease and desist letters, initial corrective measures). The Corps should support an enforcement action with an approved JD unless it is impracticable to do so under the circumstances, such as where access to the site is prohibited.

f. When the Corps provides a preliminary JD, or authorizes an activity based on a preliminary JD, the Corps is making no legally binding determination of any type regarding whether CWA/RHA jurisdiction exists over the particular water body or wetland in question.

g. A preliminary JD is "preliminary" in the sense that a recipient of a preliminary JD can later request and obtain an approved JD if that later becomes necessary or appropriate during the permit process or during the administrative appeal process. If a

permit applicant elects to seek a Corps individual permit based on a preliminary JD, that permit applicant can later raise jurisdictional issues as part of an administrative appeal of a proffered permit or a permit denial, as explained in paragraph 6 below.

h. In all circumstances where an approved JD is not required by the guidance in paragraph 2 of this RGL, District Engineers retain authority to use preliminary JDs. The Corps may authorize an activity with one or more general permits, a letter of permission, or a standard individual permit, with no "official" JD of any type, or based on a preliminary JD, where the District Engineer determines that to be appropriate, and where the permit applicant has been made aware of his or her option to receive an approved JD and has declined to exercise that option. Generally, approved JDs should be used to support individual permit applications, but the applicant should be made aware of his or her option to elect to use a preliminary JD wherever the applicant feels doing so is in his or her best interest.

5. Processing approved and preliminary JDs. Every approved JD and preliminary JD should be completed and provided to the person, organization, or agency requesting it as promptly as is practicable in light of the district's workload, and site and weather conditions if a site visit is determined necessary.

a. Corps districts should not give preliminary JDs priority over approved JDs. Moreover, every Corps district should ensure that a permit applicant's request for an approved JD rather than a preliminary JD will not prejudice the timely processing of that permit application. It is the Corps' goal that every JD requested by an affected party should be completed within 60 calendar days of receiving the request. Regulatory Project Managers will notify their supervisors and develop a schedule for completion of the JD if it is not practicable to meet this 60 day goal.

b. The Corps should not provide either an approved JD or a preliminary JD to any person if the Corps has reason to believe that person is seeking a JD for any purpose relating to a CWA program not administered by the Corps (e.g., CWA Section 402, 303, or 311). In such circumstances the Corps should decline to perform the JD and instead refer the person who requested it to the Federal or state agency responsible for administering that program.

6. JDs and appeals. In any circumstance where a permit applicant obtains a Corps proffered individual permit or a permit denial, based on a preliminary JD, and where the permit applicant elects to pursue an administrative appeal of the proffered permit or the permit denial, the appeal "may include jurisdiction issues," as stated at 33 C.F.R. 331.5(a)(2). However, if an affected party during the appeal of a proffered permit or a permit denial challenges or questions jurisdiction, those jurisdictional issues must be addressed with an approved JD. Therefore, if, during or as a result of the administrative appeal of the permit denial or the terms and conditions of the proffered permit, it becomes necessary to make an official determination whether CWA/RHA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps should provide an approved JD as soon as is practicable, consistent with the

goal expressed in paragraph 5 above. Such an approved JD would be subject to the same procedures as other approved JDs, such as requirements for coordinating approved JDs with EPA.

7. Key distinction between approved JDs and preliminary JDs. By definition, a preliminary JD can only be used to determine that wetlands or other water bodies that exist on a particular site "may be" jurisdictional waters of the United States. A preliminary JD by definition cannot be used to determine either that there are no wetlands or other water bodies on a site at all (i.e., that there are no aquatic resources on the site and the entire site is comprised of uplands), or that there are no jurisdictional wetlands or other water bodies on a site, or that only a portion of the wetlands or waterbodies on a site are jurisdictional. A definitive, official determination that there are, or that there are not, jurisdictional "waters of the United States" on a site can only made by an approved JD. The Corps retains the ability to use a "no-permit-required" letter to indicate that a specific proposed activity is not subject to CWA/RHA jurisdiction when that is determined appropriate, but a "no-permit-required" letter cannot make any sort of determination regarding whether there are jurisdictional wetlands or other waterbodies on a site.

8. Mandatory use of the preliminary JD form. In each and every circumstance where a preliminary JD is used, the Corps district must complete the "Preliminary Jurisdictional Determination Form" provided at Attachment 1, which sets forth in writing the minimum requirements for a preliminary JD and important information concerning the requesting party's option to request and obtain an approved JD, and subsequent appeal rights. The signature of the affected party who requested the preliminary JD will be obtained on the preliminary JD form wherever practicable (e.g., except for enforcement situations, etc.). Where a preliminary JD form covers multiple water bodies or multiple sites, the information for each can be included in the table provided with the preliminary JD form. Information in addition to the minimum of data required on the preliminary JD form can be included on that form, but only if such information pertains to the amount and location of wetlands or other water bodies at the site. Corps regulatory personnel are expected to continue to exercise appropriate judgment and use appropriate information when making technical and scientific determinations as to what areas on the site qualify as water bodies or wetlands. Any such additional information included on the preliminary JD form should not purport, or be construed, to address any legal determination involving CWA/RHA jurisdiction on the site.

9. Data collection. Information about the quality and quantity of the aquatic resources that would be affected by the proposed activity, the types of impacts that are expected to occur, and compensatory mitigation, are obtained by the Corps during the processing of an individual permit application and are included in pre-construction notification for reporting NWPs. For example, NWP pre-construction notifications must contain a "description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause; . . . a delineation of special aquatic sites and other waters of the United States on the project site." (Reissuance of Nationwide Permits Notice, 72 Fed. Reg. 11092, at 11194-95 (March 12, 2007).) Applicants should

provide a delineation of special aquatic sites in support of an individual permit or "letter of permission" application.

a. The information on a preliminary JD form should be limited to the amount and location of wetlands and other water bodies on the site and should be sufficiently accurate and reliable that the effective presumption of CWA/RHA jurisdiction over all of the wetlands and other water bodies at the site will support a reliable and enforceable permit decision. When a preliminary JD is used to support a request for a permit authorization, the information on the preliminary JD form is also relevant to the processing of that permit application (e.g., to calculate compensatory mitigation requirements). During the permit process, information in addition to the data on the preliminary JD form is developed and relied upon to support the Corps permit decision; that additional information should be carefully documented as part of the permit process (e.g., through an environmental assessment, 404(b)(1) analysis, combined decision document, or decision memorandum). This additional information for the permit decision should ***not*** be captured on a preliminary JD form.

b. The type of information collected to support the decision on the permit application will be the same for permit applications supported by approved JDs and for those supported by preliminary JDs. Therefore, decisions and judgments regarding environmental impacts, public interest determinations, and mitigation requirements should be adequately supported regardless of the type of JD used. For this reason, the data necessary to quantify and defend the Corps Regulatory Program's performance will be available for a permit application regardless of whether it was supported by an approved JD or a preliminary JD.

c. The information used to support an approved JD should be reliable and verifiable. Traditionally, this information has been obtained or verified though a site visit, but now, with information from new, highly sensitive technology and imaging, site visits may not always be required for approved JDs.

d. When documenting preliminary JDs, any available technical, scientific, and observational information about the wetlands or other water bodies can be entered into ORM2 regardless of whether it is the type of information that could inform a formal jurisdictional determination (e.g., discussion of the ecological relationship between water bodies), so long as legal conclusions about jurisdictional status are not included. Any additional, available information that is entered into ORM2 must be accompanied by the warning that the information has not been verified, that it is not an official determination by the government, and that it cannot later be relied upon to determine whether an area is or is not jurisdictional.

10. <u>Coordination with U.S. Environmental Protection Agency (EPA) and posting</u>. Districts will continue to post approved JDs on their web sites. Consistent with historical practice, preliminary JDs will not be coordinated with EPA or posted on District websites. Corps Headquarters is modifying the ORM2 data base to collect information regarding use of preliminary JDs, and regarding permit authorizations based on

preliminary JDs, or based on no official form of JD. Until ORM2 is modified to collect and access information related to preliminary JDs, every District should collect basic information, to the maximum extent practicable, on those subjects for purposes of documenting District workload.

11. This guidance remains in effect until revised or rescinded.

Attachment

for DON T. RILEY
Major General, US Army
Deputy Commanding General for Civil and Emergency Operations

ATTACHMENT

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD):

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:

C. DISTRICT OFFICE, FILE NAME, AND NUMBER:

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State: County/parish/borough: City:

Center coordinates of site (lat/long in degree decimal format): Lat. °

Pick List, Long. ° **Pick List.**

Universal Transverse Mercator:

Name of nearest waterbody:

Identify (estimate) amount of waters in the review area:

Non-wetland waters: linear feet: width (ft) and/or acres.
Cowardin Class:
Stream Flow:

Wetlands: acres.
Cowardin Class:

Name of any water bodies on the site that have been identified as Section 10 waters:

Tidal:

Non-Tidal:

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:

☐ Field Determination. Date(s):

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

☐ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .

☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.

- ☐ Office concurs with data sheets/delineation report.
- ☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps: .

☐ Corps navigable waters' study: .

☐ U.S. Geological Survey Hydrologic Atlas: .

- ☐ USGS NHD data.
- ☐ USGS 8 and 12 digit HUC maps.

☐ U.S. Geological Survey map(s). Cite scale & quad name: .

☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .

☐ National wetlands inventory map(s). Cite name: .

☐ State/Local wetland inventory map(s): .

☐ FEMA/FIRM maps: .

☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)

☐ Photographs: ☐ Aerial (Name & Date): .

or ☐ Other (Name & Date): .

☐ Previous determination(s). File no. and date of response letter: .

☐ Other information (please specify): .

<u>IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.</u>

Signature and date of Regulatory Project Manager (REQUIRED)	Signature and date of person requesting preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

SAMPLE

Site number	Latitude	Longitude	Cowardin Class	Estimated amount of aquatic resource in review area	Class of aquatic resource
1				0.1 acre	section 10 – tidal
2				100 linear feet	section 10 – non-tidal
3				15 square feet	non-section 10 – wetland
4				0.01 acre	non-section 10 – non-wetland

APPENDIX D

FORECASTS OF AVIATION ACTIVITY APPROVAL LETTER (FAA)

COCHISE COUNTY

BISBEE DOUGLAS INTERNATIONAL AIRPORT

AIRPORT MASTER PLAN

ARMSTRONG

U.S. Department
of Transportation
**Federal Aviation
Administration**

Federal Aviation Administration
Phoenix Airports Field Office

2800 N 44th Street
Suite 510
Phoenix, AZ 85008

February 19, 2014

Ms. Lissa M. Marra
Grants Director
Cochise County
1415 Melody Lane Bldg G.
Bisbee, Arizona 85603

Dear Ms. Marra:

Bisbee Douglas International Airport (DUG), Cochise County, Arizona
Aviation Activity Forecast Approval

The Federal Aviation Administration (FAA) has reviewed the aviation forecast for the airport master plan for Bisbee Douglas International Airport dated February 10, 2014. The FAA approves these forecasts for airport planning purposes, including Airport Layout Plan development.

In summary, while the difference between the FAA TAF and Bisbee Douglas International Airport forecast update regarding total operations isn't within the 10 percent and 15 percent allowance for 5 and 10 year planning horizons, the airport forecast update appropriately explains these differences due to the use of the airport by area flight schools, no expected growth in based aircraft, a continued use of the airport as a base for the U.S. Forest Service, and continued medevac services. Therefore, approval of this forecast doesn't need to be sent to FAA Headquarters for review because the 5 and 10 year forecasts do not exceed benchmarks established in the FAA's Guidance on Review & Approval of Local Aviation Forecasts published in 2008.

The forecast was formulated using current data and appropriate methodologies; therefore the FAA locally approves this forecast for planning purposes at the Bisbee Douglas International Airport. It is important to note that the approval of this forecast doesn't guarantee future funding for large scale capital improvements as future projects will need to be justified by current activity levels reached at the time the projects are proposed for implementation.

If you have any questions about this forecast approval, please call me at 602-379-3022

Sincerely,

Jared M. Raymond
Airport Planner

cc: Kenn Potts, ADOT, Airport Grant Manager

APPENDIX E

FAA EQUATION #15

COCHISE COUNTY

BISBEE DOUGLAS INTERNATIONAL AIRPORT

AIRPORT MASTER PLAN

ARMSTRONG

Estimate of annual operations for Bisbee Douglas International Airport using FAA's Equation #15, *Model for Estimating General Aviation Operations at Non-Towered Airports*

In order to make the result as accurate as possible, the number of based aircraft used in this formula is 5, as this is the most up to date figure as reported by airport management. The formula, and the breakdown of data for Bisbee Douglas International Airport within the formula, is as follows:

775 + 241(Based Aircraft) – 0.14(Based Aircraft)^2 + 31,478(Based Aircraft/Total Number of Based Aircraft within 100 miles of Airport) + 5,577(Number of Flight Schools at Airport) + 0.001(Population with 100 miles) – 3,736(multiply by 1 if Airport is Located in WA, CA, OR or AK; multiply by zero if not) + 12,121(Population within 25 miles/population within 100 miles) = total estimated annual operations

775 + 241(5) – 0.14(5)^2 + 31,478(.05) + 0 + 131 – 0 + 12,121(.20) = 6,105 total estimated annual operations.

APPENDIX F

AVERAGE DAILY OPERATIONS PER MONTH FORMULA

COCHISE COUNTY

BISBEE DOUGLAS INTERNATIONAL AIRPORT

AIRPORT MASTER PLAN

ARMSTRONG

Average Daily Operations per Month Formula found in Chapter 3, Forecasts of Aviation Activity, Section 3.8

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 percent of total daily operations 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 percent 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 percent 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 percent as follows:

$$P = 1.5\,(0.90\,/12)$$

Where D = Average daily operations in a given month

P = Peak hourly demand in a given month

APPENDIX G

PUBLISHED INSTRUMENT APPROACH PROCEDURES

COCHISE COUNTY

BISBEE DOUGLAS INTERNATIONAL AIRPORT

AIRPORT MASTER PLAN

ARMSTRONG

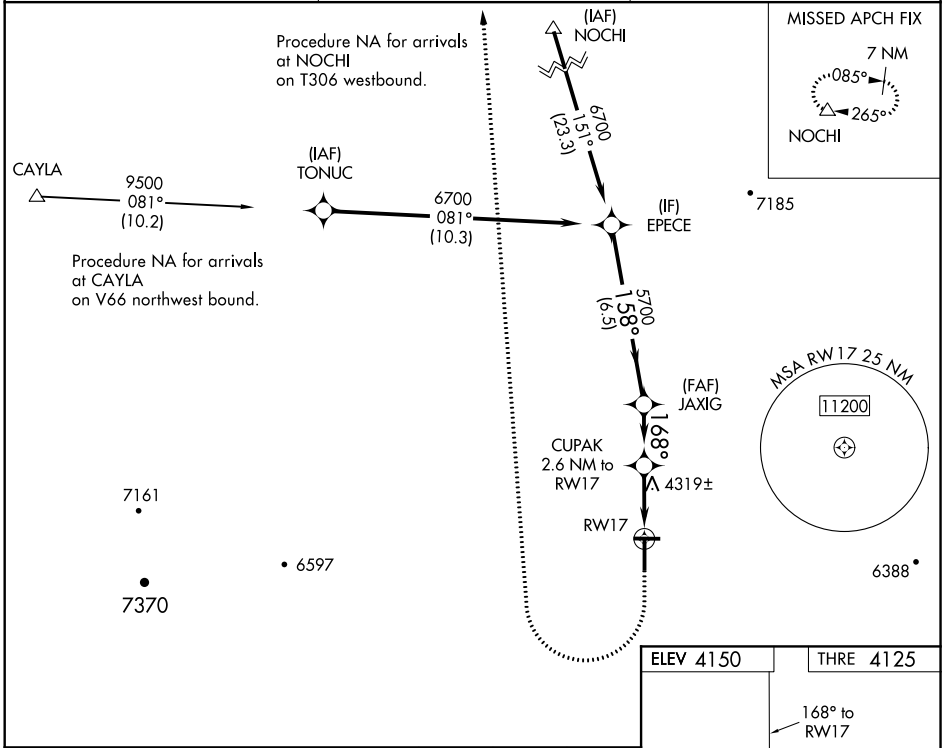
APP CRS	Rwy ldg	6430
168°	THRE	4125
	Apt Elev	4150

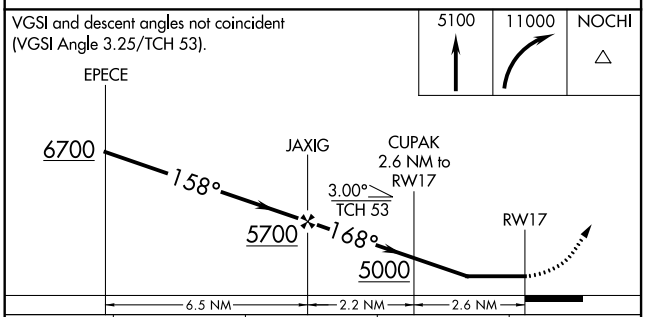
RNAV (GPS) RWY 17
BISBEE-DOUGLAS INTL (DUG)

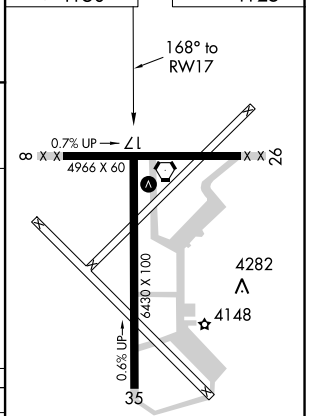
Circling to Rwy 8 NA at night. When VGSI inop, Circling Rwy 26 NA at night. When VGSI inop, Straight-in/Circling Rwy 17 procedure NA at night. DME/DME RNP-0.3 NA. Visibility reduction by helicopters NA.

MISSED APPROACH: Climb to 5100 then climbing right turn to 11000 direct NOCHI and hold

ASOS	PRESCOTT RADIO	UNICOM
119.275	122.6	123.0 (CTAF) L







CATEGORY	A	B	C	D
LNAV MDA	4580-1 455 (500-1)		4580-1⅜ 455 (500-1⅜)	
CIRCLING	4620-1 470 (500-1)	4640-1 490 (500-1)	4760-1¾ 610 (700-1¾)	4800-2 650 (700-2)

MIRL Rwy 17-35 L

SW-4, 21 AUG 2014 to 18 SEP 2014

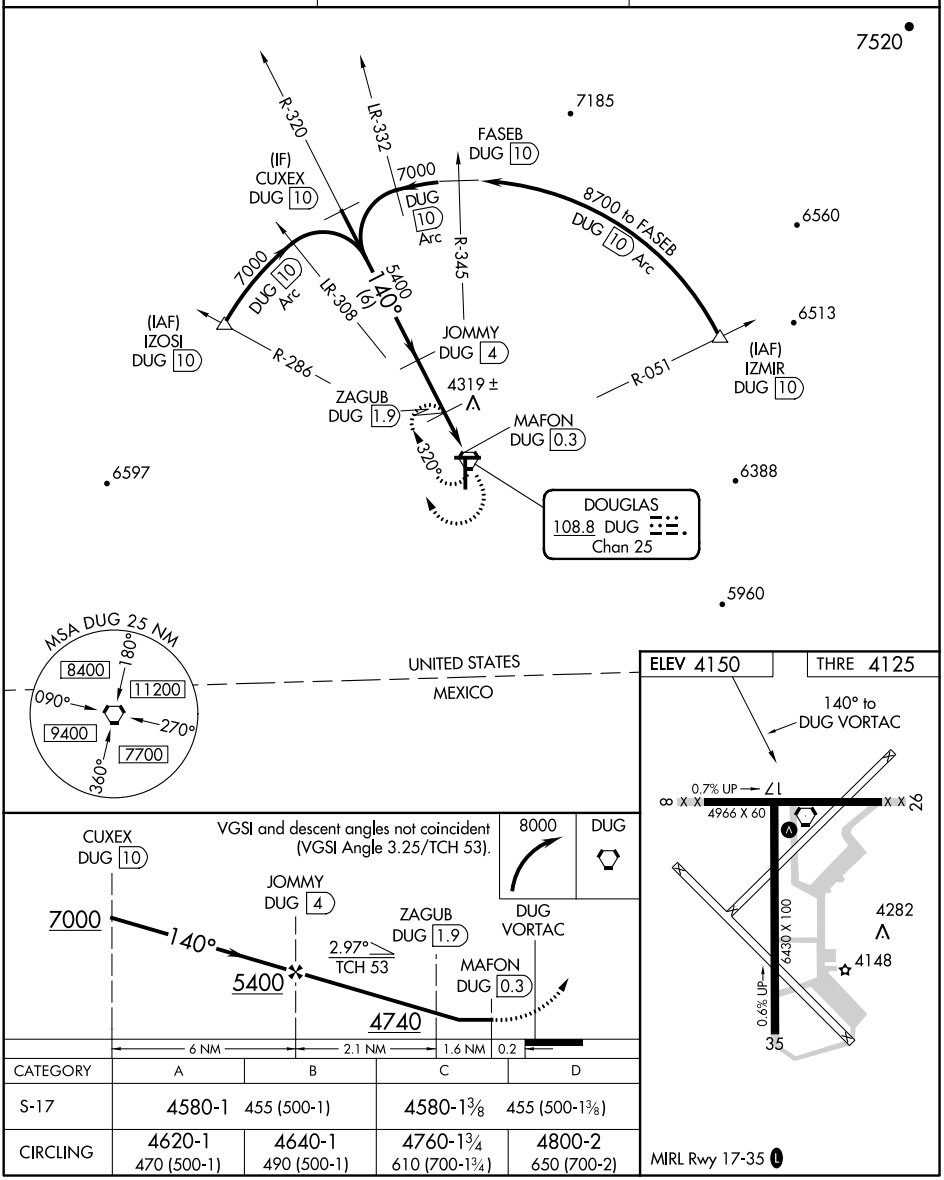
VOR/DME RWY 17
BISBEE-DOUGLAS INTL (DUG)

VORTAC DUG 108.8 Chan 25	APP CRS 140°	Rwy ldg 6430 THRE 4125 Apt Elev 4150

Circling to Rwy 8 NA at night. When VGSI inop, Circling Rwy 26 NA at night. When VGSI inop, Straight-in/Circling Rwy 17 procedure NA at night. Visibility reduction by helicopters NA.

MISSED APPROACH: Climbing right turn to 8000 in DUG VORTAC holding pattern, continue climb-in-hold to 8000.

ASOS	PRESCOTT RADIO	UNICOM
119.275	122.6	123.0 (CTAF) L



CATEGORY	A	B	C	D
S-17	4580-1 455 (500-1)		4580-1⅜ 455 (500-1⅜)	
CIRCLING	4620-1 470 (500-1)	4640-1 490 (500-1)	4760-1¾ 610 (700-1¾)	4800-2 650 (700-2)

SW-4, 21 AUG 2014 to 18 SEP 2014

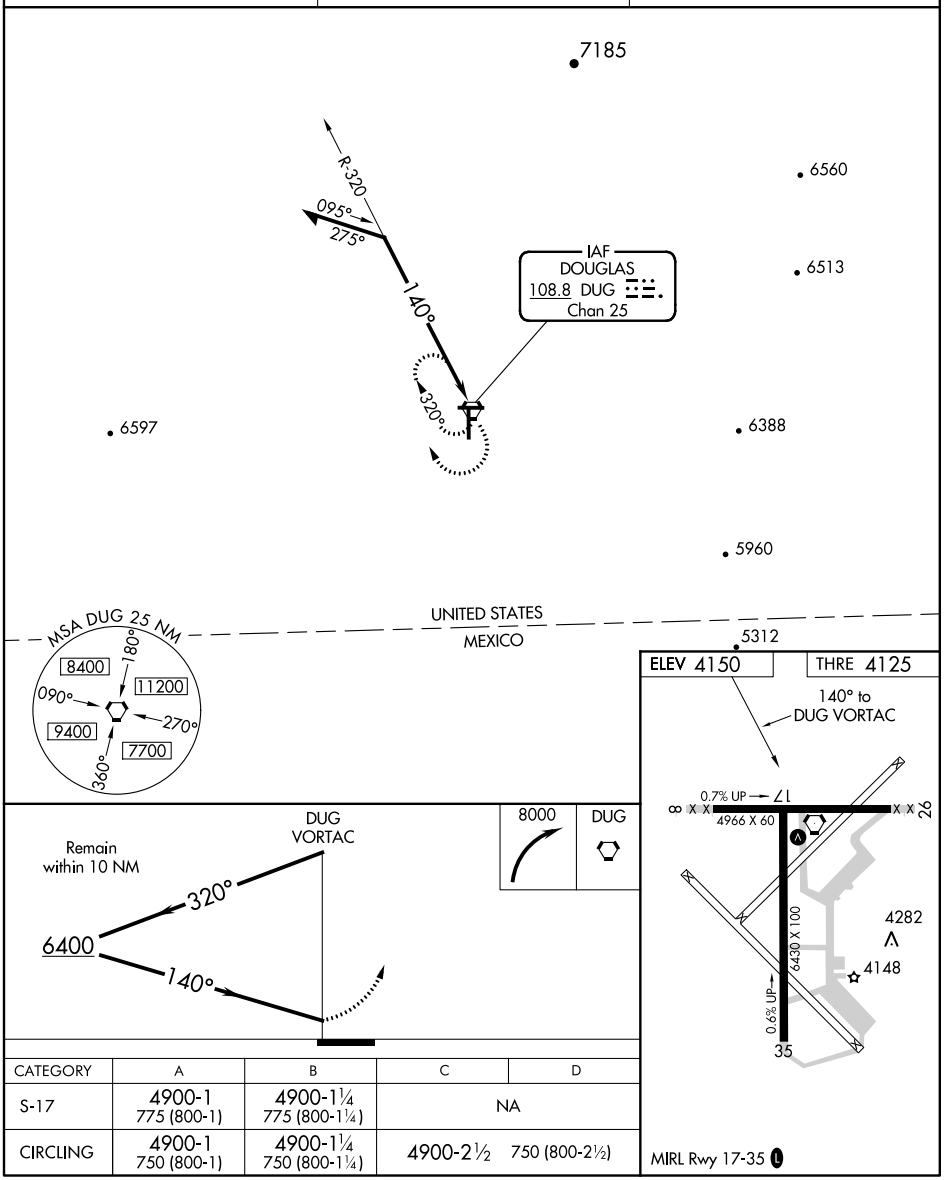
VORTAC DUG 108.8 Chan 25	APP CRS 140°	Rwy ldg 6430 THRE 4125 Apt Elev 4150

VOR RWY 17
BISBEE-DOUGLAS INTL (DUG)

Circling to Rwy 8 NA at night. When VGSI inop, Circling Rwy 26 NA at night. When VGSI inop, Straight-in/Circling Rwy 17 procedure NA at night. Visibility reduction by helicopters NA.

MISSED APPROACH: Climbing right turn to 8000 in DUG VORTAC holding pattern.

ASOS	PRESCOTT RADIO	UNICOM
119.275	122.6	123.0 (CTAF) L



CATEGORY	A	B	C	D
S-17	4900-1 775 (800-1)	4900-1¼ 775 (800-1¼)	NA	
CIRCLING	4900-1 750 (800-1)	4900-1¼ 750 (800-1¼)	4900-2½ 750 (800-2½)	

SW-4, 21 AUG 2014 to 18 SEP 2014

APPENDIX H

COCHISE COUNTY/CITY OF DOUGLAS MOU

COCHISE COUNTY

BISBEE DOUGLAS INTERNATIONAL AIRPORT

AIRPORT MASTER PLAN

ARMSTRONG

MEMORANDUM OF UNDERSTANDING BETWEEN COCHISE COUNTY AND THE CITY OF DOUGLAS FOR NON-EXCLUSIVE COMMERCIAL USE OF BISBEE-DOUGLAS INTERNATIONAL AIRPORT

This Memorandum of Understanding ("Agreement") between the County of Cochise ("County"), owner of the property known as the Bisbee-Douglas International Airport ("BDI"), and the City of Douglas ("City"), which wishes to promote the development of airport-related or airport-compatible economic activities thereon, is intended to provide parameters for a license to be granted to the City for said purpose.

I. Definitions

BDI premises: All that property described in the quitclaim deed issued May 13, 1949, from the United States War Assets Administration to the County of Cochise, the legal description of which is incorporated herewith by reference.

FAA: Federal Aviation Administration.

Subject property: Any land on the BDI premises except those lands used for or within 200 feet of an airport runway, taxiway, parking apron; any fenced area; any land currently under lease or occupied by or planned to be occupied by any structure, road, highway, public utility line, pipeline, well; or any other easement of record for any rights of way for any purpose.

II. Scope of license

Subject to terms described herein, the City is hereby granted a non-exclusive five-year license to:

1. Encumber any of the subject property within the scope of this license for any economic development purpose that is determined by the FAA to be compatible with the use of said premises as an airport, and so long as such use does not interfere with other uses at BDI.

2. Enter into agreements with other private parties, non-profit organizations and/or governmental or quasi-governmental entities for the lease of any of the subject property within the scope of this license for any period of time within the term of this license, for any airport-compatible purpose, as determined by the FAA.

3. Construct or allow to be constructed within the boundaries of the subject property on the BDI premises any structures that the City deems to be necessary to its development of airport-related or airport-compatible economic activities, provided that any such construction shall comply with all County building codes

and shall be subject to all County permitting, permit fee and inspection requirements.

III. Procedures for exercise of license rights

Prior to entering any agreement pursuant to Section II above, the City shall:

1. Confirm with the County Administrator or his designee that the proposed use is within the scope of this license and not otherwise committed to another planned use. If approval by the Board of Supervisors is required, the County shall seek such approval within sixty (60) days of receipt of the proposal from the City.

2. Obtain written approval of the FAA for the proposed use as airport-compatible.

IV. Effective date

This Agreement shall be effective upon written approval of its terms of the FAA and signing of this Agreement by the parties hereto.

V. Term, termination

This Agreement shall remain in effect for five years and may be renewed by mutual agreement of the parties for successive five-year terms. It is subject to termination by either party, for any reason, on six months' written notice.

Termination by City or by expiration of term: If this Agreement is terminated by the City, or if this Agreement expires without renewal, any improvements made pursuant to this Agreement shall be retained by the County upon termination and the City shall be responsible for the cost of removal of any obstructions and/or repair of any damage to the property caused by or resulting from the City's use or control thereof.

Termination by County: If this Agreement is terminated by the County, the County shall reimburse the City the fair market value of any improvements it wishes to retain, but the City shall be responsible for the cost of removal of any obstructions and/or repair of any damage to the property caused by or resulting from the City's use or control thereof.

VI. Income

Any net income derived, directly or indirectly, by the City from any economic development sponsored or undertaken by the City under terms of this license shall be shared equally with the County.

VII. Reservations of mineral rights

Any rights granted to the City under this Agreement for use of the subject property on BDI premises shall be subject to those mineral rights specifically reserved by

the U.S. in the quitclaim deed referenced in Section I, above, and incorporated herewith; and all other mineral, oil and gas rights, in deposits in the lands covered by this Agreement, which are retained by Cochise County. Both the United States government and the County reserve the right to come on the land, or to grant that right to any other parties of their choosing, to prospect, making just compensation for any damage or injury caused thereby.

VIII. Amendment

This Agreement is intended to memorialize the purpose and basic terms of agreement between the parties with respect to City use of the subject property on the BDI premises. It is anticipated by the parties that it may be augmented from time to time by sub-agreements between the parties, consistent with the terms contained herein, that may serve to provide additional specific terms as to particular property uses, and/or evolving purposes and functions of the parties with respect to said property. The terms of this basic Agreement may be amended by the parties at any time, by mutual written agreement.

IX. Contacts

Any notices, questions, comments and concerns regarding the duties and responsibilities of the Parties under this Agreement are to be directed to:

COUNTY: Mike Ortega, Cochise County Administrator
1415 Melody Lane, Bldg. G
Bisbee, Arizona 85603

CITY: Carlos De La Torre, City Manager
City of Douglas
425 E. 10th Street
Douglas, Arizona 85607

X. General Terms

10.1 Compliance with Laws, Rules and Regulations. The Parties and their subcontractors shall comply with all applicable Federal and state laws, rules, regulations, standards and Executive Orders, without limitation to those designated within this Agreement. The laws and regulations, of the State of Arizona govern the rights of the Parties, the performance of this Agreement, and any disputes arising from the Agreement. Any action relating to this Agreement must be brought by arbitration to the extent required by A.R.S. § 12-1518 or in an appropriate court. Any arbitration award will be enforced in an appropriate court.

10.2 Non-Discrimination. The parties shall not discriminate against any employee, client or any other individual in any way because of that person's age, race, creed, color, religion, sex, disability or national origin in the course of carrying out their duties pursuant to this Agreement. The Parties shall comply with the provisions of

Executive Order 755, as amended by Executive Order 994, which is incorporated into this Agreement by reference, as if set forth in full herein.

10.3 ADA. The Parties shall comply with all applicable provisions of the Americans with Disabilities Act (Public Law 101-336, as modified by Pub. L. 110-325, codified at 42 U.S.C. §§ 12101 through -12213) and all applicable federal regulations under the Act, including 28 CFR Parts 35 and 36.

10.4 Conflict of Interest. This Agreement is subject to termination for conflict of interest pursuant to terms of A.R.S. § 38-511.

10.5 Severability. The provisions of this Agreement are severable. If any provision is held by a court to be invalid or unenforceable, the remaining provisions continue to be valid and enforceable to the full extent permitted by law.

10.6 Indemnification. Each Party (as Indemnitor) agrees to indemnify, defend and hold harmless the other Party (as Indemnitee) from and against any and all claims, losses, liability, costs or expenses (including reasonable attorney's fees) (hereinafter collectively referred to as "claims") arising out of bodily injury of any person (including death) or property damage, but only to the extent that such claims which result in vicarious/derivative liability to the Indemnitee, are caused by the act, omission, negligence, misconduct, or other fault of the Indemnitor, its officers, officials, agents, employees, or volunteers.

10.7 No Third Party Beneficiaries. Nothing in the provisions of this Agreement is intended to create duties or obligations to or rights in third parties not parties to this Agreement or effect the legal liability of any Party to the Agreement.

10.8 No Joint Venture. Nothing in this Agreement is intended to create a joint venture between or among the Parties, and it will not be so construed. None of the Parties' employees shall be considered officers, agents or employees of any of the other Parties, or be entitled to receive any employment related fringe benefits from any of the other Parties.

IN WITNESS THEREOF, the Parties hereto have executed this Agreement on the date and year specified below:

COCHISE COUNTY

Ann English

Ann English, Chair

10-22-13

Date

Attest:

Arlethe Rios, Clerk of the Board

10/22/13

Date

CITY OF DOUGLAS

Carlos A. De La Torre, P.E., City Manager — Date: 10-14-2013

Attest:

Brenda Aguilar, City Clerk — Date: 10/09/2013

APPENDIX I

QUIT CLAIM DEED - 1949

COCHISE COUNTY

BISBEE DOUGLAS INTERNATIONAL AIRPORT

AIRPORT MASTER PLAN

ARMSTRONG

Douglas Army Airfield
(W-Ariz-49)

540

QUITCLAIM DEED

THIS INDENTURE, made this 13th day of May, 1949, between the UNITED STATES OF AMERICA, acting by and through the War Assets Administration, under and pursuant to Reorganization Plan One of 1947 (12 Fed. Reg. 4534) and the powers and authority contained in the provisions of the Surplus Property Act of 1944, as amended, and applicable rules, regulations and orders thereunder, party of the first part, and the COUNTY OF COCHISE, a political subdivision of the State of Arizona, party of the second part;

WITNESSETH: That the said party of the first part, for and in consideration of the assumption by the party of the second part of all the obligations and its taking subject to certain reservations, restrictions and conditions and its covenant to abide by and its agreement to certain other reservations, restrictions and conditions, as set out hereinafter, does remise, release and quitclaim unto the said party of the second part, its successors and assigns, all of its right, title, interest, claim and demand in and to the following described property situate in the County of Cochise, State of Arizona, to wit:

All those portions of Sections 27, 28, 32, 33 and 34 in Township 22 South, Range 27 East, and of Sections 3, 4, 5, 9 and 10 in Township 23 South, Range 27 East, Gila and Salt River Base and Meridian, Cochise County, Arizona, more particularly described as follows:

BEGINNING at the Northeast corner of the Southwest Quarter of Section 27, Township 22 South, Range 27 East, Gila and Salt River Base and Meridian, being the center of said Section 27; thence running South along the North-South quarter section line through Sections 27 and 34 in Township 22 South, Range 27 East, and through Sections 3 and 10 in Township 23 South, Range 27 East to the center of Section 10; thence running West along the East-West quarter section line to a point 1012.2 feet East of the West quarter corner of Section 10; thence running South 84° 23' West 1884.1 feet to a point on the Northeasterly right-of-way line of U. S. Highway 666 and 50 feet at right angles from Engineer's Station 353 & 74.2; thence running in a Northwesterly direction along the Northeasterly right-of-way line of U. S. Highway 666 to a point, which point is 50 feet at right angles from Engineer's Station 484 & 97.9 in the Northeast Quarter of Section 32, Township 22 South, Range 27 East; thence running East a distance of 2391.8 feet; thence running North a distance of 1120.00 to a point; thence running East a distance of 1320.00 feet to a point, which is also the Southeast corner of the Northwest Quarter of the Northwest Quarter of Section 33, Township 22 South, Range 27 East; thence running North a distance of 3960.00 feet to a point on the East-West quarter section line of Section 28, same Township and Range; thence running East along said East-West quarter section line a distance of 1955.00 feet; thence running South 55° 00' East 1220.7 feet to a point; thence running North 55° 00' East 1220.7 feet to a point on the East-West quarter section line of Section 27, Township 22 South, Range 27 East; thence East 2648.5 feet to the point of beginning.

Together with the following railroad rights-of-way:

TRACT NO. 1: Beginning at a point which is North 7° 35' 34" West 1020.26 feet from the Southeast corner of Section One (Sec. 1), Township Twenty-four South (Twp. 24 S.), Range Twenty-seven East (R. 27 E.), of the Gila and Salt River Base and Meridian; thence concave to the left on a curve with a chord length of 709.51 feet, North 21° 15' 36" West; thence on a tangent North 28° 30' West 3691.0 feet; thence North 61° 31' East 100 feet; thence parallel to and 100 feet distant from the aforesaid tangent South 28° 30' East 3691.0 feet; thence along a curve concave to the right with chord length of 734.71 feet bearing South 21° 15' 36" East; thence South 75° 58' 48" West; 100 feet to the point of beginning. All being within the East half (E½) of Section One (Sec. 1), Township Twenty-four South (Twp. 24 S.), Range Twenty-seven East (R. 27 E.), of the Gila and Salt River Base and Meridian, County of Cochise, State of Arizona, containing 10.136 acres, more or less. Being more generally described to be a strip of right-of-way extending 50 feet distant on each side of the centerline of an existing railroad track as surveyed between Engineer's Station 22 plus 85 and 67 plus 00, of the former Courtland Branch of the Southern Pacific Company, originally constructed as the Mexico and Colorado Railroad, together with existing railroad trackage thereon.

TRACT NO. 4: That portion of a right-of-way one hundred feet (100') wide, for a railroad spur for Douglas Army Airfield, located in the East half of the East half of the Southwest Quarter (E½E½SW¼) of Section Ten (Sec. 10), Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, in Cochise County, Arizona, more particularly described as follows:

Beginning at a point on the East and West quarter section line of Section Ten (Sec. 10), Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, Cochise County, Arizona, which is South 89° 58' East a distance of 2412 feet from the West quarter corner of said Section 10, which point is also 238 feet West from the center of said Section 10; thence continuing South 89° 58' East along the said East and West quarter Section line a distance of 100 feet to a point, which point is 138 feet West from the center of said Section 10; thence South 0° 09' East a distance of 2633 feet to a point on the Section line common to Sections Ten and Fifteen (Secs. 10 & 15), which is North 89° 55' West a distance of 138 feet from the quarter corner common to said Section 10 and 15, said Township and Range; thence North 89° 55' West along the section line common to said Sections 10 and 15, a distance of 100 feet to a point; thence North 0° 09' West a distance of 2633 feet to the place of beginning, containing 6.04 acres, more or less.

TRACT NO. 5: That portion of a right-of-way one hundred feet (100') wide, for a railroad spur for Douglas Army Airfield, located in the North half of the North half (N½N½) of Section Fifteen (Sec. 15), Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), more particularly described as follows:

Beginning at a point on the section line common to Sections Ten and Fifteen (Secs. 10 & 15), Township Twenty-three South (Twp. 23 S.), Range Twenty-

seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, Cochise County, Arizona, which is North 89° 55' West a distance of 138 feet from the quarter corner common to said Sections 10 and 15; thence South 0° 09' East a distance of 208.3 feet to a point which is 50 feet at right angles from Engineer's Station 310 + 64.3 and at the point of tangent of a 1° 30' curve; thence continuing in a Southeasterly direction on a 1° 30' curve a distance of 1206.2 feet to a point on the North line of the South half of the North half (S½N½) of Section 15, said Township and Range; thence North 89° 55' West along the said North line of the South half of the North half (S½N½) of said Section 15, a distance of 105 feet to a point; thence in a Northeasterly direction on a 1° 30' curve a distance of 1206.2 feet to the point of ending of said curve, which is 50 feet at right angles from Engineer's Station 310 + 64.3; thence North 0° 09' West a distance of 208.3 feet to a point on the section line common to said Sections 10 and 15, which is North 89° 55' West a distance of 238 feet from the quarter corner common to said Sections 10 and 15, said Township and Range; thence North 89° 55' West a distance of 100 feet along the said section line to the place of beginning, containing 2.70 acres, more or less.

TRACT NO. 6: That portion of a right-of-way one hundred feet (100') wide, for a railroad spur for Douglas Army Airfield, located in the Northwest Quarter of the Southwest Quarter of the Northeast Quarter (NW¼SW¼NE¼) of Section Fifteen (Sec. 15), Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, in Cochise County, Arizona, more particularly described as follows:

Beginning at a point which bears North 89° 55' West 138 feet from the quarter corner between Sections Ten and Fifteen (Secs. 10 & 15), Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, Cochise County, Arizona; thence South 0° 09' East 208.3 feet to a point which is 50 feet East and at right angles from Engineer's Station 310 + 64.3 and also the point of tangent of a 1° 30' curve; thence continuing in a Southeasterly direction on a 1° 30' curve 1206.2 feet to a point on the South line of the Northwest Quarter of the Northeast Quarter (NW¼NE¼) of said Section 15, the true point of beginning of Tract No. 6; thence continuing on the same 1° 30' curve 693 feet to a point which is 50 feet Northeast and at right angles from Engineer's Station 291 + 65.0, the point of curve of the 1° 30' curve; thence in a Northwesterly direction on a 0° 30' curve to the left 682.1 feet to a point; thence in a Northeasterly direction on a 1° 30' curve to the left 40.9 feet to a point on the South line of the Northwest Quarter of the Northeast Quarter (NW¼NE¼) of said Section 15; thence South 89° 55' East along said South line 105 feet to the point of beginning, containing 0.81 acres, more or less.

TRACT NO. 7: That portion of a right-of-way one hundred feet (100') wide, for a railroad spur for Douglas Army Airfield, located in the Southwest Quarter of the Northeast Quarter (SW¼NE¼), in the Northwest Quarter of the Southeast Quarter (NW¼SE¼), and in the Northeast Quarter of the Southeast Quarter (NE¼SE¼) of Section Fifteen (Sec. 15), Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, in Cochise County, Arizona, more particularly described as follows:

Beginning at a point which bears South 89° 53' East 1398.05 feet from the Southwest corner of the Northwest Quarter of the Southeast Quarter (NW¼SE¼) of Section Fifteen (Sec. 15), Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, Cochise County, Arizona, the true point of beginning of Tract No. 7; thence North 28° 30' West 2277.1 feet to a point 50 feet West and at right angles from Engineer's Station 291 + 65.0; thence in a Northeasterly direction on a 1° 30' curve to the right 682.1 feet to a point which is 48.9 feet on a 1° 30' curve from the South line of the Northwest Quarter of the Northeast Quarter (NW¼NE¼) of said Section 15, said Township and Range, and also the Northwest corner of Tract No. 6; thence in a Southeasterly direction on a 0° 30' curve 682.1 feet to a point 50 feet Northeast and at right angles from Engineer's Station 291 + 65.0; thence South 28° 30' East 2331.9 feet to a point which bears North 89° 53' West 1117.05 feet from the Northeast corner of the Southeast Quarter of the Southeast Quarter (SE¼SE¼) of said Section 15; thence North 89° 53' West 113.9 feet to the point of beginning, containing 6.04 acres, more or less.

TRACT NO. 8: That portion of a right-of-way one hundred feet (100') wide, for a railroad spur for Douglas Army Airfield, located in the Southeast Quarter of the Southeast Quarter (SE¼SE¼) of Section Fifteen (15), and in the Northeast Quarter of the Northeast Quarter (NE¼NE¼) of Section Twenty-two (Sec. 22), Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, in Cochise County, Arizona, more particularly described as follows:

Beginning at a point which bears North 89° 53' West 1117.05 feet from the Northeast corner of the Southeast Quarter of the Southeast Quarter (SE¼SE¼) of Section Fifteen (Sec. 15), Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, Cochise County, Arizona, the true point of beginning of Tract No. 8; thence South 28° 30' East 2473.5 feet to a point on the East line of Section Twenty-two (Sec. 22), said Township and Range; thence South along said East section line 192.2 feet to a point; thence North 28° 30' West 2697.5 feet to a point which bears South 89° 53' East 1398.05 feet from the Southwest corner of the Northwest Quarter of the Southeast Quarter (NW¼SE¼) of said Section 15, said Township and Range; thence South 89° 53' East 113.9 feet to the point of beginning, containing 5.90 acres, more or less.

TRACT NO. 9: That portion of a right of way one hundred feet (100') wide for a railroad spur for Douglas Army Airfield, located in the Northwest Quarter of the Northwest Quarter (NW¼NW¼) of Section Twenty-three (Sec. 23), Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, in Cochise County, Arizona, more particularly described as follows:

Beginning at a point which bears North 89° 53' West 1117.05 feet from the Northeast corner of the Southeast Quarter of the Southeast Quarter (SE¼SE¼)

of Section Fifteen (Sec. 15), in Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, Cochise County, Arizona; thence South 28° 30' East 2473.5 feet to a point on the Section line common to Sections Twenty-two and Twenty-three (Sec. 22 & 23), said Township and Range, the true point of beginning of Tract No. 9; thence South along said section line 192.2 feet to a point; thence South 28° 30' East 301 feet to a point on the South line of the Northwest Quarter of the Northwest Quarter (NW¼NW¼) of said Section 23, which point is 56.95 feet North 89° 53' West from Engineer's Station 238 + 44; thence South 89° 53' East along said South line 113.9 feet to a point; thence North 28° 30' West 531 feet to the true point of beginning, containing 0.91 acres, more or less.

TRACT NO. 10: That portion of a right-of-way one hundred feet (100') wide for a railroad spur for Douglas Army Airfield, located in the Southwest Quarter of the Northwest Quarter (SW¼NW¼) of Section Twenty-three (Sec. 23), Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, in Cochise County, Arizona, more particularly described as follows:

Beginning at a point on the East-West Quarter section line of Section Twenty-three (Sec. 23), Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, Cochise County, Arizona, which bears North 89° 53' West a distance of 1567.05 feet from the center of said Section 23, the true point of beginning of Tract No. 10; thence North 28° 30' West 1520 feet to a point on the South line of the Northwest Quarter of the Northwest Quarter (NW¼NW¼) of said Section 23, which point is 56.95 feet South 89° 53' East from Engineer's Station 233 + 44; thence North 89° 53' West along said South line 113.9 feet to a point; thence South 28° 30' East 1520 feet to a point on the East-West quarter section line of said Section 23, 933.05 feet from the West line of said Section 23; thence South 89° 53' East 113.9 feet to the point of beginning, containing 3.40 acres, more or less.

TRACT NO. 11: That portion of a right-of-way one hundred feet (100') wide for a railroad spur for Douglas Army Airfield, located in the Northwest Quarter of the Southwest Quarter (NW¼SW¼), in the Northeast Quarter of the Southwest Quarter (NE¼SW¼), and in the Southeast Quarter of the Southwest Quarter (SE¼SW¼) of Section Twenty-three (Sec. 23), Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, in Cochise County, Arizona, more particularly described as follows:

Beginning at a point on the East-West quarter section line of Section Twenty-three (Sec. 23), Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, Cochise County, Arizona, bearing North 89° 53' West 1567.05 feet from the center of said Section 23, which point is also South 89° 53' East 56.95 feet from Engineer's Station 223 + 24, the true point of beginning of Tract No. 11; thence South 28° 30' East 3036.9 feet to a point on the South line of said Section 23, which point bears South 89° 53' East 53.95 feet from Engineer's Station 192 + 67.1; thence North 89° 53' West 113.9 feet along said South line to a point; thence North

28° 30' West 3036.9 feet to a point on the East-West quarter section line, which point bears North 89° 53' West 56.95 feet from Engineer's Station 223 + 24; thence South 89° 53' East 113.9 feet to the point of beginning, containing 6.90 acres, more or less.

TRACT NO. 12: That portion of a right-of-way one hundred feet (100') wide for a railroad spur for Douglas Army Airfield, located in the Northeast Quarter of the Northeast Quarter of the Northwest Quarter (NE¼NE¼NW¼) of Section Twenty-six (Sec. 26), Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, in Cochise County, Arizona, more particularly described as follows:

Beginning at a point on the East-West quarter section line of Section Twenty-three (Sec. 23), Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, Cochise County, Arizona, bearing North 89° 53' West 1567.05 feet from the center of said section 23, which point is also South 89° 53' East 56.95 feet from Engineer's Station 223 + 24; thence South 28° 30' East 3036.9 feet to a point on the South line of said Section 23, which point bears South 89° 53' East 56.95 feet from Engineers Station 192 + 87.1, the true point of beginning of Tract No. 12; thence South 28° 30' East 218.9 feet to a point on the North-South quarter section line of Section Twenty-six (Sec. 26), said Township and Range, which point is North 0° 05' West 102.6 feet from Engineers Station 189 + 50; thence South 0° 05' East along said quarter section line 205.3 feet to a point; thence North 28° 30' West 455.3 feet to a point on the South line of said Section 23, which point bears North 89° 53' West 56.95 feet from Engineers Station 192 + 87.1; thence South 89° 53' East 113.9 feet to the point of beginning, containing 0.75 acres, more or less.

TRACT NO. 13: That portion of a right-of-way one hundred feet (100') wide for a railroad spur for Douglas Army Airfield, located in the Northwest quarter of the Northeast quarter (NW¼NE¼), in the Southwest Quarter of the Northeast Quarter (SW¼NE¼), in the Southeast Quarter of the Northeast Quarter (SE¼NE¼), in the Northeast Quarter of the Southeast Quarter (NE¼SE¼), and in the Southeast Quarter of the Southeast Quarter (SE¼SE¼) of Section Twenty-six (Sec. 26), Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, in Cochise County, Arizona, more particularly described as follows:

Beginning at a point on the East-West quarter section line of Section Twenty-six (Sec. 26), Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, Cochise County, Arizona, which bears North 89° 53' West 1189.05 feet from the East quarter corner of said Section 26, the true point of beginning of Tract No. 13; thence South 28° 30' East 2692 feet to a point on the West line of said Section 26, which point bears North 0° 17' West 102.6 feet from Engineer's Station 134 + 90; thence South 0° 17' West 205.3 feet along said West line of said Section 26 to a point; thence North 28° 30' West 5460 feet to a point on the North-South quarter line of said Section 26, which point bears South 0° 05' East 102.6 feet from Engineer's Station 189 + 50; thence North 0° 05'

West 206.3 feet to a point; thence South 28° 30' East 2762 feet to the point of beginning, containing 12.50 acres, more or less.

TRACT NO. 14: That portion of a right-of-way one hundred feet (100') wide for a railroad spur for Douglas Army Airfield, located in the Southwest Quarter of the Southwest Quarter of the Southwest Quarter (SW¼SW¼SW¼) of Section Twenty-five (Sec. 25), Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, in Cochise County, Arizona, more particularly described as follows:

Beginning at a point on the East-West quarter section line of Section Twenty-six (Sec. 26), Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, Cochise County, Arizona, which point bears North 89° 53' West 1189.05 feet from the East quarter corner of said Section 26; thence South 28° 30' East 2698 feet to a point on the East line of said Section 26, which point bears North 0° 17' West 102.6 feet from Engineer's Station 134 + 90, the true point of beginning of Tract No. 14; thence South 28° 30' East 403.6 feet to a point on the North line of said Section 26, same Township and Range, which point bears South 89° 53' East 56.95 feet from Engineer's Station 131 + 98.4; thence along said North line North 89° 53' West 113.9 feet to a point; thence North 28° 30' West 179.6 feet to a point on the East line of said Section 26, which point bears South 0° 17' East 102.6 feet from Engineer's Station 134 + 90; thence North 0° 17' West 205.3 feet to the point of beginning, containing 0.67 acres, more or less.

TRACT NO. 15: That portion of a right-of-way one hundred feet (100') wide for a railroad spur for Douglas Army Airfield, located in the Northwest Quarter of the Northwest Quarter (NW¼NW¼), in the Southwest Quarter of the Northwest Quarter (SW¼NW¼), in the Southeast Quarter of the Northwest Quarter (SE¼NW¼), in the Northeast Quarter of the Southwest Quarter (NE¼SW¼), in the Southeast Quarter of the Southwest Quarter (SE¼SW¼), and in the Southwest Quarter of the Southeast Quarter (SW¼SE¼) of Section Thirty-six (Sec. 36), Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, in Cochise County, Arizona, more particularly described as follows:

Beginning at a point on the South line of Section Thirty-six (Sec. 36), Township Twenty-three South (Twp. 23 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, Cochise County, Arizona, which point bears South 89° 58' East 2971.20 feet from the section corner common to Sections One (1), Two (2), Thirty-five (35) and Thirty-six (36), said Township and Range, the true point of beginning of Tract No. 15; thence North 28° 30' West 6054.6 feet to a point on the North line of said Section 36, which point bears North 89° 53' West 56.95 feet from Engineer's Station 131 + 98.4; thence along said North line South 89° 53' East 113.9 feet to a point; thence South 28° 30' East 6054.6 feet to a point on the South line of said Section 36, which point bears South 89° 58' East 56.95 feet from Engineer's Station 71 + 43.8; thence along said South line North 89° 58' West 113.9 feet to the point of beginning, containing 14.10 acres, more or less.

TRACT NO. 16: That portion of a right-of-way one hundred feet (100') wide for a railroad spur for Douglas Army Airfield, located in the Northwest Quarter of the Northwest Quarter of the Northeast Quarter (NW¼NW¼NE¼) of Section One (Sec. 1), Township Twenty-four South (Twp. 24 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, in Cochise County, Arizona, more particularly described as follows:

Beginning at a point on the North line of Section One (Sec. 1), Township Twenty-four South (Twp. 24 S.), Range Twenty-seven East (Rge. 27 E.), Gila and Salt River Base and Meridian, Cochise County, Arizona, which point bears South 89° 58' East 2971.20 feet from the section corner common to Sections Thirty-five (35), Thirty-six (36), Two (2) and said Section One (1), the true point of beginning of Tract No. 16; thence South 28° 30' East 458.8 feet to a point which bears South 61° 30' West 50 feet from Engineer's Station 67 + 00; thence North 61° 30' East 100 feet to a point; thence North 28° 30' West 408.8 feet to a point on the North line of said Section One, which point bears South 89° 58' East 56.95 feet from Engineer's Station 71 + 43.8; thence North 89° 58' West 113.9 feet along said North line to the point of beginning, containing 1.00 acre, more or less.

Bested

TRACT NO. 17: A railroad right-of-way consisting of a strip of land located in Sections 1 and 12 in Township 24 South, Range 27 East, and in Section 6, Township 24 South, Range 28 East, Gila and Salt River Base and Meridian, Cochise County, Arizona, being 20 feet in width, 10 feet on either side of the following described center line;

Beginning at a point on the existing Southern Pacific Railroad spur track at Engineer's Station 6 + 52; thence on a curve concave to the left, to Engineer's Station 22 + 85, a distance of 1633 feet to the point of ending. (License dated September 4, 1942.

ALSO the interest of the United States of America in and to that certain right-of-way acquired under the License Agreement dated September 4, 1942, between the El Paso and Southwestern Railroad Company, a corporation, and Southern Pacific Company, a corporation, licensors, and the United States of America, licensee.

Together with the following listed buildings and improvements:

BUILDINGS:

T-1001 - So. Gate & House
T-1010 - Pistol & Machine Gun Range
T-1011 - Skeet Range
T-1013 - Pistol & Machine Gun Range
T-2001 - Lavatory
T-2002 - Lavatory
T-2003 - Barracks
T-2004 - Recreation
T-2005 - Covered Walk
T-2010 - Hospital Recreation
T-2012 - Barracks
T-2013 - Barracks

BUILDINGS CONT'D:

T-2014 - Hospital Mess
T-2016 - Storehouse
T-2017 - Detention Ward
T-2023 - Standard Ward
T-2024 - Standard Ward
T-2025 - Standard Ward
T-2026 - Standard Ward
T-2027 - Standard Ward
T-2033 - Nurses' Quarters
T-2035 - Recreation
T-2062 - Gas Station (1 12,000 Gal. Tank)
T-2073 - Warehouse
T-2074 - Equipment Shed
T-2076 - Paint Shop
T-2077 - Carpenter Shop
T-2078 - Sheet Metal Shop
T-2079 - Blacksmith Shop
T-2080 - Electric Shop
T-2081 - Plumbing Shop
T-2086 - Open Shed
T-2090 - Warehouse
T-2091 - Warehouse
T-2092 - Warehouse
T-2093 - Warehouse
T-2094 - Warehouse
T-2095 - Warehouse
T-2096 - Warehouse
T-2097 - Warehouse
T-2098 - Warehouse
T-2099 - Warehouse
T-2100 - Warehouse
T-2101 - Open Shed
T-2103 - Reclamation Shed
T-2106 - Shed
T-2110 - Grease Rack (1 Car)
T-3006 - Tennis Court
T-3030 - Administration
T-3031 - Commissary
T-3032 - Gas Station (1 12,000 Gal. Tank)
T-3033 - Commissary Storage
T-2112 - Civilian Quarters
T-2113 - Civilian Quarters
T-2114 - Civilian Quarters
T-2115 - Civilian Quarters
T-2117 - Civilian Quarters
T-2132 - Paint Storage
T-3039 - Service Club EM
T-3101 - Paint Storage Shop
T-3102 - Link Trainer
T-3103 - Cadet Operation
T-3104 - Squad Oper. & Crew Chief
T-3105 - Squad Oper. & Crew Chief
T-3106 - Control Tower
T-3107 - Squad Oper. & Crew Chief
T-3108 - Squad Oper. & Crew Chief
T-3109 - Arms & Instrument Bldg.
T-3110 - Base Eng. Maint. & Insp.
T-3111 - Base Engineer Shop
T-3112 - Hangar
T-3113 - Link Trainer Bldg.
T-3114 - Hangar (PLM)
T-3116 - Plane Wash Rack Shed
T-3120 - Lumber Shed
T-3122 - Blacksmith Shop
T-3123 - Supply Bldg.

BUILDINGS CONT'D:

T-3124 - Concrete Block Bldg.
T-4023 - Theatre
T-4025 - Fire Station
T-4086 - Squad. Oper. & Crew Chief
T-4087 - Paint Storage
T-4088 - Hangar Bldg.
T-4089 - Bomb Sight Bldg.
T-4090 - Bomb Sight Bldg.
T-4091 - Boiler House
T-4092 - Parachute Bldg.
T-4093 - Squad. Oper. & Crew Chief
T-4094 - Hangar Bldg.
T-4095 - Squad. Oper. & Crew Chief
T-4096 - Hangar Bldg.
T-4097 - Control Tower
T-4098 - Cadet Operation
T-4099 - Link Trainer Bldg.
T-4100 - Photo Lab.
T-4101 - Paint Storage
T-4102 - Base Operation
T-4103 - Squad. Oper. & Crew Chief
T-4104 - Squad. Oper. & Crew Chief
T-4105 - Crash Truck Station
T-4108 - Hangar Bldg.
T-4109 - Link Trainer Bldg.
T-4114 - Shed
T-4115 - Shed
T-4119 - Bath House
T-5005 - Dog Kennels
T-5051 - B.O.Q.
T-5052 - Flagpole
T-5054 - Officer's Mess
T-5055 - Guest House
T-5056 - Officer's Club
T-5059 - Officer's Club
T-5060 - Swimming Pool (Off.)
T-5093 - Tele. & Telegraph Bldg.
T-6001 - Small Arms Storage
T-6002 - Pyrotechnic Bldg.
T-6003 - Chemical Bomb Storage
T-6004 - Igloo
T-6005 - Assy. & Maint. Bldg.
T-6006 - Segregated Storage
T-6007 - Igloo
T-6008 - Generator House
No # - Automatic Sprinkler System (Hospital)
No # - Bath House
No # - Tennis Court
T-4116 - Swimming Pool (Colored)
T-4118 - Dressing Room (Colored)
No # - Shed (Vicinity T-4119)
No # - Shed (Vicinity T-3108)
No # - Shed (Vicinity Ord. Area)
T-6011 - Shed (Vicinity Ord. Area)
No # - Shed (Vicinity T-4102)
No # - Shed (Vicinity T-3123)
No # - Concrete Pad (Vicinity T-4026)
No # - Tetrahedron
T-2104 - Shed
T-2105 - Shed
T-3117 - Shed
T-4110 - Parachute Platform
T-4113 - Shed
No # - Shed (Vicinity T-3114)

IMPROVEMENTS:

Airfield Facilities

Runways

Runway No. 1 E-W
Runway No. 2 NW-SE
Runway No. 3 NE-SW
Runway No. 4 N-S
Runway No. 5 E-W
Runway No. 6 N-S
Runway No. 7 NE-SW

Taxiways

Taxiway No. 1
Taxiway No. 2
Taxiway No. 3
Taxiway No. 4
Taxiway No. 5
Taxiway No. 6
Taxiway No. 7
Taxiway No. 8
Taxiway No. 9
Taxiway No. 10
Taxiway No. 11
Taxiway No. 12
Taxiway No. 13

Parking Apron

Cost includes T-1017,
Compass Swinging Table

Airfield Markings

A.C. Gasoline Fuel System

T-2142 - 96,600 Gals.
T-2143 - 210,000 Gals.
T-2144 - 17,332 Gals.
T-2146 - 17,332 Gals.
T-2147 - 17,625 Gals.
T-2148 - 23,000 Gals.
T-2145 - 17,332 Gals.
T-2149 - Not shown

Airport Lighting

T-4111 - Night Lighting Vault

Dust Control

Clearing and Grubbing

Utilities & Misc. Facilities

Water Supply System

T-4107 - Water Stor. Tank, 25,000 Gal.
T-5002 - Water Stor. Tank, 25,000 Gal.
T-5004 - Water Stor. Reservoir, 200,000 Gal.
T-1004 - Wells & Facilities
T-1005 - Wells & Facilities
T-1009 - Wells & Facilities
T-3115 - Wells & Facilities
T-4085 - Wells & Facilities
T-5001 - Wells & Facilities

IMPROVEMENTS CONT'D:

T-5003 - Wells & Facilities
T-5065 - Wells & Facilities

Electrical Distribution System

Railroads

Includes T-2121,
Switching Station

Fuel Oil Storage

Gas Distribution System

Sewage System

Sewer Collecting System

T-2124 (Sewage Plant)
T-2125
T-2126
T-2127
T-2128
T-2129
T-2155
T-2123

Roads

Storm Drainage System

Fencing

Includes T-2136 Gate

Fire Alarm System

Lubricating Oil Storage Plant

Includes T-2118, T-2119 & T-2120 Underground Tanks

TOGETHER WITH personal property, as more particularly set forth in Exhibit "A" hereunto attached and made a part hereof, the same as if fully set forth herein.

The above described premises are subject to the easements for the rights-of-way for all roads, highways, public utility lines, railways, and pipelines of record.

Said property transferred hereby was duly declared surplus and was assigned to the War Assets Administration for disposal, acting pursuant to the provisions of Reorganization Plan One of 1947 (12 Fed. Reg. 4534), Surplus Property Act of 1944, as amended, and WAA Regulation No. 1, as amended.

EXCEPTING, HOWEVER, from this conveyance and reserving to the party of the first part, in accordance with Executive Order 9908, approved on December 5, 1947 (12 F. R. 8223), all uranium, thorium, and all other materials determined pursuant to section 5 (b) (1) of the Atomic Energy Act of 1946 (60 Stat. 761), to be peculiarly essential to the production of fissionable material, contained in whatever concentration, in deposits in the lands covered by this instrument, are hereby reserved for the use of the United States, together with the

right of the United States through its authorized agents or representatives at any time to enter upon the land and prospect for, mine, and remove the same, making just compensation for any damage or injury occasioned thereby. However, such land may be used, and any rights otherwise acquired by this disposition may be exercised, as if no reservation of such materials had been made; except that, when such use results in the extraction of any such material from the land in quantities which may not be transferred or delivered without a license under the Atomic Energy Act of 1946, as it now exists or may hereafter be amended, such material shall be the property of the United States Atomic Energy Commission, and the Commission may require delivery of such material to it by any possessor thereof after such material has been separated as such from the ores in which it was contained. If the Commission requires the delivery of such material to it, it shall pay to the person mining or extracting the same, or to such other person as the Commission determines to be entitled thereto, such sums, including profits, as the Commission deems fair and reasonable for the discovery, mining development, production, extraction, and other services performed with respect to such material prior to such delivery, but such payment shall not include any amount on account of the value of such material before removal from its place of deposit in nature. If the Commission does not require delivery of such material to it, the reservation hereby made shall be of no further force or effect.

FURTHER EXCEPTING, and reserving, however, from this conveyance all right, title and interest in and to all property in the nature of equipment, furnishings and other personal property located on land conveyed herein, which can be removed from the land without material injury to the land or structures located thereon, other than property of such nature located on such premises which is required for the efficient operation for airport purposes of the structures and improvements specifically listed hereinabove as being transferred hereby; and further excepting from this conveyance all structures on such premises other than structures specifically described or enumerated above as being conveyed hereunder, and reserving to the party of the first part the right of removal from the premises of the property and structures excepted hereby within a reasonable period of time after the date hereof, which shall not be construed to mean any period less than one (1) year after the date of this instrument.

TO HAVE AND TO HOLD the foregoing described premises, together with all and singular the appurtenances and privileges thereunto belonging, and all the estate, right, title, interest and claim of the party of the first part unto the said party of the second part, its successors and assigns, forever, subject to the reservations, restrictions and conditions set forth in this instrument.

By the acceptance of this Deed or any rights hereunder, the said party of the second part, for itself, its successors and assigns, agrees that the transfer of the property transferred by this instrument, is accepted subject to the following restrictions set forth in subparagraphs (1) and (2) of this paragraph, which shall run with the land, imposed pursuant to the authority of Article 4, Section 3, Clause 2, of the Constitution of the United States of America, the Surplus Property Act of 1944, as amended, Reorganization Plan One of 1947 (12 Fed. Reg. 4534), and applicable rules, regulations and orders.

(1) That, except as provided in subparagraph (6) of the next succeeding unnumbered paragraph, the land, betterments, structures, improvements and equipment in which this instrument transfers any interest shall be used for public airport purposes for the use and benefit of the public, on reasonable terms and without unjust discrimination and without grant or exercise of any exclusive right for use of the airport within the meaning of the term "exclusive right" as used in subparagraph (4) of the next succeeding paragraph. As used in this instrument, the term "airport" shall be deemed to

include at least all such land, betterments, structures, improvements and equipment.

(2) That, except as provided in subparagraph (6) of the next succeeding paragraph, the entire landing area, as defined in WAA Regulation 5, as amended, and all structures, improvements, facilities and equipment in which this instrument transfers any interest shall be maintained for the use and benefit of the public at all times in good and serviceable condition, provided, however, that such maintenance shall be required as to structures, improvements, facilities and equipment only during the remainder of their estimated life, as determined by the Civil Aeronautics Administrator, or his successor.

By the acceptance of this Deed or any rights hereunder, the said party of the second part, for itself, its successors and assigns, also assumes the obligations of, covenants to abide by and agrees to, and this transfer is made subject to the following reservations and restrictions set forth in subparagraphs (1) to (7), inclusive, of this paragraph, which shall run with the land, imposed pursuant to the authority of Article 4, Section 3, Clause 2, of the Constitution of the United States of America, the Surplus Property Act of 1944, as amended, Reorganization Plan One of 1947, and applicable rules, regulations and orders;

(1) That insofar as it is within its powers, the party of the second part shall adequately clear and protect the aerial approaches to the airport by removing, lowering, relocating, marking or lighting or otherwise mitigating existing airport hazards and by preventing the establishment or creation of future airport hazards.

(2) That the United States of America (hereinafter sometimes referred to as the "Government") through any of its employees or agents shall at all times have the right to make nonexclusive use of the landing area of the airport at which any of the property transferred by this instrument is located or used, without charge; provided, however, that such use may be limited as may be determined at any time by the Civil Aeronautics Administrator, or his successor, to be necessary to prevent undue interference with use by other authorized aircraft; provided, further, that the Government shall be obligated to pay for damages caused by such use, or if its use of the landing area is substantial, to contribute a reasonable share of the cost of maintaining and operating the landing area, commensurate with the use made by it.

(3) That during any national emergency declared by the President of the United States of America or the Congress thereof, the Government shall have the right to make exclusive or nonexclusive use and have exclusive or nonexclusive control and possession, without charge, of the airport at which any of the property transferred by this instrument is located or used, or of such portion thereof as it may desire, provided, however, that the Government shall be responsible for the entire cost of maintaining such part of the airport as it may use exclusively, or over which it may have exclusive possession or control, during the period of such use, possession, or control, and shall be obligated to contribute a reasonable share, commensurate with the use made by it of the cost of maintenance of such property as it may use nonexclusively or over which it may have nonexclusive control and possession; provided, further, that the Government shall pay a fair rental for its use, control, or possession, exclusively or nonexclusively of any improvements to the airport made without United States aid.

(4) That no exclusive right for the use of the airport at which the property transferred by this instrument is located shall be vested (directly or indirectly) in any person or persons to the exclusion of others in the same class, the term "exclusive right" being defined to mean

1. any exclusive right to use the airport

for conducting any particular aeronautical activity requiring operation of aircraft;

2. any exclusive right to engage in the sale or supplying of aircraft, aircraft accessories, equipment, or supplies (excluding the sale of gasoline and oil), or aircraft services necessary for the operation of aircraft (including the maintenance and repair of aircraft, aircraft engines, propellers, and appliances).

(5) That, except as provided in subparagraph (6) of this paragraph, the property transferred hereby may be successively transferred only with the proviso that any such subsequent transferee assumes all the obligations imposed upon the party of the second part by the provisions of this instrument.

(6) That no property transferred by this instrument shall be used, leased, sold, salvaged, or disposed of by the party of the second part for other than airport purposes without the written consent of the Civil Aeronautics Administrator, which shall be granted only if said Administrator determines that the property can be used, leased, sold, salvaged or disposed of for other than airport purposes without materially and adversely affecting the development, improvement, operation or maintenance of the airport at which such property is located.

(7) The party of the second part does hereby release the Government, and will take whatever action may be required by the War Assets Administration to assure the complete release of the Government from any and all liability the Government may be under for restoration or other damages under any lease or other agreement covering the use by the Government of the airport, or part thereof, owned, controlled or operated by the party of the second part, upon which, adjacent to which, or in connection with which, any property transferred by this instrument was located or used; provided, that no such release shall be construed as depriving the party of the second part of any right it may otherwise have to receive reimbursement under Section 17 of the Federal Airport Act for the necessary rehabilitation or repair of public airports heretofore or hereafter substantially damaged by any Federal agency.

By acceptance of this instrument or any rights hereunder, the party of the second part further agrees with the party of the first part as follows:

(1) That in the event that any of the aforesaid terms, conditions, reservations, or restrictions are not met, observed, or complied with by the party of the second part, or any subsequent transferee, whether caused by the legal inability of said party of the second part, or subsequent transferee, to perform any of the obligations herein set out, or otherwise, the title, right of possession and all other rights transferred by this instrument to the party of the second part, or any portion thereof, shall at the option of the party of the first part revert to the party of the first part sixty (60) days following the date upon which demand to this effect is made in writing by the Civil Aeronautics Administration, or its successor in function, unless within said sixty (60) days such default or violation shall have been cured and all such terms, conditions, reservations and restrictions shall have been met, observed or complied with, in which event said reversion shall not occur and title, right of possession, and all other rights transferred hereby, except such, if any, as shall have previously reverted, shall remain vested in the party of the second part, its transferees, successors and assigns.

(2) That if the construction as covenants of any of the foregoing reservations and restrictions recited herein as covenants of the

application of the same as covenants in any particular instance is held invalid, the particular reservations or restrictions in question shall be construed instead merely as conditions upon the breach of which the Government may exercise its option to cause the title, right of possession and all other rights transferred to the party of the second part, or any portion thereof, to revert to it, and the application of such reservations or restrictions as covenants in any other instance and the construction of the remainder of such reservations and restrictions as covenants shall not be affected thereby.

IN WITNESS WHEREOF, the party of the first part has caused these presents to be executed the day and year first above written.

UNITED STATES OF AMERICA
Acting by and Through
War Assets Administration

By Robert B. Bradford
ROBERT B. BRADFORD
Regional Director
War Assets Administration
Region 10
San Francisco, California

WITNESSES:
Ernest R. Qualing
Nora O. Bean

STATE OF CALIFORNIA)
CITY AND COUNTY OF SAN FRANCISCO) ss.

On this 13th day of May, 1949, before me [illegible], a Notary Public in and for the City and County of San Francisco, State of California, personally appeared ROBERT B. BRADFORD, known to me to be the Regional Director, War Assets Administration, Region 10, San Francisco, California, and known to me to be the person who executed the within instrument on behalf of said War Assets Administration, which executed said instrument on behalf of the United States of America, and acknowledged to me that he subscribed to the said instrument the name of the United States of America and the name of the War Assets Administration on behalf of the United States of America, and further, that the United States of America executed said instrument.

WITNESS my hand and Official Seal.

(SEAL)

[illegible]
Notary Public
in and for the City and County of
San Francisco, State of California

My Commission expires:
NOTARY PUBLIC
In and for the City and County of San Francisco
State of California
My Commission Expires August 27, 1951

EXHIBIT "A"

PERSONAL PROPERTY

NO. OF UNITS	DESCRIPTION
1	Hose, Garden, 50' - 3/4"
1	Hose, Garden, 50' - 3/4"
4	Hose, Garden, 50' - 3/4"
1	Hose, Garden, 100'- 3/4"
1	Hose, Garden, 50' - 1"
72	Extinguisher, Fire, Pump Type, 4G. "Fyr-Fyter Co" #397502
74	Extinguisher, Fire, 2½ Gal.
26	Extinguisher, Fire, Foam, 2½ Gal.
26	Extinguisher, Fire, CTC, 1 Gal.
2	Extinguisher, Fire, CTC, 3½ Gal.
12	Extinguisher, Fire, CTC, 1 Qt.
2	Extinguisher, Fire, CO2, 2#
3	Extinguisher, Fire, CO2, 4#
2	Extinguisher, Fire, CO2, 15#
1	Extinguisher, Fire, CO2, 50#
1	Pump, Hand, Bar. Type, Ser. #122241C
1	Compressor, "Champion" w/GE Motor, Elec. #5K-225D10, Portable, G.E. Motor Ser. #KW17938
1	Refrigerator, "McCray" Mod. US20A-S/N 1-4135
1	Truck, GMC, Fire, Pumper, 1½ Ton complete with equipment
1	Truck, Dodge, Fire, 1½ Ton Pumper, US Reg. #505485, Ser. KWkR469 Eng.T-118-72023, with equipment
1	Truck, Dodge, Crash, Fire, S/N 81334377 - #502273, 1½ Ton, with equipment
1	Truck, Cargo w/winch & tripod
250'	Hose, Fire, 1½" sgl.
1900'	Hose, Fire, 2½", 50'
1	Pump, barrel, Phillips, #19
1	Pump, Centrifugal, sump, Chain Belt Co. #B-1123, Gasoline motor, Ser. #A-58729
1	Gun, Grease, Alemite
	Job Lot of Hand Tools:
1	Stick, Clamp 6'
1	Stick, Clamp 8'
1	Axe, 5" blade
1	Bar, Crow 53" long 1½" blade
1	Bar, Wrecking, 3/4" x 24"
1	Brace, bit, carpenter's
1	Chisel, wood 1/4"
1	Chisel, wood 1-1/4"
1	Cutter, Pipe 1/8"
1	Cutter, Pipe 1" - 3"
3	Hammer, Carpenter's, claw
1	Level, Carpenter's, 28"
1	Pliers, long nose, OA 6"
3	Saw, hand, rip & crosscut, 25"
2	Shovels
1	Shovel, lineman
1	Square, Carpenter's framing
1	Stock, Die, Pipe
1	Stock, Die, Pipe
1	Wrench, Crescent 8"
1	Wrench, Box

NO. OF UNITS	DESCRIPTION
1	Wrench, F/Curb Stops
1	Wrench, Engineers
1	Wrench, Engineer
1	Wrench, Engineer
1	Wrench, Engineer
1	Wrench, Engineer
1	Wrench, Pipe, Stillson 8"
1	Wrench, Pipe, Stillson 18" "Pipemaster"
2	Wrench, Pipe, Stillson 36"
1	Wrench, Pipe, Stillson, 48"
1	Wrench, Pipe, chain 1 to 6
4	Wrench, Valve, gas
1	Wrench, Valve, f/gate valves
1	Cylinder, chorine Ser. #KM85831 I
2	Forks, pitch
1	Wrench, crescent, 12"
1	Wrench, pipe, Stillson 24"
1	Wrench, lug
3	Pick, railroad
1	Saw, hack
2	Cylinder, 50# carbon dioxide
2	Hoes, grub
2	Nozzle, hose
1	Vise, machinist
2	Sprinkler, Lawn, midget 14"
1	Ladder, step, 5'
1	Ladder, step, 8'
1	Wheelbarrow, metal bed
1	Gloves, rubber (pair)
1	Protector, rubber #126 (pair)
1	Shears, snip
1	Volt, ammeter, AK-1, AC, G2
1	Grinder, elec. Brown-Brockmeyer Co. Ser. #1776408
1	Wrench, hydrant, fire
1	Wrench, Fire Hydrant
1	Wrench, Hydrant, square-nut
3	Helmet, Firemans, size 6-7/8
4	Helmet, Firemans, size 7
3	Helmet, Firemans, size 7-1/8
4	Helmet, Firemans, size 7½
15	Trousers, Firemans
15	Coats, Duck, Firemans
7	Boots, Rubber, knee, size 7
7	Boots, Rubber, knee, size 6
1	Boots, Rubber, knee, size 10
14	Gloves, barbed wire (pair)
3	Expander, Hose
1	Transfer Unit for CO-2 Lux Booster Pump Ser. #2178
1	Cooler, Water, inverted bottle type, 5 Gal. w/stand
1	Mower, Lawn, Blair
1	Scale, Platform, Home, Portable
1	Chair, Swivel, sec. type
1	Desk, Office, Wood
1	Chair, Typist
1	Section, furniture, wood
10	Chair, Folding, Wood
12	Bedstead, wood
12	Mattress, cotton
24	Blankets, wood, O.D.
12	Covers, Mattress
9	Pillows, Feather
2	Telephones, Field Type

NO. OF UNITS	DESCRIPTION
1	Telephone, field type
1	Refrigerator, elec. Hussman Mod. C-Z243 9K1953
1	Machine, woodworking, saw, Mtd. Dewalt Prod. Co. Ser. #25691
1	Distributor, bitum. trailer mtd. 1200 Gal. Mod. MX Ser. #1525, Govt. #WO95104
1	Grader, Cat. Ser. #1R1017087, Army Ser. #WB23549, equipped w/10' blade & scarifier
1	Roller, Road, Galion, Tandem Type, 8-12 Tons, US #WB28147, Model R-26286, Motor #UDCB3085-Z1
1	Tractor, "International" TD14, Ser. #UDTB 3365-Z1, US #924827, Motor #TDFM6137T4
1	Angle-dozer, hyd. Bacyrus Erie Model #20-21, International TD14 Diesel Tractor 74" gauge
1	Tractor, "Case", Model CD14 Ser. #4700070, US Reg. #WB25594
1	Skip Loader, WM 14213, gas driven, "Allis Chalmers" w/Hough Shovel Attachment, w/loader, hydraulic lift
1	Tractor "Case" Model CD 14, Ser. #VAL 4701208, w/mower attachment, Ser. #13398, Engine Ser. #12652
1	Jeep, Ford, MC #48475, Eng. #181608
1	Truck, IHC, 2½ Ton Dump
1	Truck, Army, IHC, Cargo, 2½ Ton, No. BMC-6648 List 6922 DQSP-522-47
1	Compressor, Mtd. Ser. #15640
	Job Lot of Radio Equipment:
4	Antenna
4	Base, Insulator
1	Receiver, Hammurlund, BC779-B
4	Receiver, Hammurlund, SPR-110
1	Light, Spot, Revolving #44266
1	Handset, T-32
1	Panel-board, Control Unit, SN 812
1	Power Unit, PR-63-E
1	Remote Control Unit RM-6-F S/N 20
5	Speaker, hallicrafters PM-10
1	Wind, Direction Transmitter MI-152-C
1	Weather Panel ML 143-C
1	Wind Intensity Transmitter
2	Control Panel, GE, S/N's 4931636, 4931847
1	Altimeter, Assembly, Unit #12A
1	Charger, Battery, GE, Model 6RB33B1

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WAA Form 1241
(4-12-48)

UNITED STATES OF AMERICA
War Assets Administration

C E R T I F I C A T E

I, the undersigned L. S. WRIGHT, Secretary, The General Board, War Assets Administration, in my official capacity as such Secretary, and duly authorized in the DELEGATION OF AUTHORITY INCIDENT TO THE CARE, HANDLING AND CONVEYANCING dated April 1, 1949, to make the following certification, do hereby certify:

1. That ROBERT B. BRADFORD is the Regional Director, Region 10, War Assets Administration, duly appointed, authorized and acting in such capacity at the time of the execution of the attached instrument.

2. That the attached DELEGATION OF AUTHORITY INCIDENT TO THE CARE, HANDLING AND CONVEYANCING is a true and correct copy of the original said DELEGATION OF AUTHORITY, dated April 1, 1949.

Given under my hand this 13th day of May, 1949.

Secretary
(Title)
The General Board
(Office)
War Assets Administration

Fee 13.50

Recorded | Compared To | Copied | Indexed
DOMTARED | INDEXED

STATE OF ARIZONA, } ss.
County of Cochise.
I hereby certify that the within instrument was filed and recorded at request of

Cochise County
Arizona
MAY 23 1949 9 00 AM M
In Book DOCKET 25
on Page 540-559
Witness my hand and Official Seal the day and year aforesaid.

P. W. Newbury,
County Recorder

COCHISE COUNTY RECORDER

4336

(NOTICE)

DELEGATION OF AUTHORITY NO. 24

DELEGATION OF AUTHORITY INCIDENT TO THE CARE, HANDLING, AND CONVEYANCING OF SURPLUS REAL PROPERTY AND PERSONAL PROPERTY ASSIGNED FOR DISPOSAL THEREWITH.

The Director, Industrial Real Estate Disposal Division, the Director, General Real Estate Disposal Division, and the General Counsel, War Assets Administration; the Regional Director and the Associate Regional Director, in each and every War Assets Administration Regional Office; and any person or persons designated to act, and acting, in any of the foregoing capacities, are hereby authorized, individually (1) to execute, acknowledge and deliver any deed, lease, permit, contract, receipt, bill of sale, or other instruments in writing in connection with the care, handling and disposal of surplus real property, or personal property assigned for disposition with real property, located within the United States, its territories and possessions, (2) to accept any notes, bonds, mortgages deeds of trust or other security instruments taken as consideration in whole or in part for the disposition of such surplus real or personal property, and to do all acts necessary or proper to release and discharge any such instrument or any lien created by such instrument or otherwise created, and (3) to do or perform any other act necessary to effect the transfer of title to any such surplus real or personal property located as above provided; all pursuant to the provisions of law, including the Surplus Property Act of 1944, as amended (58 Stat. 765; 50 U.S.C. App. Supp. 1611); Public Law 181, 79th Cong. (59 Stat. 533; 50 U.S.C. App. Supp. 1614 a, 1614 b); Reorganization Plan 1 of 1947 (12 F.R. 4534); Public Law 289, 80th Cong. (61 Stat. 678); Public Law 829, 80th Cong; Public Law 883, 80th Cong; Public Law 616, 80th Cong; War Assets Administration Appropriation Acts; and War Assets Administration Regulation No. 1 (12 F. R. 6661), as amended.

The Regional Director in each and every War Assets Administration Regional Office is hereby authorized to redelegate to such person or persons as he may designate the authority delegated to him by this instrument.

L. S. Wright, the Secretary of The General Board War Assets Administration, is hereby authorized to certify true copies of this Delegation and provide such further certification as may be necessary to effectuate the intent of this Delegation in form for recording in any jurisdiction, as may be required.

This Delegation shall be effective as of the opening of business on April 1, 1949.

This authority is in addition to delegations of authority previously granted under dates of May 17, 1946; May 29, 1946; July 30, 1946; September 16, 1946; October 31, 1946; November 22, 1946; January 13, 1947; June 6, 1947; December 1, 1947; April 9, 1948; and July 1, 1948; but shall not in any manner supersede provisions of said delegations as do not conflict with the provisions of this Delegation.

Jess Larson

JESS LARSON
Administrator

Dated: APR 1 1949, 1949.

GPO 4750 W-3-63-1096-34-3394