Douglas Municipal Airport

Master Plan Update and Business Plan

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CITY OF DOUGLAS

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Douglas Municipal Airport (DGL)
Master Plan Update and Business Plan

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Final Report

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1 INVENTORY

With grant funding from the Arizona Department of Transportation (ADOT), the City of Douglas prepared a Master Plan Update (MPU) for the Douglas Municipal Airport (DGL or Airport). The purpose of this MPU is to develop a detailed guide for DGL that embodies the Airport's vision, goals, and objectives while providing for safe and efficient aeronautical operations at and around DGL. Further, this MPU was developed with observation given to the local community and the needs and suggestions of the City of Douglas and Cochise County. This MPU highlights the ongoing efforts of DGL to maintain a user-friendly and safe atmosphere that have developed and changed since the previous Master Plan was completed in 1994. In addition to this MPU, DGL developed a complementary Business Plan that is a concurrent element of the MPU and is referenced for support.

1.1 Airport Vision

The City of Douglas, Arizona, was the first city with an international airport in the United States. Douglas also became home to World War II military pilot training and housed Amelia Earhart on a cross-country flight.[1] Having such a profound historical aviation background, the City of Douglas understands and prioritizes the need for continued growth coupled with safety and efficiency of aeronautical operations.

While historically the Airport served commercial airlines, the vision for the Airport is to remain a general aviation (GA) airport.

The Cochise County Comprehensive Plan describes two goals of transportation:

"Provide a safe, appropriate, well-maintained, cost-effective, and energy efficient transportation network for the use and enjoyment of county residents and businesses

Support air travel opportunities while minimizing the impacts on human and natural communities"[2]

The ultimate intent of DGL and the City of Douglas is to develop a Master Plan that embodies the vision of the City and the County by providing a safe, efficient, and environmentally-conscious airport system for the growing aviation community. The Airport vision includes maintaining DGL as a public benefit by serving the local community and attracting new GA users or transient aircraft activity by providing adequate facilities for existing projected future demand.

1.2 Master Plan Goals and Objectives

The previous Master Plan for DGL was completed in 1994 and since that time the aviation industry has experienced significant fluctuation. Shifts in the national economy, changing aircraft trends, new navigation technologies, and changing national airport design and safety standards provided by the Federal Aviation Administration (FAA) have all impacted the aviation sector. This MPU was undertaken to evaluate the Airport's capabilities and role, to forecast

[1] http://visitdouglas.com/index.php?option=com_content&task=view&id=42&Itemid=51
[2] Cochise County Comprehensive Plan

future aviation demand, and to plan for development of new or expanded facilities that may be required to meet projected demand. Specific objectives of the MPU include:

- Examine factors likely to affect air transportation demand in the City of Douglas and surrounding area over the next 20 years, including the substantial growth in population and the regional economy, and develop updated operational and based aircraft forecasts
- Determine project needs of existing and potential Airport users, taking into consideration recent changes to FAA design standards and continued maintenance, as well as necessary improvements to the Airport's infrastructure to ensure maximum utility of public and private facilities at DGL
- Reflect the goals and visions of the surrounding area, especially those related to quality of life, business and development, and land use
- Establish a schedule of development priorities, a financial program for implementation of development, and analyze potential funding sources consistent with the Arizona Department of Transportation (ADOT) and local government
- Maintain safety as an essential consideration in the planning and development of the Airport
- Examine regional demand and current state of nearby airports including Bisbee Municipal Airport (P04), Cochise College Airport (P03), and Bisbee-Douglas International Airport (DUG)

1.3 Baseline Assumptions

The baseline assumptions used throughout the preparation of this MPU include:

- DGL will continue to operate as a general aviation airport through the 20-year planning period
- DGL will continue to seek general aviation and small corporate business aviation based tenants and transient operations
- State aviation programs will be in place throughout the planning period to assist in funding future capital development needs

1.4 Inventory Elements

The initial step of the airport master planning process is development of a thorough inventory of existing conditions and operations at DGL and the surrounding market area. The inventory process incorporated a broad spectrum of information including data on landside and airside facilities, surrounding land uses, weather conditions, area airspace, historical activity levels, and socioeconomic factors. This data establishes the foundation for evaluating future Airport needs and facility requirements. The information summarized in the following sections of this chapter was obtained through on-site visits, discussions with Airport staff, tenants, and stakeholders, review of previous Airport planning documents and FAA records, and review of various local, regional, and statewide planning documents. Inventory data is presented in the following sections:

- Airport Ownership and History
- Airport Location and Access
- Airport Role
- Airport Activity
- Existing Airport Facilities
- Airspace and Instrument Procedures
- Climatic and Meteorological Conditions
- Area Socioeconomic Data
- Area Land Use and Zoning
- Environmental Considerations
- Other Area Airports
- Near-Term Planned Development

1.5 Airport Ownership and History

The following section on the history of the Airport were obtained from, *"The First 20 Years of Aviation History in Douglas, Arizona"* by Cindy Hayostek.

DGL is owned and maintained by the City of Douglas, which relishes in its rich aviation history that dates back to the early 1900s. DGL was originally constructed as a military base named "Camp Douglas" where Army units were stationed to mitigate Mexican Revolution incursions. Military aircraft began to arrive in 1916 and Camp Douglas was quickly recognized as a site for sustained aviation development. By 1923, Douglas, AZ received mention as a possible federal airmail route stop. Four years later, Douglas residents organized Arizona's first National Aeronautic Association (NAA) Chapter which advocated for Douglas as an airmail stop. Becoming an airmail stop required interstate airline service which, in turn required a separate airport. By 1928, the NAA successfully leveraged six businessmen to buy land for $900 for airport development which was then deeded to the City.

Construction of the new airport got the attention of commercial airlines, and in November of 1928, Frye's Aero Corp and Standard Airlines, Inc., would provide daily flights between Los Angeles and Dallas, which included stops in Douglas and three other cities in Texas. By 1929, Douglas Airport began commercial service using two Fokker monoplanes owned by Standard Airlines.

Aviation activity in Douglas was observed nationwide as the first All Women's Transcontinental Air Race (also known as the Powder Puff Derby) made overnight stops at the Airport. The Air Race brought famous aviators including Amelia Earhart.

The Airport's reputation continued to grow, which provided increased business opportunities. By 1930 it was announced that Douglas, along with Tucson and Phoenix, was on the first, regularly scheduled, coast-to-coast, federal airmail route, prompting the City for immediate hangar construction. The first airmail planes went through Douglas on October 15, 1930 during morning and afternoon hours. The airmail contractor, Southern Air Fast Express, promised "the city that furnished the largest patronage, measured upon the basis of its population, would have its name

in the large letters upon one of the planes used in carrying the mail." Douglas beat out every other major city on the east and west coast, picking up its name-sake.

Located near the north entrance of the Airport is the Border Air Museum, which is devoted to the history of aviation at DGL and other nearby airports. The museum was gifted to the City of Douglas by the late Richard Westbrook and his wife Irma in 2002.

1.6 Airport Location and Access

As shown in **Exhibit 1-1,** DGL is located in the southeast corner of Arizona, and is just east of the center of the City of Douglas at an elevation of approximately 4,173 feet.

Exhibit 1-1. DGL Airport Region

Sources: ESRI, USGS

The surface transportation network and local community surrounding the Airport are depicted in **Exhibit 1-2**. State Route 80 and U.S. Route 191 provide primary north-south access between Douglas and other cities within the state of Arizona. Access between the major routes and the Airport are primarily provided by 15th Street and 10th Street.

DGL borders W. Airport Rd and E. Geronimo Trail. The southern edge of DGL is located directly on the U.S. – Mexico border.

Exhibit 1-2. Surface Transportation Network and Airport Access

Sources: ESRI, USGS

1.7 Airport Role

The 2008 Arizona State Airports System Plan (ASASP) distinguishes five different roles of airports in the state of Arizona. The roles are defined as follows[3]:

- **Commercial Service Airports**: Publicly owned airports which enplane 2,500 or more passengers annually and receive scheduled passenger air service.
- **Reliever Airports:** FAA-designated airports that relieve congestion at a commercial service airport.
- **GA-Community Airports:** Airports that serve regional economies, connecting to state and national economies, and serve all types of general aviation aircraft.
- **GA-Rural Airports:** Airports that serve a supplemental role in local economies, primarily serving smaller business, recreational, and personal flying.

[3] https://www.azdot.gov/docs/default-source/airport-development/azsaspchapterfive-final.pdf?sfvrsn=2

• **GA-Basic Airports:** Airports that serve a limited role in the local economy, primarily serving recreational and personal flying.

The determination of airport placement among these categories was based on the evaluation of airports using 21 metrics across four major categories, including:

- Development
- Economic Support
- Safety and Security
- Environmental Sensitivity and Stewardship

Based on the criteria defined by the state of Arizona, DGL is listed in the ASASP as a GA-Community Airport.

DGL is not included in the FAA's National Plan of Integrated Airport Systems (NPIAS). Exclusion of an airport from the NPIAS can be attributed to one of the following reasons: does not meet the minimum NPIAS entry criteria; is located within 20 miles of another NPIAS airport; or the airport owner/operator has chosen not to pursue NPIAS inclusion because they prefer not to be bound by the rules that would accompany federal funding.[4] DGL's exclusion from the NPIAS is largely attributed to its close proximity to current NPIAS airports (DUG and P04).

Regular aviation-related uses at DGL include:

Recreational: This category involves flying for pleasure or tourism. Generally, pilots in this category are operating light single-engine piston aircraft. However, multi-engine aircraft are sometimes operated in this category.

Personal Transportation: Users in this category value flying on their own schedule instead of commercial airline schedules. Operators in this category frequent non-commercial airports such as DGL to avoid congestion at major commercial service airports. Single-engine, multi-engine, turboprop, and occasionally light jet aircraft are operated in this category.

Corporate/Business Transportation: Businesses often favor flying on their own schedules depending on conducive airport locations to their respective companies. Users in this category that operate or have operated at DGL include Takata, Velcro, and Rubbermaid. A wide range of aircraft types are known to operate in this category including single-engine piston aircraft up to and including narrow body jet aircraft. This user category also includes state and federal agencies and travel by government officials.

1.8 Airport Activity

In addition to providing an understanding of the levels and types of aviation activity that occur at DGL, historic Airport activity can be used to identify recent trends that may impact future activity levels. By analyzing historic data, a better understanding of the Airport's activity and

[4] http://www.faa.gov/airports/planning_capacity/npias/media/evaluating-formulation-npias-report-to-congress.pdf

potential future can be deduced. Current and historical data for the aircraft operations and based aircraft components of Airport activity are summarized in the following sections.

1.8.1 Based Aircraft

The FAA defines a based aircraft as "an aircraft that is operational and airworthy, which is typically based" at an airport "for a majority of the year." Based aircraft are generally stored at an airport in a hangar building or tied down on an airport apron area.

Data gathered from Airport management and existing users identified 12 based aircraft in September 2016. Five of the fixed-wing based aircraft are stored in t-hangar units, six fixed-wing aircraft are stored in a large box hangar, while a helicopter, operated by Lifeline, is stored in a small box hangar. The current based aircraft at DGL are described in **Table 1-1**.

Table 1-1. Based Aircraft

Aircraft Type	Aircraft Class
Cessna Skylane II	Single-Piston
Centurion II	Single-Piston
Stationair	Single-Piston
Cessna 206	Single-Piston
Aero Pulsar	Single-Piston
Antonov AN2	Single-Piston
Beech Baron	Single-Piston
Cessna 172	Single-Piston
Cessna 172	Single-Piston
Cessna 182	Single-Piston
Piper Seminole	Twin-Piston
Bell 407	Helicopter

Source: Douglas Municipal Airport

Because DGL is a non-NPIAS facility, historical data for based aircraft and aircraft operations is not available from FAA databases such as the Terminal Area Forecasts (TAF). Instead, figures from the previous Master Plan and the 2008 ASASP are used to produce estimates of historical activity. A summary of historical based aircraft at DGL is shown in **Table 1-2**.

Table 1-2. Historical Based Aircraft

Year	Total
2007	*27*
2008	*25*
2009	*24*
2010	*22*
2011	*20*
2012	*19*
2013	*17*
2014	*15*
2015	*14*
2016	12

Note: Extrapolated years have been italicized
Sources: 2008 ASASP, DGL Airport Management, Previous DGL Master Plan

As shown, there were 27 based aircraft identified in 2007, and 12 in 2016, which represents a Compound Annual Growth Rate (CAGR) of -7.79%. It should be noted that data for specific years that were not available have been extrapolated.

1.8.2 Aircraft Operations

A common measure of airport activity is the number of aircraft operations occurring on an annual basis. An aircraft operation is defined as either a landing or a departure (also referred to as a takeoff). For example, a touch-and-go operation, where an aircraft lands and takes off without leaving the active runway which is typical of training aircraft, counts as two operations. Aircraft operations are categorized in several ways, one of which is whether the operation is itinerant or local in nature. Itinerant operations are those conducted by aircraft coming from outside the Airport's traffic pattern. Local operations are conducted by aircraft remaining in the local traffic pattern, conducting simulated instrument approaches at the Airport, or by aircraft going to or from the Airport and a practice area within a 20-mile radius. Touch-and-go training activity is an example of local activity. Once categorized as itinerant or local operations, aircraft activity is further categorized by the nature of the operator. Transient aircraft operations are categorized into one of the following groups: air carrier, air taxi, general aviation, or military. Local operations are categorized as either general aviation or military.

It is important to note that at airports that do not have air traffic control towers such as DGL, operational estimates are typically provided by airport management or a fixed-base operator that is located at the airport. These estimates reflect the operator or manager's opinion of activity, but actual counts are typically not available, especially for an entire year.

A summary of estimated total annual aircraft operations for DGL for the period 2007 to 2016 is presented in **Table 1-3**.

Table 1-3. Historical Annual Aircraft Operations

Year	Total Operations
2007	11,000
2008	*10,067*
2009	*9,133*
2010	*8,200*
2011	*7,267*
2012	*6,333*
2013	*5,400*
2014	*4,467*
2015	*3,533*
2016	2,600

Sources: 2008 ASASP, DGL Airport Management, Previous DGL Master Plan
Note: Extrapolated years have been italicized

As shown, there were 11,000 operations identified in 2007, and 2,600 in 2016, which represents a Compound Annual Growth Rate (CAGR) of -14.9%. It should be noted that data for specific years that were not available have been extrapolated.

1.9 Existing Airport Facilities

The inventory of existing facilities at the Airport, as of 2016, was completed through an on-site inspection, discussions with Airport management and staff, and review of existing Airport documents, airport layout plans (ALPs), and related studies.

Existing Airport facilities are categorized and examined in the following sections:

- Airport Property
- Airfield Facilities
- Landside Facilities
- Utilities
- Automobile Parking
- Airport Fencing and Security

These inventory categories comprise important components of the Airport's infrastructure. For the Airport to efficiently accommodate future demand, each component must provide sufficient capacity while at the same time seamlessly integrate with other infrastructure components to support general aviation, limited military operations, and tenant needs.

As defined in FAA Advisory Circular 150/5300-13A, Change 1, the FAA classifies airports by Airport Reference Code (ARC), which identifies the overall planning and design criteria for the Airport. The ARC is assigned based on the size of the largest aircraft that generally records at least 500 operations annually at an airport; this aircraft is known as the airport's "critical aircraft." DGL is currently an Airport Reference Code (ARC) B-II facility. B-II facilities serve

aircraft with an approach speed between 91 and 120 knots as well as a wingspan between 49 and 78 feet. Some examples of B-II ARC aircraft are but not limited to: Cessna Citation V, Beech King Air F90, etc.[5] Additional information regarding the ARC and facilities are included in subsequent chapters of this MPU.

1.9.1 Airport Property

Existing facilities at DGL are located on approximately 640 acres currently owned by the City of Douglas. Current Airport property is identified in **Exhibit 1-3**.

Exhibit 1-3. Current Airport Property

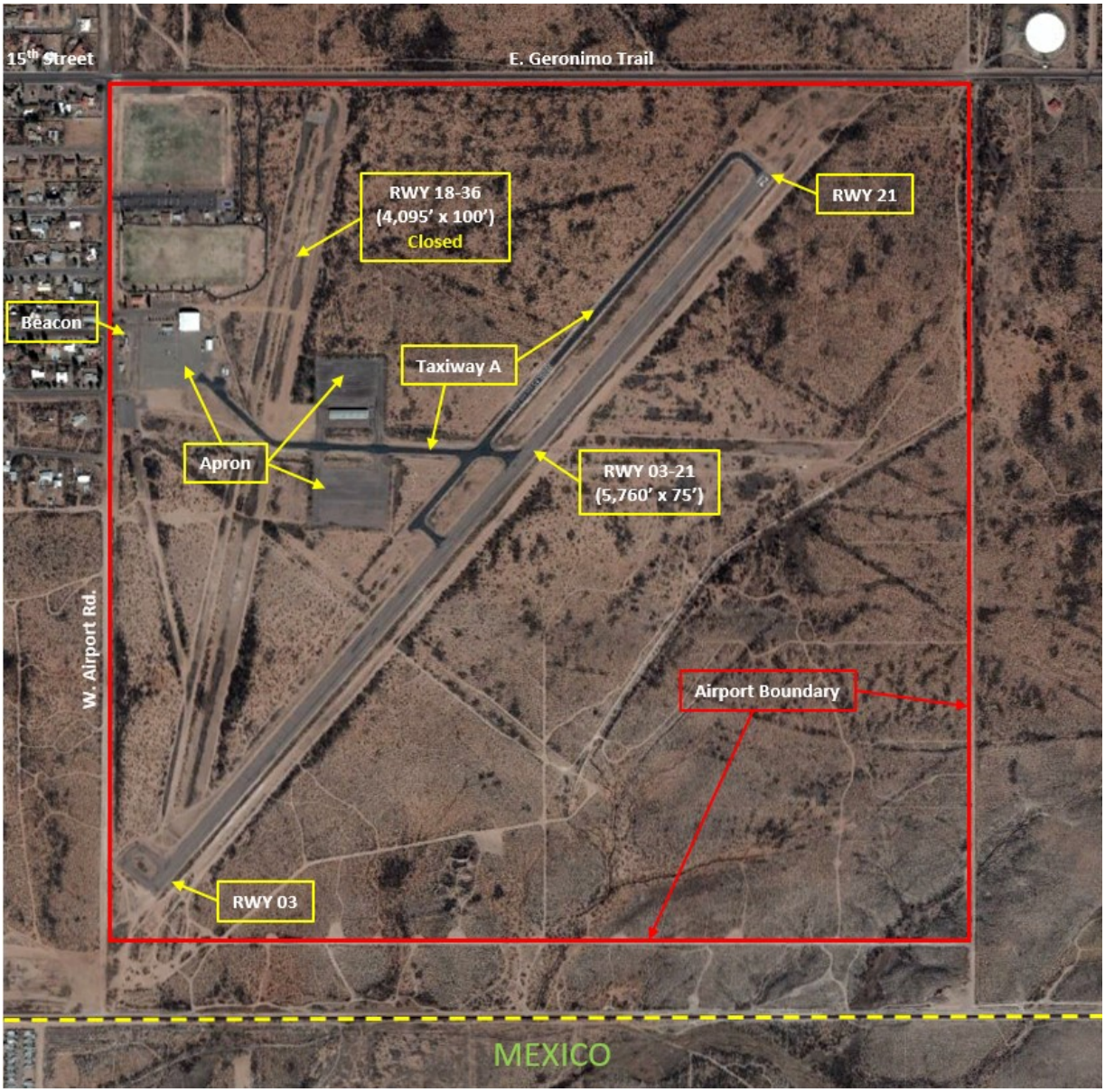
Sources: Kimley-Horn, Google Earth

[5] http://aireform.com/faas-airport-reference-codes/

1.9.2 Airfield Facilities

Airfield (also referred to as airside) facilities are those facilities that accommodate aircraft operations and support the transitioning of aircraft from the air to the ground, and vice versa. These include runways, taxiways, aprons, and navigational aids. The following describes the existing airfield facilities at DGL, which are also depicted in **Exhibit 1-4**.

Exhibit 1-4. Current Airfield Facilities



Sources: Kimley-Horn, Google Earth

Runways and Taxiways

DGL is currently served by a single paved runway, Runway 03-21. Runway 03-21 is 5,760 feet in length and 75 feet in width and is constructed of asphalt. The dimensions, conditions, and

weight bearing capacity of the runway are summarized in **Table 1-4.** DGL previously had a second unpaved runway, Runway 18-36. This runway has been closed indefinitely as it was described as having large brush, rocks, and an uneven surface.

Table 1-4. Runway 03-21 Specifications

Runway 03-21	
Length	5,760 feet
Width	75 feet
Surface/Conditions	Asphalt/Very Poor

Source: www.AirNav.com

DGL does not currently have a full parallel taxiway associated with Runway 03-21, though a partial taxiway (Taxiway A) does exist on the northwest side. According to the Arizona Department of Transportation (ADOT), Taxiway A has a pavement condition rating of 100, which is considered to be good. Taxiway A is 35 feet in width and approximately 3,050 feet in length. Taxiway A, and connector Taxiways A3, A4, and A5 were resurfaced in June 2014 through a grant from ADOT. Turnaround Taxiways A1 and A2 are located on the south end of Runway 03-21, providing aircraft the ability to turn and back taxi down the runway to the terminal area. A summary of taxiways is provided in **Table 1-5**.

Table 1-5. DGL Taxiway System

DGL Taxiway System		
Taxiway	**Description**	**Condition**
A	Partial Parallel	Excellent
A1	Turnaround (South portion)	Poor
A2	Turnaround (North Portion)	Poor
A3	Connector	Excellent
A4	Connector – Runway to Apron Areas	Excellent
A5	Connector	Excellent

Sources: Arizona Department of Transportation, DGL Airport Layout Plan

Aprons and Tie-Downs

Airport apron areas serve a variety of purposes and are generally classified based on the users they are intended to support, the activities conducted on the apron area, and/or their location on the airport. DGL currently has two aprons. The primary apron (A01) has approximately 15,000 square yards of area. According to ADOT, this apron has a pavement condition index (PCI) of 53 which is considered to be poor condition. Currently, the primary apron has nine aircraft tie downs. Tie-down locations are generally used for short-term storage of transient aircraft, but can also be used by based aircraft not stored in hangars.

The secondary apron (A02) is composed of two asphalt areas split by Taxiway A. Including taxilanes, the northern portion of the apron is approximately 15,500 square yards in area and has 18 aircraft tie-downs. The southern portion of the apron including taxilanes is approximately 17,000 square yards in size and has 18 aircraft tie-downs. According to ADOT, the PCI for this

apron is 26 which is considered in poor condition. Collectively, DGL's two aprons have 45 aircraft tie-downs.

Lighting, Runway Markings, and Navigational Aids

Airport lighting and runway markings are important to supporting the control and movement of aircraft in the airfield area. They also help pilots visually identify their location relative to the airport and the airfield area. Navigational aids, or NAVAIDs, are electronic or visual devices that provide guidance to pilots during the landing or takeoff of an aircraft. Existing airfield lighting and NAVAID equipment at DGL are summarized in **Table 1-6**.

Table 1-6. Runway 03-21 Markings and NAVAIDs

Runway 03-21	
Runway Edge Lighting/Other	Medium Intensity Runway Lighting (MIRL)/Runway End Identifier Lights (REILs)
Runway Marking/Condition	Basic/Poor
NAVAIDs	4-light Precision Approach Path Indicators (PAPI) RWY end 03 and 21, Airport Beacon, NOTAM-D service available, Wind Sock

Sources: FAA Form 5010, www.airnav.com

1.9.2.1.1 Lighting at the Airport

Medium intensity runway lights (MIRLs) – MIRLs define the lateral limits of a runway and are spaced 200 feet apart.

Runway end indicator lights (REILs) – REILs are located on both ends of Runway 03-21.

1.9.2.1.2 Runway Markings at the Airport

Basic markings – Basic runway markings are used under visual flight rules (VFR). These markings include centerlines and runway designations. The runway markings at DGL are currently in poor condition.

1.9.2.1.3 NAVAIDs at the Airport

Rotating Beacon – The Airport is equipped with a standard rotating white-green beacon that operates from sunset to sunrise. The beacon is located at the far west end of the airfield.

Wind Indicator – The Airport also has a lighted wind indicator. This is used to determine the direction of the wind on the ground as compared to the wind at the altitude a pilot is flying.

PAPIs – Both runway 03 and 21 are equipped with PAPIs, which is a visual aid that provides guidance information to help a pilot acquire and maintain the correct approach (in the vertical plane) to an airport.

1.9.3 Landside Facilities

Landside facilities at airports consist of a wide variety of buildings and equipment that support airport operations. For the purpose of this MPU, the following landside facilities at DGL have been inventoried:

- General Aviation Terminal
- Aircraft Hangars
- Fuel Facility
- Automobile Parking
- Airport Fencing and Security

General Aviation Terminal

DGL currently has three on-airport buildings and a trailer that are owned by the City of Douglas. Portions of the permanent structures have been used for GA terminal services in the past. One structure is 800 square feet while the other is 600 square feet. Currently, the permanent structures are not being used for a specific purpose. The Airport is planning to improve the facades but the City does not intend to use the interior of the structures for aviation needs. The trailer is utilized as an Airport operations office space and a work space for a construction project. The previously mentioned Border Air Museum is on Airport property and is used for meetings; however, there is no pilot lounge or specified Fixed Base Operator (FBO). DGL has expressed a desire to construct a more legitimate GA terminal building in the future; this will be addressed in greater detail in the Facility Requirements Chapter of this MPU.

Aircraft Hangars

DGL has three hangars on the airfield: one large T-hangar, one large conventional hangar, and one small conventional hangar. The large T-hangar has 10 units that are currently all being utilized. The large conventional hangar, approximately 12,500 square feet in area, has six based aircraft, while the small conventional hangar, approximately 2,500 square feet in area, has one Lifeline based helicopter. **Exhibit 1-5** displays the location of the Airport's three hangars.

Exhibit 1-5. Hangars and Fuel Farm

Sources: Kimley-Horn, Google Earth

Fuel Facility

DGL's fuel storage facility is located to the south of the small conventional hangar near the primary apron. On this site, the Airport maintains two above ground storage tanks, one with AvGas and the other with Jet A fuel. Each tank holds approximately12,000 gallons of fuel. Self-serve Jet A fuel is available at the tank site, while AvGas is available on the main apron. The Airport primarily provides self-fueling service, but offers assistance upon request. Airport fuel is provided 24 hours a day. **Exhibit 1-5** displays the location of the Airport's fuel facility.

1.9.4 Utilities

Utilities are provided to the Airport from a variety of sources. **Table 1-7** identifies utilities and providers in greater detail.

Table 1-7. Airport Utilities

Utilities	Source
Electricity	Arizona Public Service Electric Company
Water	City of Douglas
Sanitary	City of Douglas

Source: Douglas Municipal Airport

1.9.5 Automobile Parking

Auto parking at DGL is depicted in **Exhibit 1-6** which displays the 30 paved parking spots just north of the primary apron and large conventional hangar. These spots are also shared with the Border Air Museum, which is also seen in **Exhibit 1-6**. Immediately to the west of the main aircraft parking apron is an unpaved lot outside the western fence that can accommodate approximately 20 vehicles.

Vehicles are frequently parked on the apron near the Lifeline building and near the small hangar away from aircraft parking areas.

Exhibit 1-6. Automobile Parking

Sources: Google Earth, Kimley-Horn

1.9.6 Airport Fencing and Security

DGL recently began a fencing installation project in an effort to update the Airport's security. Since the beginning of the project, the Airport has installed new three-strand barbed-wire fencing which is six feet tall. This portion of the fencing is approximately 1,100 feet long and runs from the west side of the large conventional hangar to Airport Road, then south past East 9th Street. The remaining Airport boundary has four-foot-tall barbed-wire fence in fair condition. Design for the remaining phase of Airport fencing was in progress at the time of this MPU; construction is anticipated to be completed as a near-term (0-5 year) project. The north entrance to the airfield requires key card access to open the gate.

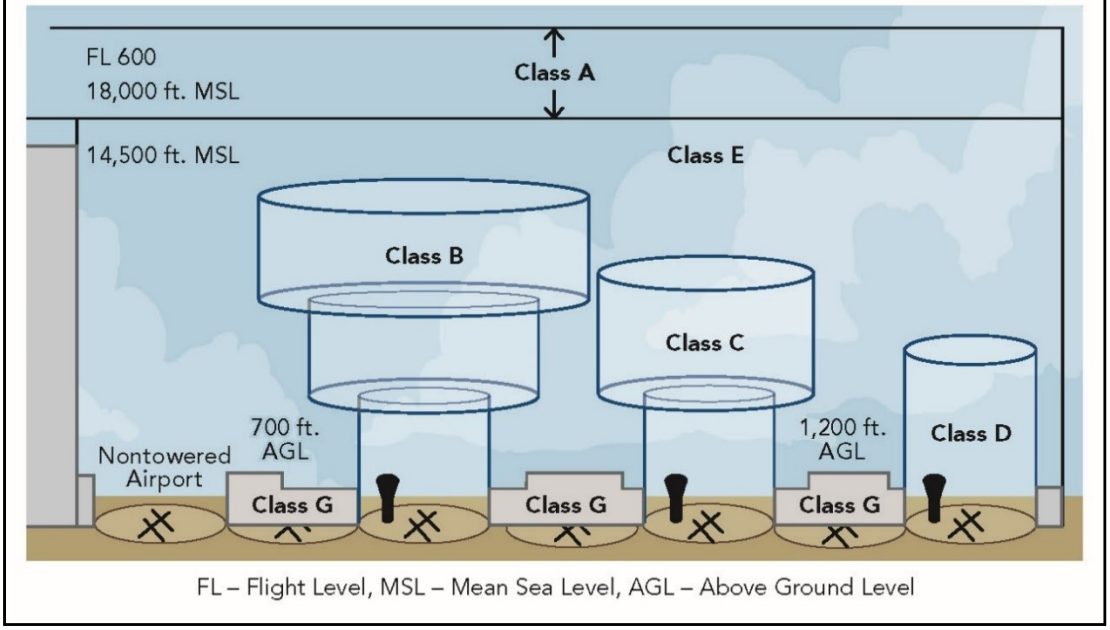
1.10 Airspace and Instrument Procedures

Airspace in the U.S. is classified generally as controlled, uncontrolled, or special use. Controlled airspace encompasses those areas where there are specific certification, communication, and navigation equipment requirements that pilots and aircraft must meet to operate in that airspace.

1.10.1 Airspace Designations

Through Federal Aviation Regulations (FARs), airspace classifications have been developed to promote the safe and efficient movement and control of aircraft during flight and approach/departure procedures. Airspace classifications are identified on sectional aeronautical charts published by the FAA's National Aeronautical Charting Office. A graphic of these airspace classifications is presented in **Exhibit 1-7**.

Exhibit 1-7. Airspace Classifications



Source: FAA Aeronautical Information Manual

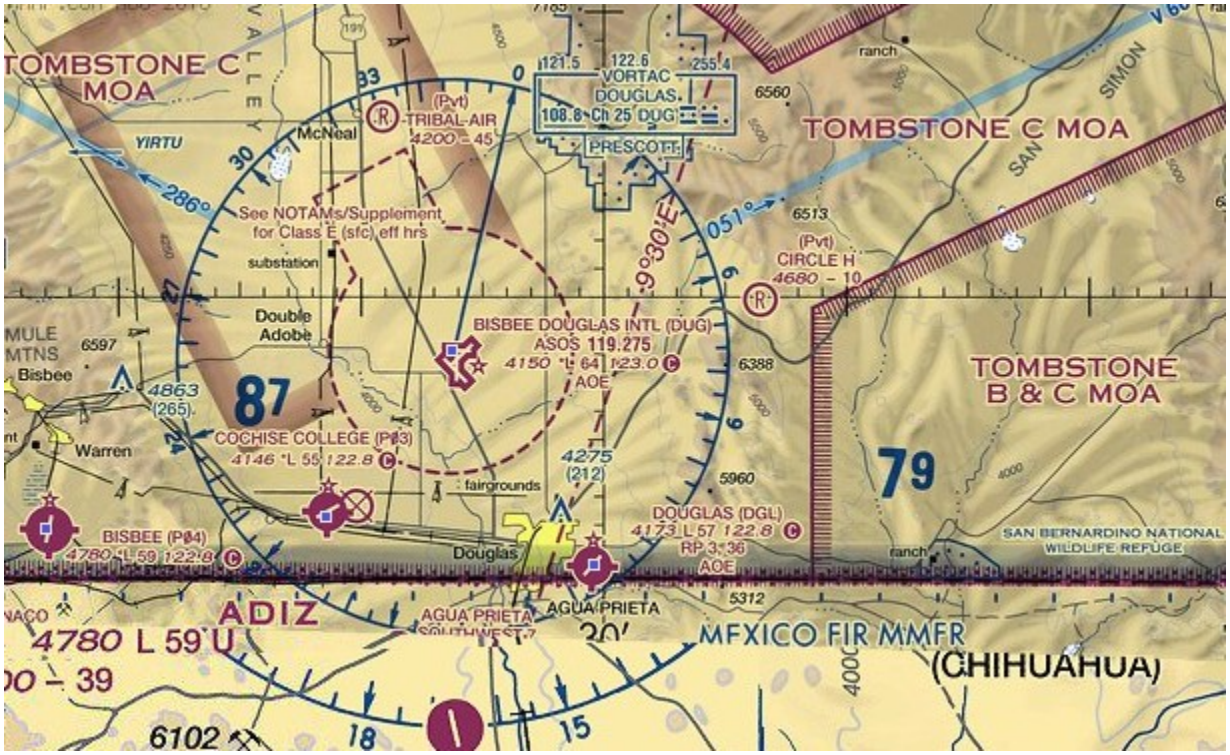
FAR Part 71 and FAR Part 73 establish classifications of airspace with the following characteristics:

- **Class A Airspace** – Class A airspace is not shown on aeronautical charts. It begins at 18,000 feet above mean sea level (MSL) and extends to higher altitudes. This airspace is designated in FAR Part 71.193 for positive control of aircraft. The Positive Control Area allows flights only operating under instrument flight rules (IFR), with a pilot who has an instrument rating, and prior permission is required. Class A airspace does not significantly impact the operation of DGL.
- **Class B Airspace** – Class B airspace is found around major airports. Pilots must get permission to enter this airspace from the controlling agency, typically the Terminal

Radar Approach Control (TRACON) facility associated with the airport and region. There is no Class B airspace near DGL.

- **Class C Airspace** – Class C airspace is the airspace from the surface to 4,000 feet above the airport elevation. Although the configuration of each Class C airspace area is individually tailored, the airspace usually consists of a surface area with a five-mile radius, and an outer circle with a one-mile radius that extends from 1,200 feet to 4,000 feet above the airport elevation. An aircraft must establish two-way radio communication with the controlling agency providing air traffic services prior to entering the airspace and thereafter maintain those communications while within the airspace. VFR aircraft are only separated from IFR aircraft within the airspace. There is no Class C airspace identified near Douglas Municipal Airport.
- **Class D Airspace** – Class D airspace exists at any airport with an operating air traffic control tower where Class B or Class C airspace does not exist. Class D airspace typically extends 5 miles from the airport to an altitude of 2,500 feet AGL. Pilots must establish two-way radio communication with the controlling agency, usually the air traffic control tower, before entering this classification of airspace. Class D airspace does not impact operations at DGL.
- **Class E Airspace (with floor 1,200 feet above surface)** – Class E airspace typically surrounds airports having instrument approaches and encompasses portions of the instrument approach paths. The flight requirements within Class E airspace result in increased aircraft separation requirements thereby promoting safety and minimizing potential incidents between IFR and VFR aircraft in this airspace. Class E airspace is located above DGL. Specifically, the Class E Airspace surrounding DGL has a floor 1,200 feet or greater above the surface that abuts Class G Airspace. **Exhibit 1-8** displays the location of DGL within its Class E Airspace.
- **Class G Airspace** – Class G airspace is referred to as uncontrolled airspace and is not depicted on aeronautical charts. This classification of airspace comprises all airspace not identified as another class. IFR flights typically do not operate in Class G airspace, as no Air Traffic Control (ATC) services are provided. VFR flights are permitted as long as visibility and cloud clearance minimums are met.

Exhibit 1-8. DGL Airspace



Source: **http://aeronav.faa.gov/content/aeronav/sectional_files/PDFs/Phoenix_95_P.pdf**
Note: The faint blue bar running through DGL in this sectional signifies the Class E Airspace with a floor 1,200 feet above the surface. The dashed red circle around DUG represents standard Class E Airspace.

- **Restricted Areas** – Restricted areas contain airspace identified by an area on the surface of the earth within which the flight of aircraft, while not wholly prohibited, is subject to restrictions. Restricted areas denote the existence of unusual, often invisible, hazards to aircraft; examples include artillery firing, aerial gunnery, or guided missiles. Penetration of restricted areas without authorization from the using or controlling agency may be extremely hazardous to the aircraft and its occupants. The nearest restricted airspace to DGL is located roughly 50 miles west surrounding Fort Huachuca, a U.S. Army base located in the town of Sierra Vista, AZ.
- **Prohibited Areas** – Prohibited areas contain airspace within which the flight of unauthorized aircraft is prohibited. Such areas are established for security or other reasons associated with the national welfare. Prohibited areas are published in the National Register and are depicted on aeronautical charts. There are no areas of prohibited airspace proximate to DGL.
- **Alert Areas** – Alert areas are depicted on aeronautical charts to inform nonparticipating pilots of areas that may contain a high volume of pilot training or an unusual type of aerial activity. Pilots should be particularly alert when flying in these areas. All activity within an alert area shall be conducted in accordance with the Code of Federal Regulations (CFRs), without waiver, and pilots of participating aircraft as well as pilots transiting the areas shall be equally responsible for collision avoidance. There are currently no alert areas located near DGL.

- **International Airspace** – Runway end 03 is approximately 1,000 feet from the U.S./Mexico Border. Aircraft that depart to the southwest often enter Mexican airspace. Aircraft operation movements are monitored by Air Traffic Control at Fort Huachuca/Libby Army Airfield. Based on conversations with Airport users and management, aircraft are allowed to traverse one to two miles into Mexican Airspace as long as they display movement back into U.S. Airspace.

As the summary descriptions of airspace classifications indicate and **Exhibit 1-7** and **1-8** show, different classes of airspace have different characteristics, dimensions, altitudes, and requirements based on the types of activity that they are intended to support. Existing airspace classifications in the vicinity of DGL and those that could have the potential to impact aircraft operations at the Airport have been identified.

1.10.2 Military Airspace

Military Operations Airspace (MOA) is a type of special use airspace (SUA), other than restricted airspace or prohibited airspace, where military operations are of a nature that justify limitations on aircraft not participating in those operations. Whenever an MOA is active, pilots operating under VFR should exercise extreme caution while flying within, near, or below the MOA. IFR traffic may be cleared through the area provided ATC can ensure IFR separation. DGL is located within Tombstone C MOA and in relatively close proximity to two separated MOAs: Tombstone A MOA and Tombstone B MOA. Tombstone B MOA is closer to DGL at roughly 10 miles east of the Airport. **Exhibit 1-8** shows the location of DGL within and near the Tombstone MOAs. The Tombstone C MOA covers the surrounding area and includes the airspace from 14,500 feet MSL to 18,000 feet MSL. The Tombstone A and B MOAs include the airspace from 500 feet AGL to 14,500 feet MSL. All Tombstone MOAs are active Monday through Friday from 6:00 a.m. until 9:00 p.m. The controlling agency for the MOAs is Albuquerque Center. Above Tombstone MOA is an Air Traffic Control Assigned Airspace (ATCAA) which extends the Tombstone MOA up to 51,000 MSL.

Military aerial refueling (AR) occurs above Cochise County 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 Tombstone MOA.

1.10.3 Instrument Approach Procedures

An instrument approach procedure is defined as a series of predetermined maneuvers for guiding an aircraft from the beginning of the initial approach to a landing, or a point from which a landing may be made visually. Instrument approach procedures are especially important during instrument meteorological conditions (IMC) when cloud ceilings are lower than 1,000 feet above ground level (AGL) and visibility becomes less than 3 statute miles. Under these conditions, properly trained pilots with adequately equipped aircraft can follow FAA published Instrument Approach Procedures (IAPs) to land at an airport.

Currently, DGL does not have Instrument Approach Procedure. Potential jet traffic may warrant this. An examination of potential instrument approaches will be provided in the Facility Requirements analysis.

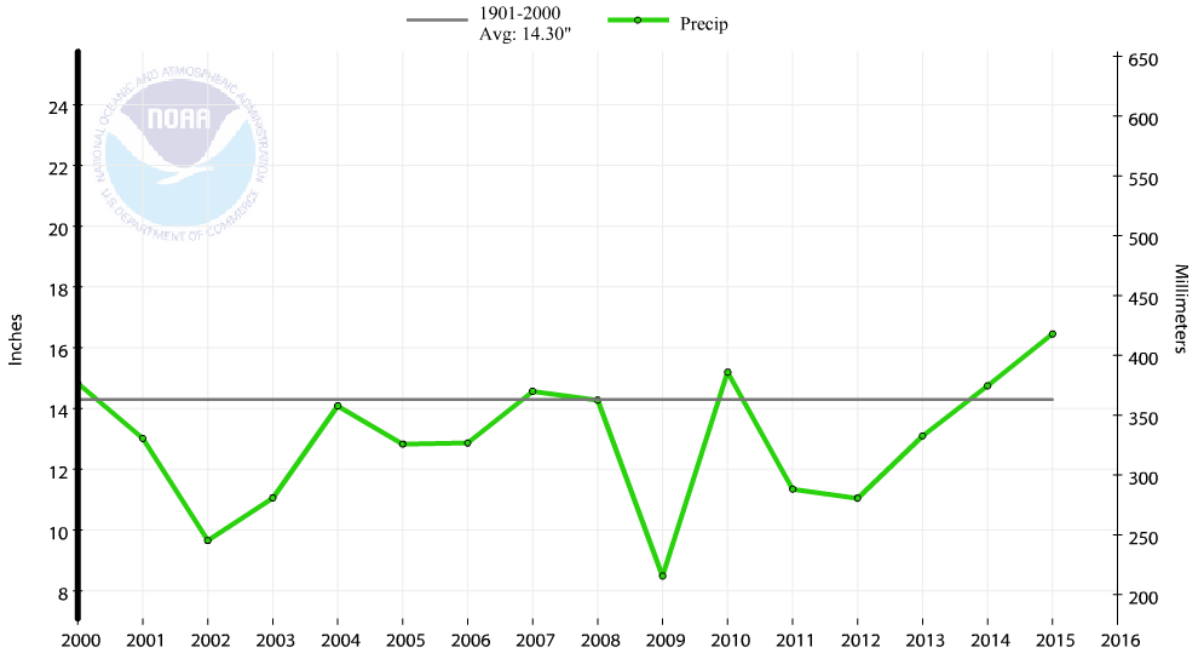
1.11 Climatic and Meteorological Conditions

Climatic and meteorological conditions, particularly temperature and wind speed, are important considerations in the analysis and development of airfield facilities. These factors directly affect the planning and design of runway facilities as well as utility and operational efficiency of the airfield.

1.11.1 Local Climatological Data

DGL is located in southwest Cochise County in an area that receives approximately 1.89 inches of precipitation monthly. According to the National Oceanic and Atmospheric Administration (NOAA), 16.46 inches of precipitation was recorded in 2015 for the Southeast region of Arizona, where DGL is located. **Exhibit 1-9** indicates that the current precipitation levels are following an inclining trend and exceeding the 1901-2000 baseline.

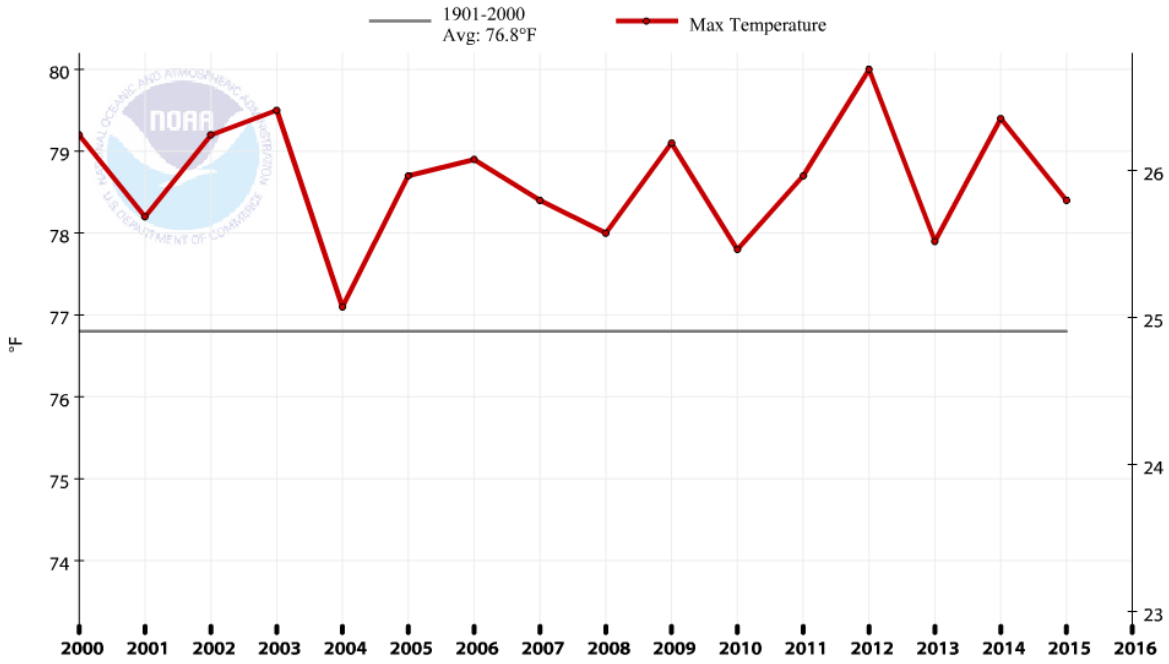
Exhibit 1-9. Southeast Arizona Annual Precipitation Trend



Source: National Oceanic and Atmospheric Administration, National Centers for Environmental Information

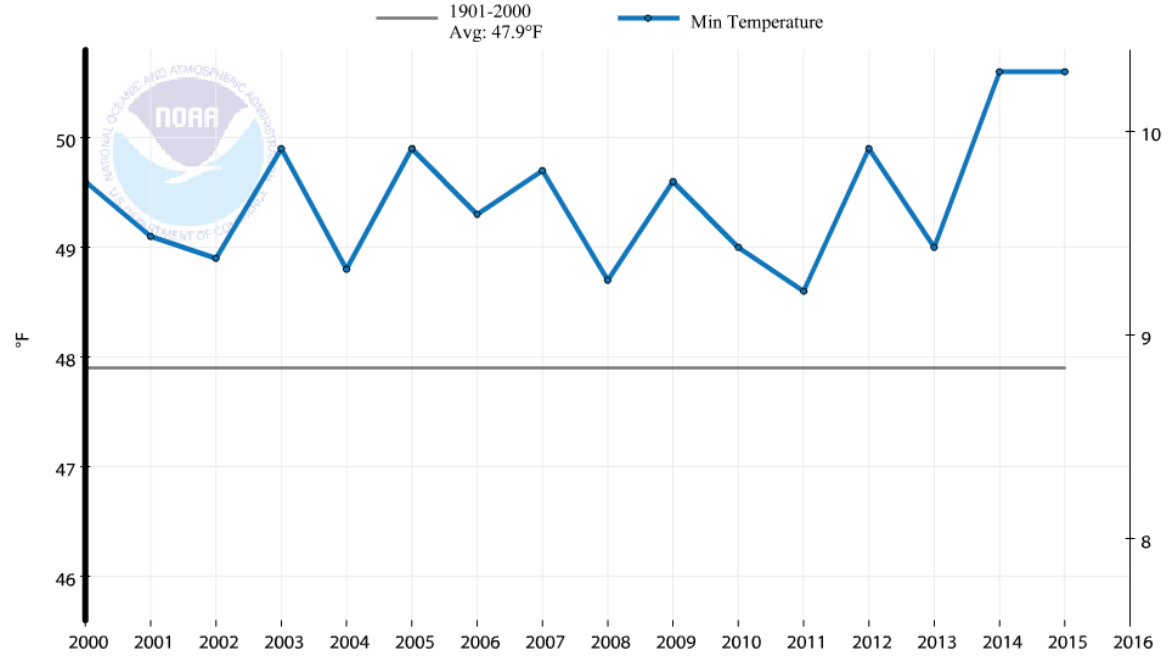
The average maximum temperature of the hottest month, June, is 97.7 degrees Fahrenheit, while the average minimum temperature of the coldest month, December, is 25.2 degrees Fahrenheit. **Exhibits 1-10** and **1-11** display the varying trends of maximum and minimum annual average temperatures. Both exhibits show the consistency of modern temperature levels staying well above the 1901-2000 baseline.

Exhibit 1-10. Southeast Arizona Annual Average Max. Temperature



Source: National Oceanic and Atmospheric Administration, National Centers for Environmental Information

Exhibit 1-11. Southeast Arizona Annual Average Min. Temperature



Source: National Oceanic and Atmospheric Administration, National Centers for Environmental Information

1.11.2 Ceiling and Visibility Conditions

Ceiling and visibility conditions at and around an airport play a major role in the usage and operational efficiency of its facilities. A ceiling is defined as the height above the ground or water of the base of the lowest layer of clouds covering more than half the sky. Low ceiling and/or poor visibility conditions limit the overall effective usage of an airport. During times of poor visibility, pilots must operate under IFR, rather than VFR. Seasonal afternoon thunderstorms are common in southern Arizona with the area averaging 42 annual events. Thunderstorms are often a cause of poor visibility and low ceilings. With no instrument approach procedures at DGL, poor visibility conditions occasionally interfere with aeronautical operations.

1.11.3 Runway Wind Coverage

Wind conditions affect all airplanes in varying degrees. Generally, the smaller the airplane, the more it is affected by wind, particularly crosswind components. Crosswinds are often a contributing factor in small airplane accidents.[6] In FAA Advisory Circular 150/5300-13A, the FAA instructs that a runway orientation should provide at least 95.0 percent wind coverage for the aircraft which are forecasted to use the airport on a regular basis. If the wind coverage is less than 95.0 percent, development of a cross-wind runway should be considered. The allowable crosswind component per Runway Design Code (RDC) is shown in **Table 1-8**.

Table 1-8. Allowable Crosswind Component per Runway Design Code (RDC)

RDC	Allowable Crosswind Component
A-I and B-I	10.5 knots
A-II and B-II	13 knots
A-III, B-III, C-I through D-III, D-I through D-III	16 knots
A-IV and B-IV, C-IV through C-VI, D-IV through D-VI	20 knots
E-I through E-VI	20 knots

Source: FAA AC 150/5300-13A

Wind coverage for DGL is identified in **Table 1-9**. According to the wind data analysis for the Airport as available from the FAA's Airports Geographic Information System (AGIS) website, the existing runway orientation at DGL does not provide 95 percent coverage for all aircraft types under both VFR and IFR conditions. It is important to note that wind samples were gathered from the nearest Airport Automated Surface Observing System (ASOS), which located at Bisbee-Douglas International Airport, approximately 10 miles northwest of DGL. Wind coverage and runway orientation will be addressed in greater detail in the Facility Requirements Chapter of this MPU.

[6] http://www.faa.gov/documentLibrary/media/Advisory_Circular/150_5300_13_part2.pdf

Table 1-9. Runway 03-21 Wind Coverage

	10.5 kt	13 kt	16 kt
All Weather	89.75%	94.4%	98.07%
IFR	81.15%	86.36%	91.52%
VFR	89.89%	94.54%	98.18%

Source: FAA AGIS Website, https://airports-gis.faa.gov/public/windrose_help.html, accessed August 2016

1.12 Area Socioeconomic Data

The relationship between socioeconomic factors and an airport's role and activity levels is an important consideration in the master planning process. In addition to providing a general understanding of the existing conditions in an airport area, socioeconomic data is instrumental in developing future projections of aviation activity. The following provides a summary of the socioeconomic data for the City of Douglas, Cochise County, the state of Arizona and the United States. As portrayed in **Table 1-10**, the population decrease in the City and County is well below the population increase of the State and Nation.

Table 1-10. Population Characteristics

Year	City of Douglas	Cochise County	Arizona	United States
2011	17,555	134,154	6,538,126	311,718,857
2012	16,928	136,518	6,662,512	314,102,623
2013	16,788	138,882	6,786,898	316,427,395
2014	16,671	141,246	6,911,284	318,907,401
2015	16,592	143,610	7,035,670	321,418,820
Change (2011-2015)	-5.40%	6.17%	7.07%	3.02%

Sources: Woods and Poole Economics, Inc., American FactFinder

Table 1-11 summarizes historic data related to employment and unemployment in Cochise County, the state of Arizona, and the United States from 2011 to 2015. It is important to note that Agua Prieta, located immediately south of Douglas in Mexico has a population of approximately 70,000-100,000. Although the majority of residents in Agua Prieta are employed at Maquiladoras and businesses on the Mexico side of the border, the City of Douglas estimates that approximately 70 percent of tax revenues in Douglas are attributed to citizens of Agua Prieta. It is important to note that Maquiladoras are factories in Mexico that produce manufactured goods, several of which are shipped across the border to distribution centers in Douglas.

Table 1-11. Employment Summary

Year	Cochise County % Employed	Arizona % Employed	United States % Employed
2011	44.4%	50.2%	59.40%
2012	44.0%	50.0%	58.80%
2013	43.5%	49.8%	58.20%
2014	43.1%	49.7%	57.60%
2015	43.6%	49.5%	57.70%

Sources: Woods and Poole Economics, Inc., American FactFinder

Table 1-12 summarizes the average income per capita personal income (PCPI) in Cochise County as well as the state of Arizona for 2015. 2015 per capita personal income data is not available yet for the United States.

Table 1-12. 2015 Per Capita Personal Income

Year	Cochise County	Arizona
2011	$37,989	$38,664
2012	$38,246	$38,954
2013	$38,502	$39,245
2014	$38,758	$39,535
2015	$39,014	$39,826

Source: Woods and Poole Economics, Inc.

1.13 Area Land Use and Zoning

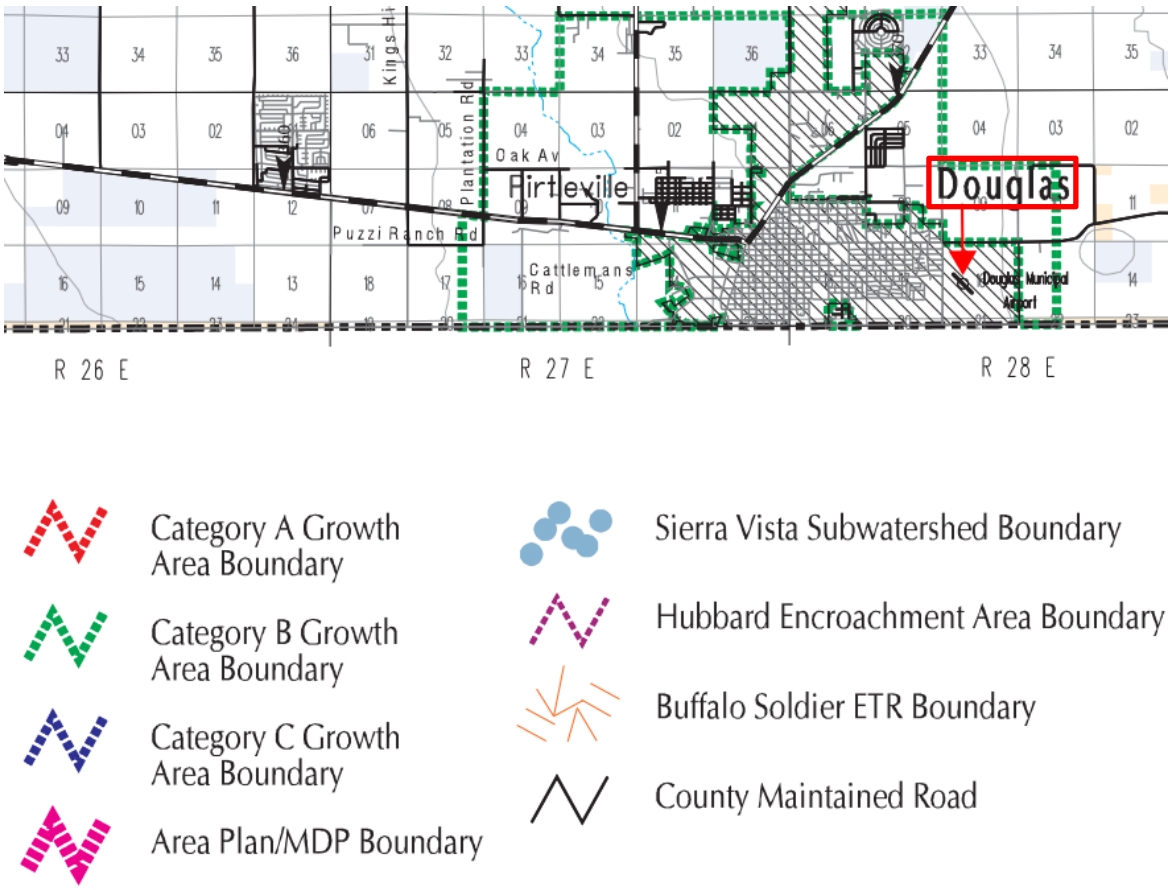
Identifying land use and zoning characteristics in the environs of airports is an important task in the master planning process because of significant impacts that incompatible development in the airport area can have on the facility's continued operation and development. Working with the relevant planning commissions, counties, municipalities, or other entities to promote compatible land uses and zoning in the environs of DGL can allow the Airport to continue to operate and develop in a manner that minimizes the impacts of the Airport as they pertain to non-compatible land uses.

The entirety of the Airport property is within the City of Douglas city limits, however the Airport itself does not have a specific zoning classification. The extents of the City of Douglas zoning jurisdiction terminate at Airport Road which serves as the western border of the Airport property. Zoning designations immediately to the west of the Airport property include single family residence and multi-family residence.

Currently, the Airport property is not zoned by Cochise County, nor is the surrounding land to the West side of the Airport property. However, the land surrounding the Airport to the East is zoned by Cochise County as RU-4 (Rural). Cochise County identifies an RU-4 parcel as having a minimum lot size of four acres. Examples of uses in RU-4 parcels include all single and multiple

household dwellings. The Cochise County Comprehensive Plan was adopted in 1984 and last revised in 2015 to promote orderly and well-planned County growth. The most recent adaptation of the Comprehensive Plan lists the area containing DGL as a Category B Growth Area within the incorporated city. **Exhibit 1-12** displays the location of DGL in the Comprehensive Plan map.

Exhibit 1-12: DGL in the County Comprehensive Plan Map



Source: Cochise County Comprehensive Plan

Cochise County defines Category B Growth Areas as, "Areas adjacent to Category A Urban Growth Areas as well as the larger unincorporated communities of the County, which are experiencing growth." These are areas in transition from a traditional rural environment to something more urbanized. Category B Community Growth Areas include the areas presently identified as Category B and any additional areas that have been determined to meet the following criteria:

a. The area to be designated has a moderate level of residential and/or non-residential growth
b. The area serves as a logical transition between urban growth and rural areas and/or has a distinctive community identity

c. The area has adequate water, access, drainage, and sewage disposal capability to accommodate medium to high density development
d. In general, residential lot sizes are one acre or less in size but may transition to larger lot sizes at the fringes of the area. Smaller lot sizes have access to sewer and/or water and are commonly found in established subdivisions and manufactured/mobile home parks or historic town sites
e. Improved streets designated as arterial or collectors can support limited non-residential development
f. There is substantial potential for further development along with opportunities to preserve undeveloped recreational resources, i.e. open space and washes

1.14 Environmental Considerations

Local and regional environmental factors can affect how an airport is developed. Conversely, airport development has the potential to impact those environmental resources. For these reasons, the FAA requires that airport sponsors incorporate environmental considerations into the master planning process. Although this Master Plan is not funded in any part by the FAA, airport master planning recommendations and design standards outlined in FAA Advisory Circular 150/5300-13A, Airport Design and FAA AC 150/5070-6B, Airport Master Plans are generally followed. While a detailed overview of the various environmental resources near DGL is provided in subsequent chapters of this MPU, the following three resources are considered of significant importance to the ongoing development of the Airport.

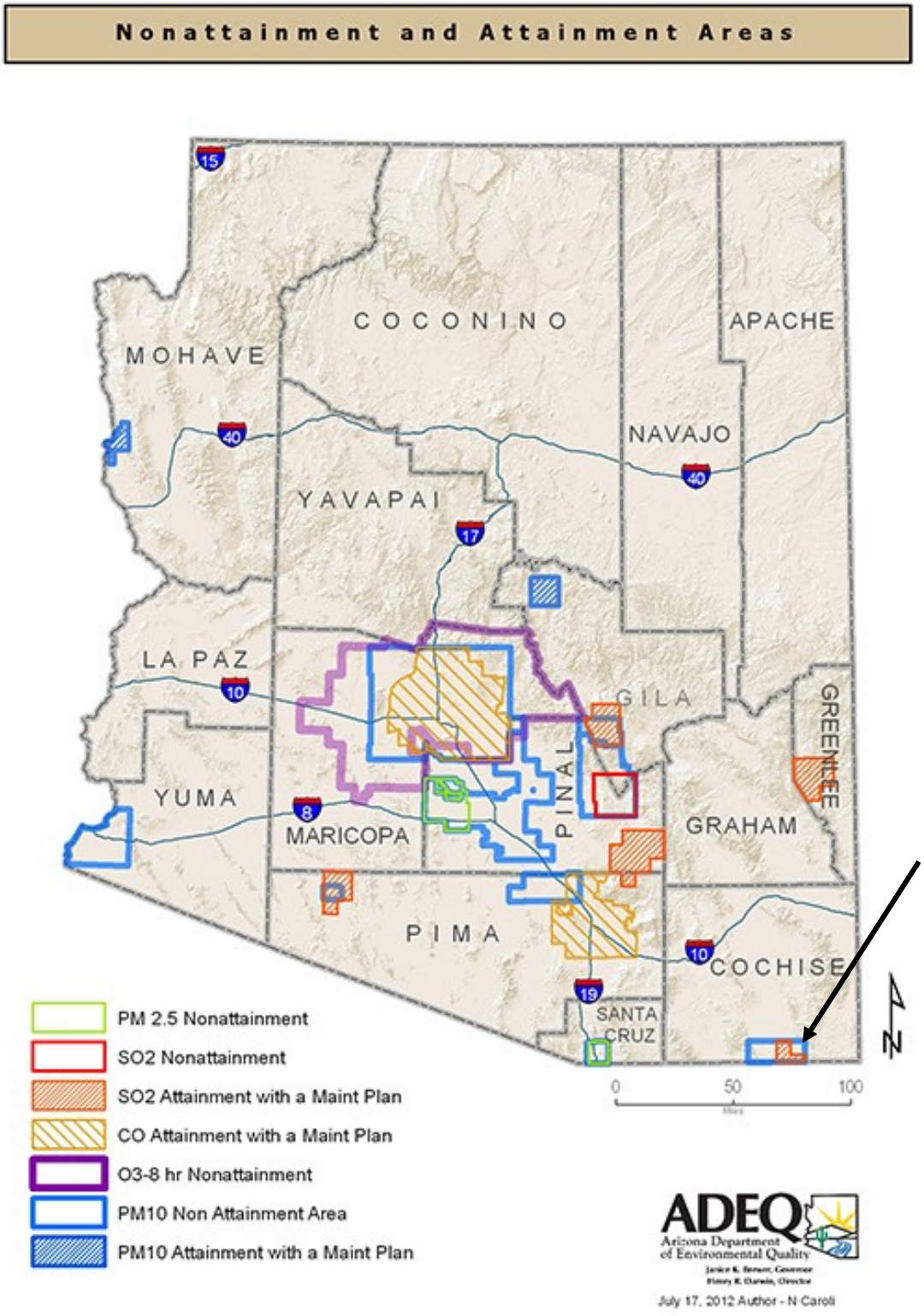
1.14.1 Air Quality

Air quality maps were obtained from the Arizona Department of Environmental Quality (ADEQ) which portray areas of nonattainment & attainment Areas. DGL is located within a non-attainment area that contained higher levels of sulfur dioxide (SO2) which is under maintenance. A nonattainment area is an area considered to have worse air quality than the National Ambient Air Quality Standards.

The classification of sulfur dioxide in the area was changed to an area of maintenance in which the EPA reclassifies the Douglas area with attaining a sulfur dioxide standard. This declares that Douglas, AZ has met the federal health standard for sulfur dioxide and approved the state's plan to maintain healthy levels of SO2 for the next 10 years. The sulfur dioxide that was classified as harmful to the environment was emitted from the now closed Phelps Dodge Douglas Reduction Works smelter.

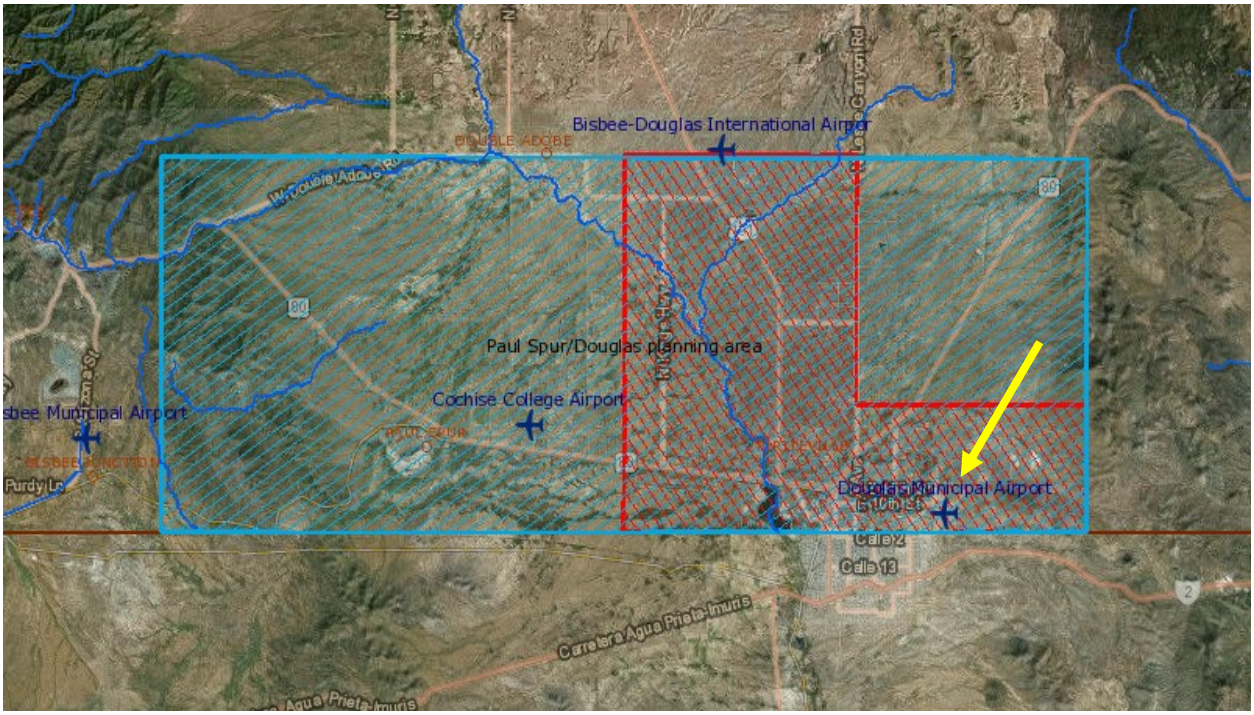
Factors that contribute to the nonattainment classification of the area that DGL is located within include prevalent sunshine, high elevation, and threat of wildfires. In addition, strong winds from California and Mexico bring pollution to Arizona counties. ADEQ is currently developing a maintenance plan and request for re-designation for the Douglas-Paul spur PM10 nonattainment area. **Exhibits 1-13 and 1-14** display the non-attainment designation around Cochise County.

Exhibit 1-13. State Air Quality Map



Source: http://legacy.azdeq.gov/environ/air/plan/notmeet.html

Exhibit 1-14. DGL Within SO2 Area



Source: http://gisweb.azdeq.gov/arcgis/emaps/?topic=nonattain

1.14.2 Fish, Wildlife and Plants

The possibility of any impacts to any threatened and endangered species and candidate species within the DGL environment was based on review of information from the U.S. Fish and Wildlife Service website. A list was obtained of federally threatened or endangered species in Cochise County. The list should be evaluated for any future development projects to determine if any of the species will be impacted. The species listed in **Table 1-13** represent the county as a whole and does not solely represent DGL.

Table 1-13. Cochise County Species List

Group	Common Name	Scientific Name	Status
Amphibians	Sonora tiger Salamander	Ambystoma tigrinum stebbinsi	Endangered
Amphibians	Chiricahua leopard frog	Rana chiricahuensis	Threatened
Amphibians	Arizona Treefrog	Hyla wrightorum	Candidate
Birds	American peregrine falcon	Falco peregrinus anatum	Recovery
Birds	Yellow-billed Cuckoo	Coccyzus americanus	Threatened
Birds	northern aplomado falcon	Falco femoralis septentrionalis	Experimental Population, Non-Essential
Birds	Mexican spotted owl	Strix occidentalis lucida	Threatened
Birds	Southwestern willow flycatcher	Empidonax traillii extimus	Endangered
Fishes	Gila topminnow (incl. Yaqui)	Poeciliopsis occidentalis	Endangered
Fishes	Gila topminnow (incl. Yaqui)	Poeciliopsis occidentalis	Endangered
Fishes	Yaqui catfish	Ictalurus pricei	Threatened
Fishes	Gila chub	Gila intermedia	Endangered
Fishes	Yaqui chub	Gila purpurea	Endangered
Fishes	Loach minnow	Tiaroga cobitis	Endangered
Fishes	Desert pupfish	Cyprinodon macularius	Endangered
Fishes	Beautiful shiner	Cyprinella formosa	Threatened
Fishes	Spikedace	Meda fulgida	Endangered
Flowering Plants	Bartram stonecrop	Graptopetalum bartramii	Under Review
Flowering Plants	Cochise pincushion cactus	Coryphantha robbinsiorum	Threatened
Flowering Plants	Huachuca water-umbel	Lilaeopsis schaffneriana var. recurva	Endangered
Flowering Plants	Beardless chinch weed	Pectis imberbis	Under Review
Flowering Plants	Canelo Hills ladies'-tresses	Spiranthes delitescens	Endangered
Flowering Plants	Wright's marsh thistle	Cirsium wrightii	Candidate
Mammals	Jaguar	Panthera onca	Endangered
Mammals	Ocelot	Leopardus (=Felis) pardalis	Endangered
Mammals	Lesser long-nosed bat	Leptonycteris curasoae yerbabuenae	Endangered
Reptiles	New Mexican ridge-nosed rattlesnake	Crotalus willardi obscurus	Threatened
Reptiles	Northern Mexican gartersnake	Thamnophis eques megalops	Threatened
Snails	Huachuca springsnail	Pyrgulopsis thompsoni	Candidate
Snails	San Bernardino springsnail	Pyrgulopsis bernardina	Threatened

Source: http://ecos.fws.gov/ecp0/reports/species-by-current-range-county?fips=04003

1.14.3 Noise

DGL does not have a substantial amount of operations to model a day-night level (DNL) contour to represent the noise produce from daily operations. Noise is not a significant environmental factor at DGL, however, any increase of future aviation-related activity could have noise impacts on the surrounding environs.

1.15 Other Area Airports

In addition to examining market area demographic and socioeconomic characteristics, it is also important to understand the dynamics of aviation activity in the Douglas area and the impacts that other nearby airports may have on aviation demand. The location of other airports and the level of service and activity that they support is an important consideration in developing a long-range development plan for DGL. Nearby public use airports and their relevant characteristics are summarized in **Table 1-14**.

Table 1-14. Airports within 20 NM of DGL

Airport	FAA ID	NPIAS Role	Distance from DGL	Runway Dimensions (ft)	Approach Type	Based Aircraft (2016)	Annual Operations (2016)
Douglas Municipal Airport	DGL	N/A	N/A	5,760 x 75	Basic	12	2,600
Cochise College Airport	P03	N/A	9.5 NM	5,551 x 60	Basic	19	54,033
Douglas - Bisbee International Airport	DUG	Local/Basic	8.0 NM	6,430 x 100 4,966 x 60	Non-precision/ Basic	6	2,382
Bisbee Municipal Airport	P04	Local/Basic	19.5 NM	5,929 x 60 2,650 x 110	Basic	11	2,900

Source: www.airnav.com

1.16 Near-Term Planned Development

As a part of the Facility Requirements and Alternatives Analysis Chapters of this MPU, near-term (0-5 years), intermediate term (6-10 years), and long-term (11-20 years) development recommendations will be developed. However, there are additional near-term Airport improvement projects that were in the planning and design phase at the time this MPU was developed.

The first improvement project is the previously noted construction of perimeter fencing. Phase 1 of this project has already been completed. At the time this MPU was developed, the City was in the process of identifying if the design for the remaining fence would be completed in one phase (Phase 2) or in multiple phases. The design for the remainder of this project is anticipated to be completed in the 2016-2017 timeframe.

The second near-term planned development for DGL is the reconstruction of Runway 03-21. In June 2016, the Arizona Department of Transportation indicated that a design grant for reconstruction of the existing runway would be issued. At the time this MPU was developed, it was estimated that design for the runway reconstruction would be completed in 2017. Once design for this project is complete, the City may then apply for grants to assist with costs associated with environmental documentation and construction of the project.

2 FORECASTS

This chapter discusses the findings and methodologies used to project aviation demand at Douglas Municipal Airport (DGL). It is important to recognize that there can be short-term fluctuations in an airport's activity due to a variety of factors that cannot be anticipated. The forecasts developed in this Master Plan Update (MPU) provide a meaningful framework to guide analysis for the future Airport development needs and alternatives.

The projections of aviation demand developed for DGL are documented in the following sections:

- Socioeconomic Factors
- Historical and Current Activity
- National Aviation Trends
- Based Aircraft Projections
- Aircraft Operations Projections
- Critical Aircraft
- Forecast Summary

The forecast analysis includes methodologies that consider historical aviation trends at the Airport and throughout the nation. Local historical data was compiled from Airport records and tenants, as well as the 2008 Arizona State Airports System Plan (ASASP). Demographic data for Cochise County and the state of Arizona were obtained from Woods and Poole Economics, Inc. These data were analyzed to track local trends and conditions to project demand at DGL. Projections of aviation activity for the Airport were prepared for near-term (2021), mid-term (2026), and long-term (2036) timeframes. These projections are generally unconstrained and assume the Airport will be able to develop the various facilities necessary to accommodate based aircraft and future operations.

The two elements that are examined in the forecasts are aircraft operations and based aircraft. A based aircraft is generally defined as an aircraft that is permanently stored at an airport. An aircraft operation represents either a take-off or landing conducted by an aircraft. For example, a takeoff and a landing would count as two operations.

Operations forecasts are further categorized in this MPU as local or itinerant. According to the FAA, local operations are defined as those conducted by aircraft that operate in the local traffic pattern or within sight of the Airport; are known to be departing for, or arriving from, flight in local practice areas located within a 20-mile radius of the Airport; or execute simulated instrument approaches or low passes at the Airport. Itinerant operations are all aircraft operations other than local operations.

2.1 Socioeconomic Factors

Regional socioeconomic trends were identified in the preceding chapter. Where applicable, these data can be used in the MPU process to relate future aviation activity levels at the Airport to local and regional socioeconomic trends. Douglas is a small rural city and because of this, Cochise County is used as the regional market area for Douglas Municipal Airport. The forecast analysis examines historical trends and future projections of the region's population, employment, and earnings to relate to aviation activity. Socioeconomic factors are important to analyze because the level of activity at an airport typically emulates the economic condition of the region. Woods and Poole Economics, Inc. data for Cochise County and the state of Arizona were examined extensively to generate projections for DGL through 2036.

It is important to note that a large majority of tax revenues in the City of Douglas are attributed to the neighboring Mexican City of Agua Prieta. Agua Prieta is a border town adjacent to Douglas with a population of 70,000 to 100,000. Many of the Agua Prieta residents work in Maquiladoras, or factories that produce manufactured goods, several of which are shipped across the border to distribution centers in Douglas. Driven by the large population and economic industry in Agua Prieta, almost 75 percent of the City of Douglas' tax revenues can be attributed to Mexican residents.

Table 2-1 reviews the population growth trends of Cochise County and the state of Arizona over a 10-year period. Using socioeconomic data from Woods and Poole Economics, Inc., the compound annual growth rate (CAGR) was calculated. Compound annual growth rate is a metric that generates linear annual gains for a particular series of data. It should be noted that CAGR calculates a constant rate of change. CAGR dampens the effect of volatility during periods that experience significant change, and is essentially a "smoothed" annual growth rate.

Table 2-1. Comparison of Historical Population Growth Trends

Year	Cochise County	Arizona
2007	127,660	6,140,390
2008	129,020	6,280,360
2009	130,080	6,343,150
2010	131,790	6,413,740
2011	134,150	6,538,130
2012	136,520	6,662,510
2013	138,880	6,786,900
2014	141,250	6,911,280
2015	143,610	7,035,670
2016	146,030	7,162,980
CAGR 2007-2016	**1.51%**	**1.73%**

Source: Woods and Poole Economics, Inc. for years 2000, 2008-2010, 2015, and 2020

As shown in **Table 2-1**, historical population growth was measured for Cochise County and the State of Arizona. Between the years of 2007 and 2016, the CAGR of population growth in

Cochise County was 1.51 percent. In the same timeframe, the state of Arizona experienced population growth at a CAGR of 1.73 percent, slightly higher than that of Cochise County.

In addition to the population growth rate, there are other demographic factors that can significantly impact aviation activity. Regional economic factors can play a significant role in the level of activity experienced at an airport. **Table 2-2** summarizes historical Employment and Gross Regional Product (GRP) for Cochise County and the state of Arizona. GRP is defined as the market value of all goods and services produced within a metropolitan area in a given period of time. It should be noted that data obtained from Woods and Poole Economics, Inc. is reported in constant dollars (year 2015) to adjust for inflation over time.

Table 2-2. Historical Cochise County and State of Arizona Employment and Gross Regional Product

Year	Cochise County		State of Arizona	
	Employment (in thousands)	Total GRP (in millions)	Employment (in thousands)	Total GRP (in millions)
2007	58,510	$4,858.0	3,324,420	$281,230.5
2008	59,670	$5,058.7	3,399,940	$290,140.9
2009	59,120	$5,017.1	3,217,660	$274,524.3
2010	59,200	$5,024.3	3,227,560	$275,543.0
2011	59,880	$5,123.3	3,279,050	$282,366.6
2012	60,560	$5,222.3	3,330,550	$289,190.1
2013	61,240	$5,321.3	3,382,040	$296,013.7
2014	61,920	$5,420.3	3,433,540	$302,837.3
2015	62,600	$5,519.3	3,485,030	$309,660.9
2016	63,720	$5,687.1	3,552,770	$318,884.5
CAGR 2007-2016	**0.95%**	**1.77%**	**0.74%**	**1.41%**

Source: Woods and Poole Economics, Inc.

As shown in **Table 2-2**, employment in Cochise County grew at a rate of almost 1 percent from 2007 to 2016. One percent growth outpaces the state of Arizona whose employment growth was 0.74 percent during the same timeframe. Similarly, total GRP increased 1.77 percent annually, while the state of Arizona's GRP increased 1.41 percent annually during the same timeframe. Between 2008 and 2010, Cochise County and the state of Arizona experienced declines in GRP, which are likely attributed to the recession that occurred nationally during that time.

Statistical analysis typically indicates that regional earnings is one of the most important demographic factors impacting aviation demand, illustrating an underlying assumption that as earnings, and consequently discretionary income grows, individuals have more income to spend on goods and services, including aviation-related goods and services. Total employment and total GRP growth rates of Cochise County outperformed that of the State. The growth of the County and the proximity of DGL to the Mexican border and the adjacent City of Agua Prieta should support the growth of the Airport for the foreseeable future.

Per capita personal income (PCPI) is another way to measure the economic growth of an area. PCPI measures the average income earned per person in a given area (city, region, country, etc.) in a specified year. It is calculated by dividing the area's total income by its total population. **Table 2-3** presents a summary of historical PCPI figures for Cochise County and Arizona. It should be noted that PCPI data obtained from Woods and Poole Economics, Inc. is reported in constant dollars (year 2015) to adjust for inflation over time.

Table 2-3. Historical Cochise County and State of Arizona Per Capita Personal Income

Year	Cochise County (in 2015 $)	Arizona (in 2015 $)
2007	$35,698.2	$39,202.2
2008	$36,915.4	$39,724.9
2009	$37,902.1	$38,386.3
2010	$37,733.4	$38,373.0
2011	$37,989.5	$38,663.5
2012	$38,245.5	$38,954.0
2013	$38,501.6	$39,244.6
2014	$38,757.7	$39,535.1
2015	$39,013.8	$39,825.7
2016	$39,583.2	$40,408.2
CAGR 2007-2016	**1.15%**	**0.34%**

Source: Woods and Poole Economics, Inc.

As shown in **Table 2-3**, personal income in Cochise County has grown at a rate of 1.15 percent annually between 2007 and 2016 while the state of Arizona has grown at a rate of 0.34 percent over the same ten-year period. The state of Arizona's PCPI is higher than Cochise County in every year, however, it's growth rate was 0.81 percent less than Cochise County between 2007 and 2016. If this growth rate persists, Cochise County PCPI will closely match the State of Arizona PCPI through 2036.

2.2 Historical and Current Activity

At general aviation airports such as DGL, there are two primary indicators of activity: based aircraft and annual operations. Historical based aircraft and operations data for DGL provide the baseline from which future activity at the Airport can be projected. DGL does not have an Air Traffic Control Tower (ATCT), and it is not included in the FAA's National Plan of Integrated Airport Systems (NPIAS), which means that historical data identified in databases such as the FAA's Terminal Area Forecasts (TAF) are not available. As such, base year 2015 data for based aircraft and aircraft operations have been determined by an on-site inventory, an examination of historical fuel sales, and information provided by Airport management and tenants.

2.2.1 Historical Based Aircraft

The only resources available to identify historical DGL based aircraft are the previous Airport Master Plan, which was completed in 1994, and the ASASP. The 1994 Master Plan identified 27 based aircraft at DGL in 1993. The 2008 ASASP identified 27 based aircraft in 2007. No other historical data for based aircraft at DGL were available to develop a base year estimate,

therefore, a physical inventory count was conducted. The inventory identified 12 based aircraft at DGL in 2016 including 10 single-engine piston aircraft, one twin-engine piston aircraft, and one helicopter.

As shown in **Table 2-4**, based aircraft at DGL decreased from 27 in 2007 to 12 in 2016. This table depicts that DGL experienced a 56% decline in BAC in the 10-year period.

Table 2-4. Historical DGL Based Aircraft

Year	Total
2007	*27*
2008	*25*
2009	*24*
2010	*22*
2011	*20*
2012	*19*
2013	*17*
2014	*15*
2015	*14*
2016	12
CAGR 2007-2016	**-8.62%**

Note: Values for extrapolated years are italicized
Source: 2008 Arizona State Airport System Plan (ASASP)

Because of the significant difference in the number of based aircraft reported by the ASASP compared with the Airport survey data from 2016, forecasts of based aircraft activity in this MPU do not use time-series or historical trend methodologies. Instead, methodologies that compare existing based aircraft to other comparable factors were developed.

2.2.2 Historical Aircraft Operations

As previously defined, local operations are those conducted by aircraft that operate in the local traffic pattern or within sight of the Airport; are known to be departing for, or arriving from, flight in local practice areas located within a 20-mile radius of the Airport; or execute simulated instrument approaches or low passes at the Airport. Itinerant operations are all aircraft operations other than local operations.

Since DGL does not have an ATCT, historical aircraft operations represent estimates of activity from the 2008 ASASP and information provided by Airport management and tenants for base year 2015. It should be noted that historical operations between 2007 and 2015 have been extrapolated (see **Table 2-5**).

Based on information provided by Airport management and Lifeline, the Airport's sole permanent tenant, it was estimated that 2,600 operations occurred in 2016. **Table 2-5** shows that total operations from 2007 to 2016 decreased steadily. Also shown are ASASP forecasts of operations for 2007-2016, which reflects a CAGR of 1.42 percent.

Table 2-5. Historical DGL Aircraft Operational Mix

Year	Commercial Service	General Aviation	Military	Total Operations	SASP Projections
2007	0	11,000	100	11,100	11,100
2008	0	*9,990*	*170*	*10,160*	*11,266*
2009	0	*8,970*	*240*	*9,210*	*11,433*
2010	0	*7,960*	*10*	*8,270*	*11,599*
2011	0	*6,940*	*380*	*7,320*	*11,765*
2012	0	*5,930*	*450*	*6,380*	*11,932*
2013	0	*4,910*	*520*	*5,430*	*12,098*
2014	0	*3,900*	*590*	*4,490*	*12,264*
2015	0	*2,880*	*660*	*3,540*	*12,431*
2016	0	1,870	730	2,600	12,597
CAGR 2007-2016	**0.00%**	**-17.87%**	**24.72%**	**-14.89%**	**1.42%**

Note: Values for extrapolated years are italicized
Sources: 2008 Arizona State Airport System Plan, Lifeline – Airport tenant - August 2016

2.2.3 Historical Fuel Sales

As noted in the Inventory Chapter, DGL offers self-fueling for both Jet A and 100LL. **Table 2-6** depicts fuel sales sold in dollars and gallons from 2007 to 2015. Although this information is not used to project aircraft activity, it is important to identify the frequency of activity at the Airport. The irregularity in annual fuel sales at Douglas Municipal Airport's fuel farm is likely attributed to historical fluctuations in fuel price, the economic instability that occurred between 2008 and 2010, and changes in the number of based aircraft and itinerant operations that occur at DGL. Even though operations cannot directly be determined from the fuel sales information, it can be determined that DGL's fuel farm is a significant asset to the Airport.

Table 2-6. DGL Historical Fuel Sales

Year	100LL	100LL Gallons Sold	Jet A	Jet A Gallons Sold
2007	$0.00	N/A	$15,815.50	N/A
2008	$34,278.99	N/A	$18,091.63	N/A
2009	$53,035.76	11,960	$35,207.48	4,310
2010	$179,197.52	24,550	$26,048.84	6,010
2011	$69,138.58	16,100	$59,041.73	12,110
2012	$53,124.59	11,600	$26,392.09	5,830
2013	$56,328.70	11,580	$34,478.81	6,140
2014	$74,065.46	15,190	$18,312.81	3,120
2015	$64,387.62	15,210	$20,147.55	3,520

Source: Douglas Municipal Airport

2.3 National Aviation Trends

The preparation of forecasts of aviation-related demand requires a general understanding of recent and anticipated national trends in the aviation industry. Although trends that are occurring nationally don't always significantly impact individual airports, they are important to examine in comparison to recent levels of local activity. Although DGL experiences some military operations, the majority of the activity at the Airport is associated with general aviation (also referred to as GA). As such, this section focuses on past and anticipated trends in the general aviation industry. General aviation aircraft are defined as all aircraft not flown by commercial airlines or the military.

The general aviation industry has experienced significant changes in recent years. At the national level, fluctuating levels of general aviation usage caused by economic upturns/downturns resulting from the nation's business cycle has significantly impacted general aviation demand. This section examines general aviation trends, and the numerous factors that have influenced those trends in the U.S.

2.3.1 General Aviation Overview

There are 19,360 public and private airport facilities located throughout the United States, as reported by the FAA; 3,331 of these airports are included in the FAA's NPIAS, indicating that they are eligible for federal funding assistance. Commercial service airports, those that accommodate scheduled passenger airline service, represent a relatively small portion (514 or roughly 15 percent) of the airports in the NPIAS. General aviation airports, including relievers, comprise 85 percent of the NPIAS.

DGL is not included in the NPIAS. DGL is included in the Arizona system of airports and is eligible for state grant funding.

General aviation activity has declined in recent years. According to the *FAA Aerospace Forecast, Fiscal Years 2016-2036*, since 2000, operations on the national level have declined at an average annual rate of 3.3 percent. According to the FAA, much of this decline can be attributed to economic conditions and fuel prices.

2.3.2 Business Use of Aviation

Based on information provided by local businesses, it has been identified that DGL is occasionally used for business and corporate use. The City of Douglas and Agua Prieta, immediately south of the U.S.-Mexico border, are home to a number of businesses that currently use the Airport for business travel. For the purposes of this MPU, the terms business and corporate aircraft are used interchangeably, as they both refer to aircraft used to support a business enterprise; though as defined by the FAA, they each have their own distinct definition.

The FAA defines business use as:

"Any use of an aircraft (not for compensation or hire) by an individual for transportation required by the business in which the individual is engaged."

The FAA defines corporate transportation as:

"Any use of an aircraft by a corporation, company or other organization (not for compensation or hire) for the purposes of transporting its employees and/or property, and employing professional pilots for the operation of the aircraft."

The FAA estimated in their *2015-2019 Report to Congress* that business aircraft usage comprises 8.7 percent of all aviation activity. An additional 9.7 percent of the nation's general aviation activity is considered corporate. These figures represent a general decline nationally in the use of business/corporate aviation between 2008 and 2012 when they totaled 9.6 percent and 11.9 percent, respectively.

Increasing personnel productivity is one of the most important benefits of using business aircraft. Companies flying general aviation aircraft for business control scheduling capabilities. Itineraries can be changed as needed, and aircraft can fly to destination not served by scheduled airlines.

Business aircraft usage provides the following:

- Employee time savings
- Increased enroute productivity
- Minimized time away from home
- Enhanced industrial security
- Enhanced personal safety
- Management control over scheduling

Many of the nation's employers that use general aviation are members of the National Business Aircraft Association (NBAA). The NBAA's *Business Aviation Fact Book 2014* shows that nationwide business aviation contributes $150 billion to the U.S. economic output. The NBAA Fact Book also indicates that only three percent of business aircraft are flown by Fortune 500 companies; a large spectrum of companies and organizations of various sizes operate the remaining 97 percent. This indicates that the use of business aviation is not exclusive to large companies, and has practicable application for many different types of businesses.

Business use of general aviation aircraft ranges from small, single-engine aircraft to multiple aircraft corporate fleets supported by dedicated flight crews and mechanics. General aviation aircraft use allows employers to transport personnel and air cargo efficiently. Businesses often use general aviation aircraft to link multiple office locations and reach existing and potential customers. Business aircraft use by smaller companies has escalated as various chartering, leasing, time-sharing, interchange agreements, partnerships, and management contacts have emerged.

Though business use of general aviation has declined in recent years nationally, it is expected that the unique business climate within the DGL market area will result in continued growth in the local aviation environment. According to American Fact Finder and the 2010 Census, the City of Douglas has a population of 17,378. While this is a relatively small number, it does not account for the population of the neighboring town of Agua Prieta, Mexico. According to

Douglas City officials, the majority of the City's sales tax (70%) is generated from residents of Mexico.

The city of Agua Prieta, Mexico is home to multiple Maquiladoras (factories) that produce manufactured goods, several of which are shipped across the border to distribution centers in Douglas. From there, they are routed to cities all over the U.S. The Maquiladoras and distribution centers provide employment to thousands of people in Agua Prieta and Douglas. The Port of Entry to Mexico, located on the City of Douglas/Agua Prieta border, provides access to and from each city. Douglas City officials and local Airport stakeholders have identified that demand to pass through the port of entry exceeds its capacity and that significant improvements are needed; however, it continues to be a gateway for local, regional, and international business and trade.

2.3.3 FAA Forecasts

The FAA publishes forecasts on an annual basis that summarize anticipated trends in most components of civil aviation activity. Each published forecast revisits previous activity forecasts and updates them after examining the previous year's trends in aviation and economic activity. Many factors are considered in the FAA's development of forecasts, including U.S. and international economic trends and projected fuel costs. FAA forecasts provide detailed analyses of historical and forecasted aviation trends and provide a general framework for anticipated future level of regional and national aviation activity. Even though DGL is not included in the FAA's NPIAS, the trends and guidelines used by FAA are directly relevant since they represent national activity interests.

Examples of measures of national general aviation activity that are monitored and forecast by the FAA on an annual basis in the FAA Aerospace Forecasts include active pilots, active hours flown, and active aircraft fleet. Historical and projected activity in each of these categories is examined in the following sections. The data presented is based on the most recent available information, contained in *FAA Aerospace Forecasts, Fiscal Years 2016-2036.*

Active Pilots

An active pilot is defined by the FAA as those persons with a pilot certificate and a valid medical certificate. **Table 2-7** presents historical and projected U.S. Active Pilots data by certificate type. Between 2011 and 2016, the total number of active pilots has decreased by 0.63 percent, dropping from a total of 617,128 active pilots to 588,985 active pilots. In the next 20 years, the total number of active pilots is projected to increase by a CAGR of 0.11 percent.

Active Hours Flown

Aircraft hours flown is another statistic used by the FAA to measure and project general aviation activity. Hours flown is a valuable measure because it captures a number of activity-related data including aircraft utilization, frequency of use, and duration of use. As shown in **Table 2-8**, single-engine piston hours are anticipated to continue to diminish over the next 20 years as they have since 2011. Multi-engine hours are also projected to decrease, while turboprop and jet hours are projected to increase steadily. The CAGR of U.S. active hours flown from 2011-2016 decreased by -1.06 percent while it is projected to increase from by 1.20 percent between 2016 to 2036.

Active Aircraft Fleet

The FAA tracks the number of active general aviation aircraft in the U.S. fleet annually. Active aircraft are defined by the FAA as those aircraft currently registered in the U.S. and flying at least one hour during the year. **Table 2-9** summarizes recent active aircraft trends as well as future active aircraft by aircraft type from 2011-2036.

Similar to active hours flown, the U.S. single-engine and multi-engine piston aircraft fleets are projected to continually decrease through 2036 while turboprop and jet aircraft are anticipated to increase. The total active fleet decreased at an annual rate of -1.59 percent between 2011 and 2016 but is projected to increase at a CAGR of 0.18 percent through 2036.

FAA Forecast Summary

The cyclical nature of general aviation activity is illustrated in the historical national data presented in this analysis. While national general aviation activity experienced rebounded growth during the mid and late- 1990's, the terrorist attacks of 2001 and the economic downturn of 2008 dampened this nationwide activity. FAA projections of U.S. general aviation activity, including active pilots, active aircraft, and hours flown all showed varied levels of growth and decline through the FAA's forecast horizon of 2036.

Table 2-7. Historical and Projected U.S. Active Pilots

Certificate Type	Historical						Projected				CAGR 2011-2016	CAGR 2016-2036
	2011	2012	2013	2014	2015	2016	2017	2021	2031	2036		
Students	118,657	119,946	120,285	120,546	122,729	123,900	124,650	126,600	130,350	131,800	-3.50%	-0.27%
Recreational	227	218	238	220	190	190	190	185	180	180	7.73%	4.63%
Sport	4,066	4,493	4,824	5,157	5,482	5,900	6,350	8,000	12,450	14,600	-2.60%	-0.63%
Private	194,441	188,001	180,214	174,883	170,718	170,450	168,250	163,600	152,500	150,200	-3.97%	-0.52%
Commercial	120,865	116,400	108,206	104,322	101,164	98,700	96,750	92,200	89,300	88,950	1.69%	0.42%
Transport	142,511	145,590	149,824	152,933	154,730	155,000	155,400	156,600	163,800	168,600	0.46%	2.27%
Rotorcraft	15,220	15,126	15,114	15,511	15,566	15,575	15,645	16,685	21,555	24,420	-1.84%	-0.12%
Glider	21,141	20,802	20,381	19,927	19,460	19,270	19,240	19,025	18,835	18,825	-0.93%	0.07%
Total:	**617,128**	**610,576**	**599,086**	**593,499**	**590,039**	**588,985**	**586,475**	**582,895**	**588,970**	**597,575**	-0.63%	0.11%
Instrument Rated[1]	314,122	311,952	307,120	306,066	304,329	304,400	303,900	304,300	307,700	311,300	0.87%	0.31%

[1]Instrument rated pilots should not be added to other categories in deriving total.
Source: FAA Aerospace Forecasts 2016-2036

Table 2-8. Historical and Projected U.S. Active Hours Flown (in thousands)

Certificate Type	Historical						Projected				CAGR 2011-2016	CAGR 2016-2036
	2011	2012	2013	2014	2015	2016	2017	2021	2031	2036		
Single-engine Piston	11,844	11,442	10,706	10,395	10,312	10,225	10,151	9,879	9,285	9,119	-2.90%	-0.57%
Multi-engine Piston	1,782	1,766	1,646	1,573	1,555	1,541	1,530	1,497	1,496	1,505	-2.86%	-0.12%
Turboprop	2,463	2,733	2,587	2,613	2,582	2,564	2,556	2,589	3,113	3,575	0.81%	1.68%
Jet	3,407	3,418	3,488	3,881	3,913	4,016	4,164	4,771	6,425	7,422	3.34%	3.12%
Rotorcraft	3,411	3,454	2,949	3,242	3,240	3,323	3,417	3,885	4,905	5,430	-0.52%	2.49%
Experimental	1,203	1,243	1,191	1,244	1,260	1,283	1,311	1,418	1,722	1,876	1.30%	1.92%
Sport	278	169	173	165	180	194	208	268	426	505	-6.94%	4.90%
Other	181	180	135	158	154	152	152	152	151	150	-3.43%	-0.07%
Total:	**24,569**	**24,405**	**22,875**	**23,271**	**23,196**	**23,298**	**23,489**	**24,459**	**27,523**	**29,582**	**-1.06%**	**1.20%**

Source: FAA Aerospace Forecasts 2016-2036

Table 2-9. Historical and Projected U.S. Active Aircraft Fleet

Certificate Type	Historical					Projected				CAGR 2011-2016	CAGR 2016-2036
	2011	2012	2013	2014	2015	2016	2021	2031	2036		
Single-engine Piston	136,895	128,847	124,398	126,036	125,050	124,055	119,585	110,685	107,160	-1.95%	-0.73%
Multi-engine Piston	15,702	14,313	13,257	13,146	13,085	13,025	12,760	12,095	11,695	-3.67%	-0.54%
Turboprop	9,523	10,304	9,619	9,777	9,570	9,420	9,215	10,990	12,635	-0.22%	1.48%
Jet	11,650	11,793	11,637	12,362	12,475	12,635	13,975	18,015	20,770	1.64%	2.52%
Rotorcraft	10,082	10,055	9,765	9,966	10,240	10,540	11,985	14,730	16,255	0.89%	2.19%
Experimental	24,275	26,715	24,918	26,191	26,435	26,590	27,690	30,155	31,640	1.84%	0.87%
Sport	6,645	2,001	2,056	2,231	2,410	2,590	3,490	5,275	6,100	-17.18%	4.38%
Other	5,681	5,006	4,277	4,699	4,615	4,570	4,525	4,465	4,440	-4.26%	-0.14%
Total:	**220,453**	**209,034**	**199,927**	**204,408**	**203,880**	**203,425**	**203,225**	**206,410**	**210,695**	**-1.59%**	**0.18%**

*Experimental Light-sport category that was previously shown under Sport Aircraft is moved under Experimental Aircraft category, starting in 2012.
Note: An active aircraft is one that has a current registration and was flown at least one hour during the calendar year.
Source: FAA Aerospace Forecasts 2016-2036

2.4 Based Aircraft Projections

The FAA maintains projections of aviation-related activity in its Terminal Area Forecasts (TAF). Terminal Area Forecasts are only available for NPIAS airports, and as DGL is a Non-NPIAS facility, the only previous forecast, other than the dated 1994 Airport Master Plan, is from the 2008 ASASP. As shown in **Table 2-10**, the ASASP projected that there would be 29 based aircraft at DGL in 2016. As previously noted, an on-site inventory identified that there were 12 based aircraft at the Airport in 2016. As such, the previous forecasts from the ASASP are no longer accurate, and additional methodologies to project based aircraft at DGL have been developed. The following sections identify 20-year forecasts of based aircraft demand using a variety of methodologies.

Table 2-10. DGL Based Aircraft Comparison

Historical	ASASP	DGL
2016	29	12
Projected		
2021	30	
2026	31	
2036	33	

Source: 2008 ASASP

2.4.1 Based Aircraft Forecast Methodologies

The 2008 ASASP reports that there were 27 based aircraft at Douglas Municipal Airport in 2007. A physical count of based aircraft was completed in July 2016 and confirmed a total of 12 BAC at DGL. Without accurate historical records between 2007 and 2016, certain types of methodologies typically employed for forecasting are not useful for projections presented in this MPU. Methodologies such as regression or trend analysis utilize historical data to project future activity. Since these methodologies will not provide an accurate portrayal of aviation-related activity at DGL, based aircraft forecasts are derived from two types of forecasting methodologies: socioeconomic and market share.

Socioeconomic Methodology – Population Variable

Socioeconomic factors of a community do not always impact or reflect aviation-related activity at a nearby airport; however, they can often give direction to the overall health of the local economy and the potential type of aircraft activity that may be occurring at that airport. According to data obtained from Woods and Poole Economics, Inc., an independent firm that specializes in long-term county economic and demographic projections, the population of Cochise County is anticipated to increase from 146,034 in 2016 to 194,704 in 2036, which reflects a CAGR of 1.45 percent. The population of Cochise County is anticipated to increase at a slightly lesser rate than the state of Arizona (1.54 percent CAGR).

Based on conversations with Airport management and tenants, the number of based aircraft at DGL in 2016 was 12. The Socioeconomic-Population Variable Methodology for based aircraft forecasts assumes that between 2016 and 2036, the number of based aircraft at the Airport will increase at the same rate as the population of Cochise County (see **Table 2-11**). As shown, the number of based aircraft at DGL is projected to increase from 12 in 2016 to 16 in 2036.

Table 2-11. DGL Socioeconomic – Population Variable Based Aircraft Forecast

Historical	Cochise County Population	DGL Based Aircraft
2016	146,030	12
Projected		
2021	158,180	13
2026	170,410	14
2036	194,700	16
CAGR 2016-2036	**1.45%**	**1.45%**

Sources: Woods and Poole Economics, Inc., Kimley-Horn

Socioeconomic Methodology – Employment Variable

Similar to the Socioeconomic-Population Variable Methodology, the Socioeconomic-Employment Variable Methodology assumes that between 2016 and 2036 the number of based aircraft at the Airport will increase at the same rate as the number of employed individuals in Cochise County (see **Table 2-12**). According to Woods and Poole Economics, Inc., the number of employed individuals in Cochise County is anticipated to increase from 63,722 in 2016 to 90,922 in 2036, a CAGR of 1.79 percent. As shown, the number of based aircraft at DGL is projected to increase from 12 in 2016 to 17 in 2036.

Table 2-12. DGL Socioeconomic – Employment Variable Based Aircraft Forecast

Historical	Cochise County Employment	DGL Based Aircraft
2016	63,720	12
Projected		
2021	69,450	13
2026	75,780	14
2036	90,920	17
CAGR 2016-2036	**1.79%**	**1.79%**

Sources: Woods and Poole Economics, Inc., Kimley-Horn

Socioeconomic Methodology – Per Capita Personal Income Variable

Per capita personal income (PCPI) can be an indicator of a local population's propensity to travel or own an aircraft. Commercial service is not provided at Douglas Municipal Airport; however, the Airport has the capabilities to support some jet traffic due to its existing runway length and on-site jet fueling facilities. Per capita personal income is examined to project based aircraft at the Airport and the result is depicted in **Table 2-13**. As shown, per capita income in Cochise County is anticipated to increase from $39,583.20 in 2016 to $56,088.90 in 2036, a CAGR of 1.76 percent. This methodology projects the number of based aircraft at the Airport from 2016 to 2036 to increase at the same rate as per capita income in Cochise County. According to the Socioeconomic-Per Capita Personal Income Variable Methodology, the number of based aircraft

at DGL is projected to increase from 12 in 2016 to 17 in 2036. It should be noted that per capita data obtained from Woods and Poole Economics, Inc. is reported in constant dollars (year 2015) to adjust for inflation over time.

Table 2-13. DGL Socioeconomic – Per Capita Personal Income Variable ($2015) Based Aircraft Forecast

Historical	Cochise County PCPI	DGL Based Aircraft
2016	$39,583.2	12
Projected		
2021	$42,573.5	13
2026	$46,274.3	14
2036	$56,088.9	17
CAGR 2016-2036	**1.76%**	**1.76%**

Sources: Woods and Poole Economics, Inc., Kimley-Horn

Socioeconomic Methodology – Total Retail Sales Variable

The fourth socioeconomic variable examined to project based aircraft at the Airport is Total Retail Sales. Retail sales indicate the spending strength of a given location and include motor vehicle, furniture and home furnishings, electronics and appliances, building materials, food and beverage, and other miscellaneous items. According to Woods and Poole Economics, Inc. data, total retail sales in Cochise County from $1,735.90 (in millions) in 2016 to $2,849.50 in 2036, a CAGR of 2.51 percent. This methodology assumes that from 2016 to 2036, the number of based aircraft at DGL will increase at the same rate as total retail sales in Cochise County (see **Table 2-14**). As shown, the number of based aircraft at the Airport is projected to increase from 12 in 2016 to 20 in 2036. As with per capita income, total retail sales are reported in constant dollars (year 2015) to adjust for inflation over time.

Table 2-14. DGL Socioeconomic – Total Retail Sales Variable ($2015) Based Aircraft Forecast

Historical	Cochise County Total Retail Sales (Millions)	DGL Based Aircraft
2016	$1,735.9	12
Projected		
2021	$1,971.7	14
2026	$2,231.8	15
2036	$2,849.5	20
CAGR 2016-2036	**2.51%**	**2.51%**

Sources: Woods and Poole Economics, Inc., Kimley-Horn

Socioeconomic Methodology – Summary of Results

A summary of the results of the socioeconomic methodologies used to project based aircraft at the Airport is shown in **Table 2-15**, including the CAGR for each methodology from 2016-2036. The Population, Employment, and Per Capita Income Methodologies have a relatively similar CAGR. The Total Retail Sales Methodology shows a higher growth rate (2.51 percent)

compared to the other three socioeconomic methodologies. This growth is most likely attributed to the sales from Mexican visitors in the City of Douglas and surrounding areas.

Table 2-15. Socioeconomic Forecasts of DGL Based Aircraft

Historical	Population Methodology	Employment Methodology	Per Capita Income Methodology	Total Retail Sales Methodology
2016	12	12	12	12
Projected				
2021	13	13	13	14
2026	14	14	14	15
2036	16	17	17	20
CAGR 2016-2036	**1.45%**	**1.79%**	**1.76%**	**2.51%**

Notes: CAGR is based on 2016-2036 projections. 2015 Based Aircraft methodology is derived from the 2008 Arizona State Airport System Plan (ASASP) data records extrapolated from 2007.
Sources: Woods and Poole Economics, Inc., Kimley-Horn

Based Aircraft Forecast - Market Share Methodology

The second type of methodology used to project based aircraft at DGL is market share. Market share compares an individual component's share (based aircraft at DGL) with a larger market. Two markets were compared against based aircraft at DGL; the State of Arizona, and a regional market that includes based aircraft at nearby airports including Cochise College Airport (P03), Bisbee-Douglas International Airport (DUG), and Bisbee Municipal Airport (P04).

As mentioned in previous sections of this MPU, there were 12 based aircraft at the Airport in 2016. According to the FAA TAF, there were 5,540 based aircraft at NPIAS airports in the state of Arizona. With the known based aircraft, DGL accounted for a 0.22 percent market share of based aircraft in Arizona in 2016. FAA TAF projections of based aircraft in Arizona are depicted in **Table 2-16**. The 0.22 percent market share is held constant throughout the projection period, which results in an increase from 12 based aircraft at DGL in 2016 to 16 in 2036.

Table 2-16. DGL Market Share Methodology
Based Aircraft Forecast

Historical	Arizona Based Aircraft	DGL Based Aircraft	DGL Market Share
2016	5,540	12	0.22%
Projected			
2021	5,980	13	0.22%
2026	6,470	14	0.22%
2036	7,590	16	0.22%
CAGR 2016-2036	**1.58%**	**1.58%**	

Sources: Woods and Poole Economics, Inc., Kimley-Horn

The second market share methodology compares based aircraft at DGL to the previously mentioned nearby airports. Existing and projected based aircraft data for P03, DUG, and P04 were obtained from Airport Master Plans and extrapolated through 2036 as necessary. It was determined that based aircraft at DGL accounted for approximately 25 percent of the regional market. This figure is held constant throughout the projection period.

As shown in **Table 2-17**, the sum of 2016 based aircraft at the four airports was 48. Keeping the percent of DGL based aircraft constant at 25 percent, the total number of based aircraft at DGL is projected to be 14 by 2036, which reflects a CAGR of 0.77 percent.

Table 2-17. Douglas and Regional Airport (Market Share) Based Aircraft Forecast

Historical	Douglas Municipal Airport Based Aircraft	Cochise College Airport Based Aircraft	Bisbee-Douglas International Based Aircraft	Bisbee Municipal Based Aircraft	Total Based Aircraft	% DGL Based Aircraft
2016	12	19	6	11	48	25%
Projected						
2021	13	21	6	11	51	25%
2026	13	22	7	11	54	25%
2036	14	24	7	11	57	26%
CAGR 2016-2036	**0.77%**	**1.17%**	**0.77%**	**0.00%**	**1.09%**	

Sources: Douglas Municipal Airport, P03 Master Plan Update, DUG Master Plan Update, FAA TAF

Based Aircraft Forecast – Summary

Table 2-18 summarizes the six methodologies used to project based aircraft at DGL from 2016 to 2036. Due the limited growth in socioeconomic indicators in Cochise County, based aircraft, depending on methodology, are projected to increase by two to eight aircraft in the 20-year timeframe.

Table 2-18. Based Aircraft Forecast - Summary

Historical	Population Variable BAC	Employment Variable BAC	PCPI Variable BAC	Total Retail Sales Variable BAC	AZ Market Share Variable BAC	Regional Market Share Variable BAC
2016	12	12	12	12	12	12
Projected						
2021	13	13	13	14	13	13
2026	14	14	14	15	14	13
2036	16	17	17	20	16	14
CAGR 2016-2036	**1.45%**	**1.79%**	**1.76%**	**2.51%**	**1.58%**	**0.77%**

Source: Woods and Poole Economics, Inc.

Based Aircraft Forecast – Preferred Methodology

Socioeconomic population, employment, per capita income, and retail sales methodologies all suggest somewhat similar growth rates of based aircraft at DGL through 2036. Due to the regional socioeconomic status of Cochise County and the City of Douglas staying fairly consistent, this data can be referred to, but not used as a preferred methodology. The significant decline in the number of based aircraft at DGL between 2007 and 2016 also suggests that local socioeconomic factors are not the most significant indicator of Airport activity.

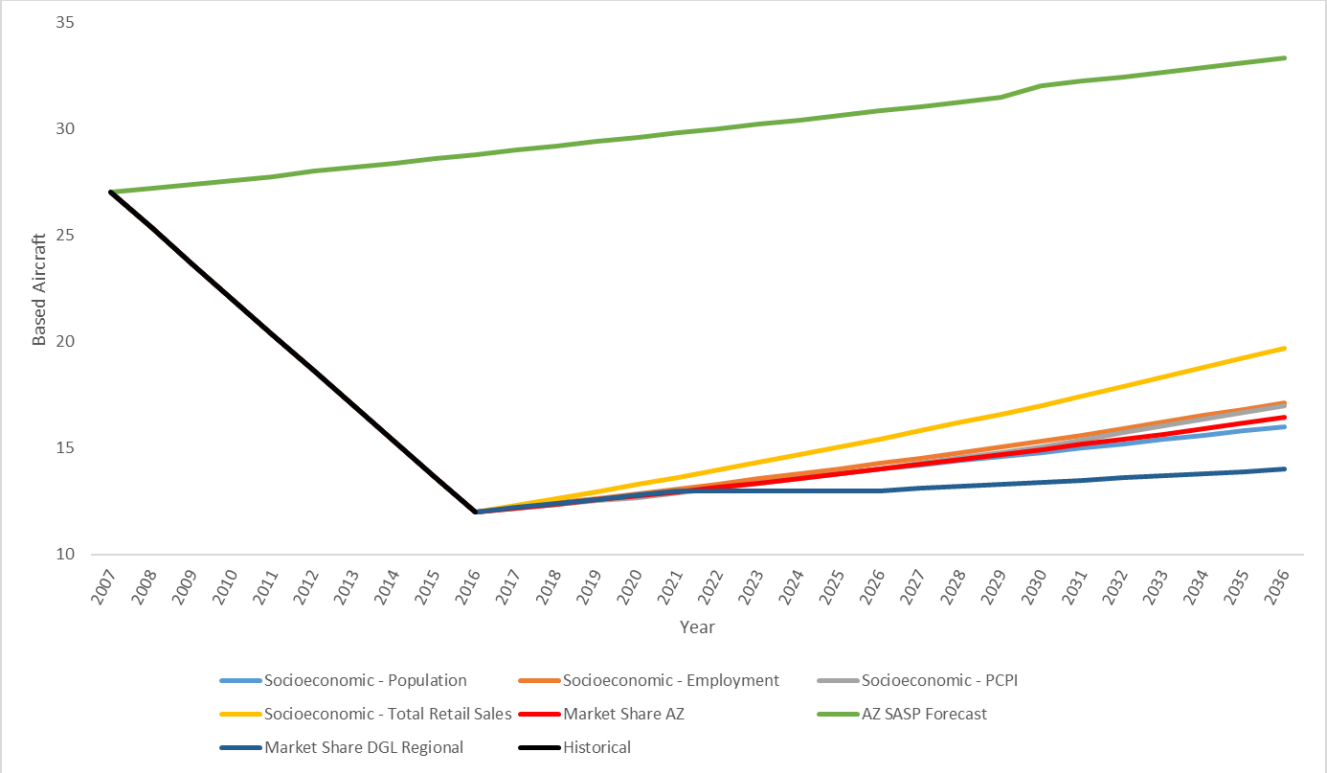
Because they do not account for the decline in based aircraft that has occurred in recent years, based aircraft projections based on the ASASP shown in **Table 2-9** are not accurate projections of based aircraft at DGL in 2036. The ASASP projected 27 based aircraft at DGL in 2007 with a CAGR of 0.68 percent. Using this method, DGL would have 29 based aircraft in 2016, which is incorrect based on recent inventory data. As such, the methodology that utilizes the ASASP's projections is not accurate and is not to be used as a preferred method for determining based aircraft at DGL.

Due to the consistent economic climate in Cochise County, it is not anticipated that there will be a significant change in based aircraft at DGL. Consequently, it is reasonable to assume the based aircraft market share of DGL compared to the state of Arizona and region will remain constant over time. The market share methodologies are based on available data and provide a more accurate report of based aircraft than that of the ASASP created in 2008. Because the regional market share methodology relies on actual data reported in airport master plans, and it is assumed that DGL's market share compared with overall demand in the region will remain relatively constant, the regional market share methodology is the preferred methodology for based aircraft. A summary of all methodologies for based aircraft is previously shown in **Table 2-18** and below in **Exhibit 2-1**.

It should be noted that although the regional market share methodology is the preferred forecast for based aircraft at DGL, projections of activity described by other methodologies represent a reasonable range of potential outcomes at the Airport. While the difference in the number of

projected based aircraft is relatively small, this range of possible future aircraft at DGL provides a general indication of what the Airport should plan for with respect to facility requirements.

Exhibit 2-1. Based Aircraft Forecast - Summary



Sources: Woods and Poole Economics, Inc., 2008 Arizona State Airports System Plan, Kimley-Horn

Based Aircraft Fleet Mix Forecast

As with most general aviation airports, the majority of the based aircraft fleet at DGL is comprised of single-engine piston aircraft. The FAA projects the national based aircraft fleet mix in 2016 to remain fairly stable with little changes throughout the projection period with one exception. National trends and FAA TAF forecasts indicate strong growth in the number of general aviation and air taxi jet aircraft in operation in the U.S. through 2036. The number of jets in operation in the U.S. in anticipated to increase from 12,475 in 2015 to 20,770 in 2036, a CAGR of 2.5 percent. In 2015, there were no based jets at DGL, and despite the recent increase in jet operations nationally, it is anticipated that DGL will not have a based jet by 2036. Although the Airport is equipped with adequate facilities to accommodate jet operations, given the Airport's location and regional socioeconomic status, it is more likely that single-engine prop, rotorcraft, and twin-engine aircraft will continue to dominate the fleet mix at DGL.

In 2016, as noted by the DGL Airport management and stakeholders, there were 10 single-engine aircraft, one multi-engine aircraft, and one helicopter based at the Airport. As shown in **Table 2-19**, single-engine prop aircraft make up 83.33 percent of the fleet mix, while multi-engine and helicopter aircraft each make up 8.33 percent of the entire fleet. Using the preferred based aircraft methodology to project BAC through 2036, and keeping the fleet mix percentage constant throughout the projection period, the fleet mix is projected through 2036. As the total based aircraft fleet is anticipated to increase by 2 aircraft through 2036, the only category that is anticipated to increase in the number of aircraft is single-engine piston aircraft.

Table 2-19. DGL Based Aircraft Fleet Mix Forecast

Historical	Single-Piston	%	Multi-Piston	%	Jet	%	Helicopter	%	Total
2016	10	83.33%	1	8.33%	0	0.00%	1	8.33%	12
Projected									
2021	10	83.33%	1	8.33%	0	0.00%	1	8.33%	13
2026	11	83.33%	1	8.33%	0	0.00%	1	8.33%	13
2036	12	83.33%	1	8.33%	0	0.00%	1	8.33%	14
CAGR	**0.92%**	**0.00%**	**0.00%**	**0.00%**		**0.00%**	**0.00%**	**0.00%**	**0.77%**

Sources: Douglas Municipal Airport, Kimley-Horn

2.5 Aircraft Operations Projections

Aircraft operations projections are used to determine funding and design criteria at airports. At airports with ATCTs, aircraft operations are tracked and recorded by the air traffic controller. Most airport in the United States, including DGL, do not have air traffic control towers. These airports are referred to as non-towered airports, and they make up the vast majority of the airports open to the public for business. Accordingly, unlike with larger towered airports, these non-towered airports do not always have readily available records on aircraft activity.

There are several factors that impact the number of aircraft operations that occur at a particular airport. The number of based aircraft, local demographics, national economic and aviation-related trends, proximity to other airports, capability and existing condition of facilities, business needs, and several other factors influence aircraft operations at an airport. At non-towered facilities such as DGL it is difficult to accurately measure historical aircraft operations.

The only historical data available to project operations at DGL is from the ASASP which estimated 11,000 operations in 2007. Due to the lack of historical operations data available, time series or regression analysis methodologies would not accurately portray projected aviation-related activity. The methodologies utilized for purposes of this MPU examine operations based on socioeconomic factors, market share, and operations per based aircraft (OPBA).

2.5.1 Aircraft Operations Forecast – Baseline Estimate

As discussed above, aircraft operations data are not readily accessible because of the lack of an ATCT and database estimates from sources such as the FAA TAF. Consequently, a baseline estimate for 2016 operations is based on observations from Airport management and tenants. It was determined that 2,600 operations occurred at DGL in 2016. This figure is used to project operational demand moving forward.

Socioeconomic Methodology – Population Variable - Forecasts

As with based aircraft forecasts, one methodology used to determine projections of aircraft operations was an examination of local socioeconomic data. As shown in **Table 2-20**, based on data provided from Woods and Poole Economics, Inc. the population of Cochise County is projected to increase from 146,034 in 2016 to 194,704 in 2036. This increase in population over the 20-year period represents a CAGR of 1.45 percent. The estimate of 2,600 aircraft operations in base year 2016 is applied to the projected population growth rate of Cochise County. As shown, this methodology projects 3,470 operations will occur at DGL by 2036, which represents a CAGR of 1.45 percent.

Table 2-20. DGL Socioeconomic - Population Variable Operations Forecasts

Historical	Cochise County Population	Total Operations
2016	146,030	2,600
Projected		
2021	158,180	2,820
2026	170,410	3,030
2036	194,700	3,470
CAGR 2016-2036	**1.45%**	**1.45%**

Sources: Douglas Municipal Airport, Woods and Poole Economics, Inc., Kimley-Horn

Socioeconomic Methodology – Employment Variable – Forecasts

Using the same socioeconomic methodology, total operations at DGL are developed by applying the CAGR of total employment of Cochise County between 2016 and 2036 to aircraft operations in base year 2016. As shown in **Table 2-21**, employment in the County is projected to increase from 63,722 in 2016 to 90,922 in 2036, which represents a CAGR of 1.79 percent. By applying the same growth rate to the number of operations reported at DGL in 2016, 3,710 annual operations are projected by 2036.

Table 2-21. Socioeconomic – Employment Variable Operations Forecast

Historical	Cochise County Employment	Total Operations
2016	63,720	2,600
Projected		
2021	69,450	2,830
2026	75,780	3,090
2036	90,920	3,710
CAGR 2016-2036	**1.79%**	**1.79%**

Sources: Douglas Municipal Airport, Woods and Poole Economics, Inc., Kimley-Horn

Socioeconomic Methodology – Per Capita Personal Income Variable - Forecasts

As stated in a previous section, per capital personal income (PCPI) can be an indicator of a local population's propensity to travel or own an aircraft. As shown in **Table 2-22**, the PCPI of Cochise County was $39,583.20 in 2016, and is projected to increase to $56,088.90 in 2036. This exhibits a CAGR of 1.76 percent during the 20-year projection period. By applying the 1.76 percent growth rate to the 2,600 operations at DGL in 2016, aircraft operations are projected to be 3,680 by 2036.

Table 2-22. Socioeconomic – Per Capita Personal Income Variable $2015 Operations Forecast

Historical	Cochise County PCPI	Total Operations
2016	$39,583.2	2,600
Projected		
2021	$42,573.5	2,800
2026	$46,274.3	3,040
2036	$56,088.9	3,680
CAGR 2016-2036	**1.76%**	**1.76%**

Sources: Douglas Municipal Airport, Woods and Poole Economics, Inc., Kimley-Horn

Socioeconomic Methodology – Total Retail Sales Variable – Forecasts

The final socioeconomic methodology used for determining aircraft operations at DGL is the Total Retail Sales Variable. As shown in **Table 2-23**, the total retail sales in Cochise County in 2016 was $1,735.9 (millions), increasing to $2,849.5 in 2036. This increase represents a 2.51 percent CAGR for the 20-year period. After applying the 2.51 percent CAGR to the 2,600 operations currently at DGL, operations are projected to be 4,270 by 2036.

Table 2-23. Socioeconomic – Total Retail Sales Variable ($2015)
Operations Forecast

Historical	Cochise County Total Retail Sales (millions)	Total Operations
2016	$1,735.9	2,600
Projected		
2021	$1,971.7	2,950
2026	$2,231.8	3,340
2036	$2,849.5	4,270
CAGR 2016-2036	**2.51%**	**2.51%**

Sources: Douglas Municipal Airport, Woods and Poole Economics, Inc., Kimley-Horn

Operations Forecast – Market Share Methodology

Similar to based aircraft, two market share methodologies were used to project DGL operations. Two tables were created to show the aircraft operations market share at DGL. **Table 2-24** identifies the market share of aircraft operations at DGL compared to the state of Arizona. **Table 2-25** compares aircraft operations of DGL to the regional market comprised of P03, P04, and DUG.

As shown in **Table 2-24**, in 2016, Arizona general and civil aviation operations were projected to be 2,583,163 compared to 2,600 operations at DGL, which represents a market share of 0.101 percent. This percentage is held constant and results in 2,750 operations by 2036.

Table 2-24. DGL Market Share Methodology
Operations Forecast

Historical	Arizona Operations	DGL Operations	DGL Market Share
2016	2,583,163	2,600	0.101%
Projected			
2021	2,616,600	2,630	0.101%
2026	2,651,603	2,670	0.101%
2036	2,726,912	2,750	0.101%
CAGR 2016-2036	**0.27%**	**0.27%**	**0.00%**

Sources: Douglas Municipal Airport, Woods and Poole Economics, Inc., Kimley-Horn

The second market share methodology used to project operations at DGL is the regional airport market share methodology. This market share methodology compares the total number of annual operations at DGL in 2016 to annual operations at the surrounding airports consisting of P03, P04, and DUG.

Using forecasts of aircraft operations information from recent Master Plan Updates for DUG and P03, and using FAA TAF records for P04, operations estimates and projected activity was developed for the 2016 to 2036 timeframe.

As shown in **Table 2-25**, in 2016, the total operations of the four regional market airports were 61,920. Of the 61,920 operations, 2,600 operations came from DGL, making up 4.2 percent of the regional airport market share. Using Master Plan and FAA TAF projections and keeping the percentage of DGL operations constant, the number of operations at DGL in 2036 is projected to be 3,580, which is a CAGR of 1.61 percent.

Table 2-25. Douglas and Regional Airport (Market Share) Operations Forecast

Historical	Douglas Municipal Airport Operations	Cochise College Airport Operations	Bisbee-Douglas International Airport Operations	Bisbee Municipal Airport Operations	Total Operations	% DGL Operations
2016	2,600[1]	54,030	2,380	2,900	61,920	4.2%
Projected						
2021	2,860	59,370	3,010	2,900	68,140	4.2%
2026	3,030	63,150	3,230	2,900	72,300	4.2%
2036	3,580	75,490	3,230	2,900	85,200	4.2%
CAGR 2016-2036	**1.61%**	**1.69%**	**1.53%**	**0.00%**	**1.61%**	

Sources: Douglas Municipal Airport, P03 Master Plan Update, DUG Master Plan Update, FAA TAF

Aircraft Operations Forecast – Operations per Based Aircraft Methodology

As stated in previous sections, because of the significant decline in operations at DGL in recent years, historical data are not taken into account to project future activity. With information from Airport management and primary tenant, the operations per based aircraft (OPBA) was calculated for 2016. As shown in **Table 2-26**, DGL experienced 2,600 operations and had 12 based aircraft in 2016, which calculates to an OPBA of 217. Assuming the OPBA stays constant through 2036, and using the based aircraft projections from the preferred based aircraft methodology, operations are projected to increase from 2,600 in 2016 to 3,030 in 2036, a CAGR of 0.77 percent.

Table 2-26. Operations per Based Aircraft

Historical	DGL Based Aircraft	DGL Operations	DGL OPBA
2016 (est.)	12	2,600	217
Projected			
2021	13	2,820	217
2026	13	2,820	217
2036	14	3,030	217
CAGR 2016-2036	**0.77%**	**0.77%**	

Sources: Douglas Municipal Airport, Kimley-Horn

Aircraft Operations Forecast – Summary

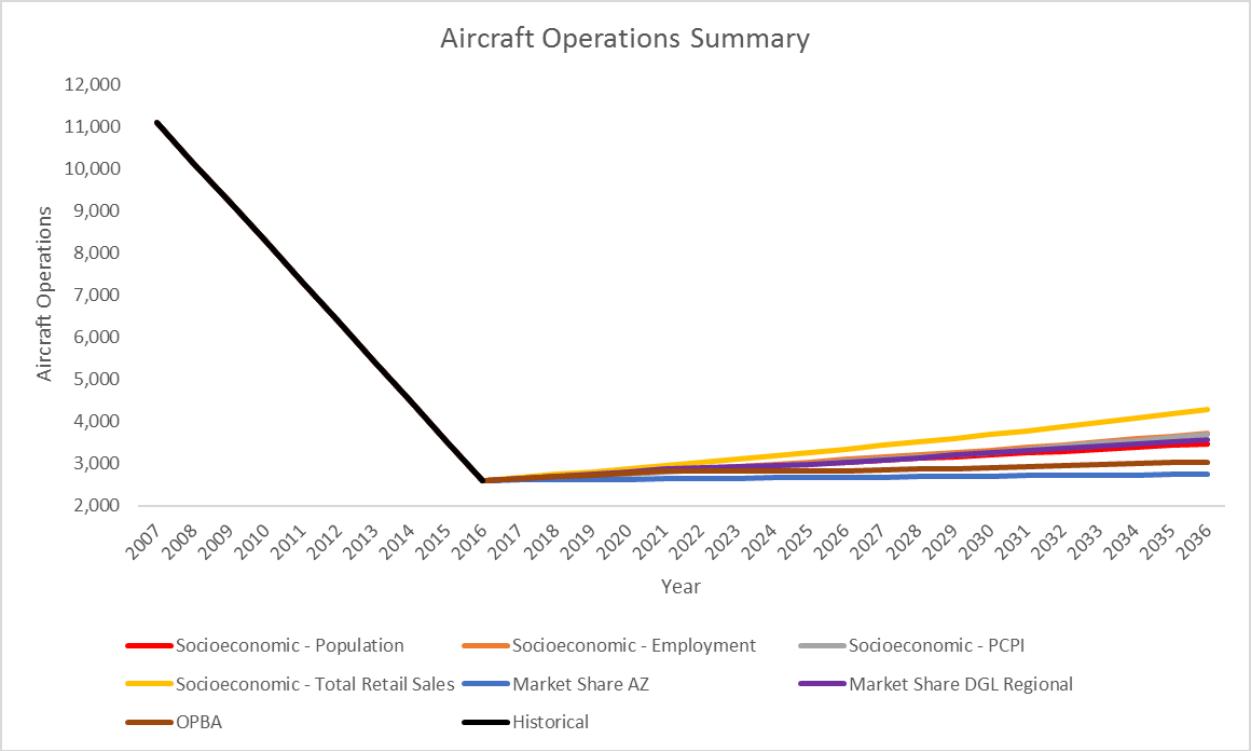
Table 2-27 and **Exhibit 2-2** summarize the seven methodologies used to project operational activity at DGL from 2016 to 2036. The Arizona Market Share Variable represents the lowest estimate of aircraft operations projected at DGL in 2036 at 2,750 operations. Alternately, the Total Retail Sales Variable represents the highest estimate of aircraft operations at the Airport in 2036 at 4,270 operations.

Table 2-27. Aircraft Operations Forecast - Summary

Historical	Population Variable Operations	Employment Variable Operations	PCPI Variable Operations	Total Retail Sales Variable Operations	AZ Market Share Variable Operations	Regional Market Share Variable Operations	OPBA Variable
2016	2,600	2,600	2,600	2,600	2,600	2,600	2,600
Projected							
2021	2,820	2,830	2,800	2,950	2,630	2,860	2,820
2026	3,030	3,090	3,040	3,340	2,670	3,030	2,820
2036	3,470	3,710	3,680	4,270	2,750	3,580	3,030
CAGR 2016-2036	**1.45%**	**1.79%**	**1.76%**	**2.51%**	**0.27%**	**1.61%**	**0.77%**

Sources: Woods and Poole Economics, Inc., 2008 ASASP, FAA TAF, Airport Management and Tenant Estimates, Kimley-Horn

Exhibit 2-2 Aircraft Operations Forecast - Summary



Sources: Woods and Poole Economics, Inc., 2008 Arizona State Airports System Plan, Kimley-Horn

2.5.2 Aircraft Operations Forecast – Preferred Methodology

All seven of the aircraft operations methodologies presented in this MPU rely on information from the Airport management and the sole tenant on the Airport. Examining the socioeconomic methodologies and choosing the preferred methodology is challenging because similar to based aircraft, it is difficult to identify a link between local socioeconomic trends and operational activity at DGL, especially due to the lack of historical data available.

The Arizona state market share methodology shown in **Table 2-24** is not a preferred methodology because it compares the state of Arizona to DGL. Arizona's airport system is very large and complex, and the traits of the state's airports are not necessarily indicative of activity at DGL. As such, while the market share of DGL to the state of Arizona as a whole may remain relatively constant over time, there is not a strong correlation between local and state activity.

The regional airport market share methodology shown in **Table 2-25** represents the regional airport market share of operations and compares it to DGL. By predicting DGL's regional operations will stay constant at 25 percent of the regional operations between P03, P04, and DUG, it can be determined that DGL will account for 3,580 operations in 2036. Because it is assumed that DGL's share of regional demand will remain constant, and based on the fact that projected activity for the regional market is based on recent forecasts developed in airport master plan updates and the FAA TAF, the regional market share methodology is the preferred methodology for aircraft operations.

Similar to based aircraft forecasts, although the preferred methodology for aircraft operations is used for facility planning in subsequent sections of this document, the additional methodologies presented represent a reasonable range of possible activity in the future.

2.5.3 Aircraft Operations Forecast – Local/Itinerant Operations

The most accurate data to identify local vs. itinerant operations at DGL based on Airport management and tenant observations. Based on this information, it is estimated that DGL experiences approximately 75 percent itinerant and 25 percent local activity. These figures are applied to total projected itinerant operations and held constant throughout the projection period (see **Table 2-28)**.

Table 2-28. DGL Operations Forecast – Local/Itinerant Operations

Historical	Total Operations	Local Operations	% Local Ops	Itinerant Operations	% Itinerant Ops
2016	2,600	650	25%	1,950	75%
Projected					
2021	2,860	715	25%	2,145	75%
2026	3,030	758	25%	2,272	75%
2036	3,580	895	25%	2,685	75%
CAGR 2016-2036	**1.61%**	**1.61%**	**0.00%**	**1.61%**	**0.00%**

Sources: Airport Management and tenant, Kimley-Horn

2.5.4 Aircraft Operations Forecast – Operational Fleet Mix

Operational fleet mix projections identify the type of aircraft that currently operate and are anticipated to operate at DGL. These forecasts are calculated based on data obtained from Airport tenants.

As shown in **Table 2-29**, of the 2,600 operations at DGL, 27 percent are from single-engine piston aircraft, 1 percent from multi-engine piston aircraft, 1 percent from jet aircraft, and another 1 percent from turbo prop aircraft. It is assumed that these operational fleet mix percentages will remain constant throughout the 20-year planning horizon.

Table 2-29. DGL Total Operational Fleet Mix Forecast

Year	Total Ops	Single-Engine		Multi-Engine		Jet		Helicopter		Turbo-Prop	
2016	2,600	27%	700	1%	30	1%	30	70%	1,810	1%	30
Projected											
2021	2,860	27%	770	1%	40	1%	40	70%	1,970	1%	40
2026	3,030	27%	820	1%	50	1%	50	70%	2,060	1%	50
2036	3,580	27%	920	1%	70	1%	70	70%	2,450	1%	70
CAGR 2016-2036	**1.61%**		**2.93%**		**1.61%**		**5.19%**		**0.91%**		**1.61%**

Note: Operations by aircraft type are rounded to remain consistent with total operations projections
Sources: Douglas Municipal Airport, Kimley-Horn

2.5.5 Aircraft Operations Forecast – Military Operations

According to Airport management and tenant observations, it is estimated that approximately two military operations occur daily at DGL, primarily conducted by the Arizona and New Mexico Air National Guard. These military operations are primarily helicopter operations, specifically conducted by UH-60 Blackhawks and EC-145 Eurocopters. Based on two operations per day, military traffic accounts for approximately 28 percent of operations at DGL (see **Table 2-30**). It is anticipated that military operations will continue to account for 28 percent of the operations at DGL. By 2036, military operations at DGL are projected to be 1,000 annually.

Table 2-30. Military Operations at DGL

Historical	General Aviation	Military	% Military	Total Operations
2016	1,870	730	28%	2,600
Projected				
2021	2,060	800	28%	2,860
2026	2,180	850	28%	3,030
2036	2,580	1,000	28%	3,580

Sources: Douglas Municipal Airport, Kimley-Horn

2.5.6 Aircraft Operations – Regional Analysis

A specific focus of this MPU is to identify the role DGL plays within the regional setting. As noted, nearby airports include P03, P04, and DUG. While each of these airports is unique and serves different users, they are also a part of a region whose demand is projected to have relatively slow growth in the future. As such, this section provides an analysis of recent historical aircraft operations by aircraft classification based on the FAA's Traffic Flow Management System Counts (TFMSC) Database. This database reports filed flight plan data from the Air Traffic Airspace Lab, typically by users that fly under IFR or are detected by radar, and are captured by the FAA's enroute computers that track aircraft on flight plans. It is important to note that the majority of jet operations and a significant proportion of turbo-prop aircraft operations have filed flight plans. Some non-turbo prop single engine piston aircraft file flight

plans for flight training purposes or when aircraft are carrying passengers, however, it is only a small proportion of overall single-engine piston operations and a limited number of VFR flights.

It should also be noted that different classifications of aircraft have significantly different impacts at airports. Jet aircraft and most turbo-prop aircraft use Jet A fuel, and significantly more fuel than piston-powered aircraft, which use lesser amounts of 100LL fuel or AvGas. Jet and turbo-prop aircraft also typically require more apron space for parking, and stronger pavements compared to piston aircraft. Aircraft operations as recorded by FAA's TFMSC by airport and classification are identified in **Table 2-31**.

Table 2-31. Regional Jet and Turbo-Prop Operations

Aircraft Classification	2013 Operations	2014 Operations	% Change	2015 Operations	% Change	% Change 2013-2015
Douglas Municipal Airport						
Turbo-Prop	10	7	-30%	54	671.4%	**440.0%**
Jet	4	28	600.0%	25	-10.7%	**525.0%**
Total	14	35	150.0%	79	125.7%	**464.3%**
Bisbee-Douglas International Airport (DUG)						
Turbo-Prop	38	62	62.3%	35	-43.5%	**-7.9%**
Jet	83	65	-21.7%	58	-10.8%	**-30.1%**
Total	121	127	5.0%	93	-26.8%	**-23.1%**
Bisbee Municipal Airport (P04)						
Turbo-Prop	10	4	-60.0%	4	0.0%	**-60.0%**
Jet		4	100.0%	3	-25.0%	**100.0%**
Total	10	8	-20.0%	7	-12.5%	**-30.0%**
Cochise College Airport (P03)						
Turbo-Prop	0	0	0.0%	7	100.0%	**100.0%**
Jet	0	0	0.0%	0	0.0%	**0.0%**
Total	**0**	**0**	**0.0%**	**0**	**100.0%**	**100.0%**

Source: Based FAA Traffic Flow Management System Counts Database, Downloaded September 2016

As shown in **Table 2-31**, both turbo-prop and jet aircraft operations increased significantly at DGL between 2013 and 2015. This corresponds with a moderate decline in turbo-prop operations and a significant decline in jet operations at DUG during the same timeframe. Neither P03 nor P04 experience significant turbo-prop or jet activity according to TFMSC.

The increase in jet traffic at DGL and corresponding loss at DUG is consistent with DGL users who have stated that they more frequently operate at DGL instead of DUG, where they used to operate. Specifically, several jet operators associated with the Maquiladoras in Agua Prieta have switched to DGL due to its close proximity to the City of Douglas and the U.S.-Mexico border, as well as the availability of self-serve jet fueling capabilities. Representatives from the Maquiladoras have indicated that is a trend that is anticipated to continue with the anticipation that facilities at DGL are conducive to jet operations, specifically, the rehabilitation of Runway 03-21.

This transfer of turbo-prop and jet aircraft from other airports in the Cochise County region to DGL is a very important element to identify in this MPU. Although projections of aviation demand at the Airport indicate slow, steady growth, the impacts and benefits of increased jet and turbo-prop activity indicate that DGL could increase its market share of demand for these types of operations if they are able to maintain and improve existing facilities.

2.6 Critical Aircraft

Facility planning for general aviation airports is impacted by existing and anticipated levels of aviation-related demand, both based aircraft and annual aircraft operations, as well as the size and type of aircraft that currently operate and are projected to operate at an airport.

As defined in FAA Advisory Circular 150/5300-13A, Change 1, the FAA classifies airports by Airport Reference Code (ARC), which identifies the overall planning and design criteria for the Airport. The ARC is assigned based on the size of the largest aircraft that generally records at least 500 operations annually at an airport; this aircraft is known as the airport's "critical aircraft." The critical aircraft can consist of multiple aircraft that are considered collectively. Although this MPU and its recommendations are not specific to FAA regulations and design standards, it is important to identify the critical aircraft in order to measure the operational capabilities of airside facilities at DGL.

The ARC is based on the highest Runway Design Code (RDC) of a particular airport. The RDC is comprised of the Aircraft Approach Category (AAC), the Aircraft Design Group (ADG), and the approach visibility minimums. The AAC is based on the approach speed of the airport's critical aircraft, and the ADG is based on the critical aircraft's wingspan and tail height. The approach visibility minimums expressed by runway visual range values in feet and relate to the lowest visibility minimums with the instrument approach procedure.

The ARC provides the guidelines for pavement surfaces, safety area dimensions, runway lengths, separation standards, and taxiway criteria in an attempt to ensure that the airfield layout and geometry provide a safe and efficient operating environment for the aircraft that typically use the airport. The ARC consists of a letter and a numeric identifier. The first is the letter, which represents the AAC; the second is the number which represents the ADG. The ARC classifications omit the runway visibility identifier used in the RDC. **Table 2-32** summarizes the classifications for determining these components of the RDC and ARC.

Aircraft approach speeds included in categories A and B are typically small, piston-engine aircraft, whereas C, D, and E are normally larger turboprop or turbine powered aircraft. Similarly, the wingspan and tail height of small, piston-engine aircraft normally correspond to design group I. Typical aircraft in design group II would be a Beechcraft King Air, Cessna Citation, or smaller Gulfstream business jets. Design groups III, IV, and V would represent air carrier aircraft, such as Boeing 737, B-757, and B-747, respectively. Group VI would include the largest of aircraft such as Airbus A-380 or C-5 military cargo aircraft.

Identified in the previous ALP Update conditionally approved in 2003, the critical aircraft at DGL was identified as a Beech King Air C-90, which has a B-II ARC. An analysis of aircraft operations from the FAA's TFMSC database at DGL from 2011 to 2016 identified that the Beech 200 Super King should be the existing and future Critical Aircraft.

Although the King Air 200 does not conduct anywhere near 500 annual operations, it is reflective of the type of aircraft that are currently and projected to occur at the Airport. The TFMSC data identified that more demanding aircraft including the Swearingen Merlin Metro 2, Bombardier Lear Jet 35/36, Cessna Excel/XLS, and others that operate at DGL, however, the number of operations are not significant enough to warrant a change in critical aircraft or ARC classification.

Table 2-32. FAA Aircraft Categories and Design Standards

Aircraft Approach Category	Approach Speed	Airplane Design Group	Wing Span (feet)	Tail Height (feet)	Runway Visual Range (feet)
A	Less than 91	I	Less than 49	Less than 20	5000
B	91 to 120	II	49 to 78	21 to 29	4000
C	121 to 140	III	79 to 117	30 to 44	2400
D	141 to 165	IV	118 to 170	45 to 59	1600
E	166 or Greater	V	171 to 213	60 to 65	1200
		VI	214 up to but less than 262	66 up to but less than 80	

Source: FAA *Advisory Circular 150/5300-13A, Change 1, Airport Design*

2.7 Forecast Summary

It is anticipated that DGL will see limited, but steady growth in based aircraft and annual operations throughout the 20-year projection period. This growth is primarily driven by the Airport's advantageous proximity to both Douglas and Agua Prieta, as well as the existing facilities at the Airport. Business and corporate activity has also steadily increased in recent years, which is largely attributed to the Maquiladoras in Agua Prieta. Furthermore, the availability of both Jet A and 100LL fuel at DGL is an attractive facility for itinerant users. Lastly, projected socioeconomic data show that Cochise County will similarly grow at a slow, steady rate over the next 20 years, similar to projected growth in aviation-related activity at the Airport. **Table 2-33**, provides a summary of expected based aircraft and aircraft operations from 2016 to 2036. These forecasts will be used to assist with the development of facility needs in the subsequent chapter of this MPU.

Table 2-33. Summary of DGL Forecasts

Category	2016	Projected		
		2021	2026	2036
General Aviation Operations	**2,600**	**2,860**	**3,030**	**3,580**
Itinerant	1,950	2,145	2,272	2,685
Local	650	715	758	895
Total Based Aircraft	12	13	13	14
Single-Engine Piston	10	10	11	12
Multi-Engine Piston	1	1	1	1
Jet	0	0	0	0
Helicopter	1	1	1	1

Source: Kimley-Horn

3 FACILITY REQUIREMENTS

This chapter provides a technical analysis of facility requirements for the Douglas Municipal Airport (DGL). The purpose of this analysis is to compare the Airport's existing facilities to the projected aviation-related activity levels and identify any enhancements that may be needed to meet user demand and/or ADOT minimum facility requirements. The following elements of the Airport are addressed:

- Airside Facilities
- General Aviation Facilities
- Support Facilities

3.1 Airside Facility Requirements

Airside facilities include equipment and standards that pertain to the operational capabilities of an airport. For the purposes of this Airport Master Plan Update, airside facilities that are examined include:

- Approach Capability
- Navigational Aids and Lighting
- Airspace Protection
- Part 77 Requirements
- Critical Aircraft and Airport Reference Code
- Runway Design Code
- Approach and Departure Reference Codes
- Runway Dimensional Standards
- Runway Orientation
- Runway Length
- Runway Width
- Runway Pavement Strength
- Taxiway System

3.1.1 Approach Capability

The ability of an approaching aircraft to land at an airport is predicated on the weather conditions, the level of pilot training, the type of navigation equipment both in the aircraft and on the ground, and the approach procedures established by the FAA. Under Visual Meteorological Conditions (VMC), which are defined as a cloud ceiling greater than 1,000 feet above ground level (AGL) and visibility conditions equal to or greater than 3 statute miles, pilots may approach an airport using only visual standards or cues. These are basic flight maneuvers that can be performed by all pilots at all public-use airports. Instrument Meteorological Conditions (IMC) occur when cloud ceilings are lower than 1,000 feet AGL and visibility becomes less than 3

statute miles. Under these conditions, properly trained pilots with adequately equipped aircraft can follow FAA-published Instrument Approach Procedures (IAPs) to land at an airport.

The FAA classifies standard IAPs, and the runways supporting those procedures, based on the type of electronic navigation guidance and the lowest approach minimums (visibility and decision height/HATh) provided by that procedure. The classifications include Non-Precision (NP), Precision (P), and Approach Procedures with Vertical Guidance (APV). Non-Precision approaches provide only lateral guidance from either ground based or satellite based Global Positioning System (GPS) navigational aids (NAVAIDs). Precision instrument approaches provide both lateral and vertical guidance and are traditionally supported by multiple ground based NAVAIDs collectively called an Instrument Landing System (ILS). An ILS includes a Localizer (providing lateral guidance), a Glideslope (providing vertical guidance) and an approach lighting system (providing close-in visual guidance). Approach Procedures with Vertical Guidance are a relatively recent outcome of the FAA's Next Generation Air Transportation System (NextGen) program. These approach procedures use GPS technology to provide ILS-like approach capability without the need for traditional ground-based ILS NAVAID equipment.

Douglas Municipal Airport does not currently have any IAPs. Most aircraft operations that occur at the Airport are conducted by helicopters or small, single-engine piston aircraft. As noted in the Forecast Chapter, the Airport receives limited jet traffic, however, the numbers are not sufficient to justify development of an IAP. Furthermore, the favorable year-round climate in Douglas is conducive to visual approaches that are conducted under VMC conditions. Based on these factors, and the relatively low level of aircraft activity at the Airport, it is not anticipated that any IAPs or equipment will be needed in the 20-year planning horizon. It is important to note that Airport users and tenants have identified an approach procedure as a desired facility improvement to increase safety. It is recommended that the feasibility of implementing approach capabilities at DGL be re-examined in the next Master Plan Update, particularly if activity increases at the Airport by that point in time.

3.1.2 Navigational Aids and Lighting

NAVAIDs are any visual or electronic devices airborne or on the surface which provide point-to-point guidance information or position data to aircraft in flight. As described in Chapter 1, Runway 03-21 is equipped with Precision Approach Path Indicators (PAPIs) on both runway ends.

The Airport is also equipped with a wind sock which identifies wind speed and direction, a segmented circle, and a white-green rotating beacon. Runway 03-21 is also equipped with Medium Intensity Runway Lighting (MIRL), Runway end Indicator Lights (REILs) on both Runway End 03 and 21, and has basic runway markings that are in poor condition. The basic runway markings include runway designation (runway end number), and runway centerline marking, which identifies the center of the runway and provides alignment guidance during takeoffs and landings.

The 2008 Arizona State Airports System Plan (ASASP) identifies minimum objectives for the State's airport system that are recommended for airports to fulfill their roles in the statewide system. Douglas Municipal Airport is identified as a General Aviation-Community facility in the SASP. For this airport classification, minimum criteria as they pertain to visual aids and lighting

include a rotating beacon, wind cone/segmented circle, MIRLs, and some type of Visual Glide Slope Indicator, such as PAPIs. Based on the type and volume of aircraft operations that occur and are projected to occur at the Airport, the existing NAVAIDs and lighting are anticipated to be adequate and meet the SASP criteria.

Although they do not directly provide guidance for aircraft operations, weather stations provide valuable information to pilots taking off or landing at an airport. DGL does not currently have a weather station, though it has been identified as a need for the Airport. The nearest weather station to the Airport is located at Bisbee-Douglas International Airport, which is 10 miles northwest.

The 2008 SASP recommended that any airport in Arizona should be within 25 nautical miles of an airport weather reporting station. The SASP also cites the 2007 Arizona (Automated Weather Observing System (AWOS) Study that recommended specific airports that should install an AWOS. DGL was not on this list, however, it is anticipated that the trend of larger aircraft and jet aircraft migrating from other area airports will continue in the future. As such, it is recommended that DGL pursue installation of either an Airport Automated Surface Observing System (ASOS) or an AWOS in the intermediate (6-10 year) timeframe. Based on an examination of FAA Airport Improvement Program (AIP) grants from 2016, the overall cost for site preparation and installation of weather reporting equipment at a smaller general aviation airport is between $100,000 and $150,000. The most significant considerations for the installation of a weather reporting station is the initial purchase and installation cost, and operational and maintenance costs of the equipment.

Per FAA Order 6560.20B, the preferred siting of a weather reporting station is adjacent to the primary runway 1,000 feet to 3,000 feet from the runway threshold. The horizontal distance of the facility from the primary runway centerline is 500 feet to 1,000 feet. A specific location for the weather reporting station is identified on the Airport Layout Plan.

Though DGL meets the 2008 SASP requirement of being within 25 nautical miles of an airport weather reporting station, knowledge of accurate, current weather conditions enhances pilot safety, and would be a desirable improvement at the Airport.

3.1.3 Airspace Protection

The safe and efficient operation of aircraft requires that certain areas on and near an airport remain clear of objects that could present a hazard to air navigation. Airports that are listed in the National Plan of Integrated Airport System (NPIAS) and receive federal funding support through the Airport Improvement Program (AIP) are considered “federally obligated” and as such, are subject to FAA Grant Assurances 20 and 21 which require airport sponsors to take appropriate actions to protect the surrounding airspace from incompatible land uses and to prevent/mitigate hazardous obstacles to navigation. Because Douglas Municipal Airport is not included in the NPIAS, it is not obligated to adhere to airspace protection standards, however, it is recommended that the Airport maintain protection of the surrounding airspace to promote safe aircraft operations to the extent possible. It should be noted that these surfaces exist at all airports, regardless if they are included in the NPIAS or not.

The FAA has established two primary sets of airspace protection standards. These include Federal Aviation Regulation (FAR) Part 77 Safe, Efficient Use, and Preservation of The

Navigable Airspace, and Order 8260.3 United States Standard for Terminal Instrument Procedures (TERPS). While similar in nature and purpose, these standards have specific applications relative to approach procedures and minimums, usable runway length, AIP funding, and compatible land use planning.

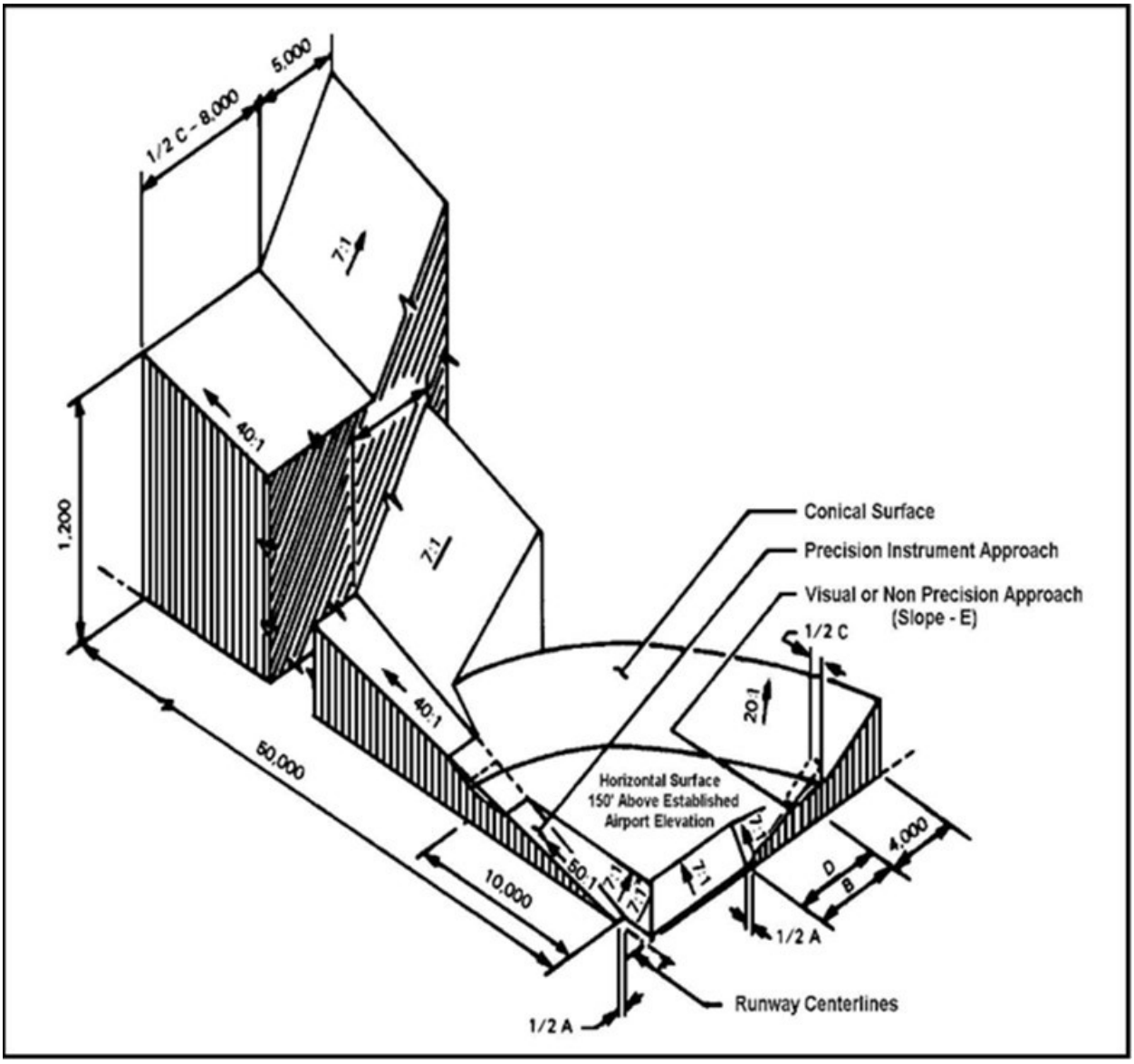
In June 2016, Quantum Spatial, a geospatial service company conducted an aerial observation of the Airport, providing high-resolution imagery and identification of airspace obstacles at DGL. Based on the results of this observation, 33 obstacles to the Part 77 Surfaces were identified. Most of these were identified as terrain, trees, and bushes. There was one tower identified as an obstacle in the Transitional Surface. It is important to note that there were no obstacles identified in the Primary Surface. A graphical representation of obstacles is shown in the Airport Layout Plan (ALP). The following sections identify obstacles and airspace surfaces in greater detail.

3.1.4 Part 77 Requirements

As directed by FAR Part 77, *imaginary surfaces* around the airfield are established for determining obstructions to air navigation. These standards are most applicable to promoting compatible land use on and near airports and are used predominately by the Airports Division of the FAA. These surfaces can vary in shape, size and slope, depending on the available approach procedures to each runway end. Any penetration of these imaginary surfaces, either manmade or natural, are identified as obstructions and must be evaluated by the FAA to determine if they present a hazard to air navigation. If determined to be a hazard, the obstacle should be removed or altered to mitigate the penetration. If not mitigated appropriately, the obstacle could adversely affect approach and departure minimums and/or operational procedures.

Based on the requirements of FAR Part 77, the following describes the imaginary surfaces as they apply to the existing Runway 03-21 at DGL. All references to a surface's *slope* is expressed in horizontal feet by vertical feet. For example, a 20:1 slope rises one foot vertically for every 20 feet horizontally. A graphical depiction of Part 77 surfaces is shown in **Exhibit 3-1**.

Exhibit 3-1. FAR Part 77 Surfaces



Source: National Oceanic and Atmospheric Administration

Primary Surface

This surface is longitudinally centered on the runway. The elevation of any point on the surface is the same as the elevation of the nearest point on the runway centerline. For Runway 03-21 this surface is 500 feet wide and extends 200 feet beyond the ends of pavement usable for takeoff and landing. There are no known obstacles to the Primary Surface.

Approach Surface

This surface is longitudinally centered on the extended runway centerline and extends outward and upward from the 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. The inner width of the Approach Surface is the same width of the Primary Surface. The Approach Surface extends at a specific slope to a uniform width and distance based on the approach

capabilities of the runway. For Runway Ends 03 and 21 this surface begins 200 feet beyond the end of the runway, is 5,000 feet long, and rises at a slope of 20 to 1 to an outer width of 1,500 feet.

Based on aerial photogrammetry conducted by Quantum Spatial, there are 17 obstacles in the Approach Surfaces of Runway 03-21, all of which are identified as trees and bushes. It is recommended that these obstacles be cleared and approach areas be regularly maintained.

Transitional Surface
This surface extends outward and upward from the sides of the Primary Surface and from the sides of the Approach Surfaces at a slope of 7 to 1 up to the height of the Horizontal Surface. There were 5 obstacles identified within the Transitional Surface, including bushes, terrain and one tower.

Horizontal Surface
This surface is a horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the Primary Surface of each runway and connecting the adjacent arcs by lines tangent to those arcs. At DGL, the Horizontal Surface extends 5,000 feet from the ends of Runway 03-21, at an elevation of 4,323 feet MSL. There are no known obstacles located in the Horizontal Surface.

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

Ten obstacles, all identified as terrain, are located within the Conical Surface with penetrations ranging from less than 1 foot to 39 feet. These obstacles are not prohibitive to operating aircraft at DGL.

3.1.5 Critical Aircraft and Airport Reference Code (ARC)

The FAA classifies airports and runways by their current and planned operational capabilities. These classifications – described below – along with the aircraft classifications defined in Chapter 1 are used to determine the appropriate FAA standards, as per AC 150/5300-13A, to which the airfield facilities are to be designed and built. Although Douglas Municipal Airport is not mandated to adhere to FAA standards, it is recommended that facilities reflect those identified in FAA AC 150/5300-13A to the extent possible.

An Airport Reference Code (ARC) is an airport designation that represents the Aircraft Approach Category (AAC) and Airplane Design Group (ADG) of the most demanding aircraft that the airfield is intended to accommodate on a regular basis. The ARC is used for planning and design only and does not limit the aircraft that may be able to operate safely at an airport.

The FAA identifies a Critical Aircraft as the most demanding airplane or group of airplanes that utilize a runway on a regular basis, which is defined as at least 250 takeoffs per year. The previous Airport Layout Plan (ALP) identified DGL's Critical Aircraft as a Beech King Air C-90, which has an ARC designation of B-II (small). Based on an analysis of historical operations at DGL using the FAA's Traffic Flow Management System Count database (TFMSC), the most demanding aircraft that regularly operates at DGL is the Beechcraft Super King Air 200.

Although more demanding aircraft including smaller jets do operate at the Airport, this aircraft model is reflective of a more typical, regularly operating aircraft. Though the Super King Air 200 does not conduct 250 annual takeoffs, it is the recommended Critical Aircraft for the Airport. With an approach speed of approximately 103 knots and a wingspan of 54 feet 6 inches, the ARC for the Beechcraft Super King Air 200 is B-II (small), the same ARC that has been maintained on DGL's ALP since 2003.

Consistent with FAA guidance, the Critical Aircraft anticipated to use the facilities over the planning horizon are those with an AAC-ADG of B-II (small), which includes the King Air 200. Based on this, the ARC for Douglas Municipal Airport is anticipated to remain B-II (small) throughout the planning horizon.

3.1.6 Runway Design Code (RDC)

The RDC is used to signify the design standards to which each specific runway is to be planned and built. This classification has three components: AAC, ADG and the highest approach visibility minimums that either end of the runway is planned to provide. Within these classifications, instrument approach visibility minimums are expressed in runway visual range (RVR) values of 1200, 1600, 2400, 4000 and 5000 feet, as described in **Table 3-1**. An airport's ARC will be consistent with the highest RDC of any of its runways. The RDC for Douglas Municipal Airport's Runway 03-21 is B-II-VIS.

Table 3-1. Instrument Approach Visibility Minimums

RVR (ft)	Corresponding Visibility Category (statute mile)
VIS	Visual Conditions (including instrument circling)
5000	Not lower than 1 mile
4000	Lower than 1 mile but not lower than ¾ mile
2400	Lower than ¾ mile but not lower than ½ mile (CAT-I ILS)
1600	Lower than ½ mile but not lower than ¼ mile (CAT-II ILS)
1200	Lower than ¼ mile (CAT-III ILS)

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

3.1.7 Approach and Departure Reference Codes (APRC & DPRC)

Approach and Departure Reference Codes (APRC and DPRC) describe the *current* operational capabilities of a runway and adjacent taxiways where no special operating procedures are necessary. In contrast, the RDC is based on *planned* development and has no operational application.

Like the RDC, the APRC is composed of three components: AAC, ADG, and visibility minimums. The APRC indicates which aircraft can operate on taxiways adjacent to a runway under particular meteorological conditions. The APRC classification is also used to identify several critical design standards including runway lighting and marking, threshold siting criteria, obstacle free zones, and other FAA obstacle identification surfaces. The APRC for Runway 03-21 is B/II/VIS.

The DPRC represents those aircraft that can take off from a runway while any aircraft are present on adjacent taxiways, under particular meteorological conditions with no special operational

procedures necessary. It is similar to the APRC, but is composed of two components, AAC and ADG. The DPRC for Runway 03-21 is B/II.

3.1.8 Runway Dimensional Standards

FAA AC 150/5300-13A, Change 1, Airport Design, identifies dimensional standards pertaining to runways and runway-related separations that are essential to provide clearance from potential hazards affecting routine aircraft movements on the airfield. Application of these standards is determined by the previously presented RDC and relates to separation distances for parallel runways, hold lines, parallel taxiways, aircraft parking areas, obstacle free areas, and safety areas. The following describes the specific safety or runway protection areas as they apply to Runway 03-21. The FAA design standards for a B-II (small) runway with visual approach minimums are summarized in **Table 3-2.**

As shown, all DGL's runway dimensional standards meet FAA requirements.

Table 3-2. Runway Dimensional Standards

Design Criteria	Runway 03-21	
	Existing Conditions	B-II (small) FAA Standards
Runway Design		
Width	75'	75'
Shoulder Width	20'	10'
Runway Protection		
RSA Length beyond departure end	300'	300'
RSA Length prior to threshold	300'	300'
RSA Width	150'	150'
ROFA Length beyond departure end	300'	300'
ROFA Length prior to threshold	300'	300'
ROFA Width	500'	500'
ROFZ Length beyond runway end	200'	200'
ROFZ Width	400'	400'
RPZ Length	1,000'	1,000'
RPZ Inner Width	250'	250'
RPZ Outer Width	450'	450'
Runway Separation		
Holding Position	200'	200'
Parallel Taxiway/Taxilane Centerline	240'	240'
Aircraft Parking Area	355'	250'

Sources: FAA Advisory Circular 150/5300-13A, 1999 Approved Airport Layout Drawing

Runway Safety Area (RSA)

The RSA is described by FAA as "a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft in the event of an undershoot, an overshoot, or excursion from the runway."

For Runway 03-21, this surface is 150 feet wide and extends 300 feet prior to the landing threshold and 300 feet beyond the departure end of the runway. The existing RSA is clear of obstacles and is entirely located on airport-owned property. Based on the type of aircraft that currently use and are projected to use the Airport, the existing RSA is adequate to accommodate projected demand.

Runway Object Free Area (ROFA)

The ROFA is an area centered on the runway centerline that is provided to enhance the safety of aircraft operations by clearing all above ground objects that protrude above the RSA edge elevation, except for objects that need to be in the ROFA for air navigation or aircraft ground maneuvering purposes. Object that must remain on the ROFA are constructed on frangible mounts, to minimize potential damage to aircraft in the event of an errant mishap.

For Runway 03-21, this surface is 500 feet wide and extends 300 feet prior to the landing threshold and 300 feet beyond the departure end of the runway. It is anticipated that the existing ROFA dimensions are adequate to accommodate existing and projected levels of demand, however, the ROFA off the end of Runway End 03 is penetrated by the Airport's perimeter fence and access road. As an extension or relocation of Runway 03-21 is not a specific recommendation of this Airport Master Plan Update, it is recommended that the City of Douglas acquire an avigation easement for safety areas that extend off the Airport property, including the RSA.

Runway Protection Zone (RPZ)

The RPZ is a trapezoidal area beginning 200 feet beyond the runway end and centered on the extended runway centerline. The RPZ is a compatible land use measure meant to enhance the protection of people and property on the ground. Airports should maintain positive control of RPZs through fee simple acquisition, easement or use restrictions/agreements. Such control includes clearing of RPZ areas of incompatible objects and activities.

As shown in Table 3.2, the RPZs for both ends of Runway 03-21 adhere to FAA standards for a B-II (small) facility. Although portions of the existing and proposed RPZ cross Geronimo Trail, Airport Road, and into Mexico, the existing RPZs do not have buildings or functions that promote large congregations of people, with the exception of approximately 4 to 6 homes located in Agua Prieta, Mexico that are within the RPZ.

The RPZ off the end of Runway end 03 is penetrated by the Airport perimeter fence and an access road. The RPZ off the end of Runway End 21 is penetrated by the perimeter fence as well as East Geronimo Trail. It is recommended that the City of Douglas acquire avigation easements or acquire the property that is encompassed by the RPZs to protect the Airport environment from incompatible land use.

Runway Obstacle Free Zone (OFZ)

The OFZ is defined by FAA as a volume of airspace centered above the runway centerline that extends 200 feet beyond each end of the runway surface that precludes taxiing or parked

airplanes and object penetrations, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function. For Runway 03-21, the OFZ is 400 feet wide. Based on existing and projected aircraft activity, it is anticipated that the existing ROFZ dimensions are adequate, however, the ROFZ off the end of Runway End 03 is penetrated by the Airport's perimeter fence and access road. This area is entirely within the ROFA, so the recommendation to acquire an avigation easement for the ROFA will also ensure that the ROFZ is adequately protected.

2.7.1.1.1 Runway Separation Standards

The FAA defines several separation standards that measure from the runway centerline to other airport facilities and are established to ensure operational safety of the airport users. The following are runway separation standards applicable to DGL:

- Runway Centerline to Edge of Aircraft Parking Area – For Runway 03-21, the standard distance is 250 feet. Existing tie-downs on aircraft parking aprons comply with this standard, as the closest distance from any aircraft parking area to the runway centerline is approximately 355 feet.
- Parallel Taxiway/Taxilane – FAA standard for a B-II (small) facility for runway-to-parallel taxiway/taxilane centerline is 240 feet. The centerline of the partial parallel taxiway at DGL is 240 feet from the centerline of Runway 03-21, which complies with this standard.
- Holding Position – FAA standard for a B-II (small) facility for runway centerline distance to aircraft holding position is 125 feet. There is one holding position on Runway end 21 and two holding positions on Runway end 03. All holding positions are 200 feet from the centerline of Runway 03-21, which exceeds to FAA design standards.

3.1.9 Runway Orientation

Ideally, a runway is oriented with the prevailing wind, as taking off and landing into the wind enhances aircraft performance. The FAA recommends that the primary runway have at least 95 percent wind coverage, which means that 95 percent of the time, the wind at an airport is within acceptable crosswind limitations. Crosswind coverage is calculated using the highest crosswind component that is acceptable for the types of aircraft expected to use the runway system. Larger aircraft have a higher tolerance for crosswind than smaller aircraft due to their size, weight and operational speed. If 95 percent coverage cannot be met by the primary runway, an additional "crosswind runway" may be needed to safely accommodate the aircraft needing the additional crosswind coverage.

Since DGL does not have a weather station, wind data were taken from the nearest Airport Automated Surface Observing System (ASOS), which is located at Bisbee-Douglas International Airport approximately 10 miles northeast of DGL. **Table 3-3** identifies wind coverage for Runway 03-21.

Table 3-3. Runway 03-21 Wind Coverage

	10.5 kt	13 kt	16 kt
All Weather	89.75%	94.4%	98.07%
IFR	81.15%	86.36%	91.52%
VFR	89.89%	94.54%	98.18%

Source: FAA AGIS Website, https://airports-gis.faa.gov/public/windrose_help.html, accessed August 2016

For a B-II (small) runway with visual approach minimums, the FAA recommends that 95 percent crosswind coverage be met for a 13-knot crosswind component. As shown in **Table 3-3**, Runway 03-21 at DGL does not satisfy this requirement for All Weather conditions. Airport tenants and users identified that a crosswind runway is a desirable facility, however, it is not as high of a priority as rehabilitation of the existing runway.

The most recent ALP, which was conditionally approved in 2003, identifies development of a crosswind Runway 12-30. While it is unlikely that the Airport would receive significant funding from the State to construct a crosswind runway, it is recommended that it still be shown on the updated ALP developed for this Master Plan Update as the crosswind runway is justified, just not a high priority given other needs at DGL. It should also be noted that despite the fact that crosswind coverages do not necessarily satisfy FAA criteria, it does not inhibit the Airport from operating as a safe facility. Based on the information provided in this section, it is further recommended that prior to any detailed planning effort pertaining to the installation of a crosswind runway, the City conduct a wind study to determine crosswind coverage specifically at DGL.

3.1.10 Runway Length

FAA AC 150/5325-4B, Runway Length Requirements for Airport Design, provides guidance for determining runway length needs. Factors that affect needed runway length include temperature, airport elevation, runway gradient, critical aircraft expected to use the airport, and the stage length or distance of the longest nonstop destination. Specific aircraft performance is a key factor in determining the runway length needed for takeoff and landing.

According to the FAA AC, the following criteria are identified for critical aircraft:

> "The recommended length for the primary runway is determined by considering either the family of airplanes having similar performance characteristics or a specific airplane needing the longest runway. In either case, the choice should be based on airplanes that are forecast to use the runway on a regular basis. A regular basis is considered to be at least 250 takeoffs a year."

AC 150/5325-4B contains exhibits that calculate runway length requirements based on families of airplanes having similar performance characteristics and utilizing inputs from the airport regarding temperature and elevation. The runway length requirement results are categorized for small aircraft less than or equal to 12,500 pounds, aircraft weighing over 12,500 pounds but less than 60,000 pounds, and large aircraft more than 60,000 pounds. The 12,500 to 60,000-pound category or less is further subdivided into groups that compose 95 percent of aircraft within that fleet category, and 100 percent of aircraft within that category.

As noted in previous sections, the B-II critical aircraft for Douglas Municipal Airport is the Beechcraft Super King Air 200, which has a Maximum Takeoff Weight of 12,500 pounds. Also, noted in FAA AC 150/5325-4B, for airport elevations above 3,000 feet, the airport designer must use the 100 percent of fleet calculations for 12,500 pound or lighter aircraft.

Takeoff lengths interpolated from the FAA tables identified in the Advisory Circular are based off an Airport elevation of 4,173 feet above MSL, and the mean maximum temperature of the hottest month, which is 94 degrees according to the previous Master Plan. Based on these inputs, the recommended runway length for Douglas Municipal Airport is 5,750 feet. The published length of Runway 03-21 is 5,760 feet. As noted, the runway length calculation accounts for 100 percent of the fleet that falls into the "Less than 12,500 Pounds" category, which includes small turbo-prop aircraft. Based on the relatively low levels of activity that occur at the Airport, and the types of aircraft that operate there, it is estimated that the existing runway length is adequate to accommodate existing and projected levels of demand.

Per FAA AC 150/5325-4B, the length requirements for a crosswind runway are the same as those for the primary runway. As such, it is recommended that the Airport Layout Plan depict a future crosswind runway that is 5,750 feet in length.

3.1.11 Runway Width

The width of Runway 03-21 is 75 feet. The FAA design standard for runway width is based on the AAC and approach visibility minimums to the runway. As indicated previously in **Table 3-2**, the standard runway width for a B-II airport with visual approach minimums is 75 feet. Based on existing and projected activity at the Airport, it is anticipated that a 75-foot wide runway is adequate to accommodate demand. This 75-foot standard is applicable to both existing Runway 03-21 and the future crosswind runway.

3.1.12 Runway Pavement Strength

Pavement design strength is related to three primary factors:

- The operating weight of aircraft anticipated to use the airport;
- The landing gear type and geometry; and
- The volume of annual aircraft operations, by type.

Pavement strength rating is not the same as maximum weight limit. Aircraft weighing more than the certified strength can operate on the runways on an infrequent basis, however, frequent activity by heavier aircraft can reduce the useful life of the pavement. Also, FAA regulations state that all federally obligated airports (these are airports that have accepted FAA funding and the associated grant assurances, which does not include DGL) must remain open to the public and cannot restrict an aircraft from using the runway due only to its weight exceeding the published pavement strength rating. The pilot of the aircraft decides which airports to use based on their determination that the airport can support their aircraft in a safe manner.

According to the 2003 ALP, Runway 03-21 has a pavement strength of 12,500 pounds for single-wheel-gear configurations, which is adequate to accommodate existing and projected demand.

According to ADOT, other than minor patching and crack sealing, the last major rehabilitation of Runway 03-21, which was a 5-inch overlay, was conducted in 1997. The Airport was last inspected in April 2013. At that time, the Runway and the turnaround taxiway was given a Pavement Condition Index (PCI) rating of 19. ADOT recommends major rehabilitation, such as a thick overlay or reconstruction when a runway's PCI drops below 55. Notes from that inspection include significant quantities of low-, medium-, and high-severity longitudinal and transverse cracking, bulging areas of pavement, and high potential of Foreign Object Debris (FOD). Airport maintenance staff regularly remove large pieces of dislocated pavement, and Airport users have identified that rehabilitation of Runway 03-21 is the most important facility need at DGL.

Based on the existing condition of Runway 03-21, the increase in turbo-prop and jet aircraft operations, and projected levels of activity, full runway reconstruction is recommended as a near-term improvement. This includes reconstruction of the turnaround taxiway. If funding from State and/or local sources cannot afford a full reconstruction of Runway 03-21, at minimum, a mill and overlay should be considered to maintain the Airport's ability to accommodate aircraft operations.

3.1.13 Taxiway System

The taxiway system links the runway and other operational areas at an airport. An effective taxiway system allows for the orderly movement of aircraft and enhances operational efficiency and safety by reducing the potential for congestion, runway crossings and pilot confusion. The following evaluates the taxiway infrastructure at Douglas Municipal Airport and identifies recommended enhancements to meet the circulation needs of the various based and transient aircraft operators.

Like the runway design standards described in Section 3.1.8, FAA AC 150/5300-13A identifies dimensional standards pertaining to taxiways and taxiway-related separations that are intended to provide adequate operational clearance between other aircraft and fixed and moveable objects.

These standards are based on both the ADG and the Taxiway Design Group (TDG) of the aircraft intended to use the facilities. The TDG is established by the overall Main Gear Width (MGW) and the Cockpit to Main Gear Distance (CMG) of the Airport's critical aircraft. The Cessna Beechcraft King Air 200 is classified as ADG II and TDG-2. The FAA design standards for these various aircraft classifications are summarized in **Tables 3-4** and **3-5.**

Table 3-4. Taxiway Design Standards Based on ADG

Item	Existing Conditions (ft.)	FAA Standards ADG II (ft.)
Taxiway Safety Area Width	79	79
Taxiway OFA Width	131	131

Source: FAA Advisory Circular 150/5300-13A, Change 1

Table 3-5. Taxiway Design Standards based on TDG

Item	Existing Conditions (ft.)	FAA Standards TDG 2 (ft.)
Taxiway Width	35	35
Taxiway Edge Safety Margin	7.5	7.5
Taxiway Shoulder Width	15	15

Source: FAA Advisory Circular 150/5300-13A, Change 1

Douglas Municipal Airport has a partial parallel taxiway, Taxiway A, that is approximately 3,050 feet in length. Taxiway A-4 connects Runway 03-21 with aircraft parking aprons and is approximately 1,800 feet in length. Taxiways A-1 and A-2 are turnaround taxiways on Runway end 03. The remaining taxiways, A-3 and A-5, are connector taxiways that join Runway 03-21 and Taxiway A. The 2008 Arizona State Airports System Plan identifies that airports designated as GA-Community, which includes DGL, should have a full or partial parallel taxiway.

Airport tenants and users have identified a full-length parallel taxiway as a need for DGL, although not as high of a priority as rehabilitation of the existing runway. The previous ALP identifies a full-length parallel taxiway, however, based on the volume and type of aircraft operations that are projected at DGL, it is estimated that the existing taxiway configuration is adequate to accommodate demand. It is recommended that a full-length parallel taxiway remain depicted on the ALP, however, it is a facility improvement that should be considered long-term (11-20 years) unless activity significantly increases before that timeframe. A graphical depiction of the taxiway system at DGL is shown in **Exhibit 3-2**.

Exhibit 3-2. Taxiway System

Sources: Google Earth, Kimley-Horn

Based on the standards identified in **Table 3-4** and **Table 3-5**, the existing width (35 ft.) of the parallel taxiway and connector taxiways with graded, unpaved shoulders is adequate to accommodate existing and projected activity.

3.2 General Aviation Facilities

The term "General Aviation Facility" refers to a facility that provides aviation services to airport users and aircraft operators such as hangar space, terminal space, and aircraft apron space. In this analysis, the following facilities were evaluated:

- Based Aircraft Storage Facilities
- Itinerant Aircraft Storage Requirements
- Apron Requirements
- Helipads
- Automobile Parking Facilities
- Airport Terminal Facility

3.2.1 Based Aircraft Storage Facilities

As noted in previous sections of this MPU, there were 12 based aircraft at the Airport in 2016, and it is projected that this number will increase to 14 by 2036.

At most airports, based aircraft are stored in either conventional hangars, T-hangars, or on the apron (aircraft tie-downs and designated aircraft apron parking spaces). These storage types are explained below.

- Conventional Hangar - This type of hangar is a large building which can house multiple aircraft in protective storage, and usually contains a large door through which aircraft can pass. Sometimes an "FBO" designation is included for this type of hangar indicating it is operated by a provider of public aviation services that stores multiple itinerant and based aircraft as part of the business activity. Conventional hangars can also be owned and house aircraft operated by or in conjunction with the owner/operator of the hangar. Examples of operators of this type of hangar space include governmental aviation divisions, private aviation companies, or corporate aviation departments. These operators would only house their own aircraft in these hangars, not itinerant aircraft.
- T-hangar - This type of hangar is an individual storage unit for a small aircraft, usually a single-engine or light twin aircraft classified under ADG I. The "T" designation corresponds to the overall shape of the unit, which is similar to a T. These individual hangars are generally grouped into linear buildings containing multiple units in a row.
- Aircraft Tie-down - An aircraft tie-down is typically an on-apron parking space that includes fixed points, typically concrete, where an aircraft can be secured using straps or cables. There can also be tie-downs on grass or non-apron areas. Although tie-downs do not provide covered protection from weather elements, they do prevent an aircraft from moving and minimize damage attributed to high winds.

At DGL, five based aircraft are stored in the 10-unit t-hangar, and the remaining seven based aircraft are stored in conventional hangars. There is no waiting list at the Airport for aircraft hangar space. Although there are 5 T-hangar spaces that are not currently housing aircraft, according to the property manager, all units are currently rented out. The two conventional

hangars account for approximately 15,000 square feet of aircraft storage area. In the larger conventional hangar, which currently houses six based aircraft, there is approximately 5,000 square feet of space that can be used for additional aircraft. It is anticipated that the existing aircraft storage hangar space is adequate to accommodate projected levels of based aircraft.

It should be noted that Lifeline, the Airport's sole current permanent tenant, indicated that they would potentially require additional hangar space for existing and future aircraft. The current hangar that is used by Lifeline is approximately 2,500 square feet in size. Based on conversations with Lifeline, a new hangar approximately 5,000 square feet in size should be planned for. This facility would likely be funded by Lifeline, and a logical location for the hangar would be between the existing Lifeline hangar and the aircraft fuel tanks to the southeast. This location provides direct access to the main apron and there is adequate space for hangar expansion. Upon expansion, if the tenant no longer requires the old hangar, the Airport could utilize it to accommodate future based aircraft or itinerant aircraft. It is recommended that the Airport continue to monitor tenant activity, and determine if expansion or reconstruction of the current smaller conventional hangar is needed.

3.2.2 Itinerant Aircraft Storage Requirements

As noted, itinerant aircraft are currently, and are projected to be stored at tie-downs on the aircraft parking apron as well as in the large conventional hangar. As identified in Chapter 1, the Airport has a total of 45 aircraft tie-downs, nine of which are located on the primary apron that houses the aircraft hangars and fueling facilities. Although peak operations projections were not developed for this Master Plan Update, based on observed activity levels provided by Airport Management and tenants, the existing aircraft tie-downs and hangar space are more than adequate to accommodate projected levels of itinerant demand. As noted, if Lifeline expands to a new executive hangar and has no use for the old facility, the Airport could preserve the vacated hangar and use for based aircraft or overflow itinerant aircraft.

3.2.3 Apron Requirements

Apron areas are intended to accommodate based and itinerant aircraft parking. Itinerant aircraft typically require a greater area for shorter amounts of time (usually less than 24 hours). Typically, based aircraft require a smaller area for longer amounts of time as this represents their storage or base location at an airport. However, it has been determined that existing and projected based aircraft will utilize conventional and T-hangars for storage purposes, leaving only itinerant aircraft to regularly utilize apron areas.

For itinerant aircraft, consideration must be made for the aircraft parking area, taxilanes leading into and out of the parking positions, and circulation areas. Typically, itinerant apron requirements are contingent on the number and type of aircraft that will use the facility.

As noted in Chapter 1, there are two aprons at DGL that encompass a total area of approximately 47,500 square yards. Although there are 36 aircraft tie-downs located on the northern and southern portions of the apron areas near the T-hangar facility, this area is primarily used by based aircraft taxiing to and from the T-hangars. It is also used infrequently by transient aircraft during special events. A 2013 ADOT inspection identified these apron areas had a PCI of 26, which is considered "poor". While resurfacing the aprons near existing T-hangars is not as high of a priority as rehabilitation/reconstruction of the runway, it is recommended that the Airport

rehabilitate or reconstruct these apron areas. At a minimum, regular maintenance and crack-sealing should be conducted as needed.

The primary apron is used regularly by based aircraft and transient aircraft and is more than adequate to accommodate existing and projected aircraft activity. Any increase in demand for apron space would be associated with an increase in aircraft tie-downs for transient aircraft on the primary apron. As noted in the previous section, it is anticipated that the existing number of aircraft tie-downs is adequate to accommodate projected demand. As such, the existing aircraft parking aprons are also anticipated to accommodate projected levels of demand. The 2013 ADOT inspection identified the PCI of this apron as 53, which is considered "poor". It is recommended that the Airport pursue rehabilitation of the primary apron and at a minimum, perform regular maintenance and crack-sealing.

3.2.4 Helipads

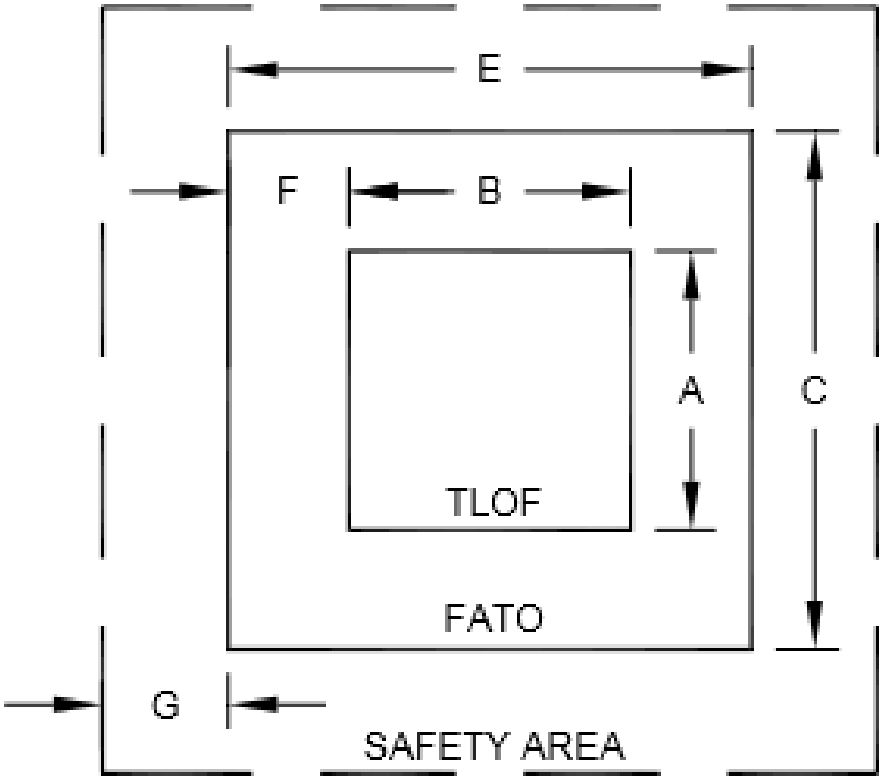
Currently, DGL has a temporary helipad that is located on the eastern portion of the primary aircraft parking apron. The helipad is used frequently by the existing Airport tenant Lifeline, as well as military and other government agency rotorcraft. Based on conversations with Lifeline and other Airport users, a permanent helipad has been identified as a need based on the frequent use of rotorcraft at DGL. The general location of the existing helipad is adequate to accommodate the type of rotorcraft that operate on the main ramp. The associated safety areas for helipads are based on the Rotor Diameter (RD) of the design helicopter, which is currently a Bell 407.

As noted, DGL is a non-NPIAS facility, and is not required to adhere to FAA recommendations, however, it is recommended that a new helipad adhere to FAA standards to the extent possible. Specific site determination recommendations and safety areas for helipads are described in FAA AC 150/5390-2C – Heliport Design. The minimum design standards for a helipad at DGL is depicted in **Exhibit 3-3** and **Table 3-6**.

The following acronyms are used in the exhibit and table below:

- D = Overall length of the design helicopter
- RD = Rotor diameter of the design helicopter
- TLOF = Touchdown and Liftoff Area
- FATO = Final Approach and Takeoff Area

Exhibit 3-3. Helipad Design Criteria for General Aviation Airports



Source: FAA AC 150/5390-2C Heliport Design

Table 3-6. Helipad Safety Areas and Minimum Dimensions

Exhibit Element	Item	Design Standard	Recommended Length (ft.)
A	Minimum TLOF Length	**1 RD**	35
B	Minimum TLOF Width	**1 RD**	35
C	Minimum FATO Length*	**1 ½ RD**	182.5
E	Minimum FATO Width*	**1 ½ RD**	182.5
F	TLOF/FATO Minimum Separation	**¾ D – ½ RD**	17.5
G	Minimum Safety Area Width	**Varies**	20

Source: FAA AC 150/5390-2C Heliport Design.
*Note: FATO dimensions include adjustments for elevation as described in Figure 2-5 of FAA AC 150/539-2C. FATO is not required to be paved.

Based on feedback provided by Airport Management and the Airport Master Plan Advisory Committee, several locations have been identified for the installation of a permanent helipad; all of which are on or near the primary aircraft parking apron. The location of the existing helipad allows for the recommended FAA safety areas and separation criteria to be met, does not require additional pavement, and is in close proximity to the current tenant, Lifeline, who is the primary user of the helipad facility. As such, it is recommended that a new helipad be situated in its existing location in the near-term, and if the tenant or other helicopter operators prefer it be moved long-term, that a new facility be located in a convenient location designated for aviation-related development as identified on the Airport Layout Plan.

3.2.5 Automobile Parking Facilities

As noted in Chapter 1, the Airport has 30 paved and approximately 20 unpaved automobile parking spaces available for use. There are no designated parking spaces inside the fenced aircraft parking apron area, however, tenants and Airport Staff often park vehicles in this area, away from the existing tie-downs and aircraft taxiing areas. The aircraft parking apron is enclosed by a chain-link fence and has a security gate, although the gate is rarely closed. Because the Airport tenant Lifeline is stationed at the Airport 24 hours a day, there is no perceived security threat from people or vehicles entering and leaving the apron area. Because the security gate remains open constantly, Airport users can park their vehicles in either of the designated lots and walk to buildings and facilities that access the apron.

Based on projections of aircraft operations and based aircraft, it is estimated that the existing parking spaces are adequate to accommodate future demand, however, if an FBO or additional tenants are established at the Airport, additional automobile parking facilities may be needed. Future landside development and additional parking should be located on or near Airport-owned structures west of the primary apron.

3.2.6 Airport Terminal Facility

Currently, the Airport does not have any terminal facility. Often, at a general aviation airport such as DGL, the airport sponsor or an FBO will provide a facility that has services such as restrooms and a pilot lounge. Based on conversations with Airport tenants and users, a terminal facility is considered a need at DGL. It is recommended that the Airport develop a small terminal facility as an intermediate (6-10 year) improvement.

In January 2017, Airport Management and the Master Plan Advisory Committee conducted a meeting to identify specific locations for facility improvements at the Airport. The area west of the primary apron that currently houses several City-owned buildings was the preferred location for a new terminal facility. Based on discussions with the City, it has been determined that construction of a new terminal building is a more viable option compared to renovation of any existing structures. While this Master Plan Update does not recommend a specific type of terminal structure, several airports with similar characteristics and activity levels have trailer/mobile home units that serve as terminals. These structures are typically sized 1,600 square feet, and are a relatively economical alternative to brick-and-mortar facilities.

As an interim action item prior to a permanent terminal facility, it may be beneficial for the Airport to provide portable toilets near the main apron for Airport users and pilots. Representatives for Lifeline have indicated that pilots frequently mistake their office as a

terminal facility and request to use their restrooms. Because Lifeline employees can be stationed 24 hours a day and have regimented work/sleep schedules, such interruptions can pose a safety hazard to their medical evacuation operations.

3.3 Support Facilities

This section examines the requirements of support facilities essential to the daily operation of the Airport. These facilities include airport access and circulation, airport maintenance facilities, utilities, and fuel storage facilities.

3.3.1 Airport Access and Circulation

The Airport is currently accessed from West Airport Road, with one access point on the west side of the parking lot through a secure gate. An unsecured access point at the southernmost point of West Airport Road is often used by U.S. Customs and Border Patrol to monitor the Airport's border with Mexico, however, the areas that are accessed are fenced off from the airfield. Any proposed development at the Airport is anticipated to be near existing facilities rather than on these undeveloped portions of the airfield. As such, general aviation activity at the Airport is not anticipated to increase enough to plan and develop another access point or access road for general aviation purposes. However, additional access and circulation may be needed based on non-aviation development. The current facility circulation provides safe and sufficient accessibility to Douglas Municipal Airport users, tenants, and maintenance personnel.

3.3.2 Aviation Fuel Storage Facilities

Douglas Municipal Airport offers 24-hour, self-fueling with one 12,000-gallon above-ground tank of AvGas and one 12,000-gallon above-ground tank of Jet A fuel. While the Airport does not have a fueling truck, it does provide assistance with fueling upon request.

Based on projected aircraft operations throughout the planning period and historical fuel sales data at DGL, the current fuel tank capacity is adequate to support aviation operations. The date that these tanks were installed was unknown at the time this Master Plan Update was conducted, however, the City has identified that they are compliant with EPA requirements for fuel storage facilities.

3.3.3 Airport Maintenance Facilities

The Airport houses some maintenance equipment in the large conventional hangar adjacent to the primary aircraft parking apron. This equipment includes a riding lawnmower, an open-air vehicle to transport equipment, and various tools and chemical agents for typical maintenance activities. Larger equipment such as sweepers for the runways and taxiways, or tractors for hauling and lawn maintenance are housed in an off-Airport facility and are requested from the City as needed. It is estimated that even if projected based aircraft are all stored in the large conventional hangar, there will be adequate space for the required maintenance equipment to be stored. As noted in previous sections, if the Airport tenant relocates its aircraft storage hangar, the existing hangar may become available for general Airport use. This facility could also provide additional maintenance equipment storage space.

3.3.4 Utilities

Utilities at Douglas Municipal Airport are provided by a variety of sources which include electricity by the Arizona Public Service Electric Company, and water and sewer provided by the City of Douglas. Based on projected aircraft operations and capacity at DGL, additional utilities or expansion of existing services are not anticipated to be needed, however, there may need to be potential expansion of utilities infrastructure for non-aviation development in the future.

3.4 Summary of Facility Requirements

Based on the facility requirements identified in this section, **Table 3-7** presents a summary of recommended improvements to the Airport's existing facilities throughout the planning period. Facility requirements are categorized as high-priority or low-priority. High-priority improvements are specific recommendations based on the analysis described in this Master Plan Update. Low-priority improvements include long-term projects that may be outside of the 20-year planning horizon, or projects that are desirable, but not necessarily feasible based on projected levels of aviation demand.

Table 3-7. Facility Requirements - Summary

Airside Facilities	Priority Level	General Aviation Facilities	Priority Level	Support Facilities	Priority Level
Remove obstacles from airspace surfaces, and ensure those that cannot be removed are properly marked or lit	High	Construct a permanent helipad useable by medium and large rotorcraft	Medium	Expansion of utility infrastructure for non-aviation use	Low
Install a weather reporting station (AWOS or ASOS)	Medium	Construct a terminal facility that houses restroom facilities and pilot lounge	High		
Expand Runway Protection Zones (RPZs) to FAA standard for a B-II facility	High	Reconstruct T-hangar apron areas	Medium		
Reconstruct Runway 03-21 to a pavement strength of 12,500 lbs. for single-wheel gear configuration (if full reconstruction cannot be achieved, a full mill and overlay is recommended)	High	Rehabilitate primary apron area	Medium		
Reconstruct turnaround taxiways on Runway end 03 (if full reconstruction cannot be achieved, a full mill and overlay is recommended)	Medium	Rehabilitate T-hangar apron area	Medium		
Install crosswind runway to satisfy FAA recommended 95% wind coverage	Low				
Examine potential for instrument approach procedures to enhance safety	Low				
Construct full-length parallel taxiway	Low				

Source: Kimley-Horn

4 ALTERNATIVES ANALYSIS

To satisfy user needs and facility requirements identified in the previous chapter of this Master Plan Update, numerous development options and site configurations were considered for proposed improvements. Some of these recommended improvements identified in the Facility Requirements Chapter are major components of the long-term development strategy for the Airport and warrant further evaluation. In most cases, recommended alternatives, or options, will consist of the scenario that provides the highest benefit to the Airport with minimal impacts. In order to evaluate various alternative improvement concepts and identify the preferred development strategy, the following items were addressed:

- Review of Previous Airport Plans
- Baseline Recommended Improvements
- Airside Facility Alternatives
- General Aviation Facility Alternatives

Alternatives were analyzed based on estimated project cost, construction and environmental impacts, consistency with existing airfield configuration and facilities, impacts to safety and efficiency of Airport users, and overall project feasibility. A phased development plan and cost estimates of recommended alternatives are presented in the subsequent chapter, "Airport Development and Financial Plan."

4.1 Review of Previous Airport Plans

The 1994 Airport Master Plan Update for DGL evaluated facility requirements through the 2014 planning horizon and identified the following recommended improvements:

- Airside
    - Extension and widening of runway (03-21) to an ultimate length of 6,710 feet
    - Strengthening of the runway overlay to 25,000 pounds single-wheel gear (SWG)
    - Development of a 4,600-foot long, unpaved crosswind runway (13-31) with a strength of 12,500 pounds SWG
    - Extension of partial parallel taxiway to runway 03-21 to full length
    - Installation of REILs to Runway 03-21 and future crosswind Runway 13-31
    - Apron extension
- Landside
    - Construction of two new conventional hangars including additional tie-downs
    - Installation of a nondirectional beacon

These physical Airport improvements are depicted on the 2003 ALP, which was conditionally approved by ADOT Aeronautics in May 2003. It should be noted that many of the recommended developments depicted on the 2003 ALP have yet to be initiated and as such, some will remain depicted in the updated ALP associated with this Master Plan Update.

4.2 Baseline Recommended Improvements

There are several improvements for which alternatives are limited. Because of minimal requirements associated with development, or because the alternatives include only a build or a no-build scenario, the following recommended projects are recommended and are not subject to alternatives analyses:

- Remove obstacles from airspace surfaces, and ensure those that cannot be removed are properly marked or lit
- Land easements to accommodate FAA-standard B-II runway protection zones (RPZs)
- Expansion of utility infrastructure for non-aviation use
- Rehabilitation and maintenance of aircraft parking apron areas

It should be noted that while the projects listed above do not require an alternatives analysis, they are equally important to develop, acquire, and/or install at the Airport as described in the Facility Requirements Chapter of this Master Plan Update.

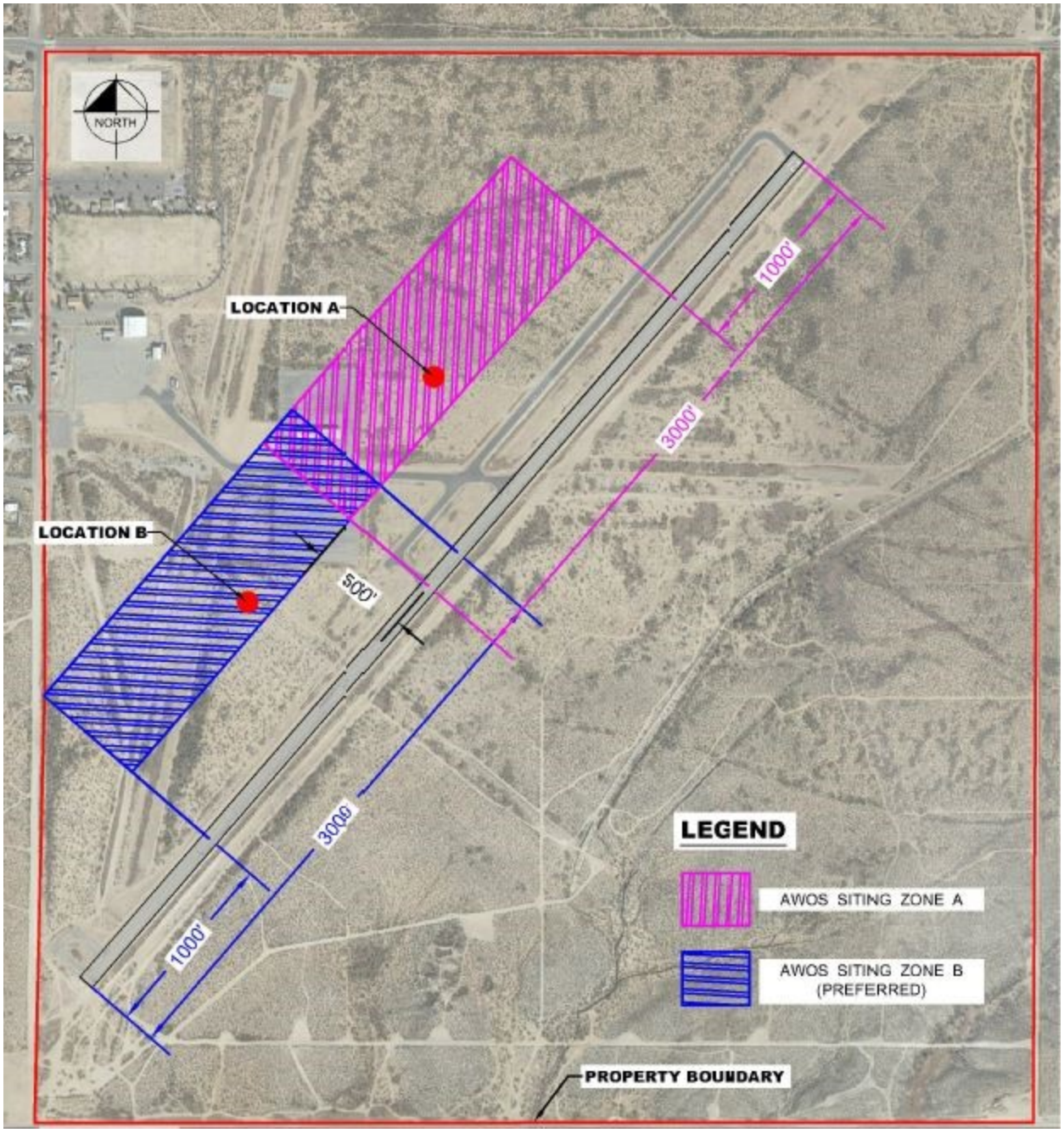
4.3 Airside Facility Alternatives

The following discusses alternatives for airside improvements recommended in the Facility Requirements Chapter. These alternatives also include a "no-build" scenario in which the Airport refrains from developing or implementing projects as recommended. The following alternatives include the recommended installation of an Automated Weather Observing System (AWOS), runway maintenance, taxiway maintenance and construction, and the development of a crosswind runway.

4.3.1 Automated Weather Observing System (AWOS)

An AWOS collects weather data at airports and disseminates these data via radio and/or landline. A weather reporting station at the Airport is a facility that can improve safety in the form of accurate weather readings which pilots rely on. Accurate weather reporting can also be used to justify or verify the need for additional improvements such as a crosswind runway. This section describes alternatives for an AWOS at DGL and the alternative locations are depicted in **Exhibit 4-1**. It should be noted that based on an examination of existing conditions at DGL, and a comparison of similar projects in Arizona and in the U.S., the construction of an AWOS (or similar weather reporting station) is estimated to be $150,000. Routine maintenance for weather stations typically occurs on an annual basis and weather information is disseminated by radio frequency as well as by a computer-generated voice message available by a telephone dial-up modem service. AWOS maintenance can be outsourced to independent companies, or training courses are available to direct airports how to conduct the maintenance themselves.

Exhibit 4-1. AWOS Alternatives



Sources: Google Earth, Kimley-Horn, FAA Order 6560.20B – Siting Criteria for Automated Weather Observing Systems

No-Build Alternative

The most significant impacts associated with the installation of an AWOS are cost of construction and maintenance, and pilot safety. In a no-build scenario, the Airport would save approximately $150,000 in construction costs and subsequent maintenance costs, however, the surrounding community has shown interest in increasing revenue potential at the Airport. An on-

site AWOS or similar type weather reporting station provides a benefit that enhances pilot and aircraft safety, which could potentially increase operations and fuel sales. Accurate wind data is crucial for providing safe approaches at the Airport and is required to justify the need for a crosswind runway. The following summarize the benefits and impacts of not installing an AWOS at DGL.

Benefits of a No-Build Alternative

- No construction or installation cost

Impacts/Issues of a No-Build Alternative

- Limits pilot knowledge of existing weather conditions
- Lack of weather data to justify/verify the need for crosswind runway
- Problematic for providing safe approaches

Location A

As depicted in **Exhibit 4-1**, Location A was established according to FAA criteria. According to the FAA's Order 6560.20B – Siting Criteria for Automated Weather Observing Systems (AWOS) for airports with visual and non-precision approaches, "the preferred siting of the cloud height, visibility, and wind sensors and associated data collection platform (DCP) is adjacent to the primary runway 1,000 feet to 3,000 feet down runway from the threshold . . . The minimum distance from runway centerline shall be 500 feet. The maximum distance from the runway shall be 1,000 feet." The proposed location of the AWOS facility within the preferred siting area of Location A was determined based on proximity to Runway 03-21 (shorter distance to the runway provides most accurate weather information) and availability of flat, undisturbed land that is clear of all runway and taxiway safety areas.

The west side of Runway 03-21 is the most logical side to locate an AWOS because the electrical vault is located on the west side of the airfield near the primary aircraft parking apron. Positioning the AWOS east of Runway 03-21 would require additional extension of electrical lines beneath the runway, which would incur unnecessary added expenses.

Location A positions the planned AWOS west of the partial parallel taxiway, and east of the north apron. This location satisfies FAA AWOS siting preferences, however, positioning the AWOS at "Location A" could potentially require digging under or around the north apron to extend and connect electrical lines to the facility. The following summarize the benefits and impacts of installing an AWOS in Location A.

Benefits of AWOS Location A

- Enhances pilot safety at the Airport and provides on-site recorded data for potential justification of future crosswind runway
- No impacts to aircraft operations during installation
- Satisfies FAA AWOS siting requirements
- Potential trenching under existing pavements

Impacts/Issues of AWOS Location A

- Requires trenching electrical lines to main electrical vault

- Up-front construction costs
- Installation of AWOS requires routine maintenance and operational costs

Location B

Also, shown in **Exhibit 4-1** is Location B which also satisfies FAA AWOS siting preferences, positioning the AWOS southwest of the south apron, approximately 2,000 feet north of Runway End 03 and 600 feet from the runway centerline. Positioning the AWOS in this location allows for the extension of electrical lines to the main apron electrical vault without interference with the existing pavement of the south apron. This location is closer to the main apron than Location A, reducing the distance of the electrical lines needed and minimizing construction and trenching impacts. Similar to Location A, the proposed location of the AWOS facility within the preferred siting area of Location B was determined by its proximity to Runway 03-21, and the site's availability of flat, undisturbed land that is clear of all runway and taxiway safety areas. The following summarize the benefits and impacts of installing an AWOS in Location B.

Benefits of AWOS Location B

- Enhances pilot safety at the Airport and provides on-site recorded data for potential justification of future crosswind runway
- No impacts to aircraft operations during installation
- Minimal impacts to existing facilities
- Satisfies FAA AWOS siting requirements
- Shortest distance to main electrical vault while adhering to FAA siting criteria
- No trenching under existing pavements

Impacts/Issues of Location B

- Requires trenching electrical lines to main electrical vault
- Shorter distance to electrical vault compared with Location A – saves on trenching and electrical line costs
- Up-front construction costs
- Installation of AWOS requires routine maintenance and operational costs

Recommended Location for AWOS

After a thorough analysis of the airport layout and the impacts incurred from installing an AWOS at DGL, it is recommended that the Airport install and position the AWOS at Location B. While the recommended location satisfies FAA siting criteria and is in an area of flat terrain, free of all runway and taxiway safety areas, the AWOS could be located elsewhere within AWOS siting area B shown in Exhibit 4-1 if desired. The exact location should primarily take into account construction costs associated with trenching and extending utility lines. Location B is the preferred location because while both sites enhance overall safety at the Airport, minimally impact existing facilities and operating aircraft, satisfy FAA AWOS siting requirements, and record wind data for future use; Location B requires the least amount of trenching to connect electrical lines to the main electrical vault. Decreasing the distance of the electrical lines reduces the overall project cost.

4.3.2 Runway Maintenance

This section identifies the alternatives to runway improvements that were described in the Facility Requirements Chapter. The runway is the most vital facility at an airport, and without routine maintenance, the runway's condition deteriorates. Routine maintenance is essential to sustain operations at an airport. As stated in FAA AC 150/5380-6C – Guidelines and Procedures for Maintenance of Airport Pavements, pavement repairs should be made as quickly as possible after the need for them arises to help ensure continued and safe aircraft operations. Airports should perform repairs at early stages of distress, even when the distresses are considered minor. A delay in repairing pavements may allow minor distresses to progress into major failures. The following sections discuss the alternatives to the runway recommendations in the previous chapter.

No-Build Alternative

This alternative details the effects of not repairing Runway 03-21. As noted previously, the runway pavement condition index (PCI) was determined by ADOT to be 19 in 2013 on a scale of 0 to 100. Another PCI inspection was scheduled to occur in 2017 but had not been conducted at the time this analysis was completed. Despite the Airport's efforts to maintain runway pavements and remove foreign object debris (FOD), it is estimated that the PCI of Runway 03-21 has declined since the 2013 inspection.

While a no-build scenario would save both the City and State significant investment dollars, the level of deterioration to Runway 03-21 has already diverted significant fixed-wing activity to other nearby airports, and aircraft operators, particularly itinerant operators, will likely continue to be reluctant to use the Airport until the condition of the runway improves.

Because the runway is in such poor condition, it is assumed that if the Airport and State do not invest in the repair of the runway, aircraft operators will choose to use other local airports. This will result in a decrease in Airport usage from local and itinerant operators resulting in decreased AvGas and Jet A fuel sales. Current based aircraft owners could also decide to base their aircraft elsewhere, and the already limited revenue stream from tenant and hangar leases could diminish.

In sum, if the Airport does not improve runway conditions, operations at DGL will likely decrease, aircraft owners and tenants may be forced to relocate, and revenues from hangar leases and fuel sales will likely diminish. The Airport has seen a decline in itinerant operation activity in the recent past, specifically jet aircraft that have landed at other nearby airports with runways that are in better condition. Representatives of some of these jet operators have identified that they prefer to fly into DGL due to its proximity to the City and availability of self-fueling facilities, however, the condition of Runway 03-21 has forced them to operate elsewhere on multiple occasions. Furthermore, the existing tenant at DGL has expressed interest in operating a fixed-wing aircraft in the future, but cannot do so until the condition of Runway 03-21 is improved. If the tenant deems that operation of a fixed wing aircraft is necessary in the future and the runway is not improved, the likelihood that they relocate to another airport would increase, and the City would lose a valuable business. Failure to mitigate the damaged pavement on Runway 03-21 could ultimately lead to closure of the Airport to fixed-wing operators entirely. The following summarize the benefits and impacts of not improving the condition of the runway at DGL.

Benefits of a No-Build Alternative

- Cost savings of up-front design and construction of runway improvements

Impacts/Issues of a No-Build Runway Alternative

- Increased threat to safety of aircraft operations
- Potential relocation of tenants, based aircraft owners
- Potential loss of hangar lease and fuel sale revenue streams
- Diversion of operations to other airports
- Potential ultimate closure of Airport
- Increased costs for sweeping and maintenance as runway condition worsens

Runway Rehabilitation

Another alternative is to perform rehabilitation of Runway 03-21. A runway rehabilitation in this case consists of a mill and overlay which removes the top layer of the runway and replaces it with a new asphalt layer. This type of runway project is typically recommended for runways with a base course in good condition because cracks in the base course eventually cause cracking at the surface. Based on the extremely low PCI of Runway 03-21, paired with the relatively shallow depth of the runway pavement, estimated from approximate weight bearing capacity, it is evident that a mill and overlay would provide temporary improvement, however, conditions that have caused deterioration of the pavement exist in the base course and fill layers of the runway, which would negate any benefits of a mill and overlay within a relatively short timeframe.

Although it would provide temporary relief, this option is less expensive and intrusive compared to a full reconstruction of Runway 03-21. Construction costs (excluding design) of a mill and overlay of the runway are estimated to be approximately $1,000,000. Construction time for a project of this nature is typically less than a full reconstruction. The runway has cracking in the base course, which means that currently visible cracks will likely re-emerge in the new overlay within an approximate five-year horizon. A mill and overlay will repair the current potholes, surface cracks, and remove asphalt FOD, but it will not repair the base course cracking. The following summarize the benefits and impacts of rehabilitating the runway.

Benefits of a Runway Rehabilitation

- Enhanced safety at the Airport by removing FOD and cracked/potholed pavements
- Runway repair could increase operations and fuel sales at the Airport
- Lower estimated construction cost compared to a full reconstruction
- Existing tenant could continue to operate during construction

Impacts/Issues of a Runway Rehabilitation

- Potential runway closures for milling and overlay settling
- Relatively high project cost for temporary benefit
- Runway would require a full reconstruction within five years

Runway Conversion

Another alternative for improving Runway 03-21 would be to convert it to an unpaved/gravel runway. While this option would essentially prohibit jet aircraft from operating at DGL, it would

provide a relatively cost-effective option for Runway 03-21 to remain operational without a full reconstruction or rehabilitation that would require additional improvements in the near-term. This alternative would entail milling the existing runway pavements (estimated at 3-inch depth), removing the milled pavements, and replacing the surface with compacted gravel.

This option provides a long-term solution for improving the runway at an estimated cost of approximately $650,000 ($150,000 for milling and removal of existing pavement, and $500,000 for grading and installation of runway surface). The primary drawback with converting Runway 03-21 to an unpaved facility is that it limits the size and type of aircraft that can operate. While gravel runways are safe for the operation of most propeller aircraft and rotorcraft, the small rocks can damage turbines.

The following summarize the benefits and impacts of rehabilitating the runway.

Benefits of a Runway Conversion

- Enhanced safety at the Airport by mitigating damaged runway pavements
- Runway repair could increase operations and AvGAS sales at the Airport
- Lowest estimated construction cost of runway alternatives
- Existing tenant could continue to operate during construction

Impacts/Issues of a Runway Conversion

- Potential runway closures for milling, grading, and installation of runway surface
- Would prohibit jet aircraft from operating at DGL
- Could reduce sales of Jet A fuel (several rotorcraft types use Jet A fuel)

Runway Reconstruction

This alternative entails a full reconstruction of Runway 03-21. A complete runway reconstruction would rebuild the entire runway from base course to pavement surface and could take anywhere from one to three months to complete, likely requiring the Airport to temporarily close for fixed-wing operations during construction. This alternative is the most expensive of those presented, but the only alternative that promotes a long-term solution to the continuously deteriorating runway pavement.

A runway reconstruction would replace the existing base course, fill material, and surface pavements to restore the runway's PCI to 100 and establish a pavement strength of 12,500 pounds. Assuming that routine maintenance is conducted on the new runway, a full asphalt runway reconstruction has a lifespan of approximately 20 years. As noted, some Airport users including jet operators have had to divert to other airports due to the level of deterioration on Runway 03-21. Restoring the runway to a safer, more operable condition would likely lead to an increase in activity at the Airport, including itinerant and jet operations. Furthermore, the existing tenant at the Airport who flies helicopters would still be able to operate during construction. Construction costs, excluding design for a full reconstruction of Runway 03-21, are estimated to be approximately $2,500,000. The following summarize the benefits and impacts of a full reconstruction of Runway 03-21.

Benefits of a Runway Reconstruction

- Enhances Airport safety by eliminating FOD, potholes, and cracks while increasing the runway PCI from <19 to 100
- Increases the runway's lifespan by approximately 20 years, assuming routine maintenance is conducted
- Runway reconstruction would likely eliminate/reduce diverted operations, leading to increased fuel sales
- Existing tenant could continue to operate during construction

Impacts/Issues of a Runway Reconstruction

- Highest cost of proposed alternatives
- Significant disruption to Airport operations attributed to runway closure during construction

Recommended Runway Alternative

The primary objective of the Airport is to provide safe, efficient facilities that should, in turn promote an increase in airport users, operations, and revenue sources. In order to accomplish this, the most viable solution is a complete reconstruction of Runway 03-21. While this alternative carries a relatively high cost to design and construct, it is the best solution for the Airport to continue to operate as an airport with a paved runway that does not start instantly experiencing cracks and can be maintained. A no-build option would undoubtedly lead to a continued decline in pilot safety due to increasing deterioration of the runway and a rehabilitation of Runway 03-21 would only provide temporary relief, which would result in additional investment in the future. While converting the runway to an unpaved facility could be a long-term solution if funding is not available for a full reconstruction, it does limit the type of aircraft that would be able to operate at DGL. As such, it is recommended that the runway reconstruction alternative be pursued and placed as the highest priority facility need of the Airport currently and in the future.

If the City of Douglas is unable to secure the funds to conduct a full runway reconstruction, it is recommended that at a minimum, it pursue funding to rehabilitate Runway 03-21 as a temporary improvement to keep the facility operational in the short-term or examine the option to convert the Runway to an unpaved facility. Project cost estimates and funding mechanisms are identified in the next chapter.

4.3.3 Crosswind Runway

As noted in the Facility Requirements Chapter of this Master Plan Update, DGL does not satisfy the requirement of 95 percent crosswind coverage. A crosswind runway is recommended when the primary runway orientation provides less than 95 percent wind coverage. Wind conditions affect all aircraft in varying degrees. Generally, the smaller the aircraft, the more it is affected by wind, particularly crosswind components, which are often a contributing factor in small aircraft accidents. As such, a crosswind runway provides improved landing and take-off conditions and increases safety.

Because DGL does not have an AWOS to evaluate wind conditions, wind data were obtained from the nearest weather reporting station, which is the Automated Surface Observing Systems

(ASOS) located at Bisbee-Douglas International Airport, approximately 10 miles northeast of DGL. While this distance is relatively short, pilots operating in the area have noted there can be significant differences in wind patterns and weather conditions within this range, necessitating the need for an on-site weather reporting system at DGL.

It is recommended that prior to any detailed design effort of a crosswind runway at the Airport, the City conduct a wind study to determine crosswind coverage. If the wind study at the Airport confirms DGL does not meet the 95 percent crosswind component, a crosswind runway is recommended, although, this should be considered a long-term pursuit.

It is also important to note that design and construction of a crosswind runway should only be pursued once improvements have been made to Runway 03-21. It is unlikely that the Airport would receive adequate funding from the State to construct a crosswind runway. As such, a crosswind runway design and construction project is a recommendation for the long-term if crosswind coverage is confirmed to be less than 95 percent.

Cost estimates have been identified for construction of both a paved and an unpaved crosswind runway. An asphalt runway that meets FAA runway length criteria is estimated to cost approximately $2.5 million while an unpaved gravel runway would cost approximately $500,000. Based on the relatively low level of activity at DGL, if a crosswind runway is ever constructed, it is recommended that an unpaved/gravel type surface is used. Consideration of the fact that the development of a crosswind runway would limit the amount of Airport-owned land available for non-aviation use should also be given. As the Airport seeks to enhance its revenue stream, a crosswind runway could impede these efforts.

4.3.4 Full-Length Parallel Taxiway

A full-length parallel taxiway eliminates use of a runway for taxiing, thus increasing airfield capacity and protecting the runway under low visibility conditions. DGL has a partial parallel taxiway, approximately 3,000 feet in length that connects Runway End 21 to Taxiway A4, which accesses the aircraft parking aprons. The following sections present development alternatives for a full-length parallel taxiway.

No-Build Alternative

The No-Build scenario would mean the airfield continues to be served by the partial parallel taxiway. A partial parallel taxiway is acceptable, however, this does not mitigate the safety threat of back-taxiing aircraft. While DGL experiences a relatively low level of activity, the threat is still present, especially in low visibility conditions. The following summarize the benefits and impact of not extending the partial parallel taxiway to a full-length parallel taxiway.

Benefits of a No-Build Alternative

- No construction or maintenance costs
- No impact to aircraft operations associated with construction

Impacts/Issues of a No-Build Alternative

- Requires aircraft to back-taxi on Runway 03-21
- Limits airfield capacity

Construct Full-Length Parallel Taxiway

This alternative identifies the impacts of constructing a full-length parallel taxiway. As stated previously, a full-length parallel taxiway increases safety by providing a route for aircraft to taxi as an alternative to taxiing on the runway. Completion of the segment of taxiway to connect Runway End 03 to the existing partial parallel taxiway will incur an estimated $500,000 in construction fees, however, this alternative improves operational safety and increases airfield capacity. The following summarize the benefits and impacts of constructing a full-length parallel taxiway.

Benefits of Constructing a Full-Length Parallel Taxiway

- Enhances Airport safety and eliminates back-taxiing on Runway 03-21
- Increases airfield capacity

Impacts/Issues of Constructing a Full-Length Parallel Taxiway

- Relatively high design and construction costs compared to existing and projected levels of activity
- Moderate disruption to Airport operations during construction

Recommended Parallel Taxiway Alternative

It is recommended that the City extend the existing partial parallel taxiway to a full-length parallel taxiway to mitigate the threat of back-taxiing aircraft, while simultaneously increasing runway capacity. As noted previously, addressing the condition of Runway 03-21 should be the Airport's primary action item. Construction of the full-length parallel taxiway is a lesser priority and is justifiable in the intermediate- to ultimate term, if and when improvements have been made to Runway 03-21. In the unlikely event that the City secured funds to both reconstruct Runway 03-21 and extend the existing taxiway to a full-length parallel taxiway, it would be beneficial to construct the taxiway extension in conjunction with Runway 03-21 improvements to limit disruption of aircraft operations during construction.

At low traffic general aviation airports such as DGL, turnarounds are considered during initial runway development as an alternative to a full or partial parallel taxiway.

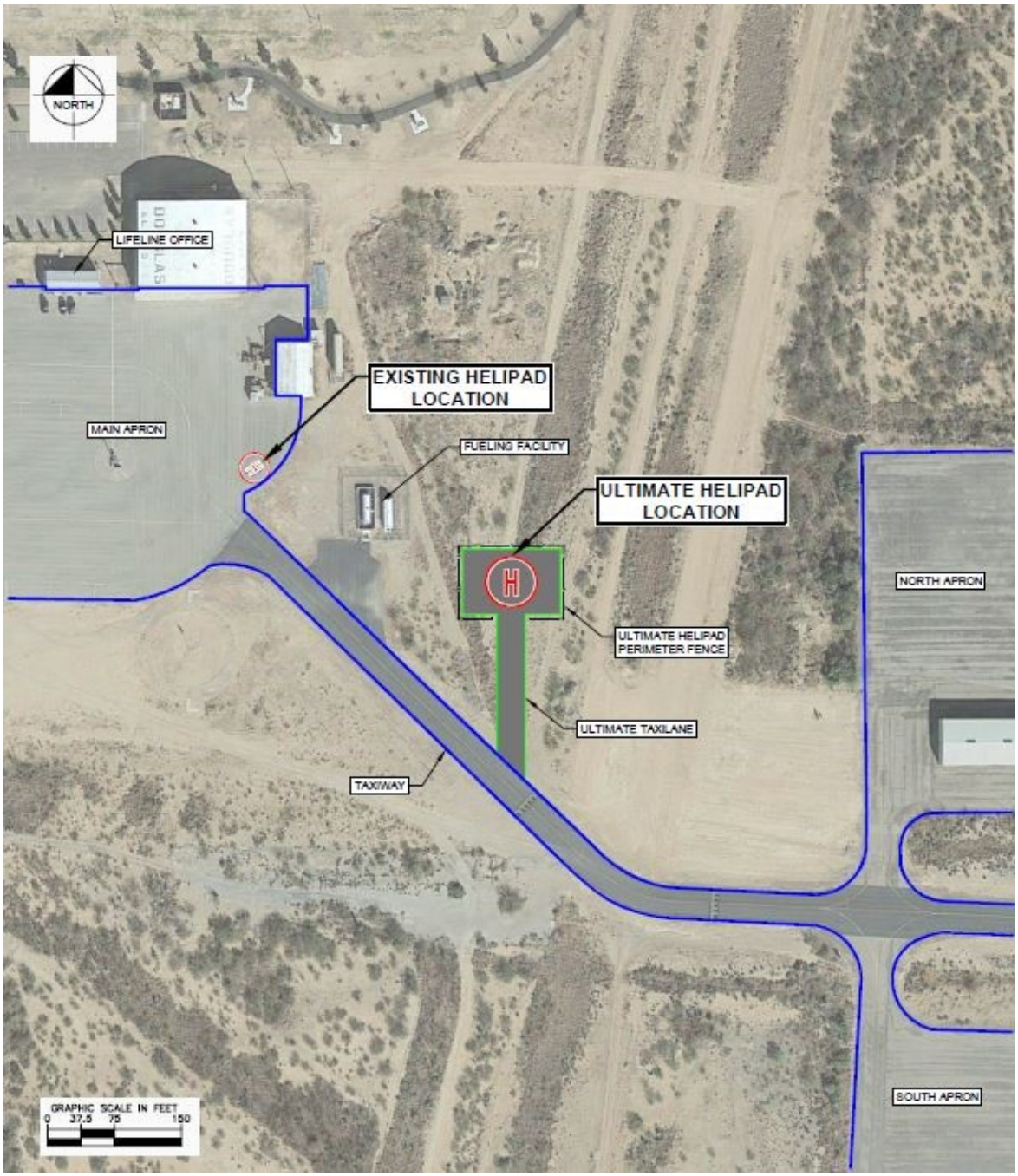
DGL is equipped with a turnaround taxiway at the end of Runway 21, however, it is in same physical condition as the existing runway. A "do-nothing" approach would leave the turnaround taxiway in a condition that is hazardous to aircraft and operators. In the event that the Airport decides not to pursue a full-length parallel taxiway, the recommended alternative to this would be rehabilitation of the turnaround taxiway in conjunction with Runway 03-21. Similar to the runway, the condition of the existing turnaround taxiway merits a full reconstruction, which has a construction cost of approximately $150,000. A rehabilitation (mill and overlay) of these pavements would cost approximately $50,000 but the effective life of the pavement would be much less. It is recommended that if a full parallel taxiway is not pursued, a full reconstruction of the turnaround taxiway be completed in conjunction with runway improvements.

4.3.5 Helipad

The Airport's helipad is located at the southeast corner of the main apron, north of Taxiway A-4. This facility is frequently utilized by Lifeline and occasionally by itinerant rotorcraft operators. Based on feedback provided at MPU Planning Advisory Committee meetings, it was identified

that a permanent helipad capable of accommodating small and medium-sized rotorcraft was a facility need. **Exhibit 4-2** below depicts the location of the proposed future helipad and the location of the existing helipad, with discussion of the impacts of a no-build scenario. It should be noted that other potential helipad locations were initially examined, but they were excluded from further analysis because they interfered with existing facilities or were located too far from the tenant's office and hangar.

Exhibit 4-2. Helipad Alternatives



Sources: Google Earth, Kimley-Horn

Lifeline currently lands their rotorcraft on the temporary helipad space located west of the Jet A fuel tanks, on the east side of the main apron. This location is conveniently positioned within a short distance of the Lifeline quarters. It has been recommended that the City construct an official permanent helipad at DGL because of the large proportion of rotorcraft operations that take place at the Airport. Having a permanent, lighted, fenced-off helipad will increase safety at the Airport as the rotorcraft will not be landing in a temporary zone on the main apron, near hangars, vehicles, or personnel.

Initial alternatives for a new permanent helipad included locating the facility in its existing location and the location east of the main apron identified in **Exhibit 4-2**. While the existing location is adequate for current levels of activity and would cost approximately $50,000 to upgrade, Lifeline has indicated that future expansion of hangar facilities would encroach toward the helipad, which would cause spatial constraints on the east side of the main apron.

While there is adequate space on the southwest portion of the main apron, and the cost associated with this improvement would also be approximately $50,000, relocating a permanent helipad to this location would eliminate aircraft tie-downs or require reconfiguration of the apron to accommodate additional taxilane and movement areas.

Exhibit 4-2 displays the recommended location of the future helipad, positioning the structure between the existing Jet A fuel station and the north apron where T-hangars are situated. The recommended location was determined based on tenant feedback and helipad siting criteria identified in FAA AC 150/5390-2C – Heliport Design. This location provides access to the taxiway flowing into both the main apron to the existing Lifeline quarters and Runway 03-21. Additionally, constructing the helipad in this location does not impact future development around the existing apron, nor will it impact operations at the Airport during construction. In order to provide safe and efficient access, the proposed helipad would require a taxilane approximately 150’ in length. While the helipad will frequently be used by Lifeline, it will also be available for public use. The construction costs associated with this option, which includes pavements, taxilane, lighting, and fencing is estimated to be approximately $200,000.

Prior to construction, it is recommended that the City further evaluate the implementation of the helipad. The proposed location for the future helipad positions the pavement immediately adjacent to a former runway which could require specific grading design.

4.4 General Aviation Facility Alternatives

This section outlines the alternatives for the recommended general aviation terminal building and detail the benefits and impacts of each location.

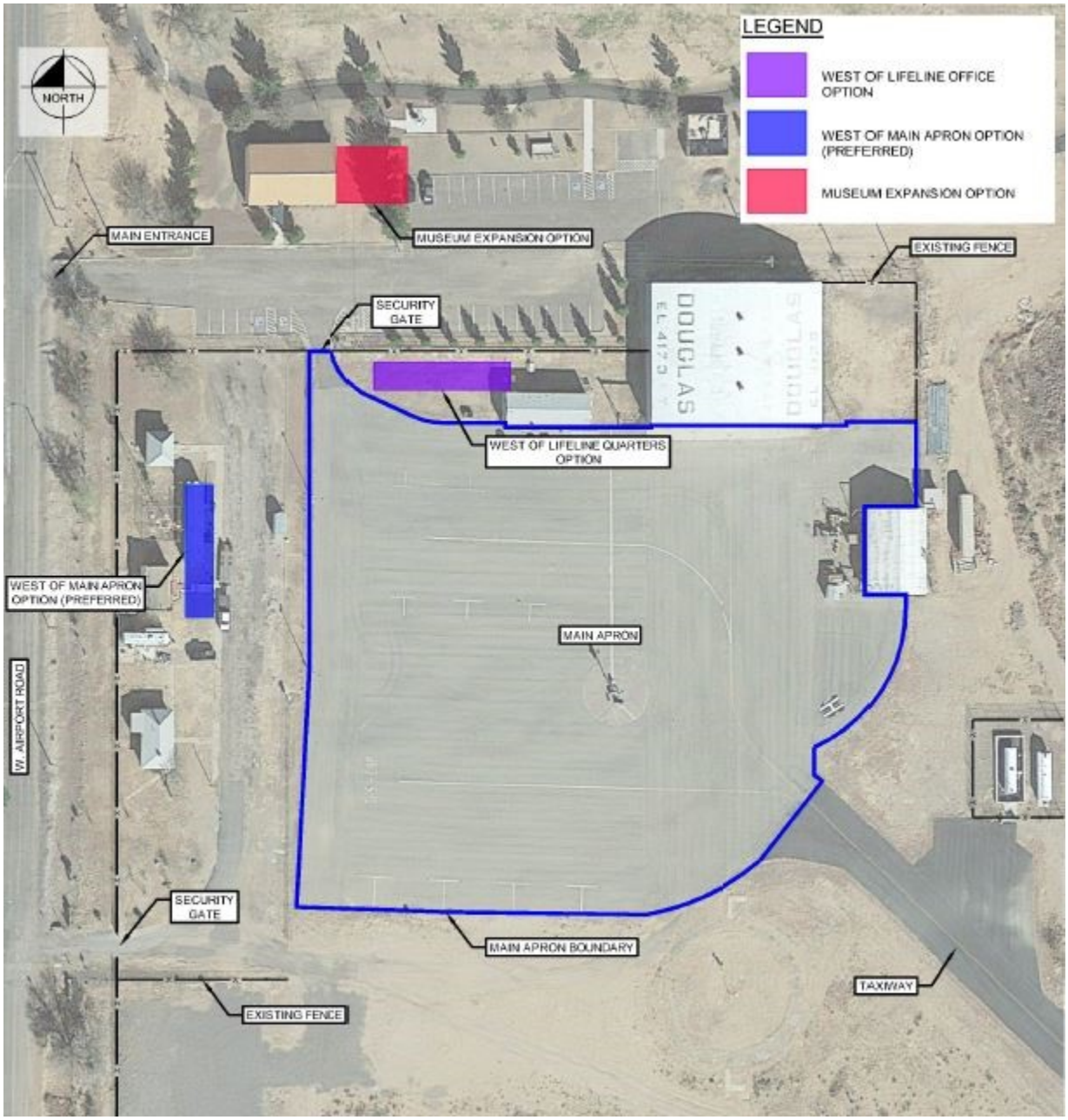
4.4.1 Terminal Building

DGL has had a terminal building in the past, however, such a facility has not been operational for several years. There is a trailer west of the main apron with a restroom that can be accessed when the Airport Operations Manager is available, however, a facility that can be accessed by pilots during hours that the Airport is operational has been identified as a need. As noted in the Facility Requirements Chapter, a typical terminal for a facility such as DGL would be sized approximately 1,600 square feet, and in the event of a new structure (as opposed to

redevelopment or expansion of an existing building), could be developed as a trailer/mobile home unit.

Many airports maintain a terminal building to provide amenities to airport users such as an internet connection, food and beverage accommodations, pilot lounges, and restrooms. After discussions with the Airport tenant, Airport users have been inadvertently entering the Lifeline quarters, mistaking their facility for a terminal building. In efforts to deter Airport users from inadvertently entering Lifeline quarters while simultaneously increasing value at the Airport, it is recommended that the Airport construct a general aviation terminal facility in the vicinity of the main apron. The following examines siting criteria and alternatives for development of a terminal building (see **Exhibit 4-3**).

Exhibit 4-3. General Aviation Terminal Building Alternatives



Sources: Google Earth, Kimley-Horn

No-Build Alternative

This alternative identifies the benefits and impacts if a terminal building is not constructed. As noted previously, the Airport's tenant has identified safety and security issues as they pertain to the lack of a terminal building. The tenant's quarters are used as both an office and a place to rest between shifts and flights. A no-build option could continue to pose a safety risk to the Airport tenant.

In addition to the safety concerns at the Airport, the City has goals to increase activity and revenue at the Airport. The lack of a terminal facility to be used by pilots could significantly cap

these goals. A terminal building can draw interest from local and itinerant pilots which, in turn, provides the opportunity for aircraft operators to re-fuel at DGL. The following summarize the benefits and impacts of not constructing a terminal building.

Benefits of a No-Build Alternative

- No cost to construct a terminal building
- No need for staffing/maintenance of facility
- Preserves space for potential non-terminal facility needs or non-aviation development

Impacts/Issues of a No-Build Alternative

- Airport users may continue to disrupt tenant operations
- Potential decrease in activity without terminal facility to accommodate pilots

Border Air Museum Expansion

This alternative develops the terminal building as an extension to the existing Border Air Museum and is depicted in red in **Exhibit 4-3**. Expansion of the museum would further utilize an existing facility and potentially create increased museum exposure, which could draw more interest in the Airport. Another benefit of expanding the Museum would be the utilization of existing utilities, parking areas, and proximity to the main entrance and W. Airport Rd. Construction costs for this option are estimated to be approximately $15,000, which does not include maintenance and staffing. While this alternative has the lowest up-front cost, it also requires the highest maintenance and staffing needs due to being situated outside the Airport security fence. Additionally, closure of the facility may be required for safety of museum visitors during construction.

Expansion of the Border Air Museum as a terminal facility would require that security gates remain open during operational hours, which poses a security risk. Because the Museum is outside the secure portion of the Airport, it would require either on-site staffed personnel or someone to frequently monitor the Museum/Terminal. A terminal building located inside the security fencing could remain open during hours that the Airport is not open without constant staffing if needed. While the existing tenant operates at the Airport 24 hours a day, it is optimal to keep security gates closed except to actual Airport users. The following summarize the benefits and impacts of constructing a terminal building as a museum expansion.

Benefits of an Airport Museum Expansion

- Potential to use existing utility infrastructure
- Possible increased museum exposure
- Provides adequate space for future terminal building expansion
- Improvements remain on Airport property
- No direct impacts to immediately adjacent offsite development or roadways
- Least expensive development alternative

Impacts/Issues of an Airport Museum Expansion

- Design and construction cost
- Outside Airport security fencing

- Would require maintenance and/or frequent check-ins by staffed individual
- Potential closure of museum during terminal building construction

North of Main Apron

This alternative develops the terminal building north of the main apron and west of the Lifeline's existing quarters and is depicted in purple in **Exhibit 4-3**.

Potential expansion beyond forecast requirements should be taken into consideration when determining the appropriate location of a terminal facility at an airport. In this case, developing a terminal building west of Lifeline's quarters only offers enough space for the development of the recommended terminal building, however, it limits building or auto parking expansion potential of the existing tenant. Additionally, while this alternative positions the terminal building close to the existing parking lot and main entrance, the terminal building would be separated by a security fence, limiting accessibility.

This alternative also situates the terminal structure close to the security gate, which could impact access to and from the main apron. The structure itself would likely be a mobile/trailer unit approximately 1,600 square feet in size that would cost approximately $40,000 for delivery, construction, and connection to utilities. It should be noted that this assumes that the terminal is a new mobile unit rather than a used structure. The following summarize the benefits and impacts of construction of a terminal building on the north side of the main apron.

Benefits of Locating North of Main Apron

- Proximity to main apron and general aviation facilities
- Proposed facility within Airport security fence
- Improvements remain on Airport property
- Utilities provided within the proposed location

Impacts/Issues of Locating North of Main Apron

- Limits potential expansion of auto parking and tenant
- Proximity to security gate
- Requires new construction rather than expanding existing infrastructure

West of Main Apron

This alternative examines the impacts of developing the terminal building west of the main apron. Developing the terminal building in this location provides many benefits in regard to location and minimizing impacts to surrounding infrastructure.

As shown in blue in **Exhibit 4-3**, positioning the terminal building west of the main apron provides immediate access to W. Airport Rd with space for Airport user parking. This location also provides access to the security gate along Airport Rd.

In addition, locating the terminal building west of the main apron creates an area free of any movement/airside obstacles. This alternative situates the terminal building outside the fencing that provides protection to the apron, but within Airport security fencing, limiting the impact to airside operations and maintaining safety and security to non-Airport users. The primary impact of this alternative is that a 1,600-square-foot structure would require the relocation or removal of

existing structures. There are three unoccupied buildings in this location that the City has identified as unusable. A new terminal facility in this area would likely require demolition, an action that the City has already indicated it would likely do in the future. As with the north apron alternative, the structure itself would likely be a mobile/trailer unit that would cost approximately $40,000 for delivery, construction, and connection to utilities. It is estimated that demolition of an existing structure and removal of materials would cost an additional $2,000 bringing the total project cost to approximately $42,000. It should be noted that this assumes that the terminal is a new mobile unit rather than a used structure. The following summarize the benefits and impacts of constructing a terminal building west of the main apron.

4.4.1.1.1 Benefits of Locating West of Main Apron

- Surrounded by Airport security fencing
- Utilities provided within the proposed location
- No disruption to aircraft operations during construction
- No direct impacts to immediately adjacent offsite development

4.4.1.1.2 Impacts/Issues of Locating West of Main Apron

- Highest cost of terminal building alternatives
- Demolition of existing structures

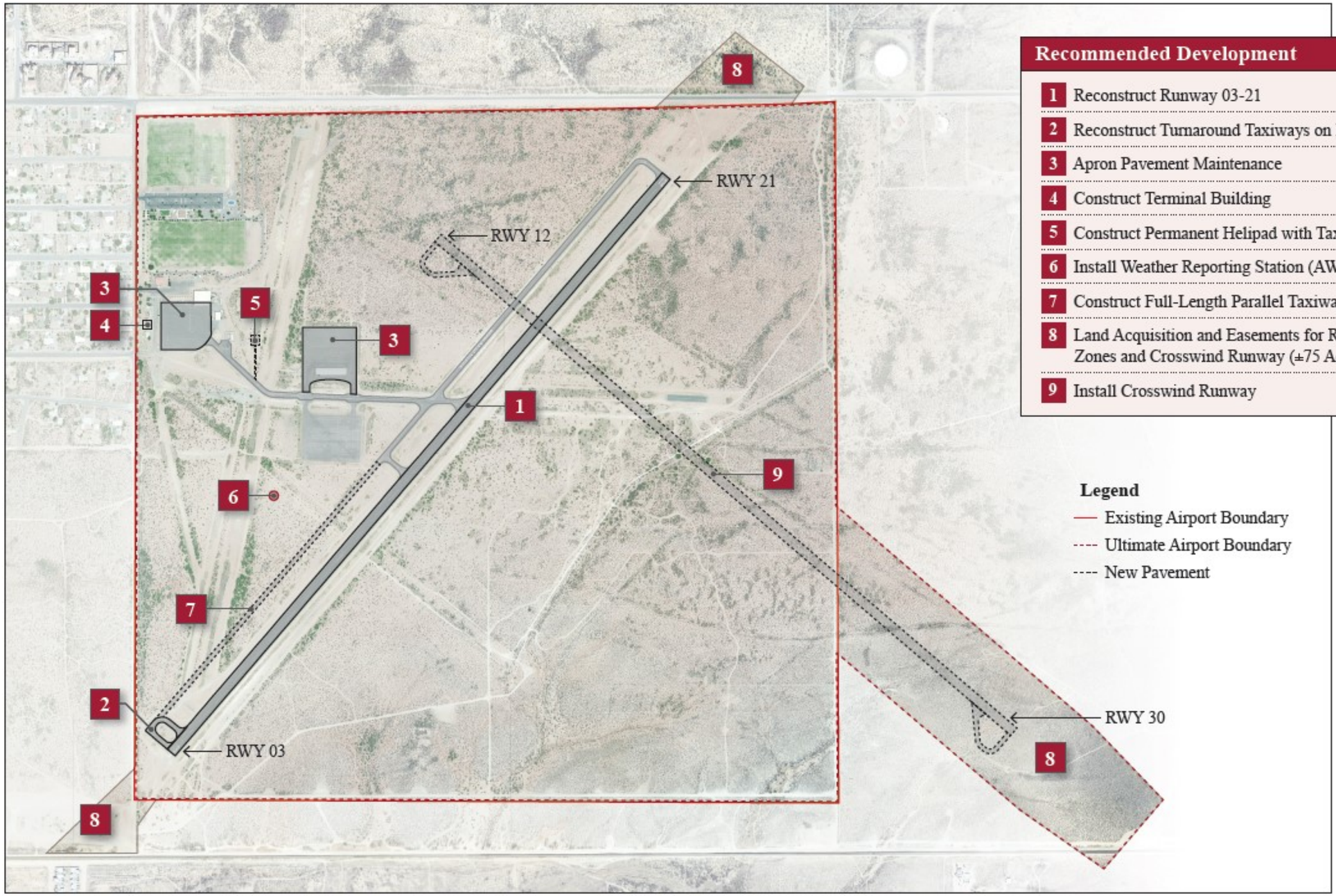
Recommended Terminal Building Alternative

Based on the analyses above and feedback provided by the Airport Master Plan Advisory Committee, the recommended development of the general aviation terminal building is west of the main apron. This location is recommended not only because of the many associated benefits compared to the other proposed alternatives; but the minimal impacts associated with placement of a terminal building west of the main apron. Positioning the terminal building west of the main apron satisfies FAA terminal building siting requirements, provides the opportunity for future expansion if needed, incurs minimal impacts to airside facilities, and provides immediate ground access to W. Airport Rd while being located within the Airport's security fence. It should be noted that the location identified in **Exhibit 4-3** is merely suggested. Based on potential removal of structures and other associated implementation costs, a terminal building could be located anywhere on the west side of the main apron that incurs minimal impacts.

4.5 Alternatives Summary

A summary of all recommended facility improvements and their preferred locations is shown in **Exhibit 4-4**. A recommended phased development plan and cost estimates for these improvements is described in the subsequent chapter.

Exhibit 4-4. Alternatives Development Summary



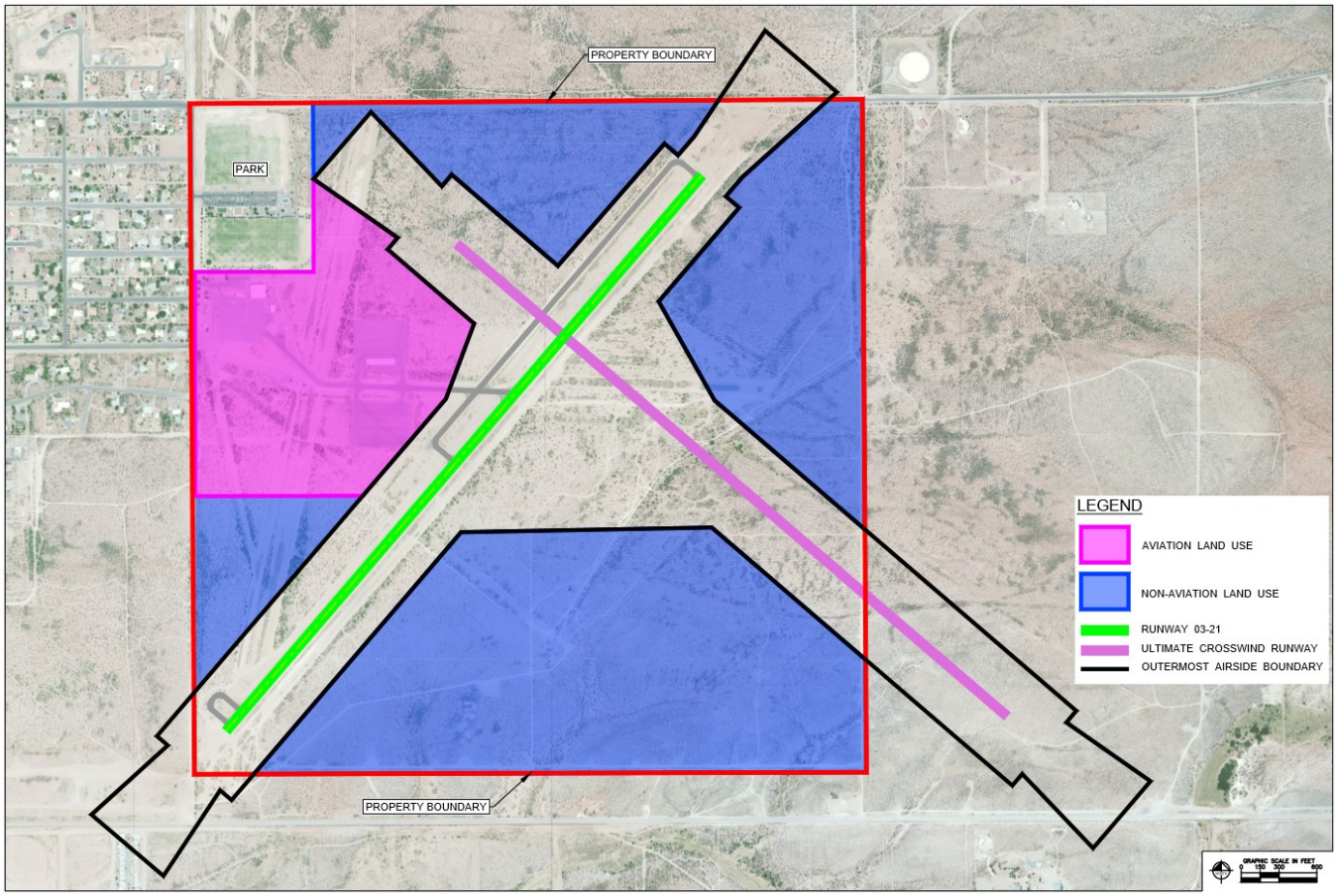
Source: Kimley-Horn

Aviation vs. Non-Aviation Airport Land Use

The previous chapter of this Master Plan Update identified facility requirements based on forecasts of aviation demand and the condition of existing facilities. This chapter identified specific locations of these facility needs based on evaluation criteria such as compatibility, project cost, and other factors. While future aviation-related facilities are anticipated to increase the overall footprint of developed land on Airport property, there will be a significant amount of space that may be used for non-aviation development.

Exhibit 4-5 depicts areas of Airport-owned land that are needed for existing and future aviation development. These areas include all airside and landside facilities as well as required safety areas that surround them. The Airport's existing property encompasses approximately 643 acres and the acquisition of parcels for the future crosswind runway and RPZs will expand this footprint to approximately 714. Existing and future aviation uses and associated safety areas are anticipated to require a total of 385 acres (shown in Exhibit 4-5 as areas within the outermost airside boundary or highlighted in pink). These parcels of land follow the outermost airside restriction areas including the Building Restriction line (BRL) and Runway Protection Zones (RPZs) and extends to the Airport property line. It should be noted that areas recommended to be designated for aviation-use include buffers that to accommodate aviation demand at DGL for a 50-year planning horizon. Airport Park, located on the northwest portion of the property encompasses approximately 26 acres. All areas that are not designated as current park space, or existing or future aviation-related development are identified for non-aviation related development. Utilization and development of these available Airport properties can generate future revenues and should be examined thoroughly prior to development. Potential uses for these areas (highlighted in blue), which total approximately 304 acres, are identified in the Airport Business Plan, which is included as Appendix B in this Master Plan Update.

Exhibit 4-5. Airport Land Use



Sources: Google Earth, Kimley-Horn

5 AIRPORT DEVELOPMENT AND FINANCIAL PLAN

This chapter provides a summary of projects identified in the Facility Requirements chapter, recommended developments described in the Alternatives chapter, as well as possible additional studies that may be required throughout the 20-year planning horizon. This summary also includes planning-level cost estimates and potential funding mechanisms. To foster additional revenue generation potential, an Airport Business Plan was developed in conjunction with the Master Plan Update. This document is included as Appendix B.

5.1 Introduction

As noted previously, Douglas Municipal Airport is not a NPIAS facility, meaning it is not eligible to receive FAA AIP grants. As such, the primary financial channel for Airport improvements other than local monies is through grants issued by the Arizona Department of Transportation – Multimodal Planning Division (ADOT-MPD) Aeronautics Group. Grant-eligible projects require a 10 percent local match to obtain 90 percent State funding. Projects are typically eligible for ADOT grants if they are related to maintenance, safety, capacity enhancement, or are projects related to environmental studies, planning, or land acquisition.

5.2 Airport Development Plan

In Spring 2017, ADOT announced that it would be suspending State/Local (S/L) grants through fiscal year 2020, essentially placing a "freeze" on funding of non-FAA eligible development. Taking this into account, the Airport Capital Improvement Plan (ACIP) developed in this chapter separates recommended improvements into two phases. Phase I includes all improvements and studies that are recommended for a 1 to 5-year completion period, while Phase II includes those projects that should be considered for completion in the 6 to 20-year timeframe. Typically, projects identified in the first 5 years of an ACIP would have specific years associated with these improvements, however, due to the uncertain nature of potential funding, these projects are classified as "near-term" improvements, meaning they should be pursued within a 5-year period.

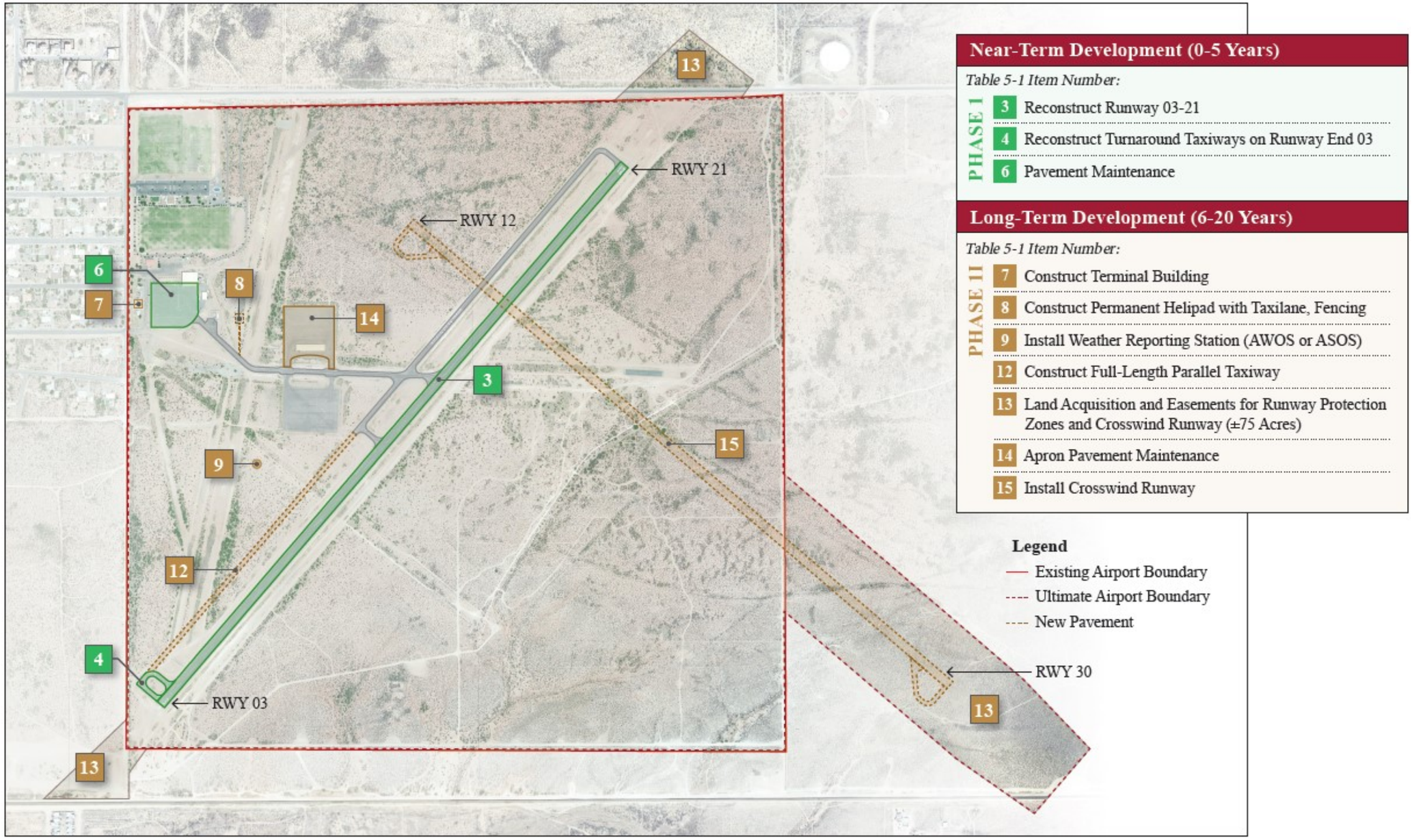
Phasing of proposed improvements assists both the airport sponsor and ADOT in the prioritization of projects in terms of need and funding significance. Proposed improvements and associated studies are shown by phase in **Table 5-1**. As noted in earlier chapters, the highest priority of the long-term sustainability of the Airport lies with reconstruction of Runway 03-21. Securing funding for this project should take precedence over all other recommended improvements. A graphical depiction of physical improvements listed in Table 5-1 is identified in **Exhibit 5-1**.

Table 5-1. Airport Capital Improvement Plan

Item #	Phase I: Near-Term Development (0-5 Years)	Total Project Cost	State Grant	Local Match
1	Conduct environmental documentation (Categorical Exclusion) for reconstruction of Runway 03-21	$60,000	$54,000	$6,000
2	Obstacle removal, brush clearing	$5,000	$4,500	$500
3	Reconstruct Runway 03-21	$2,500,000	$2,250,000	$250,000
4	Reconstruct turnaround taxiways on Runway End 03	$150,000	$135,000	$15,000
5	Conduct study for implementation of an instrument approach	$50,000	$45,000	$5,000
6	Main Apron Pavement Maintenance	$150,000	$135,000	$15,000
	Total Phase I Costs	**$2,915,000**	**$2,623,500**	**$291,500**
Item #	**Phase II: Long-Term Development (6-20 Years)**	**Total Project Cost**	**State Grant**	**Local Match**
7	Construct Terminal Building	$42,000	$37,800	$4,200
8	Construct Permanent Helipad with taxilane, fencing	$200,000	$180,000	$20,000
9	Install weather reporting station (AWOS or ASOS)	$150,000	$135,000	$15,000
10	Crosswind Runway Feasibility Study	$70,000	$63,000	$7,000
11	Update Airport Layout Plan	$150,000	$135,000	$15,000
12	Construct full-length parallel taxiway	$500,000	$450,000	$50,000
13	Land Acquisition for Runway Protection Zones and Crosswind Runway (± 75 acres)	$350,000	$315,000	$35,000
14	T-Hangar Apron Pavement Maintenance	$150,000	$135,000	$15,000
15	Install Unpaved/Gravel Crosswind Runway	$500,000	$450,000	$50,000
	Total Phase II Costs	**$2,159,000**	**$1,943,100**	**$215,900**
	TOTAL DEVELOPMENT COSTS	**$5,074,000**	**$4,566,600**	**$507,400**

Source: Kimley-Horn

Exhibit 5-1. Phased Development Plan



Source: Kimley-Horn

Prepared By:
Kimley-Horn and Associates

5.3 Development Funding Mechanisms

The following sections describe State and local funding mechanisms to potentially assist with implementation of projects identified in **Table 5-1**. As shown, in order to implement all recommended projects over the 20-year timeframe, the Airport would be responsible for approximately $500,000 of the remaining balance not covered by ADOT grants.

5.3.1 State Grant Funding

ADOT issues grants that cover 90 percent of project costs for improvements related to maintenance, safety, capacity enhancement, or are projects related to environmental studies, planning, or land acquisition. All the recommended improvements identified in Table 5-1 could be eligible for ADOT grants, however, as noted, ADOT has suspended State/Local grants through fiscal year 2020, meaning the Airport may need to determine alternative means to secure funding for needed near-term improvements.

Another State-sponsored funding mechanism includes grants administered based on the results of ADOT's Airport Pavement Management System (APMS) Program. The APMS uses the Army Corps of Engineers' Micropaver program as a basis for generating a Five-Year Arizona Pavement Preservation Program (APPP). The APMS consists of visual inspections of all airport pavements. Evaluations are made of the types and severities observed and entered into a computer program database. Pavement Condition Index (PCI) values are determined through the visual assessment of pavement condition in accordance with the most recent FAA Advisory Circular 150/5380-6 and range from 0 (failed) to 100 (excellent). Every three years, a complete database update with new visual observations is conducted. It should be noted that specific facilities that are eligible for this funding include runways, taxiways, and aircraft aprons.

Every year the Aeronautics Group, utilizing the 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 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.

Eligible projects for APMS funding undergo additional analysis to determine a final project list. Projects at DGL that could be eligible for APMS grants include #6 and #16 in **Table 5-1**. It should be noted that ADOT has suspended the administration of APMS grants through fiscal year 2019.

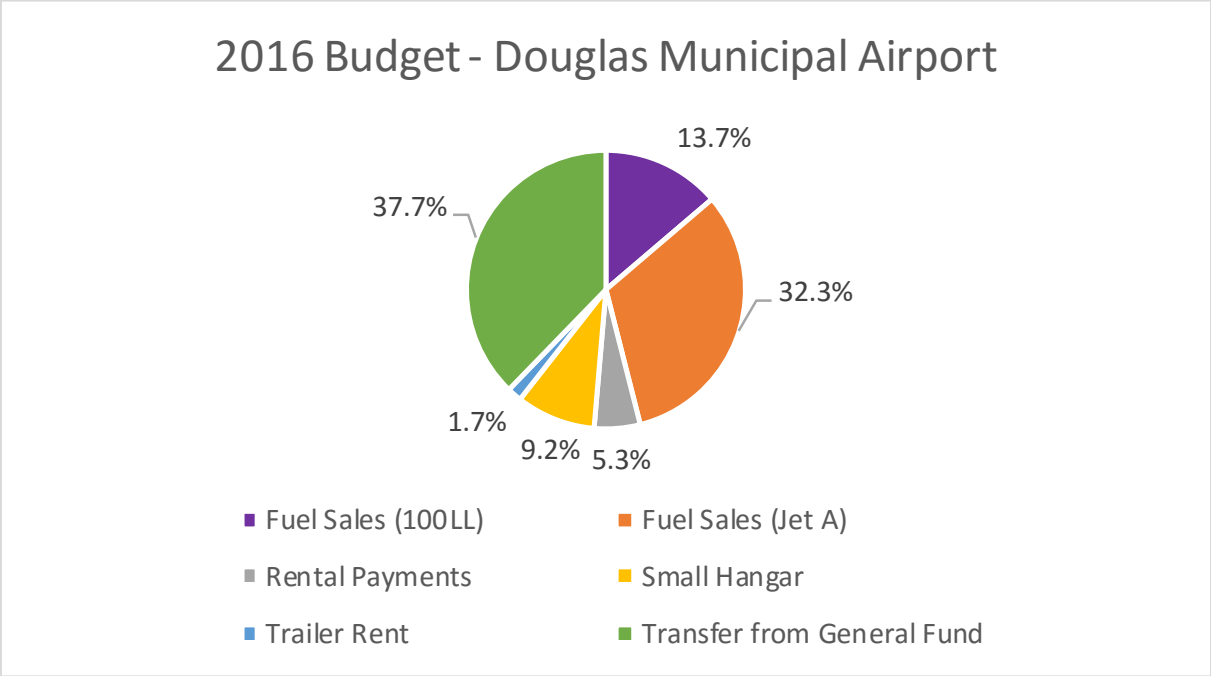
5.3.2 Local City and Airport Funding Sources

The City generates Airport revenue primarily through ground and facility leases and fuel flowage fees. Typically, such revenues are used to cover operating and maintenance expenses, however, any surplus revenues can be applied directly to the ACIP. While the Airport strives to be financially self-sufficient, as needed, the City also supports Airport expenses with allocations from its General Fund.

According to the 2015-2016 Airport Budget, approximately 46 percent of revenues were derived from 100LL (AvGAS) and Jet A sales in 2016. Approximately 16 percent of Airport revenues were obtained via rental payments, hangar leases, and lease revenues from the trailer unit on the

west end of the main apron. The remaining revenue (approximately 38 percent) was identified as a transfer from the City's General Fund (see **Exhibit 5-2**).

Exhibit 5-2. Airport Operating Budget



Sources: City of Douglas, Kimley-Horn

In addition to revenues generated by leases and fuel sales, there are other options that the Airport can use to fund projects. The most common of these are described in the Business Plan and summarized below:

Taxation and Government Subsides - In many cases, general aviation airports receive subsidies from the airport sponsor to cover operating deficits or provide matching funds required to receive state grants. Some airports may also receive subsidies from other municipalities or counties that benefit from the presence of the airport. Douglas Municipal Airport receives support from the City of Douglas for matching funds and other resources, as appropriate.

Investment Income - Investment income is associated with interest or gains directly tied to the investment of airport funds. While the Airport does not currently report outside investment income, the City of Douglas may pursue such investments in the future. The ability to utilize investment income requires up-front funds with which to invest, which can often be a deterrent for some airports.

Sale of Surplus Assets - An airport's vehicles, equipment, tools, and other capital assets should be evaluated periodically to identify items that may no longer be needed, are beyond useful life, or have become obsolete. Such assets should be sold in accordance with airport policies and procedures. The sale of surplus assets may require the reimbursement or reinvestment of the state share of grant monies used for the initial acquisition.

Debt Financing - Long-term loans are typically used to finance the acquisition of land; the purchase of vehicles, equipment, or tools; and the development of infrastructure, improvements, or facilities not eligible for grant funding. Short-term loans or lines of credit are typically used to supplement working capital to cover operating expenses during cash flow short falls. Douglas Municipal Airport has no capacity to incur debt directly, but the City of Douglas does in its capacity as the Airport sponsor.

Bonding - Various bonding mechanisms can be used to raise funds for projects not eligible for grants. A general obligation bond is typically backed by the general tax revenues of an airport sponsor. However, the airport's revenue stream, not the tax revenues of the airport sponsor or revenues specifically associated with the bonding project, is typically used to service the debt associated with revenue bonds. Special facility bonds can be used to fund the development of a single or multi-tenant facility and the revenue generated through leasing the facility can then be used to service the debt.

5.3.3 Third Party Investment

Many airports use private, third party investment when the planned improvements will be primarily used by a private business or other organization. Such projects are not ordinarily eligible for state funding. Projects of this kind typically include hangars, fixed-based operator facilities, fuel storage, exclusive-use aircraft parking aprons, industrial aviation-use facilities, non-aviation office/commercial/industrial developments, and other similar projects.

Private development proposals at DGL should be considered on a case-by-case basis and coordinated directly with the City. Often, Airport funds for enabling infrastructure, preliminary site work and site access are required to facilitate private development projects on airport property. Even if the project is not funded by ADOT, the development must be in accordance with the approved Airport Layout Plan (ALP) and be consistent with ADOT airport design and airspace protection criteria. Within the recommended improvements identified in Table 5-1, the construction of a new helipad (Item #8) could be eligible as a third-party investment opportunity.

5.4 Development Summary

While current limitations on ADOT S/L grant funding present a temporary setback to near-term Airport development, the suspension of matching grants is anticipated to lift in fiscal year 2020 and additional options for project funding in the meantime may be available. The Airport may need to pursue one or a combination of the funding mechanisms outlined in this Chapter to secure funding for needed improvements. The Airport Business Plan, included in the appendices of this Master Plan Update details additional revenue generating options and funding mechanisms that the Airport may wish to pursue.

5.5 Airport Layout Plan

The recommended developments identified in the Facility Requirements, Alternatives Analysis, and Airport Development and Financial Plan chapters of this Master Plan Update are graphically represented in the Airport Layout Plan (ALP), which is included in the Appendix. The ALP has been prepared to graphically depict the recommended airfield layout, disposition of obstructions and uses of land within the proposed Airport property. The ALP is intended to represent existing and future conditions on the Airport and can be used as a "map" for recommended improvements. The ALP has been developed in accordance with ADOT standards and in

conformance with FAA AC 150/5070-6B, "Airport Master Plans" to the extent reasonable. This set includes the following sheets:

Airport Layout Plan (ALP) Drawing Set

- 1 Cover Sheet - A separate cover sheet, with approval signature blocks, airport location maps, and other pertinent information.
- 2 Airport Layout Plan - A drawing depicting the existing and future airport facilities. This sheet includes required facility identifications, description labels, imaginary surfaces, runway protection zones, runway safety areas and basic airport and runway data tables.
- 3 Data Sheet – Identifies specific runway, taxiway, climatic, and Airport data.
- 4 Terminal Area Plan - Present a large-scale depiction of areas with significant terminal facility development.
- 5 Existing Airspace Drawing – Identifies existing airspace surfaces and obstacle information and dispositions.
- 6 Ultimate Airspace Drawing – Identifies future airspace surfaces and obstacle information and dispositions.
- 7 Inner Portion of the Approach – Runway 03-21 - Depicts profile view of the inner portion of the approach surface to Runway 03-21 and a tabular listing of all surface penetrations. The drawing also depicts the obstacle identification approach surfaces contained in 14 CFR Part 77, Objects Affecting Navigable Airspace.
- 8 Inner Portion of the Approach – Runway 12-30 – Includes profile view of inner portion of the approach surface to future crosswind runway 12-30 as well as surface penetrations.
- 9 Airport Land Use Map - Depicts land uses within existing and ultimate Airport property boundary.
- 10 Airport Property Map - Depicts the existing and ultimate Airport property boundary, various tracts of land that have been or will be acquired to develop the Airport, and the method of acquisition.

APPENDIX A – AIRPORT LAYOUT PLAN

The recommended developments identified in the Facility Requirements, Alternatives Analysis, and Airport Development and Financial Plan chapters of this Master Plan Update are graphically represented in the Airport Layout Plan (ALP). This set includes the following sheets:

Airport Layout Plan (ALP) Drawing Set

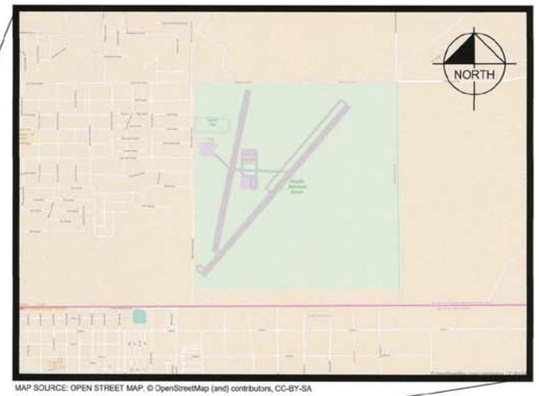
- 1 Cover Sheet
- 2 Airport Layout Plan
- 3 Data Sheet
- 4 Terminal Area Plan
- 5 Existing Airspace Drawing
- 6 Ultimate Airspace Drawing
- 7 Inner Portion of the Approach – Runway 03-21
- 8 Inner Portion of the Approach – Runway 12-30
- 9 Airport Land Use Map
- 10 Airport Property Map

DOUGLAS MUNICIPAL AIRPORT

AIRPORT LAYOUT PLAN DRAWINGS
COCHISE COUNTY, ARIZONA

NOVEMBER 2017

STATE MAP
(Not to Scale)



MAP SOURCE: OPEN STREET MAP, © OpenStreetMap (and) contributors, CC-BY-SA

VICINITY MAP
(Not to Scale)

ADOT
Multimodal Planning

This Airport/Heliport Plan has been reviewed by ADOT MPD Aeronautics staff and is approved.

12/12/17
Donald J. Kriz, P.E., State Airport Engineer — Date

The contents of this plan do not necessarily reflect the official views or policy of ADOT Aeronautics Group. Acceptance of these documents by ADOT Aeronautics does not in anyway constitute a commitment on the part of the State of Arizona to participate in any development depicted herein nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public or state laws.

CITY OF DOUGLAS APPROVAL

RECOMMENDED BY: — DATE:

11-13-17
Lynn Kerkhoner
Airport Engineer

11/13/17
Luis Pedroza
Finance Director

SHEET INDEX

No.	SHEET TITLE
1	COVER SHEET
2	AIRPORT LAYOUT PLAN
3	DATA SHEET
4	TERMINAL AREA PLAN
5	EXISTING AIRSPACE DRAWING
6	ULTIMATE AIRSPACE DRAWING
7	INNER PORTION OF THE APPROACH - RW 03-21
8	INNER PORTION OF THE APPROACH - RW 12-30
9	AIRPORT LAND USE MAP
10	AIRPORT PROPERTY MAP

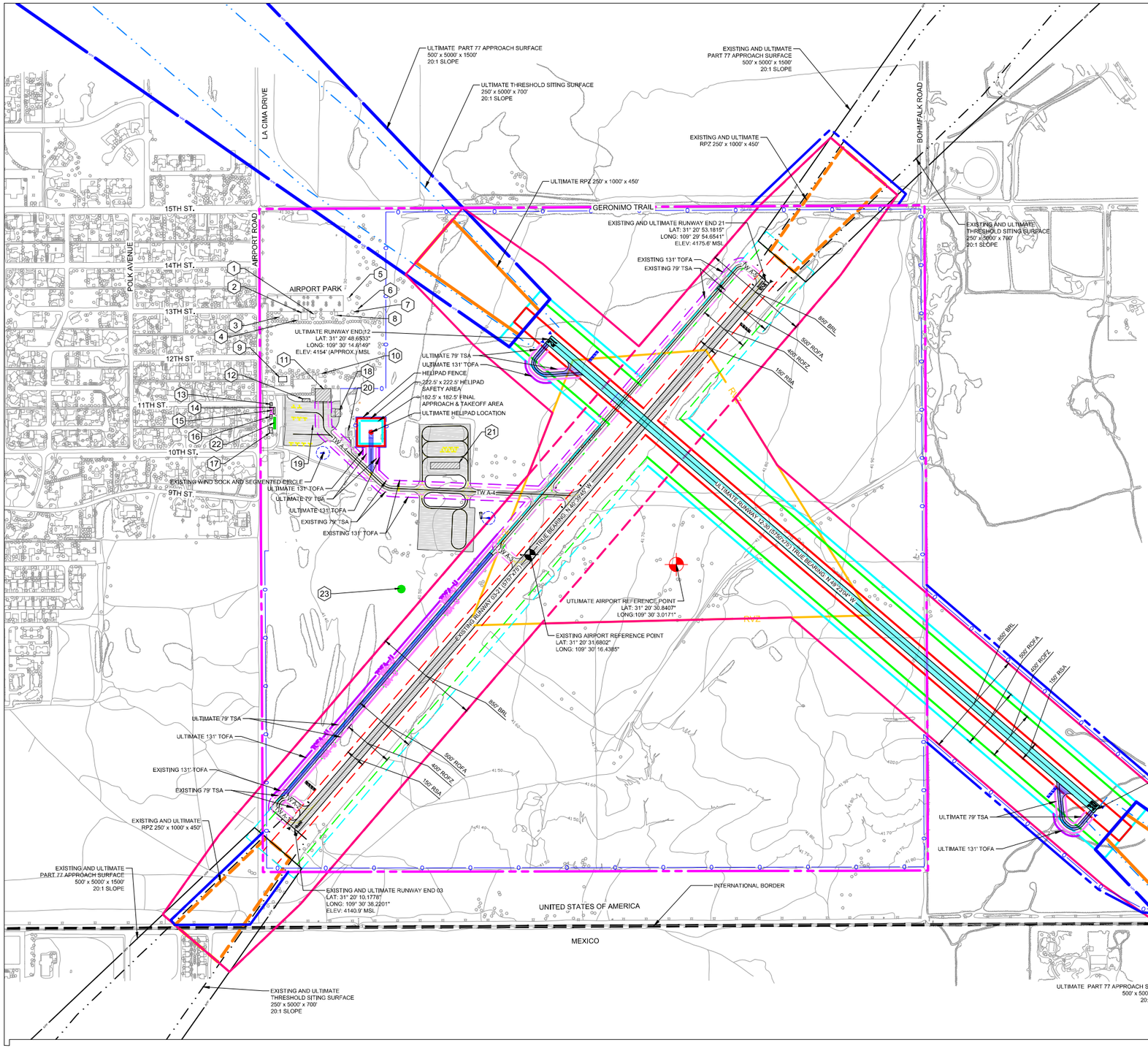
REVISIONS	BY	APPROVED	DATE

CITY OF DOUGLAS
425 E. 10TH ST, DOUGLAS, AZ, 85607

Kimley»Horn
1001 W. Southern Avenue Suite 131
Mesa, AZ 85210
www.kimley-horn.com

AIRPORT LAYOUT PLAN
COVER SHEET
SHEET 1 OF 10 SHEETS

K:\NVA_Aviation\Douglas (DGL)\CAD\PlanSheets\1 COVER SHEET.dwg Nov 30, 2017 Tommy.Cook
XREFS: XBORDER_1-0382439003 XLEGEND



CITY OF DOUGLAS APPROVAL

RECOMMENDED BY: DATE:

Lynn Kartchner
Airport Engineer

Luis Pedroza
Finance Director

EXISTING BUILDINGS/FACILITIES INDEX TABLE

NO.	DESCRIPTION	NO.	DESCRIPTION
1	PARK FACILITY	12	OFFICES
2	PARK FACILITY	13	OFFICES
3	PARK FACILITY	14	OFFICES
4	PARK FACILITY	15	ROTATING BEACON
5	PARK FACILITY	16	OFFICES
6	PARK FACILITY	17	OFFICES
7	PARK FACILITY	18	HANGAR
8	PARK FACILITY	19	FUEL FACILITY
9	BORDER AIR MUSEUM	20	FUEL FACILITY
10	PARK FACILITY	21	T-HANGAR
11	HANGAR		

ULTIMATE BUILDINGS/FACILITIES INDEX TABLE

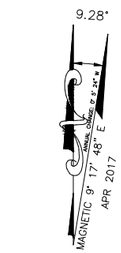
NO.	DESCRIPTION	NO.	DESCRIPTION
22	FUTURE TERMINAL FACILITY	23	FUTURE AWOS SYSTEM

LEGEND

Description	Existing	Ultimate
Airport Property Line		
Runway Obstacle Free Area (ROFA)		
Runway Obstacle Free Zone (ROFZ)		
Runway Safety Area (RSA)		
25' Building Restriction Line (BRL)		
Runway Protection Zone (RPZ)		
Runway Visibility Zone (RVZ)	N/A	RVZ
Part 77 Approach Surface	APP	APP
Threshold Siting Surface		
Taxiway Safety Area (TSA)		TSA-U
Taxiway Object Free Area (TOFA)		TOFA-U
Final Approach and Takeoff Area	N/A	FATO
Elevation	41 90	N/A
Runway Pavements		
Airfield Pavements		
Buildings		
Segmented Circle		
Rotating Beacon		
Aircraft Tie-Downs		
Airport Reference Point		
PAPI		
REIL		
Fence		
Unpaved Path or Trail		N/A
Lightpole		N/A
Utility Pole		N/A
Tree		N/A
Brushline		N/A

GENERAL NOTES

1. COORDINATES ARE PRESENTED IN NORTH AMERICAN DATUM OF 1983 (NAD83) ARIZONA STATE PLANE, EAST ZONE, IN U.S. SURVEY FEET.
2. ELEVATIONS ARE PRESENTED IN THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) IN HEIGHT ABOVE MEAN SEA LEVEL (MSL).



GRAPHIC SCALE IN FEET
0 200 400 800

MAGNETIC DECLINATION SOURCE:
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA), APRIL 2017

CITY OF DOUGLAS
425 E. 10TH ST, DOUGLAS, TOMBSTONE, AZ, 85607

Kimley»Horn
1001 W. Southern Avenue Suite 131
Mesa, AZ 85210
www.kimley-horn.com

	REVISIONS	BY	APPROVED	DATE

DOUGLAS MUNICIPAL AIRPORT
AIRPORT LAYOUT PLAN DRAWINGS
AIRPORT LAYOUT PLAN

SCALE: HOR. 1"=400' VERT. N/A

SHEET 2 OF 10 SHEETS

2 AIRPORT LAYOUT PLAN.dwg Thursday, Nov. 30 2017 10:39pm

RUNWAY DATA

ITEM		RW 03-21 (EX.)	RW 12-30 (ULT.)
APPROACH REFERENCE CODE		B/II/VIS	
DESIGN AIRCRAFT	CRITICAL AIRCRAFT	BEECHCRAFT SUPER KING AIR 200	
	APPROACH SPEED (KNOTS)	103	
	WINGSPAN/LENGTH	54' 6"	
	MAX. CERTIFIED TAKEOFF WEIGHT (LBS.)	12,500	
APPROACH MINIMUMS		VISUAL	
APPROACH TYPE		VISUAL	
FAR PART 77 APPROACH SLOPE		20:1	
RUNWAY PROTECTION ZONES (RPZ)	LENGTH	1000'	
	INNER WIDTH	250'	
	OUTER WIDTH	450'	
RUNWAY LENGTH		5757' (PUBLISHED)	5750'
RUNWAY WIDTH		75'	75'
RUNWAY PAVEMENT		ASPHALT	ASPHALT
PAVEMENT STRENGTH		12,500 lbs. SWG (Est.)	
RUNWAY LIGHTING		MIRL	MIRL
APPROACH LIGHTING		REIL	REIL
RUNWAY MARKINGS		BASIC, IN POOR CONDITION	TBD
% EFFECTIVE GRADIENT		0.6%	1.1%
VISUAL APPROACH AIDS		PAPI	PAPI
NAVIGATIONAL AIDS		WIND SOCK, SEGMENTED CIRCLE, ROTATING BEACON	AWOS, WIND SOCK, SEGMENTED CIRCLE, ROTATING BEACON
RUNWAY SAFETY AREA (RSA)	LENGTH BEYOND RUNWAY END	300'	
	WIDTH	150'	
RUNWAY OBJECT FREE AREA (ROFA)	LENGTH BEYOND RUNWAY END	300'	
	WIDTH	500'	
RUNWAY OBJECT FREE ZONE (ROFZ)	LENGTH BEYOND RUNWAY END	200'	
	WIDTH	400'	

AIRPORT DATA

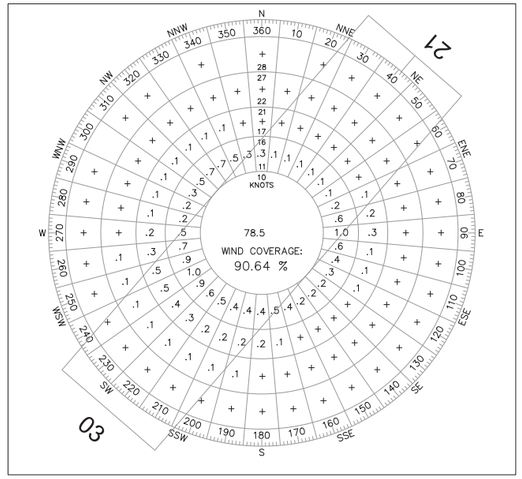
ITEM		EXISTING	ULTIMATE
AIRPORT ELEVATION (NAVD88) (MSL)		4175.6'	4220' (APPROX.)*
AIRPORT REFERENCE POINT (ARP) COORDINATES (NAD83)	LATITUDE	31° 20' 31.6802"	31° 20' 30.8407"
	LONGITUDE	109° 30' 16.4385"	109° 30' 3.0171"
MEAN MAX. TEMP - HOTTEST MONTH (JUNE)		97°F	
AIRPORT REFERENCE CODE		B-II (SMALL)	B-II (SMALL)
NPIAS ROLE		NONE	
MAGNETIC VARIATION		09° 16' 48" E changing by 0.09° W per year	
AIRPORT & TERMINAL NAVAIDS		WIND SOCK, SEGMENTED CIRCLE, ROTATING BEACON, REILs, PAPIs	AWOS, WIND SOCK, SEGMENTED CIRCLE, ROTATING BEACON, REILs, PAPIs

* - ULTIMATE AIRPORT ELEVATION REFLECTS APPROXIMATE EXISTING GROUND ELEVATION AT ULTIMATE RUNWAY END 30

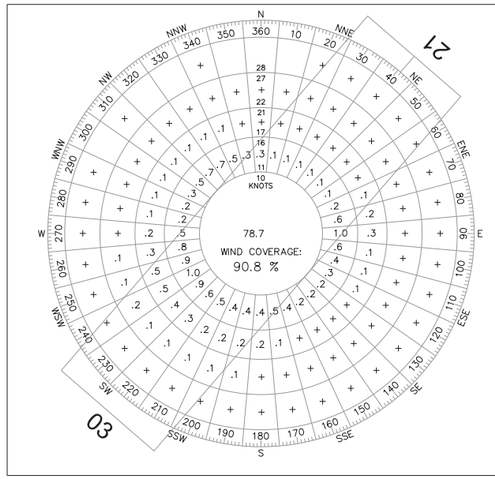
RUNWAY END COORDINATES AND ELEVATIONS

RUNWAY		LATITUDE	LONGITUDE	ELEVATION (MSL)
RW 3	EXISTING & ULTIMATE	31° 20' 10.1778"	109° 30' 38.2201"	4140.9'
RW 21	EXISTING & ULTIMATE	31° 20' 53.1815"	109° 29' 54.6541"	4175.6'
RW 12	ULTIMATE	31° 20' 48.6533"	109° 30' 14.6149"	4154' (approx.)
RW 30	ULTIMATE	31° 20' 11.3456"	109° 29' 24.5467"	4220' (approx.)

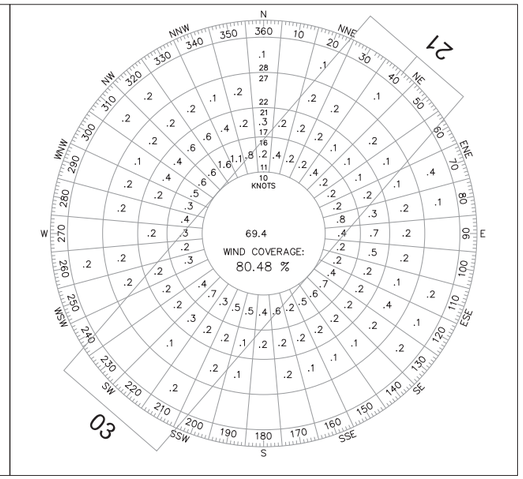
ALL-WEATHER WIND ROSE, 10.5 KNOTS



VFR WIND ROSE, 10.5 KNOTS



IFR WIND ROSE, 10.5 KNOTS



CROSSWIND COVERAGE TABLE

	ALL WEATHER		VFR WIND COVERAGE		IFR WIND COVERAGE	
	10.5 KNOTS	13 KNOTS	10.5 KNOTS	13 KNOTS	10.5 KNOTS	13 KNOTS
EXISTING RUNWAY 3-21	90.6%	95.0%	90.8%	95.1%	80.5%	86.0%
ULTIMATE RUNWAY 12-30	88.7%	92.8%	88.7%	92.8%	86.6%	90.8%
ULTIMATE COMBINED	97.6%	99.3%	97.6%	99.3%	94.7%	97.4%

WIND DATA SOURCE: DUG (STATION #722730) YEARS 2007-2016 FAA AGIS WEBSITE
HTTPS://AIRPORTS-GIS.FAA.GOV/WINDROSE, ACCESSED FEBRUARY 2017

CITY OF DOUGLAS
425 E. 10TH ST, DOUGLAS, TOMBSTONE, AZ, 85607

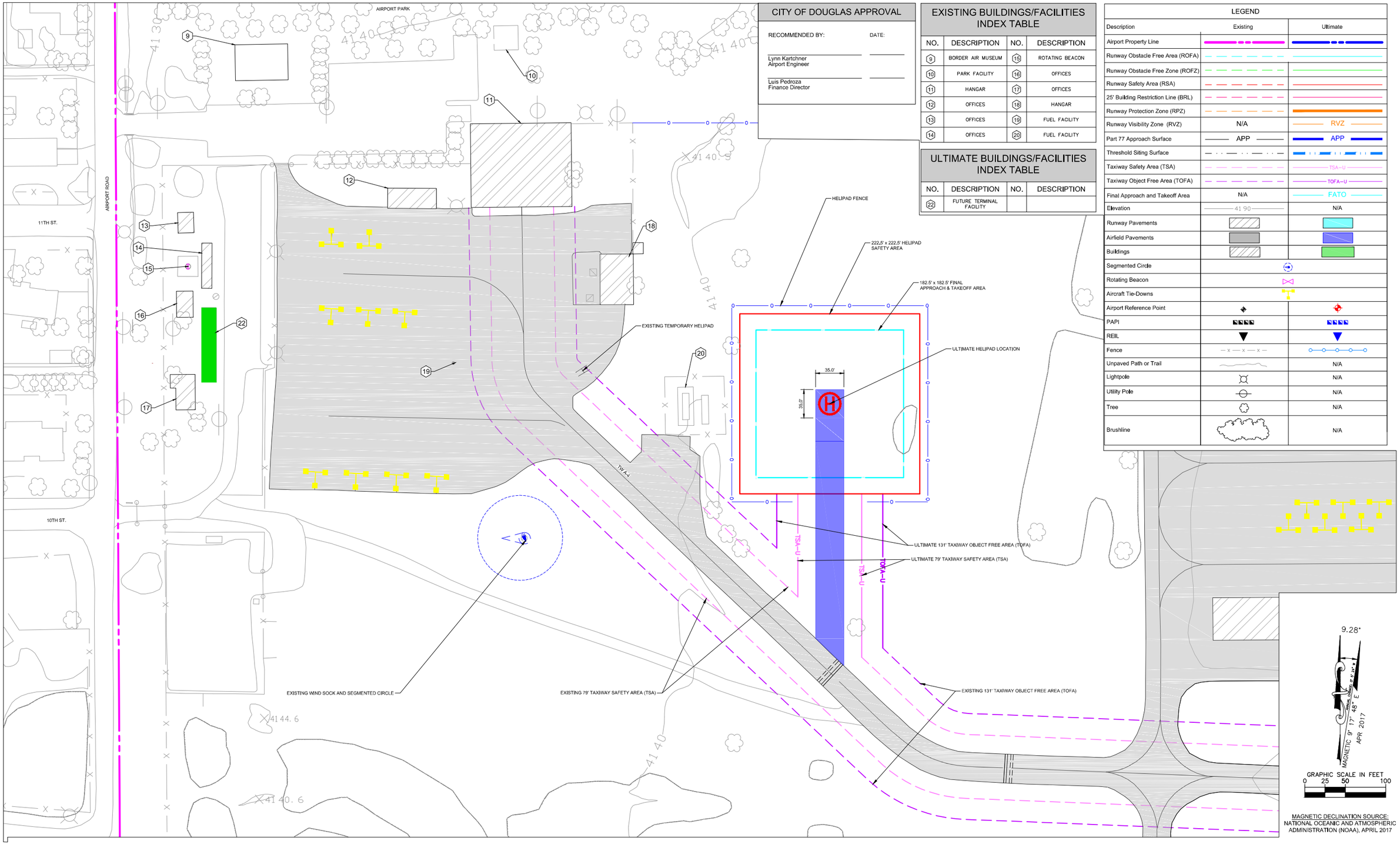
Kimley»Horn
1001 W. Southern Avenue Suite 131
Mesa, AZ 85210
www.kimley-horn.com

	REVISIONS	BY	APPROVED	DATE

DOUGLAS MUNICIPAL AIRPORT
AIRPORT LAYOUT PLAN DRAWINGS
DATA SHEET

SCALE: HOR. N/A VERT. N/A

3 DATA SHEET.dwg Thursday, Nov. 30 2017 10:39pm



CITY OF DOUGLAS APPROVAL

RECOMMENDED BY: DATE:

Lynn Kartchner
Airport Engineer

Luis Pedroza
Finance Director

EXISTING BUILDINGS/FACILITIES INDEX TABLE

NO.	DESCRIPTION	NO.	DESCRIPTION
9	BORDER AIR MUSEUM	15	ROTATING BEACON
10	PARK FACILITY	16	OFFICES
11	HANGAR	17	OFFICES
12	OFFICES	18	HANGAR
13	OFFICES	19	FUEL FACILITY
14	OFFICES	20	FUEL FACILITY

ULTIMATE BUILDINGS/FACILITIES INDEX TABLE

NO.	DESCRIPTION	NO.	DESCRIPTION
22	FUTURE TERMINAL FACILITY		

LEGEND

Description	Existing	Ultimate
Airport Property Line		
Runway Obstacle Free Area (ROFA)		
Runway Obstacle Free Zone (ROFZ)		
Runway Safety Area (RSA)		
25' Building Restriction Line (BRL)		
Runway Protection Zone (RPZ)		
Runway Visibility Zone (RVZ)	N/A	RVZ
Part 77 Approach Surface	APP	APP
Threshold Siting Surface		
Taxiway Safety Area (TSA)		TSA-U
Taxiway Object Free Area (TOFA)		TOFA-U
Final Approach and Takeoff Area	N/A	FATO
Elevation	41 90	N/A
Runway Pavements		
Airfield Pavements		
Buildings		
Segmented Circle		
Rotating Beacon		
Aircraft Tie-Downs		
Airport Reference Point		
PAPI		
REIL		
Fence		
Unpaved Path or Trail		N/A
Lightpole		N/A
Utility Pole		N/A
Tree		N/A
Brushline		N/A

MAGNETIC DECLINATION SOURCE:
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA), APRIL 2017

CITY OF DOUGLAS
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REVISIONS	BY	APPROVED	DATE

DOUGLAS MUNICIPAL AIRPORT

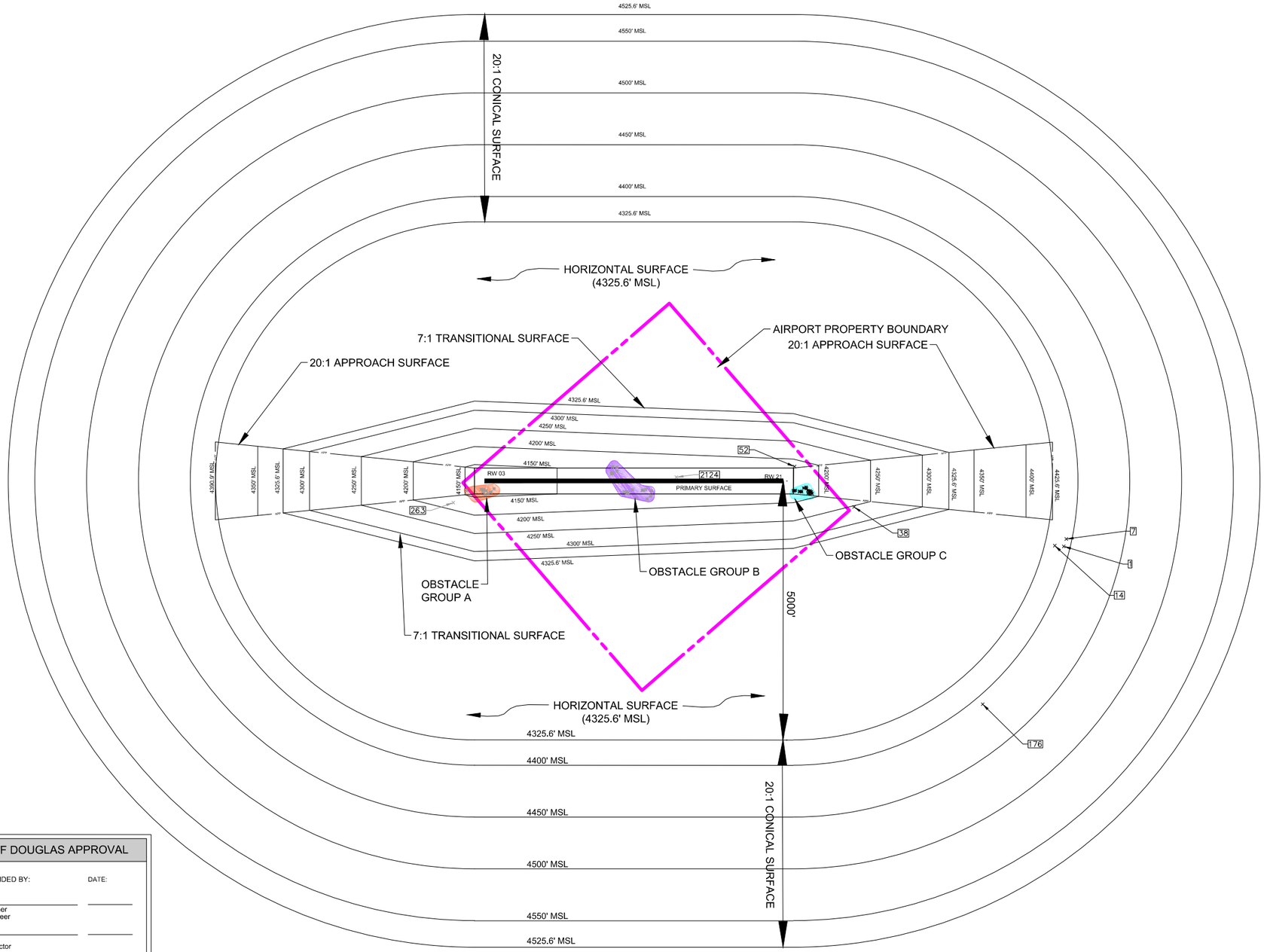
AIRPORT LAYOUT PLAN DRAWINGS

TERMINAL AREA PLAN

SCALE: HOR. 1"=50' VERT. N/A

SHEET 4 OF 11 SHEETS

4 TERMINAL AREA PLAN.dwg Thursday, Nov. 30 2017 10:42pm



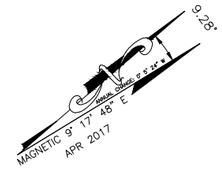
PART 77 OBSTRUCTION DATA							
OID	Group	Description	Object Height [ft MSL]	Penetrated Surface	Penetration	Disposition	FAA STUDY/ID#
1		GROUND	4365.7	CONICAL	21.6	NO ACTION	
7		GROUND	4363.0	CONICAL	18.0	NO ACTION	
14		GROUND	4344.8	CONICAL	9.3	NO ACTION	
38		TOWER	4258.8	TRANSITIONAL	5.4	MARK AND LIGHT	
52		BUSH	4183.5	TRANSITIONAL	3.2	REMOVE	
97	C	TREE	4195.0	APPROACH (RW 21)	3.4	REMOVE	
98	C	TREE	4201.9	APPROACH (RW 21)	11.0	REMOVE	
99	C	TREE	4192.8	APPROACH (RW 21)	3.3	REMOVE	
100	C	TREE	4196.5	APPROACH (RW 21)	4.9	REMOVE	
101	C	TREE	4193.6	APPROACH (RW 21)	0.8	REMOVE	
102	C	TREE	4192.9	APPROACH (RW 21)	3.2	REMOVE	
103	C	BUSH	4190.8	APPROACH (RW 21)	2.6	REMOVE	
104	C	BUSH	4189.7	APPROACH (RW 21)	1.9	REMOVE	
105	C	BUSH	4189.0	APPROACH (RW 21)	3.4	REMOVE	
106	C	BUSH	4193.8	APPROACH (RW 21)	0.3	REMOVE	
108	C	BUSH	4190.9	APPROACH (RW 21)	9.6	REMOVE	
109	C	BUSH	4190.0	APPROACH (RW 21)	7.9	REMOVE	
110	C	BUSH	4189.6	APPROACH (RW 21)	6.1	REMOVE	
111	C	BUSH	4189.0	APPROACH (RW 21)	11.5	REMOVE	
112	C	BUSH	4188.4	APPROACH (RW 21)	12.1	REMOVE	
113	C	BUSH	4188.6	APPROACH (RW 21)	13.0	REMOVE	
176		TOWER	4465	CONICAL	106.9		2011AWP08325OE
263		LIGHT_POLE	4182.8570	TRANSITIONAL	3.1	MARK AND LIGHT	
1910	B	TREE	4173.3890	TRANSITIONAL	7.1	REMOVE	
1913	B	TREE	4175.4340	TRANSITIONAL	1.7	REMOVE	
1915	B	TREE	4172.9350	PRIMARY	15.7	REMOVE	
1918	B	TREE	4172.9920	TRANSITIONAL	2.3	REMOVE	
1929	B	TREE	4172.8780	PRIMARY	15.4	REMOVE	
1940	B	TREE	4175.9450	PRIMARY	16.7	REMOVE	
1941	B	TREE	4176.5130	PRIMARY	17.2	REMOVE	
1942	B	TREE	4174.4690	PRIMARY	16.3	REMOVE	
1943	B	TREE	4173.5030	PRIMARY	15.9	REMOVE	
1944	B	TREE	4173.7870	PRIMARY	16.1	REMOVE	
1948	B	TREE	4177.0810	PRIMARY	17.5	REMOVE	
1949	B	TREE	4176.7410	PRIMARY	16.5	REMOVE	
2024	A	TREE	4148.9330	APPROACH (RW 3)	0.1	REMOVE	
2034	B	TREE	4162.2940	PRIMARY	5.9	REMOVE	
2035	B	TREE	4162.4870	PRIMARY	6.7	REMOVE	
2037	B	TREE	4163.9610	TRANSITIONAL	5.1	REMOVE	
2038	B	TREE	4164.0660	TRANSITIONAL	5.1	REMOVE	
2042	B	TREE	4161.9560	PRIMARY	6.1	REMOVE	
2043	B	TREE	4162.0040	PRIMARY	6.1	REMOVE	
2085	A	TREE	4145.5470	PRIMARY	4.2	REMOVE	
2086	A	TREE	4145.7880	PRIMARY	4.1	REMOVE	
2087	A	TREE	4150.6160	PRIMARY	9.0	REMOVE	
2124		TREE	4172.2970	PRIMARY	9.2	REMOVE	
2139	A	TREE	4146.3670	PRIMARY	4.4	REMOVE	
2171	A	TREE	4147.4780	PRIMARY	4.8	REMOVE	
2172	A	TREE	4147.7190	PRIMARY	5.2	REMOVE	
2173	A	TREE	4146.2230	PRIMARY	1.2	REMOVE	
2174	A	TREE	4147.0920	PRIMARY	4.4	REMOVE	
OBSTACLE DATA FROM FAA DOF DATED 3.26.2017							

CITY OF DOUGLAS APPROVAL

RECOMMENDED BY: DATE:

Lynn Kartchner
Airport Engineer

Luis Pedroza
Finance Director



GRAPHIC SCALE IN FEET
0 500 1000 2000

MAGNETIC DECLINATION SOURCE:
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA), APRIL 2017

CITY OF DOUGLAS
425 E. 10TH ST, DOUGLAS, TOMBSTONE, AZ, 85607

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REVISIONS	BY	APPROVED	DATE

DOUGLAS MUNICIPAL AIRPORT

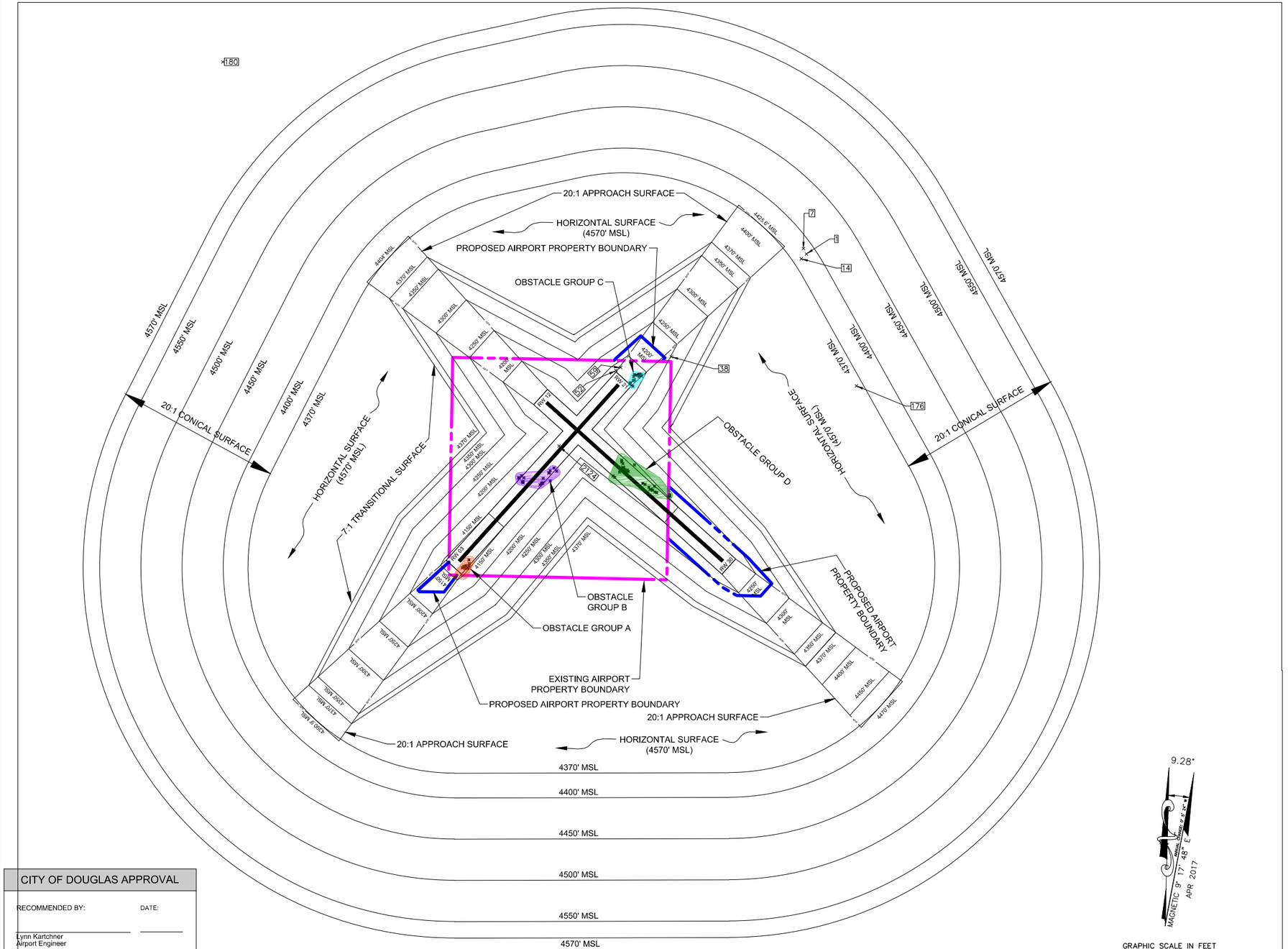
AIRPORT LAYOUT PLAN DRAWINGS

EXISTING AIRSPACE DRAWING

SCALE: HOR. 1"=1000' VERT. N/A

SHEET 5 OF 10 SHEETS

AIRSPACE PLAN.dwg Thursday, Nov. 30 2017 10:42pm



CITY OF DOUGLAS APPROVAL	
RECOMMENDED BY:	DATE:
Lynn Kartchner Airport Engineer	
Luis Pedroza Finance Director	

GRAPHIC SCALE IN FEET
0 600 1200 2400

MAGNETIC DECLINATION SOURCE:
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA), APRIL 2017

PART 77 OBSTRUCTION DATA

OID	Group	Description	Object Height [ft MSL]	Penetrated Surface	Penetration	Disposition	FAA STUDY/ID#
1		GROUND	4365.7	NONE	NONE	NO ACTION	
7		GROUND	4363.0	NONE	NONE	NO ACTION	
14		GROUND	4344.8	NONE	NONE	NO ACTION	
38		TOWER	4258.8	TRANSITIONAL	5.4	RK AND LIGHT	
52		BUSH	4183.5	TRANSITIONAL	3.2	REMOVE	
97	C	TREE	4195.0	APPROACH (RW 21)	3.4	REMOVE	
98	C	TREE	4201.9	APPROACH (RW 21)	11.0	REMOVE	
99	C	TREE	4192.8	APPROACH (RW 21)	3.3	REMOVE	
100	C	TREE	4196.5	APPROACH (RW 21)	4.9	REMOVE	
101	C	TREE	4193.6	APPROACH (RW 21)	0.8	REMOVE	
102	C	TREE	4192.9	APPROACH (RW 21)	3.2	REMOVE	
103	C	BUSH	4190.8	APPROACH (RW 21)	2.6	REMOVE	
104	C	BUSH	4189.7	APPROACH (RW 21)	1.9	REMOVE	
105	C	BUSH	4189.0	APPROACH (RW 21)	3.4	REMOVE	
106	C	BUSH	4193.8	APPROACH (RW 21)	0.3	REMOVE	
108	C	BUSH	4190.9	APPROACH (RW 21)	9.6	REMOVE	
109	C	BUSH	4190.0	APPROACH (RW 21)	7.9	REMOVE	
110	C	BUSH	4189.6	APPROACH (RW 21)	6.1	REMOVE	
111	C	BUSH	4189.0	APPROACH (RW 21)	11.5	REMOVE	
112	C	BUSH	4188.4	APPROACH (RW 21)	12.1	REMOVE	
113	C	BUSH	4188.6	APPROACH (RW 21)	13.0	REMOVE	
176		TOWER	4465	CONICAL	95.0		2011AWP08325OE
1910	B	TREE	4173.3890	TRANSITIONAL	4.3	REMOVE	
1915	B	TREE	4172.9350	PRIMARY	13.6	REMOVE	
1918	B	TREE	4172.9920	TRANSITIONAL	0.3	REMOVE	
1929	B	TREE	4172.8780	PRIMARY	13.2	REMOVE	
1940	B	TREE	4175.9450	PRIMARY	14.6	REMOVE	
1941	B	TREE	4176.5130	PRIMARY	15.0	REMOVE	
1942	B	TREE	4174.4690	PRIMARY	14.5	REMOVE	
1943	B	TREE	4173.5030	PRIMARY	13.6	REMOVE	
1944	B	TREE	4173.7870	PRIMARY	13.7	REMOVE	
1948	B	TREE	4177.0810	PRIMARY	15.4	REMOVE	
1949	B	TREE	4176.7410	PRIMARY	14.1	REMOVE	
1950	D	TREE	4195.1680	PRIMARY	12.1	REMOVE	
1951	D	TREE	4191.5750	PRIMARY	9.1	REMOVE	
1952	D	TREE	4194.3190	TRANSITIONAL	3.2	REMOVE	
1955	D	TREE	4194.3840	PRIMARY	13.7	REMOVE	
1956	D	TREE	4194.0580	PRIMARY	13.7	REMOVE	
1957	D	TREE	4194.9720	PRIMARY	13.8	REMOVE	
1958	D	TREE	4195.9520	PRIMARY	14.2	REMOVE	
1959	D	TREE	4196.1480	PRIMARY	14.2	REMOVE	
1960	D	TREE	4204.7050	PRIMARY	12.3	REMOVE	
1961	D	TREE	4204.6290	PRIMARY	11.7	REMOVE	
1962	D	TREE	4201.7700	PRIMARY	10.5	REMOVE	
1963	D	TREE	4201.1680	PRIMARY	10.2	REMOVE	
1964	D	TREE	4204.9310	PRIMARY	13.3	REMOVE	
1968	D	TREE	4201.5440	PRIMARY	10.1	REMOVE	
1970	D	TREE	4193.8620	PRIMARY	12.6	REMOVE	
1981	D	TREE	4194.3330	PRIMARY	11.4	REMOVE	
1982	D	TREE	4196.3470	PRIMARY	14.1	REMOVE	
1983	D	TREE	4196.2420	PRIMARY	12.7	REMOVE	
1984	D	TREE	4192.2290	PRIMARY	10.5	REMOVE	
1985	D	TREE	4194.9290	PRIMARY	11.5	REMOVE	
1989	D	TREE	4193.1350	PRIMARY	11.5	REMOVE	
1991	B	TREE	4162.1220	PRIMARY	0.1	REMOVE	
2024	A	TREE	4148.9330	APPROACH (RW 3)	0.1	REMOVE	
2034	B	TREE	4162.2940	PRIMARY	6.1	REMOVE	
2036	B	TREE	4162.4870	PRIMARY	6.8	REMOVE	
2037	B	TREE	4163.9610	TRANSITIONAL	5.3	REMOVE	
2038	B	TREE	4164.0660	TRANSITIONAL	5.4	REMOVE	
2042	B	TREE	4161.9560	PRIMARY	6.3	REMOVE	
2043	B	TREE	4162.0040	PRIMARY	6.2	REMOVE	
2085	A	TREE	4145.5470	PRIMARY	3.9	REMOVE	
2086	A	TREE	4145.7880	PRIMARY	3.9	REMOVE	
2087	A	TREE	4150.6160	PRIMARY	8.7	REMOVE	
2124		TREE	4172.2970	PRIMARY	9.7	REMOVE	
2139	A	TREE	4146.3670	PRIMARY	4.1	REMOVE	
2155	D	TREE	4215.7520	TRANSITIONAL	10.8	REMOVE	
2156	D	TREE	4211.3110	TRANSITIONAL	3.8	REMOVE	
2160	D	TREE	4200.3400	PRIMARY	11.2	REMOVE	
2161	D	TREE	4203.2000	PRIMARY	12.8	REMOVE	
2162	D	TREE	4201.9200	PRIMARY	13.5	REMOVE	
2164	D	TREE	4210.0920	PRIMARY	28.1	REMOVE	
2171	A	TREE	4147.4780	PRIMARY	4.4	REMOVE	
2172	A	TREE	4147.7190	PRIMARY	5.0	REMOVE	
2173	A	TREE	4146.2230	PRIMARY	1.0	REMOVE	
2174	A	TREE	4147.0920	PRIMARY	4.3	REMOVE	

OBSTACLE DATA FROM FAA DOF DATED 3.26.2017

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	REVISIONS	BY	APPROVED	DATE

DOUGLAS MUNICIPAL AIRPORT

AIRPORT LAYOUT PLAN DRAWINGS

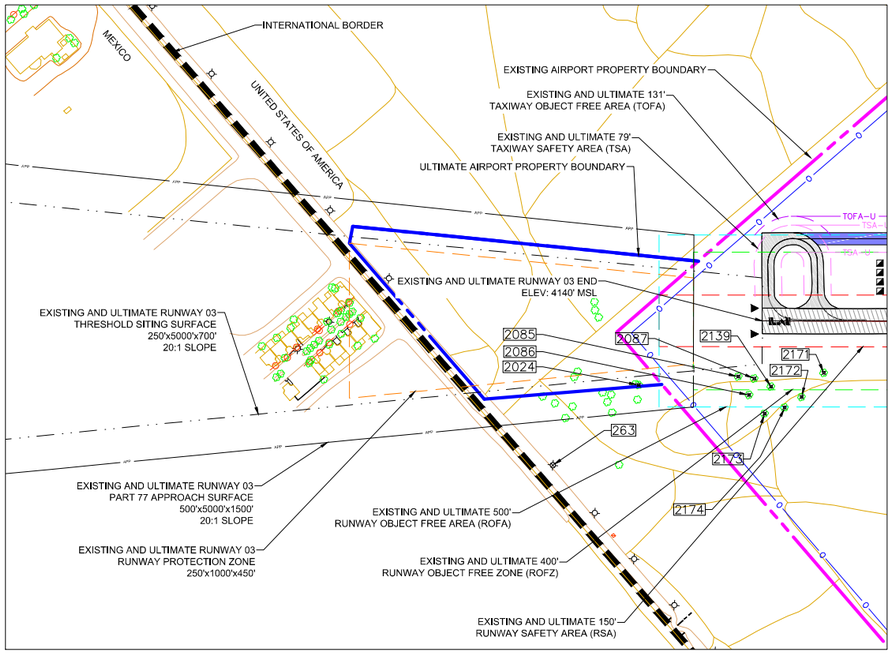
ULTIMATE AIRSPACE DRAWING

SCALE: HOR. 1"=1200' VERT. N/A

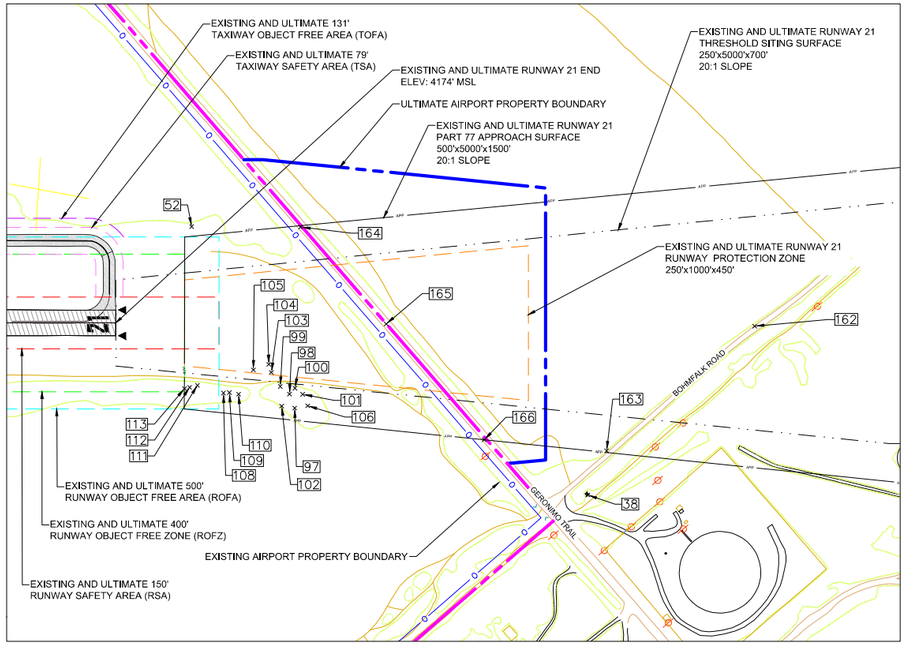
SHEET 6 OF 10 SHEETS

AIRSPACE PLAN.dwg Thursday, Nov. 30, 2017 10:42pm

RUNWAY 03

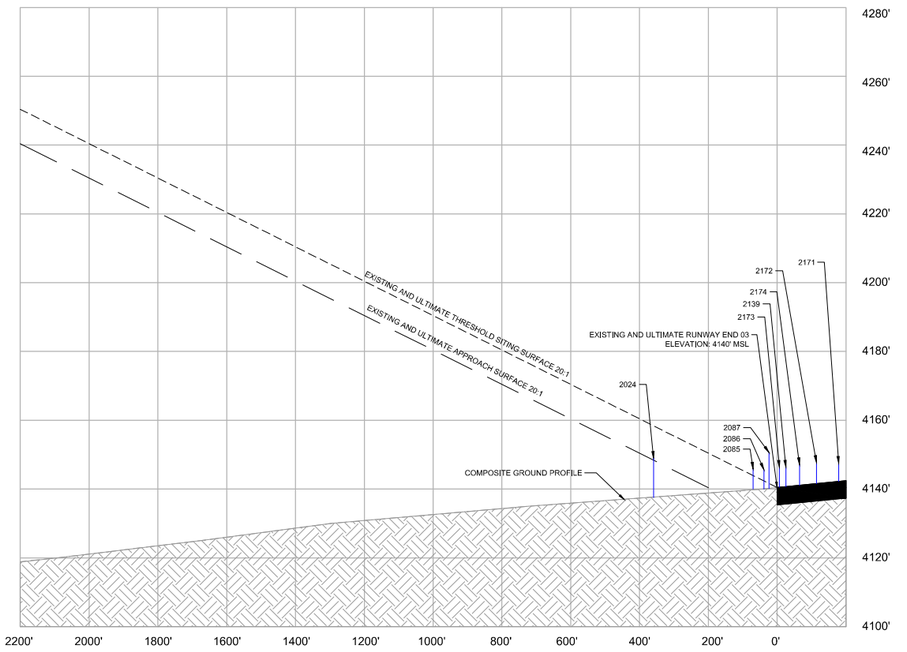


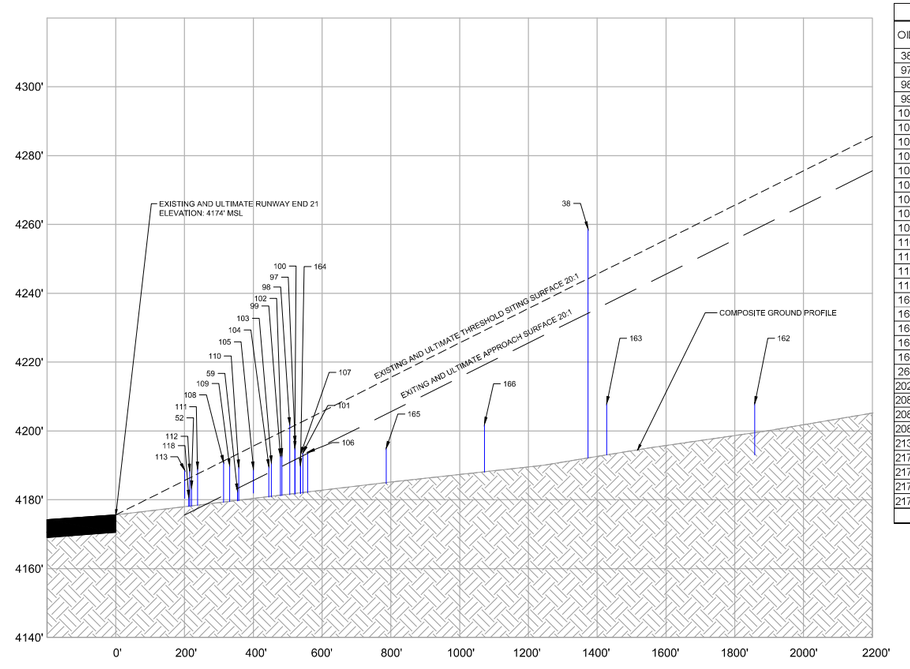
RUNWAY 21



LEGEND

Description	Existing	Ultimate
Airport Property Line		
Runway Obstacle Free Area (ROFA)		
Runway Obstacle Free Zone (ROFZ)		
Runway Safety Area (RSA)		
25' Building Restriction Line (BRL)		
Runway Protection Zone (RPZ)		
Runway Visibility Zone (RVZ)	N/A	RVZ
Part 77 Approach Surface	APP	APP
Threshold Siting Surface		
Taxiway Safety Area (TSA)		TSA-U
Taxiway Object Free Area (TOFA)		TOFA-U
Final Approach and Takeoff Area	N/A	FATO
Elevation	41 90	N/A
Runway Pavements		
Airfield Pavements		
Buildings		
Segmented Circle		
Rotating Beacon		
Aircraft Tie-Downs		
Airport Reference Point		
PAPI		
REIL		
Fence		
Unpaved Path or Trail		N/A
Lightpole		N/A
Utility Pole		N/A
Tree		N/A
Brushline		N/A





OBSTRUCTION DATA - INNER PORTION OF THE APPROACH

OID	Description	Object Height [ft MSL]	Penetrated Surface	Penetration	Disposition	FAA STUDY/ID#
38	TOWER	4258.8	TRANSITIONAL	5.4	RK AND LIGHT	
97	TREE	4195.0	APPROACH (RW 21)	3.4	REMOVE	
98	TREE	4201.9	APPROACH (RW 21)	11.0	REMOVE	
99	TREE	4192.8	APPROACH (RW 21)	3.3	REMOVE	
100	TREE	4196.5	APPROACH (RW 21)	4.9	REMOVE	
101	TREE	4193.6	APPROACH (RW 21)	0.8	REMOVE	
102	TREE	4192.9	APPROACH (RW 21)	3.2	REMOVE	
103	BUSH	4190.8	APPROACH (RW 21)	2.6	REMOVE	
104	BUSH	4189.7	APPROACH (RW 21)	1.9	REMOVE	
105	BUSH	4189.0	APPROACH (RW 21)	3.4	REMOVE	
106	BUSH	4193.8	APPROACH (RW 21)	0.3	REMOVE	
108	BUSH	4190.9	APPROACH (RW 21)	9.6	REMOVE	
109	BUSH	4190.0	APPROACH (RW 21)	7.9	REMOVE	
110	BUSH	4189.6	APPROACH (RW 21)	6.1	REMOVE	
111	BUSH	4189.0	APPROACH (RW 21)	11.5	REMOVE	
112	BUSH	4188.4	APPROACH (RW 21)	12.1	REMOVE	
113	BUSH	4188.6	APPROACH (RW 21)	13.0	REMOVE	
162	BOHMFALK_ROAD	4205 (EST.)	NONE	NONE	NONE	
163	BOHMFALK_ROAD	4206 (EST.)	NONE	NONE	NONE	
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165	GERONIMO_TRAIL	4208 (EST.)	NONE	NONE	NONE	
166	GERONIMO_TRAIL	4209 (EST.)	NONE	NONE	NONE	
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2024	TREE	4148.9330	APPROACH (RW 3)	0.1	REMOVE	
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2086	TREE	4145.7880	PRIMARY	3.9	REMOVE	
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2139	TREE	4146.3670	PRIMARY	4.1	REMOVE	
2171	TREE	4147.4780	PRIMARY	4.4	REMOVE	
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2173	TREE	4146.2230	PRIMARY	1.0	REMOVE	
2174	TREE	4147.0920	PRIMARY	4.3	REMOVE	

OBSTACLE DATA FROM FAA DOF DATED 3.26.2017

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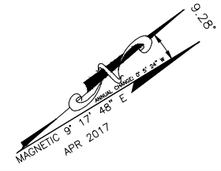

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DOUGLAS MUNICIPAL AIRPORT

AIRPORT LAYOUT PLAN DRAWINGS
INNER PORTION OF THE APPROACH - RW 03-21

SCALE: HOR. 1"=200' VERT. 1"=20'

SHEET 7 OF 10 SHEETS

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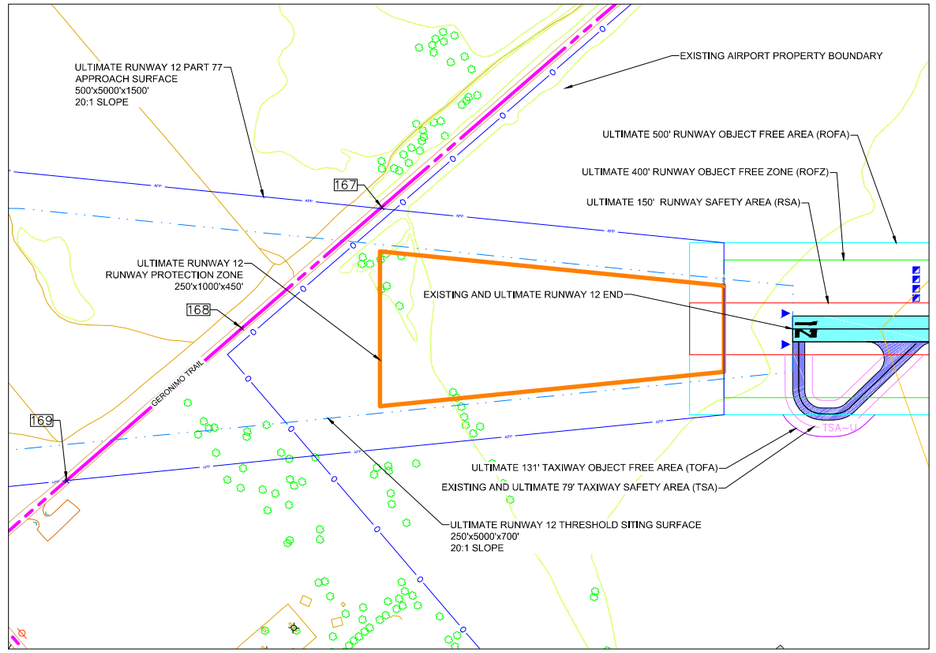
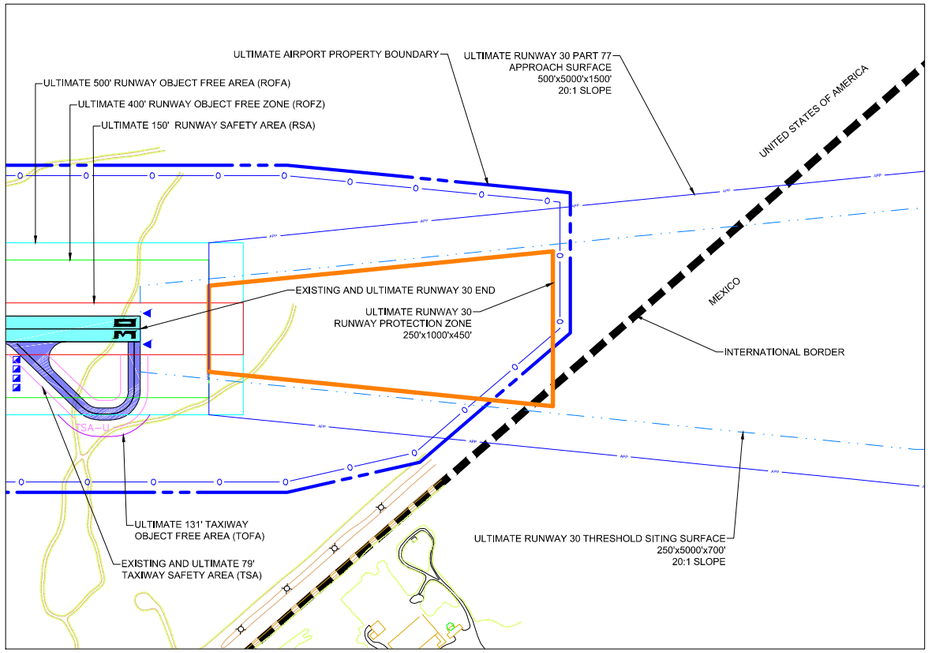
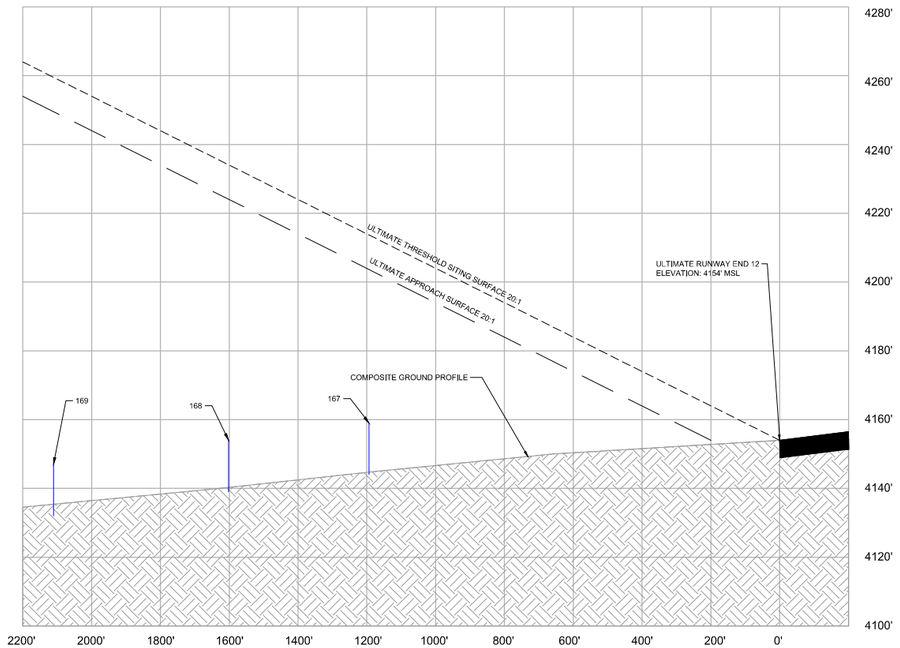
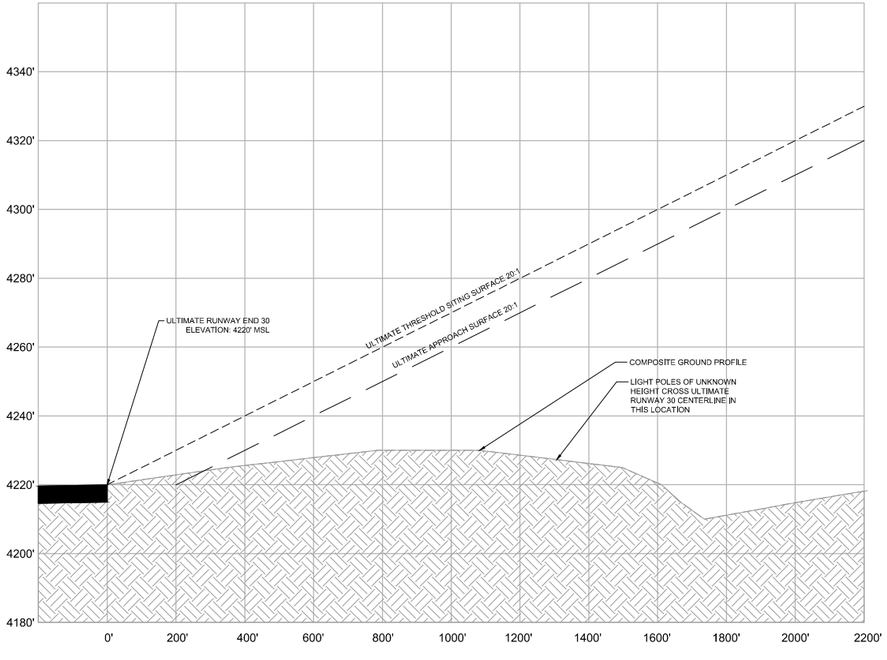
RUNWAY 12



RUNWAY 30







LEGEND		
Description	Existing	Ultimate
Airport Property Line		
Runway Obstacle Free Area (ROFA)		
Runway Obstacle Free Zone (ROFZ)		
Runway Safety Area (RSA)		
25' Building Restriction Line (BRL)		
Runway Protection Zone (RPZ)		
Runway Visibility Zone (RVZ)	N/A	RVZ
Part 77 Approach Surface	APP	APP
Threshold Siting Surface		
Taxiway Safety Area (TSA)		TSA-U
Taxiway Object Free Area (TOFA)		TOFA-U
Final Approach and Takeoff Area	N/A	FATO
Elevation	41 90	N/A
Runway Pavements		
Airfield Pavements		
Buildings		
Segmented Circle		
Rotating Beacon		
Aircraft Tie-Downs		
Airport Reference Point		
PAPI		
REIL		
Fence		
Unpaved Path or Trail		N/A
Lightpole		N/A
Utility Pole		N/A
Tree		N/A
Brushline		N/A

OBSTRUCTION DATA - INNER PORTION OF THE APPROACH

OID	Description	Object Height [ft MSL]	Penetrated Surface	Penetration	Disposition	FAA STUDY/ID#
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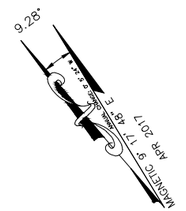
OBSTACLE DATA FROM FAA DOF DATED 3.26.2017



GRAPHIC SCALE IN FEET
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AIRPORT LAYOUT PLAN DRAWINGS
INNER PORTION OF THE APPROACH - RW 12-30

SCALE: HOR. 1"=200' VERT. 1"=20'

SHEET 8 OF 10 SHEETS

IPASD.dwg Thursday, Nov. 30 2017 10:43pm

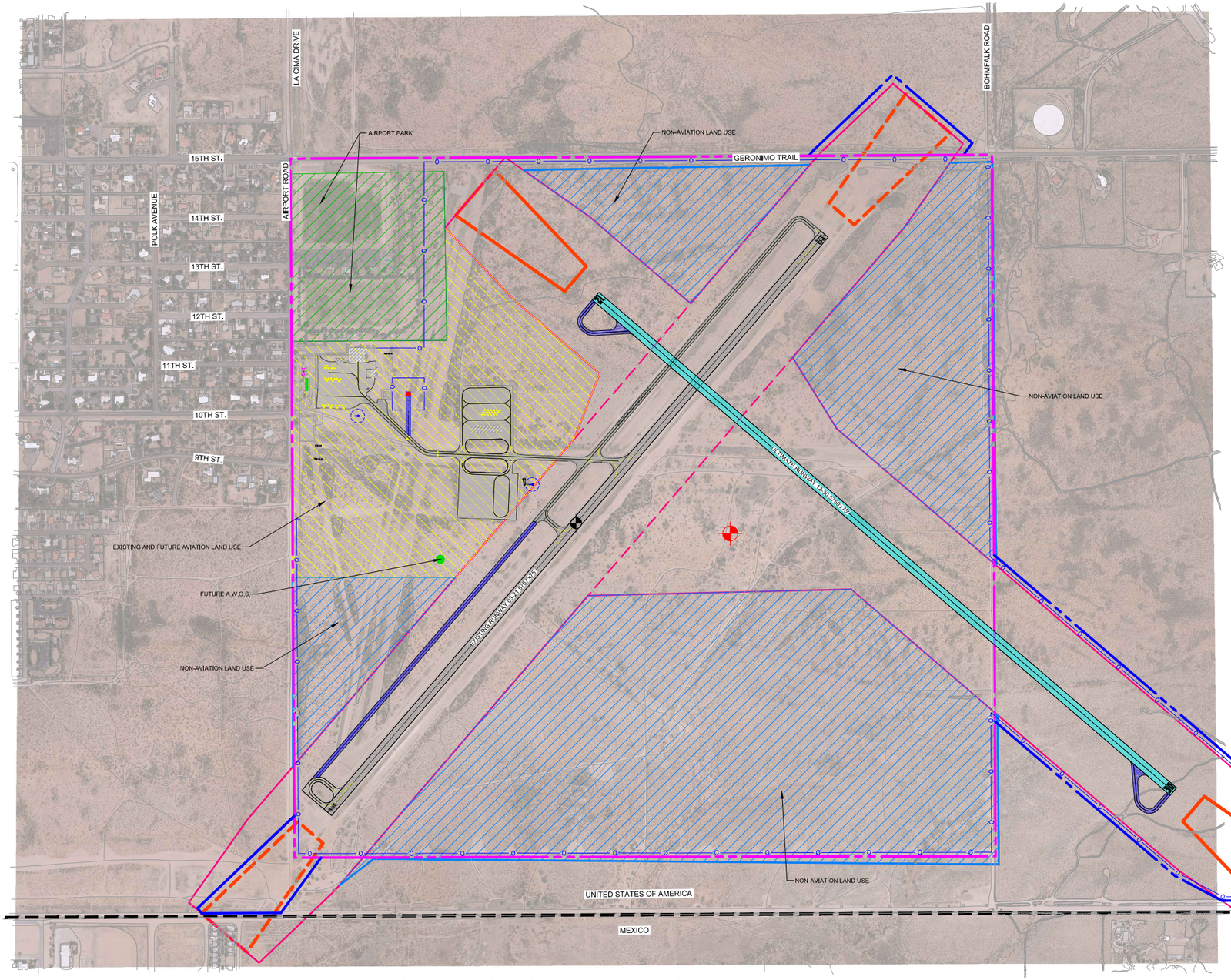
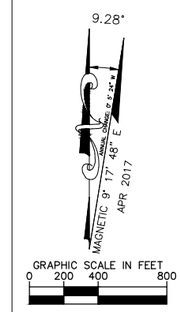


IMAGE SOURCE: QUANTUM SPATIAL, COMPILED BY PHOTOGRAMMETRIC METHODS FROM AERIAL POTOGRAPHY DATED 5-11-2016

LEGEND - AIRPORT LAND USE MAP

Description	Existing	Ultimate
Airport Property Line		
Runway Protection Zone (RPZ)		
25' Building Restriction Line (BRL)		
Runway Pavements		
Airfield Pavements		
Buildings		
Existing & Future Aviation Land Use		
Non-Aviation Land Use		
Public Park		
Segmented Circle		
Rotating Beacon		
Airport Reference Point		
Fence		
Unpaved Path or Trail		N/A
Lightpole		N/A
Utility Pole		N/A
Tree		N/A
Brushline		N/A



MAGNETIC DECLINATION SOURCE:
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DOUGLAS MUNICIPAL AIRPORT
AIRPORT LAYOUT PLAN DRAWINGS
AIRPORT LAND USE MAP

SCALE: HOR. 1"=400' VERT. N/A

SHEET 9 OF 10 SHEETS

LAND USE MAP.dwg Thursday, Nov. 30 2017 10:44pm

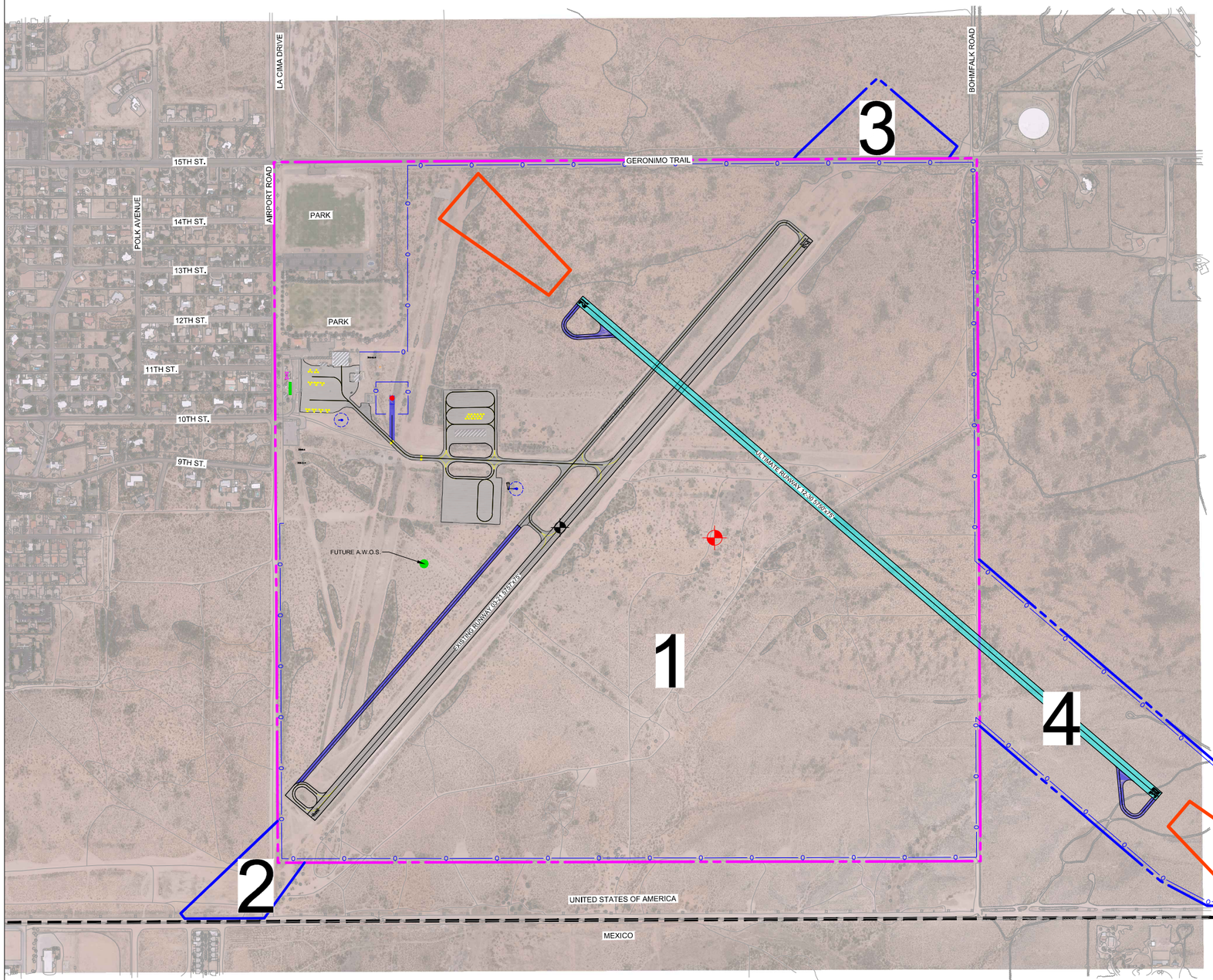

IMAGE SOURCE: QUANTUM SPATIAL, COMPILED BY PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY DATED 5-11-2016

LEGEND - AIRPORT LAND USE MAP		
Description	Existing	Ultimate
Airport Property Line		
Runway Protection Zone (RPZ)		
25' Building Restriction Line (BRL)		
Runway Pavements		
Airfield Pavements		
Buildings		
Existing & Future Aviation Land Use		
Non-Aviation Land Use		
Public Park		

EXISTING AIRPORT PROPERTY

MAP NUMBER	DATE OF ACQUISITION	GRANTOR	TYPE OF ACQUISITION	ACREAGE	TAX PARCEL NUMBER
1	UNKNOWN	UNKNOWN	FEE ACQUISITION	643.2	410-01-005

EXISTING AIRPORT PROPERTY

MAP NUMBER	DATE OF ACQUISITION	GRANTOR	TYPE OF ACQUISITION	ACREAGE	TAX PARCEL NUMBER
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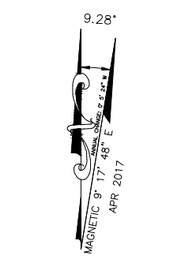
3	FUTURE		AVIGATION EASEMENT	11.0	
4	FUTURE		FEE ACQUISITION	62.2	



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MAGNETIC DECLINATION SOURCE:
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DOUGLAS MUNICIPAL AIRPORT
AIRPORT LAYOUT PLAN DRAWINGS
AIRPORT PROPERTY MAP

SCALE: HOR. 1"=400' VERT. N/A
SHEET 10 OF 10 SHEETS

PROPERTY MAP.dwg Thursday, Nov. 30, 2017 10:46pm

APPENDIX B – AIRPORT STRATEGIC BUSINESS PLAN

Airport Strategic Business Plan

November 2017

Airport Strategic Business Plan

Prepared for:

The City of Douglas, Arizona

By:
Genesis Consulting Group, LLC

In Association With
Kimley-Horn and Associates, Inc.

November 2017

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SECTION 1 – OVERVIEW OF AIRPORT STRATEGIC BUSINESS PLAN

1.1 Introduction

Douglas Municipal Airport (Airport) is updating their Airport Master Plan, which was last prepared in 1994. The City of Douglas (City) has undertaken a measured and comprehensive approach to improve the planning process and focus on future development efforts. This method will assist the Airport with the development of an effective and relevant transportation resource for the long-term benefit of the City and surrounding communities. To ensure the Airport's future growth is maximized to its full potential, the City elected to complete a Strategic Business Plan. This Airport Strategic Business Plan (ASBP) identifies and equates the long-term Mission, Vision, Values, and Goals of the facility and incorporates them into future planning and development efforts.

1.2 Purpose

The ASBP serves as a resource document for the Airport, which utilizes a logical and disciplined structure to set out goals, objectives, and action plans that will drive the day-to-day operation, management, and economic development of the Airport. The purpose in implementing a business plan is to address questions such as:

- What should the "primary" function or role of the Airport be in the future?
- How will the community obtain maximum benefit from the Airport's operation?
- How should the Airport be improved to include additional pursuits such as increased charter, corporate, and other air services?
- How does the Airport maximize revenue and development potential?

The critical elements necessary to address these and other questions will be identified and developed as part of this process. The goal of the ASBP is to produce a viable plan to improve the business and operational standing of the Airport as it grows in the future.

1.3 Airport Background and History

The Airport is owned and operated by the City of Douglas. The Airport is located in the southeast corner of Arizona, east of the center of the City at an elevation of approximately 4,173 feet. The Airport is located immediately north and adjacent to the U.S. – Mexico border.

The Airport has been witness to many historical events over the years. First Lady Eleanor Roosevelt, wife of President Franklin Delano Roosevelt, dedicated the Douglas International Airport (DGL) as the first international airport in the United States. Designed by J.P. Sexton, DGL began operations in 1929 as the first and only truly international airport in the Americas (see **Exhibit 1-1**). The Douglas Airfield originally was connected to Mexico by a common north-south runway. Today the closest airfield on the Mexico side of the border is a private facility called the

Agua Prieta South Airport (MM65), located several miles southwest of the Douglas Municipal Airport.

Exhibit 1-1 Douglas Airport 1929

Source: Department of the Interior, National Register of Historic Places, Douglas Airport 1929

Early air travel between the United States and Mexico required planes to be cleared for entry and exit of their respective countries. In other border cities that meant a very short flight from one country's airport to the other country's airport, sometimes just over a fence. With this setting, planes could land in one country, pull back the wide gate on the barbed wire fence on the border, and taxi across to the other country; pilots and passengers could resume their flight to their destination after clearing customs.

In 1929, the first Women's Air Derby, a transcontinental air race for women pilots (Amelia Earhart among them), included Douglas as one of its stops. In October 1930, Douglas was a stop on the first transcontinental airmail route. DGL became a successful commercial airport with regular airline service.

By the late 1940's most regional commercial traffic went through Bisbee-Douglas International Airport, about nine miles north of the City. DGL lost its international designation and became Douglas Municipal Airport.

On December 30, 1975, DGL was added to the National Register of Historic Places.

Located near the north entrance of the Airport is the Border Air Museum, which is dedicated to the history of aviation at the Airport. The Museum was donated to the City, by the late Richard

Westbrook and his wife Irma in 2002 and contains photographic records and equipment depicting the evolution of the Airport from its inception until present day.

1.4 Future Development

Appropriate planning is critical to the Airport's future development and must include evaluations of the facility's infrastructure, capabilities, and services. The City of Douglas is currently updating its Airport Master Plan, which includes an inventory of existing facilities and conditions on the airport, and an evaluation of current design standards, providing a basis for updated guidelines necessary to a safe, efficient, and economic airport system.

As shown in **Exhibit 1-2**, Douglas Municipal Airport currently has a single active runway, 03–21, that is 5,760 feet in length, and 75 feet wide. An older dirt runway 18–36 also exists immediately to the east, but is in poor shape, and is currently closed. The Airport also supports a combination of three conventional and T- Hangar complexes, along with three small buildings and a trailer owned by the City of Douglas, that are occasionally utilized as a Terminal, maintenance facility, or offices. An onsite fuel facility is also available to service based and transient aircraft. The ASBP utilizes the base information contained in the Master Plan Update to evaluate the Airport's basic capabilities and future needs necessary to accomplish its future business objectives.

The Federal Aviation Administration (FAA) design standards for the development of an airport are primarily based on the size and performance characteristics of aircraft that are using or anticipated to use an airport over the course of a 20-year planning period. Furthermore, various elements of an airport's infrastructure and functions are based on these standards. The identification of this planning criteria, known as the airport reference code (ARC) is a crucial component of the master plan. The ARC is determined by the critical design aircraft approach category (AAC) and airplane design group (ADG). DGL is currently an Airport Reference Code (ARC) B-II facility. B-II facilities serve aircraft with an approach speed between 91 and 120 knots as well as a wingspan between 49 and 78 feet. Some examples of B-II ARC aircraft are but not limited to: Cessna Citation V, Beech King Air F90, etc. The current design aircraft for Douglas is the Beechcraft King Air 200.

It is important to note that the Douglas Municipal Airport is not a National Plan of Integrated Airport System (NPIAS) facility, and subsequently is not required to meet FAA standards. This may prove to be a beneficial factor in the City's ability to develop the airport in the future, as they will not be tied to FAA assurances. However, ADOT grant requirements still apply. Future development projects should be planned to meet these requirements. It is important to note that a significant change in the type of aircraft using an airport may necessitate a modification to the standards.

Exhibit 1-2 Douglas Municipal Airport Current Facilities

Source: Google Earth, 2017 Douglas Airport Master Plan Update.

SECTION 2 – SITUATIONAL ANALYSIS

2.1 Introduction

An ASBP must be developed within the context of national, state, regional, and local historic, fiscal, and economic factors. An airport's future development plan is dependent on the comprehension and application of economic factors, both positive and negative, to successfully plan a sound business course. A review of economic indicators from national, regional, and local levels is necessary to provide a comprehensive macro to micro view of the development environment for the Airport. The following sections describe the economic trends and indicators from a national level, down to a regional and local level, utilized to structure a picture of the current economic climate for the Douglas Municipal Airport.

2.2 National Overview

Information derived from the FAA Aerospace Forecasts for FY 2016 through 2036 indicates that from a national perspective, the long-term outlook for general aviation is favorable, led by gains in turbine aircraft activity.[1] The active general aviation fleet is forecast to increase 0.2 percent a year between 2015 and 2036, equating to an absolute increase in the fleet of about 7,000 units. While steady growth in both the Gross Domestic Product (GDP) and corporate profits results are anticipated to result in continued growth of the turbine and rotorcraft fleets, the largest segment of the fleet – fixed wing piston aircraft continues to shrink over the forecast period. Although fleet growth is projected to be minimal, the number of general aviation hours flown is projected to increase an average of 1.2 percent per year through 2036, as growth in turbine, rotorcraft, and experimental hours could more than offset a decline in fixed wing piston hours.

Nationally, the aviation component of the business community is recognized to continue to grow, though at a modest pace. Commercial aviation, which encompasses all airline activity and corresponding supporting airports, is still projected to be the focal point of this industry growth. In the long term, the aviation industry should remain profitable reflecting a growing U.S. economy.[2]

2.3 State Overview - Arizona Airport System

Recent FAA data reveals that the state of Arizona ranks fifth in the U.S. in active aircraft and 12th in the number of aircraft per capita. Five airports are ranked by the FAA in the top 25 in the country for general aviation (GA) operations, and three of those airports are listed in the top 10 (Phoenix Deer Valley, Ernest A. Love Field, and Falcon Field). In 2011, Phoenix Deer Valley Airport was ranked as the busiest general aviation airport in the country with over 300,000 annual operations.

[1]https://www.faa.gov/data_research/aviation/aerospace_forecasts/media/FY2016-36_FAA_Aerospace_Forecast.pdf Retrieved from https://ebr.eller.arizona.edu/about-us/forecast-update
[2]Ibid.

There are ninety-one active public use airports scattered across the State of Arizona. Sixty-six of those airports are classified as Primary Service, Commercial Service, Reliever, General Aviation, and Native American facilities.[3] There are also twenty-five secondary airports categorized as General Aviation, Government, Native American, and Private. These facilities provide the majority of aeronautical services to Arizona's flying public. Additionally, the network of public-use GA airports provides for the recreational needs of aircraft owners as well as the needs of residents and businesses throughout all parts of the state. Particularly in the rural areas of Arizona, residents are dependent on general aviation for emergency medical transport.

In 2011, based aircraft in the State were estimated at 6,561 aircraft, down from 8,251 based aircraft in 2007, according to the Arizona State Airports System Plan (SASP). Estimated operations were 2.77 million in 2011, a decrease of 27.9 percent from 2007. Similar trends are found throughout the country and reflect the impact of the recession on active aircraft numbers and operations. Even with this slowdown, the impact of general aviation and the associated airports is still positive, contributing substantial numbers of jobs and related revenues into the Arizona economy. It is important to note that statistical information on airport and aircraft performance in the State of Arizona has become somewhat dated since the last SASP was completed in 2008.

2.4 Sierra Vista/Douglas Regional Overview

In February 2013, the Arizona Office of Management and Budget (OMB) announced that the Sierra Vista-Douglas region had been upgraded from a micropolitan area to a metropolitan statistical area (MSA), expanding the State's metropolitan areas to seven. According to the University of Arizona Economic and Business Research Center, this change allowed the Sierra Vista-Douglas region to be recognized as an MSA that has at least one urbanized area of 50,000 or more inhabitants.[4] The new Sierra Vista – Douglas region encompasses all of Cochise County, Arizona, and County population centers are spread across seven cities and towns including, Benson, Sierra Vista, Douglas, Bisbee, Tombstone, Wilcox, and Huachuca City, as well as the many rural areas of the county. The 2010 U.S. Census indicated that County population supported a broad base of ranching and agriculture, commerce centers, military facilities such as Fort Huachuca, mining, and educational facilities such as Cochise Community College.

From an airport perspective, it is important to note that there is significant competition for the existing general aviation market in the immediate area. The Bisbee, Cochise County, Bisbee-Douglas, Sierra Vista, and Tombstone airports all operate within the immediate region of Douglas Municipal Airport. These airports and the competitive advantages offered by each will factor into the future development potential of the Douglas Municipal Airport.

As described in the September 2016 Data Round Up from the Economic and Research Center, the nationally described GDP indicated that only four of the seven MSAs in Arizona reported a positive increase for FY 2015 (Phoenix-Mesa-Scottsdale 1.8%, Yuma 1.5%, Flagstaff 1.4%, and Prescott 1.2%), while the remaining three (Sierra Vista-Douglas -1.7%, Tucson -2.4%, and Lake

[3]https://www.faa.gov/data_research/aviation/aerospace_forecasts/media/FY2016-36_FAA_Aerospace_Forecast.pdf
[4]Retrieved from: https://www.azeconomy.org/2014/04/economy/arizona-has-a-new-metropolitan-area-sierra-vista-douglas/

Havasu-Kingman -2.5%) reported downturns.[5] While statistically significant, the Sierra Vista-Douglas area (where the Airport is located) had the lowest decrease, which could be interpreted as a stabilization of economic factors in the immediate area.

2.5 Cochise County Overview

2.5.1 Population Trends

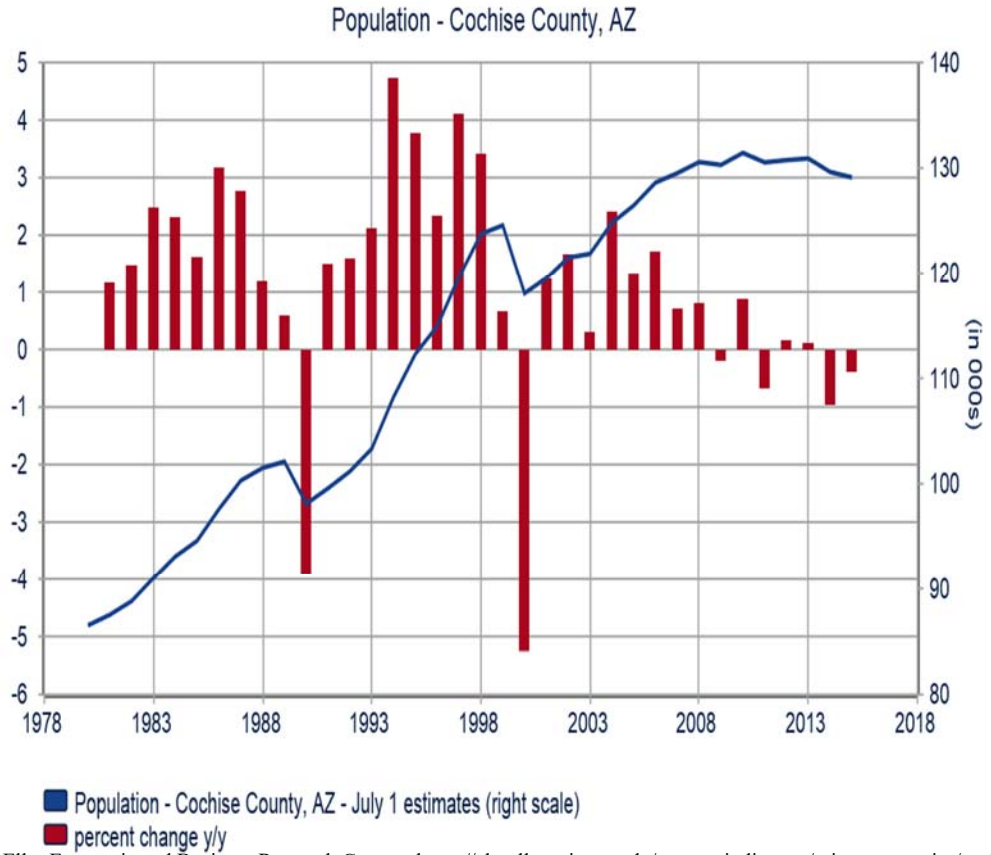
Cochise County is located in southeastern Arizona. The county has a total land area of 6,219 square miles, making it the eighth largest county in Arizona by land mass. Cochise County shares a border with the Mexican State of Sonora, and as of 2013, the largest city in Cochise County – Sierra Vista, had a population of 45,129.

The population figures presented are from the Office of Employment and Population Statistics, Arizona Department of Administration (ADOA) and differ from official Census population estimates. The Eller Economic Business Research Center (EBRC) considers the ADOA estimates to be more accurate. All population counts are mid-year July 1st estimates.[6]

As shown in **Exhibit 2-1** and **Table 2-1**, population growth in Cochise County reflects a cyclic trend that which indicates a slight growth percentage (less than 1%), immediately followed by a slight growth decline, (again, less than 1%) which averages a net decline of -0.4% growth rate for the past five years. The City of Douglas, however, has been relatively steady compared to the county as a whole, despite a population spike in 2011.

[5]Retrieved from: https://www.azeconomy.org/2016/10/featured/september-data-round-up/
[6]Office of Employment and Population Statistics, Arizona Department of Administration (ADOA)

Exhibit 2-1 Cochise County Population Centers



Source: Arizona Eller Economic and Business Research Center - https://ebr.eller.arizona.edu/current-indicators/arizona-counties/cochise-county

Table 2-1 Cochise County Population

Population - Cochise County, AZ	2011	2012	2013	2014	2015
Employment and Population Statistics, Arizona Department of Administration					
Total Population - Sierra Vista-Douglas MSA (July 1st Estimates)	130,537	130,752	130,906	129,628	129,112
% Chg from Year Ago	-0.68%	0.16%	0.12%	-0.98%	-0.4%
Benson	5,077	5,071	5,085	5,027	4,999
Bisbee	5,474	5,466	5,424	5,394	5,297
City of Douglas	17,118	16,673	16,953	16,989	16,956
City of Sierra Vista	45,098	45,794	45,303	44,286	44,183
Huachuca City	1,827	1,816	1,825	1,810	1,794
Tombstone	1,358	1,350	1,355	1,344	1,333
Willcox	3,692	3,674	3,692	3,674	3,636
Unincorporated	50,893	50,908	51,269	51,104	50,914
Published by Economic and Business Research Center.					

Source: Arizona Eller Economic and Business Research Center - https://ebr.eller.arizona.edu/current-indicators/arizona-counties/cochise-county

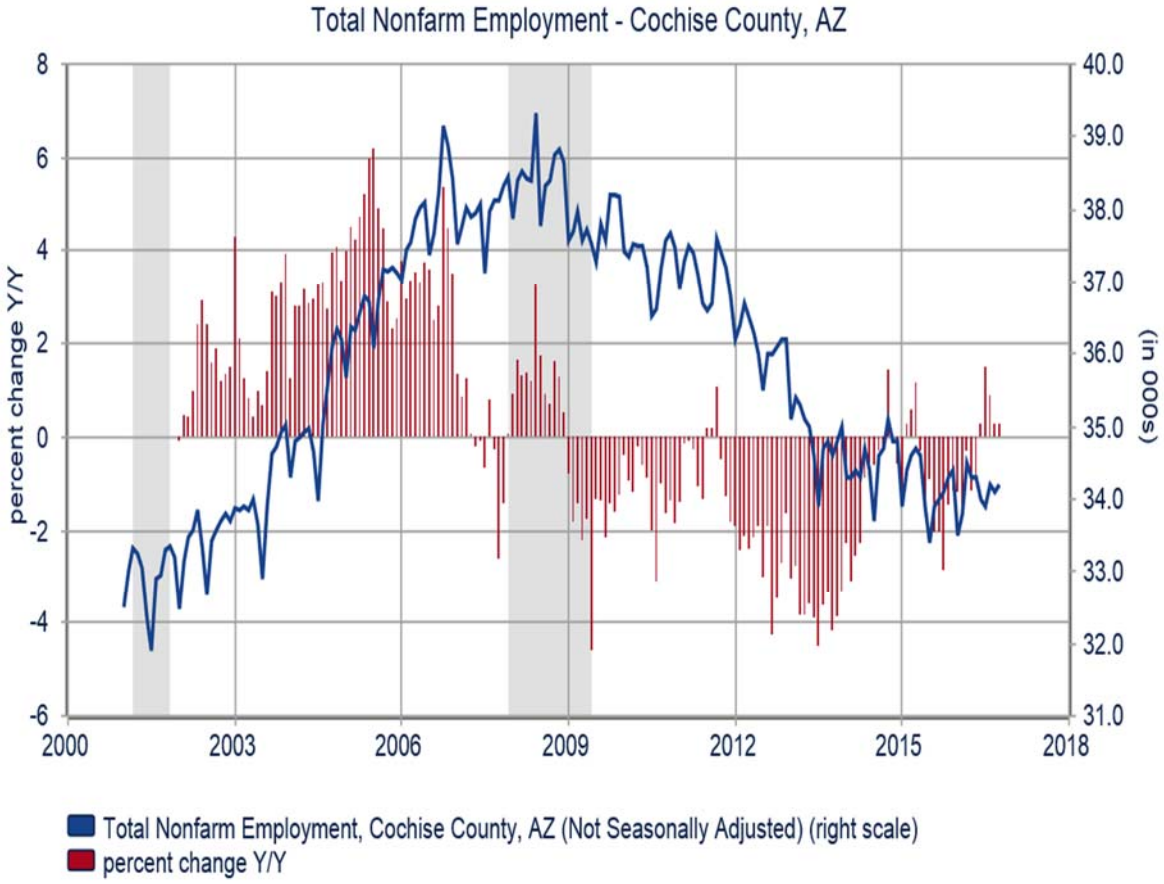
2.5.2 Cochise County Employment

As shown in **Exhibit 2-2**, general non-farm employment in Cochise County had seen steady growth peaking in 2008, with an overall 7% increase. However, since that peak, the subsequent years (2008-2015) reflected a similar downward trend resting at the present -2%, a differential swing of 5%.

This downturn can be attributed to many factors, including but not limited to changes in policy by the United States Department of Homeland Security (Post 9/11) stifling trade with the Mexican Border city of Aqua Prieta and the general regional employment lag in southeastern Arizona. The general business climate of Douglas has been dramatically affected in recent years by restrictive border policies. A major portion of the retail trade industries in Douglas has been dependent on cross border traffic, along with a large portion of the available labor base. With the advent of more restrictive regulations by both the United States and Mexico, cross border traffic in the immediate Douglas area has been dramatically reduced, with a subsequent negative impact on Douglas retail businesses and industries.

Employment trends for Cochise County from the year 2000 through 2016 are reflected in **Exhibit 2-2** and **Table 2-2** shown below:

Exhibit 2-2 Cochise County Employment Statistics



Source: Arizona Eller Economic and Business Research Center - https://ebr.eller.arizona.edu/current-indicators/arizona-counties/pima-county

Table 2-2 Cochise County Employment

Employment - Cochise County, AZ *(not seasonally adjusted)*	May 2016	Jun 2016	Jul 2016	Aug 2016	Sep 2016	Oct 2016
Current Employment Statistics, Bureau of Labor Statistics						
Total Nonfarm Employment	34,300	34,000	33,900	34,200	34,100	34,200
% Chg from Year Ago	-0.87%	0.29%	1.5%	0.88%	0.29%	0.29%
Total Private	22,500	22,900	23,000	22,700	22,500	22,500
% Chg from Year Ago	-0.88%	1.33%	2.68%	1.79%	1.35%	0.45%
Goods Producing	1,700	1,700	1,800	1,800	1,800	1,800
% Chg from Year Ago	-10.53%	-5.56%	-5.26%	0.0%	-5.26%	-5.26%
Service Providing	32,600	32,300	32,100	32,400	32,300	32,400
% Chg from Year Ago	-0.31%	0.62%	1.9%	0.93%	0.62%	0.62%
Trade, Transportation, and Utilities	6,000	6,000	6,000	5,900	5,900	6,000
Other Services	600.0	700.0	600.0	700.0	600.0	600.0
Government	11,800	11,100	10,900	11,500	11,600	11,700
% Chg from Year Ago	-0.84%	-1.77%	-0.91%	-0.86%	-1.69%	0.0%
Federal	4,900	4,900	4,900	4,900	4,800	4,800
State and Local	6,900	6,200	6,000	6,600	6,800	6,900
Published by Economic and Business Research Center.						

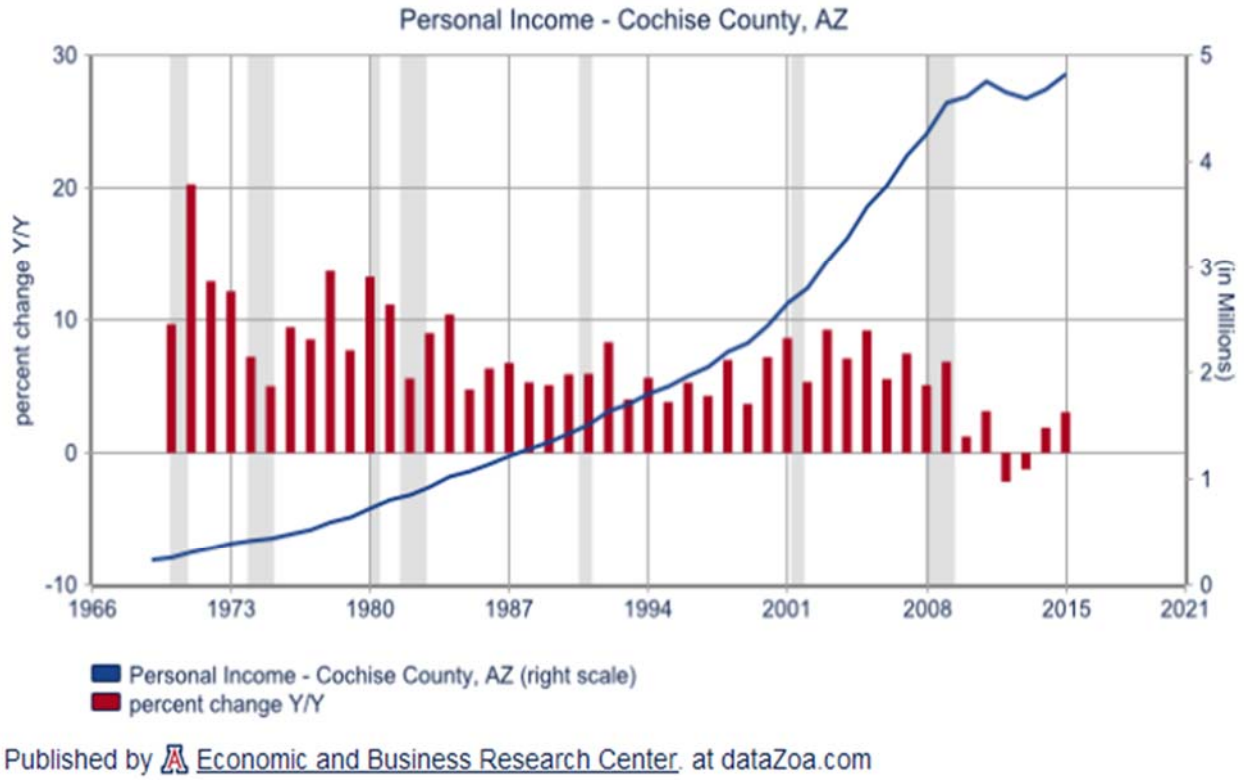
Source: Arizona Eller Economic and Business Research Center - https://ebr.eller.arizona.edu/current-indicators/arizona-counties/cochise-county

2.5.3 Cochise County Personal Income

Personal income is another major indicator of community economic health, and Cochise County has shown a steady increase in general personal income over past years (see **Exhibit 2-3**). Considering the national economic downturn in 2008 and 2009, Cochise County showed no relative decline in personal income. However, since 2009, income growth slowed dramatically from the previous 7% average prior to the 2008-09 timeframe, to approximately 2% (including a two-year negative indication 2012-13).

All data presented in this section are from the Bureau of Economic Analysis (BEA), Table CA 30, with the exception of per capita personal income and per capita net earnings. EBRC calculates these two-series using population estimates from the Arizona Office of Employment and Population Statistics, as opposed to using the official Census Bureau estimates used by BEA.

Exhibit 2-3 Cochise County Personal Income



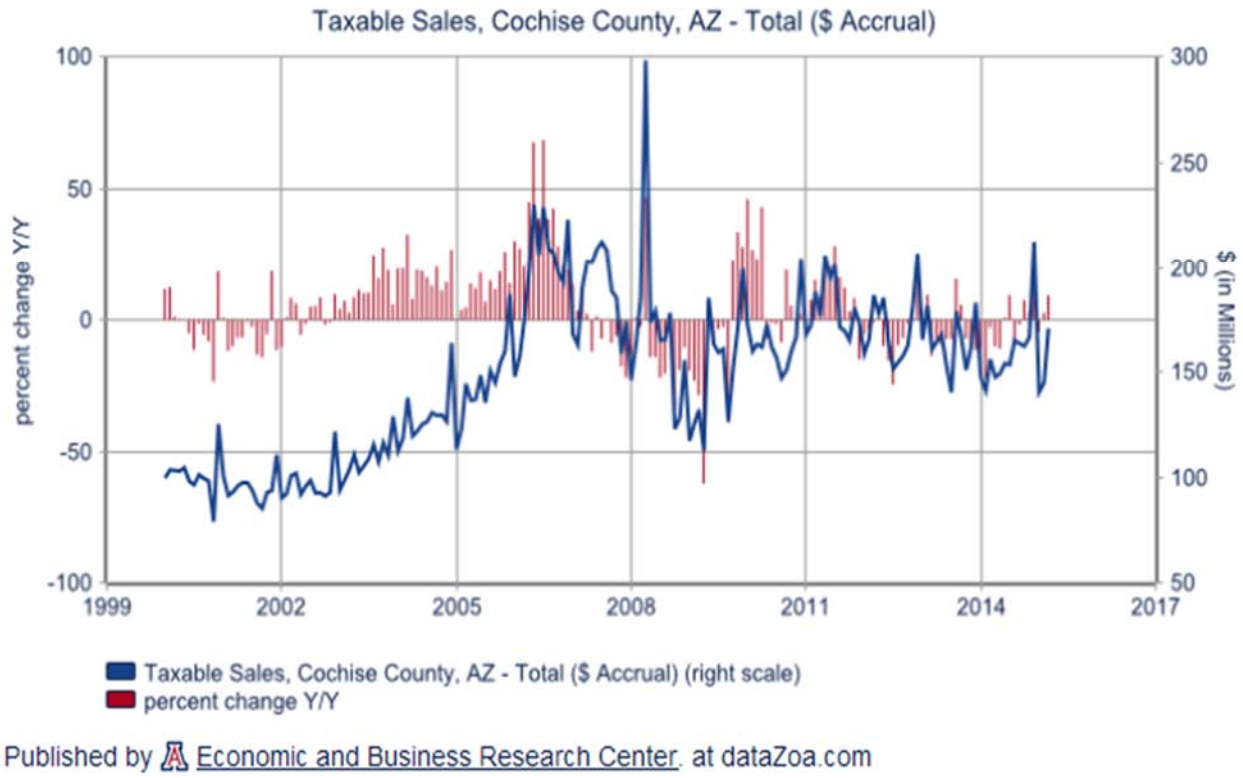
Source: Arizona Eller Economic and Business Research Center - https://ebr.eller.arizona.edu/current-indicators/arizona-counties/cochise-county

2.5.4 Cochise County Taxable Sales

Taxable sales on goods and services indicate the availability of disposable income in the community, and general indications of where and how those dollars are being spent. Cochise County tax records indicate that the area has enjoyed a steady climb in County Taxable Sales over the past 16 years, with the notable exception seen in the 2008 and 2009-time frame, whereby the nation suffered a serious downturn followed by a period of slow economic growth that persists today. **Exhibit 2-4** depicts historical taxable sales in Cochise County.

Current trends indicate that the Cochise County economy continues to achieve a slow recovery averaging approximately $200 million in annual taxable sales. These trends are expected to continue into the near future, and corresponding economic development efforts may increase growth rates in the near term.

Exhibit 2-4 Cochise County Taxable Sales



Source: Arizona Eller Economic and Business Research Center - https://ebr.eller.arizona.edu/current-indicators/arizona-counties/cochise-county

Economic indicators for Cochise County show a variable economic environment. Disposable income spent on amusements, leisure/business lodging, and retail sales are the predominate economic drivers. However, the City of Douglas and Cochise County are not immune to the influences of the State and national economies of course, and as national downturns have occurred, they have been reflected in the local economies as well.

2.6 Market Drivers for City of Douglas

According to the *2015 Economic Outlook Report*, the City of Douglas continues to see a recovering economy, predominately due to an overall growth in the Mexican middle class from the neighboring cross-border City of Agua Prieta in the State of Sonora and other projected economic developments[7]. Such projects include the construction of the Agua Prieta-Bavispe highway. This would allow for the faster connectivity between Agua Prieta and Bavispe, as well as seven other towns, resulting in better facilitation of tourism, mining, and cattle and agricultural trade between Northeastern Sonora and Southeastern Arizona[8]. According to the 2014 Arizona Commerce Authority (ACA)/Wall Street Journal White Paper entitled *AZ State of Business,* there also exists

[7]http://nebula.wsimg.com/940ec730ea3fc1cad815bbc212cf04da?AccessKeyId=6206F29E9883B3474EEC&disposition=0&alloworigin=1
[8]Ibid.

a number of programs that serve as economic drivers today[9]. Some of the major economic drivers include, Commercial/Industrial Solar, Computer Data Center Programs, Aerospace and Defense, and Advanced Manufacturing, both in Douglas and from the maquiladoras (factories) in Mexico.

2.6.1 Population Stability

The general population of Douglas has not grown appreciably in several years. However, most current residents are attracted to the area's benign climate with over 285 days of annual sunshine, which also contributes to the area's attraction for retirees. Others have immediate family ties on both sides of the border. Real estate and general cost of living costs are lower than the State average, making the Douglas area a very attractive place to live. Most people come to Douglas with the intent of remaining long term. While jobs are not considered plentiful, the skill sets of the population base are more than sufficient to meet the requirements of local business and industry.

2.6.2 Multi-Modal Transportation Opportunities

Multi-modal transportation opportunities can be major market drivers for the Douglas area. The ability to move people, goods, and services efficiently through Douglas are key components in the logistics, tourism, resort, and manufacturing industries of the area.

Douglas benefits from a regional roadway system that connects to Interstate 10 with efficient access for major automobile and truck transportation and connections to both the greater Tucson and Phoenix areas, and connections beyond to the nationwide interstate system. While the North American Free Trade Agreement (NAFTA) predictions for international trade traffic through the region, as noted in an August 2017 Arizona Economy article titled: NAFTA, Long Courtship, Marriage of Conveniences, and Now Looming Separation, never materialized, Douglas is still home to several trucking and logistics companies, and this access represents the largest inter-modal economic benefit to the City at this time. The El Paso and Southwestern Railroad was a short-line American railway company with a terminal in Douglas, which operated in Arizona, New Mexico, and Texas, with line extensions across the international border into Mexico. However, in recent years this rail line was abandoned, and future use is currently unknown.

The third element of the City of Douglas multi-modal structure is Douglas Municipal Airport, which provides direct access into the NAS for its aviation users. The City has indicated that it would like to improve the capability and service levels of the Airport in the future to help expand and promote the City's future resort, tourism, and business development opportunities.

2.6.3 Tourism Development

The location of the City of Douglas offers some unique opportunities for tourism within the region. The Douglas area is home to a number of historic ranches, museums, including the Border Air Museum located at the Airport, and landmark hotels like the Gadsden, all with a unique Mexican/American flavor.

Additionally, potential exists for increased "Medical Tourism". Many people come to the area today to take advantage of medical and prescription services that exist across the border at

[9]Wsj-az_state_of_business.pdf

significantly reduced costs compared to the United States. Appropriate marketing of Douglas Municipal Airport could raise awareness to individuals that Douglas is a convenient transition point for this market immediately adjacent to the border.

2.6.4 Industrial and Business Development Incentives

As highlighted in the aforementioned *2015 Economic Outlook Report,* three (3) recent economic developments are positioned to continue the growing economic environment for the City of Douglas. These include: (1) Douglas Port Expansion, (2) Regional Public Transportation, and (3) Douglas/Agua Prieta Sisterhood Agreement.[10]

- *Douglas Port Expansion - The* City of Douglas, in partnership with Douglas International Port Authority, is actively engaged with private and public stakeholders on both sides of the border to advance development of a new Douglas Commercial Port of Entry. In December 2014, City of Douglas submitted a proposal to U.S. Customs and Border Protection (CBP) for construction of the new facility. As of May 2015, the proposal was being evaluated by CBP and U.S. General Services Administration.

- *Regional Public Transportation* - City of Douglas, City of Bisbee, and Cochise College recently launched a public transportation partnership with funding by ADOT. The project coordinates efforts between public transportation systems in Bisbee and Douglas to improve mobility between the cities and Cochise College. As of early 2015, discussions were underway to expand the partnership to include Sierra Vista.

- *Douglas/Agua Prieta Sisterhood Agreement* - In 2013, the cities of Douglas, Arizona, and Agua Prieta, Sonora, Mexico entered into a sisterhood agreement to strengthen ties and cooperation on issues including international trade and commerce, foreign investment, global competitiveness, technology, regional economic development, infrastructure, arts and culture, tourism, sporting events, public safety, and the environment. The cities expressed commitment to exchange economic data, collaborate on promotional initiatives and expositions, and provide mutual support to tours, music performances, co-productions, and other artistic programs.

2.6.5 Educational Institutions

Education institutions play a large role in developing the Douglas market, offering quality education for children of local residents, and contributing to the local quality of life. The Unified School District boasts an excellent K through 12-school program. However, in recent years when the State of Arizona spent an average of $7,578 dollars annually state wide on each student in the public-school system, the City of Douglas spent slightly less, or approximately $7,228 per student over that same time period. The region is also home to institutions like the University of Arizona and Cochise College providing specialized educational opportunities for a broad variety of disciplines.

[10]http://nebula.wsimg.com/940ec730ea3fc1cad815bbc212cf04da?AccessKeyId=6206F29E9883B3474EEC&disposition=0&alloworigin=1

2.6.6 Quality of Life Factors

General quality of life factors plays a major role in attracting people and businesses to Douglas, and pushing the market forward. In Cochise County, foreclosed homes offered at lower prices have continued to dampen demand for new home construction through 2015 and into 2016. In the City of Douglas, however, foreclosures on the market appear to have moderated in 2015, although they remain well above levels seen prior to the national housing market crisis.[11] The overall crime rate is relatively low, and the overriding environment of Douglas is showing signs of positive growth and a bright future. City officials claim that it is a clean and safe place to live, work, and raise families.

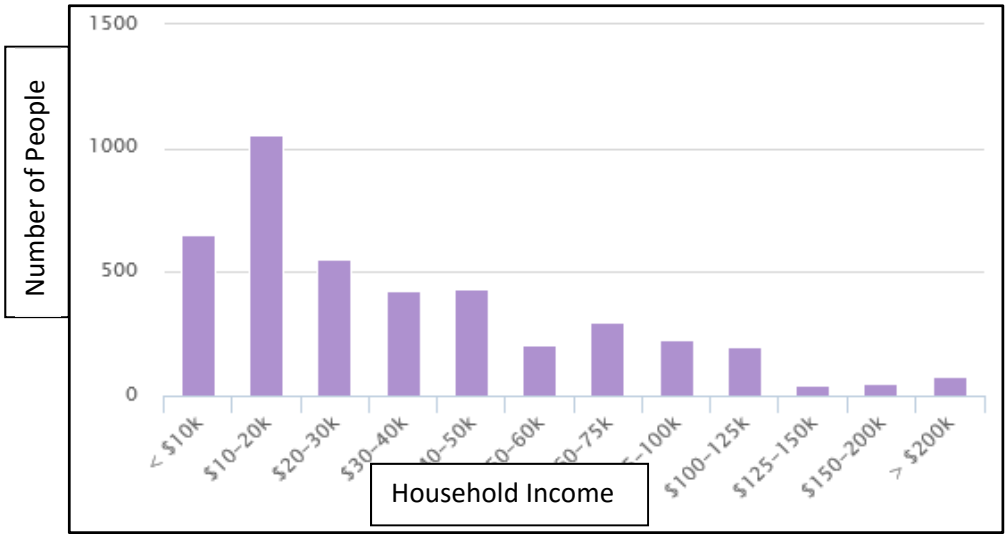
2.6.7 Community Demographics

According to the 2010 U.S. Census, the City of Douglas had a population of 17,509, 4,986 households, and 3,662 families within the City limits.[12] By the year 2014, the population of the City had decreased to 16,744, reflecting the difficulties of the local economy and job availability.

Income: In 2013, the Median Household Income for a family living in the City was approximately $32,564 annually, compared to a State of Arizona average of $57,163 annually. Family incomes in the City lagged the rest of the State of Arizona by nearly 40%.

Exhibit 2-5 below indicates the Median Family Income Range for Douglas in 2013.

Exhibit 2-5 Range of Median Family Income for Households in Douglas as of 2013



Source: http://www.city-data.com/income/income-Douglas-Arizona.html

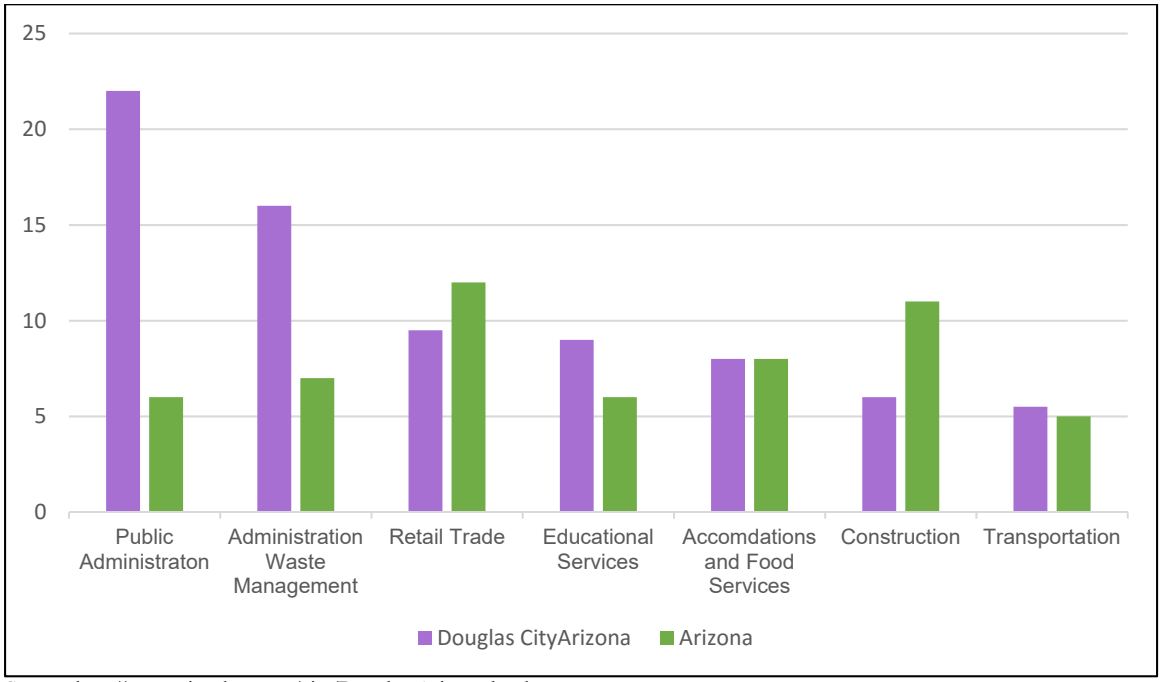
[11] http://nebula.wsimg.com/940ec730ea3fc1cad815bbc212cf04da?AccessKeyId=6206F29E9883B3474EEC&disposition=0&alloworigin=1

[12] "Selected Economic Characteristics: 2008-2012 American Community Survey 5-Year Estimates (DO03): Douglas city, Arizona". U.S. Census Bureau, American Factfinder. Retrieved November 1, 2016

The City supports several businesses and industries in addition to local ranching and agrarian activities. It is the principal retail center for the area serving patrons from both sides of the U.S. - Mexico border. However, stricter regulations pertaining to border access have contributed to a significant downturn in the business and services market in recent years. The local unemployment rate in the City is currently 7.10%, in 2013 with job growth of -0.61%. Future job growth over the next ten years is predicted to be 31.67%.[13]

Exhibit 2-6 below indicates the principal industries and businesses in the City compared against the State of Arizona as of 2013.

Exhibit 2-6 Most Common Industries in 2013



Source: http://www.city-data.com/city/Douglas-Arizona.html

While recent economic times have been challenging, future opportunities for improved growth and development do exist.[14] The City continues to play a vital role as a gateway to Mexico and the Rio Sonora region and shares a rich cultural, and economic history with its Mexican sister city, Agua Prieta. Additionally, the Airport has an opportunity to become a center for general aviation and a base for local government operations.

[13] http://www.city-data.com/income/income-Douglas-Arizona.html
[14] http://www.city-data.com/city/Douglas-Arizona.html

2.6.8 Community Economic Development Overview

Cochise College Center for Economic Research, compiles an annual economic report for Cochise County cities and towns. As detailed in their 2015 Economic Outlook Report, the following indicators were noted:

Douglas continues to see positive effects of a recovering economy, as well as benefits of a growing Mexican middle class and continued capital investment in Northern Sonora.[15]

The report also stated that that development of a new Douglas Commercial Port of Entry continues to be a prime economic focal point for the City. As recent as May 2015, the port facility was in the evaluation stage by the U.S. Customs and Border Protection and U.S. General Services Administration. Additionally, concentrated interaction and cooperation with the City of Aqua Prieta, Sonora, Mexico, is hopeful to increase trade and commerce between Southeastern Arizona and Northeastern Sonora.

2.6.9 City of Douglas Governance Structure

The City has a council-manager form of government, where policymaking is vested in elected representatives and management in an appointed professional manager. Legislative authority for the City is vested in a six-member mayor and council. City administrative officials include mayor, city council (representing six City wards), city manager, city attorney, finance manager, and city clerk.

The council sets the duties and compensation of City officials and employees, and enacts ordinances and resolutions relating to City services, taxes, appropriating and borrowing moneys, licensing and regulating businesses and trades, and other municipal purposes. The City Council appoints the city manager who has full responsibility for executing council policies and administering City operations. City employees are hired under personnel rules approved by the Council.

The Airport is owned by the City, which serves as the public sponsor for purposes of obtaining and administering Arizona Department of Transportation (ADOT) grants. ADOT issues grants to fund improvements at airports in the State of Arizona. The Airport is not included in the Airport Improvement Program grant funding program as administered by the FAA since it is not included in the FAA's NPIAS. The Mayor and City Council have policy and oversight responsibilities for the Airport and all major City functions.

The Airport is operated by City staff, which includes an Airport Director and essential Airport operations employees. The Airport Director reports to the City Manager, and continues up the chain of command to the Mayor and City Council. Currently, Airport oversight and administration duties reside with the City Public Works Director.

[15] http://factfinder2.census.gov/bkmk/table/1.0/en/ACS/12_5YR/DP03/1600000US04

2.6.10 City of Douglas Financial Structure

The City's financial structure is based on the establishment of three divisions assigned to conduct all fiscal administration.

The *Finance Division* is responsible for the day-to-day operations for cash management, banking, and investment functions. Finance also monitors the operating budget for all City funds and departments, and is responsible for the financial administration of grants. Douglas Municipal Airport in conjunction with this division receives ADOT grants from the State Aeronautics Group.[16]

The *Accounting Division* collects, records, and summarizes daily transactions and prepares periodic reports summarizing financial activities for the City management, City Council, and departments. The division implements and maintains sound financial accounting procedures, and ensures that transactions and reports are issued in compliance with Generally Accepted Accounting Principles (GAAP)[17].

The *Purchasing Division* assists departments in obtaining informal and formal bid and quotations from the procurement of materials, supplies, and services, based upon availability, quality, and price. The procurement process includes preparing bids and specifications, tabulations, and conducting bid proceedings.[18]

2.6.11 Budgets

The City is tasked with the management and coordination of all departmental budgets of the various departments and divisions within its structure.

The most current 2015 – 2016 Budget Summary indicates annual expenses of approximately $16,286,000 across the various departments of the City. Within that budget, the Airport's expenses for 2016 were projected to be $159,762. However, projected revenues for the Airport only equaled $99,460 for 2016, necessitating the transfer of $60,302 to balance the 2016 budget, as indicated below in **Table 2-3**.

As the City moves forward to make improvements to the Airport, certain operating expenses, matching funds for ADOT grants, and other expenses will drive the need for larger future operating budgets. However, it is also anticipated that successful marketing and development efforts will increase Airport traffic and related revenues, offsetting the increased expenses and moving the Airport towards a "break even" position, where General Fund monies may no longer be necessary. Recommended marketing and development strategies to help achieve that goal are addressed in subsequent chapters of this document.

[16]Selected Economic Characteristics: 2008-2012 American Community Survey 5-Year Estimates (DO03): Douglas
[17]*Ibid.*
[18]*Ibid.*

Table 2-3 Revenue Budget 2015-2016

REVENUE BUDGET 2015-2016

AIRPORT FUND

Account		Description	2012 Actual	2013 Actual	2014 Actual	2015 Actual	2015 10-month Actual	2016 Projected	2016 % Change
33221		FEDERAL GRANTS		7,377	14,108		$ _		0.00%
34880	1	FUEL SALES (100 LL)	38,739	32,126	23,718	30,500	19,278	21,960	-28.00%
34880	2	FUEL SALES (JET A)	61,979	47,200	77,611	54,000	51,991	51,600	-4.44%
36201		RENTAL PAYMENTS	5,058	9,769	8,170	8,500	3,151	8,500	0.00%
36201	5	SMALL HANGAR AVIATION	14,970	14,400	14,980	14,700	12,250	14,700	0.00%
36201	1	TRAILER RENT	2,400	2,550	4,056	5,044	3,617	2,700	-46.47%
38001		MISCELLANEOUS REVENUE	-	12,722	-	-	-		0.00%
39103		TRANSFER FROM LTAF	-	-	-	-	-	-	0.00%
39104		TRANSFER FROM GENERAL FUND	-	22,265	15,933	38,594	15,136	60,302	56.25%
		TOTAL REVENUE	**$123,146**	**$148,409**	**$158,576**	**$151,338**	**$105,423**	**$159,762**	**5.57%**

Source: City of Douglas, FY 2015-2016 Budget

SECTION 3 – AIRPORT INDUSTRY TRENDS

3.1 Introduction

Business levels at airports are influenced by national, state, and local factors. The state of the national economy, recent trends in air travel, aircraft use, and new aircraft manufacturing all influence the volume and type of aviation activity that may occur at a general aviation airport like Douglas Municipal Airport. Likewise, the state of the local economy, business activities, and other factors that serve to attract aircraft users and associated businesses are also important factors to consider. The combination of these influencers and the airport sponsor's own marketing and development efforts will determine the levels of aviation activity an area receives. This section explores airport industry trends and forecasts, and discusses recent changes in aviation activity that influence the Airport's future.

3.2 National Aviation Trends

As the national economy recovers from the most serious economic downturn since World War II and the slowest expansion in recent history, forecasters have projected that aviation will continue to feel the economic effects and growth will be slow over the long run. According to the *FAA Aerospace Forecast, Fiscal Years 2016-2036,* all segments of the industry including airlines and general aviation will continue to show growth in future years, but at a slow and measured rate as the national economy continues to recover.

3.3 General Aviation Trends

The general aviation market continues a slow but steady recovery. According to the *FAA Aerospace Forecast, Fiscal Years 2016-2036,* while the general aviation industry has made moderate gains in in recent years, in 2015 the industry experienced its first decline in deliveries since 2010. Flight operations from the staple of the general aviation industry – single-engine piston aircraft, continued to grow. Business jet deliveries recorded a modest increase compared to the previous year, turboprop deliveries were down 10 percent, and the smaller category of multi-engine piston deliveries declined 40 percent.[19] Based on figures released by the General Aviation Manufacturing Association (GAMA) in 2016, U.S. manufacturers delivered 1,581 aircraft in CY 2015, 3.1 percent fewer than 2014. This was the first decline after four years of growth in shipments that showed first signs of slowing down in 2014, (as shown in **Table 3-1**).[20]

[19] faa.gov/data_research/aviation/aerospace_forecasts/media/FY2016-36_FAA_Aerospace_Forecast.pdf
[20] *Ibid.*

Table 3-1 2015 Aircraft Shipments and Billings Compared to 2014

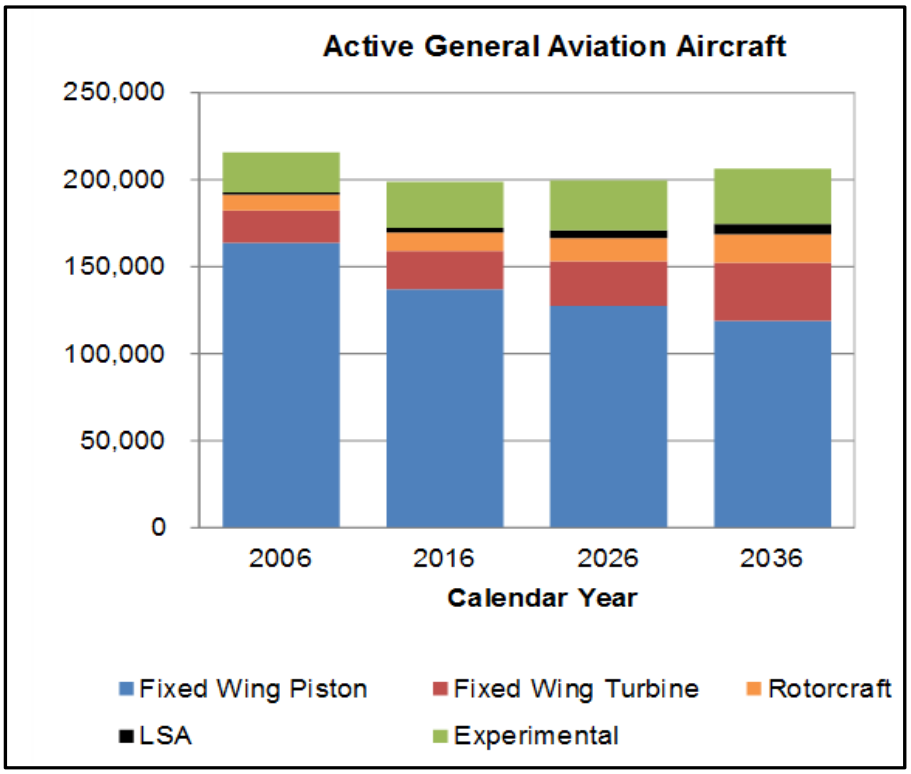
2015 AIRCRAFT SHIPMENTS AND BILLINGS COMPARED TO 2014			
AIRPLANE	**2014**	**2015**	**CHANGE**
Pistons	1,129	1,056	-6.5%
Turboprops	603	557	-7.6%
Business Jets	644	654	+1.6%
Total Shipments	**2,376**	**2,267**	**-4.6%**
Total Billings	***$21.8B***	***$20.9B***	***-4.0%***
ROTORCRAFT	**2014**	**2015**	**CHANGE**
Pistons	257	279	+8.6%
Turbine	741	675	-8.9%
Total Shipments	**998**	**954**	**-4.4%**
Total Billings	***$4.9B***	***$3.8B***	***-21.9%***

Source: https://gama.aero/news-and-events/press-releases/gama-publishes-2016

The active general aviation fleet is projected to increase at an average annual rate of 0.2 percent over the 21-year forecast period, growing from 203,880 in 2015 to 210,695 by 2036. An active aircraft is one that flies at least one hour during the year (see **Exhibit 3-1**).[21]

[21] *Ibid., pp. .3-1*

Exhibit 3-1 Active General Aviation Aircraft



Source:https://www.faa.gov/data_research/aviation/aerospace_forecasts/media/FY2016-

3.4 Other Aviation 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 unmanned aircraft systems (UAS), and the Next Generation Air Transportation System (NextGen) continue to expand in a positive direction. The aviation industry continues to be economically beneficial for not only the U.S., but also for the state of Arizona where it has been found to contribute large amounts 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 indicate positive trends within the industry in the near future.

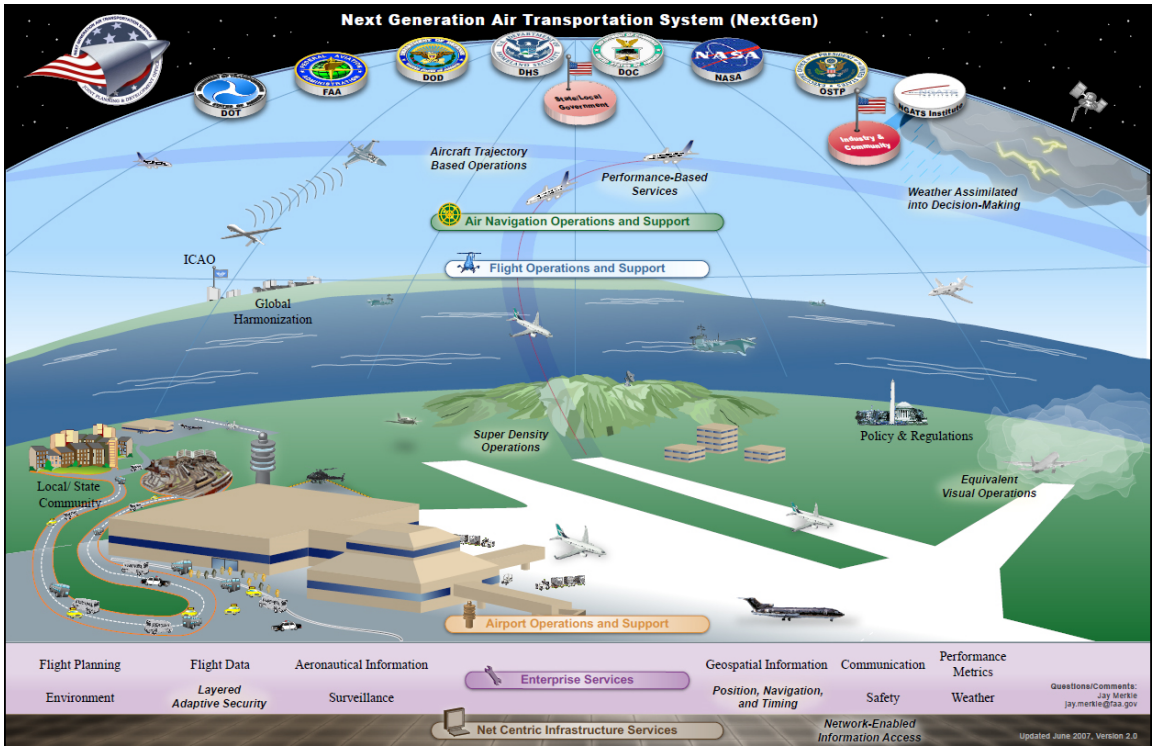
Unmanned aircraft systems take on a wide variety of forms from very small machines to full size aircraft platforms. The military applications initially gained the spotlight with development of small hand-held machines for local surveillance, up to full sized aircraft platforms capable of delivering an armament or surveillance package anywhere in the world. The nonmilitary world has also recognized the importance of UAS for everything from research, communications, or package delivery, to agriculture. The UAS technology is here to stay, and will begin integrating routine operations into the NAS in the foreseeable future.

NextGen represents a new era in aviation transforming the National Airspace System (NAS) through modernization and improvements in air traffic management technologies and procedures;

airport infrastructure and navigation technologies; and environmental, safety, and security related enhancements.

Exhibit 3-2 below highlights the various elements and organizations involved in NextGen technology and operations.[22]

Exhibit 3-2 Elements and Organizations Involved in NextGen Technology



Source: https://www.faa.gov/search/?omni=MainSearch&q=nextgen

3.5 Regional and Local Aviation Trends

Activity at the regional level and specifically at Douglas Municipal Airport in recent years has been relatively weak yet stable. Based on statistics from the FAA Form 5010-1, *Airport Master Record,* the official record kept by the FAA to document pertinent airport information, and input from the Airport sponsor, the number of based aircraft has dropped from a high of 27 in 2007 to 12 in 2016.[23] Correspondingly, aircraft operations were reported as 11,100 in 2007, compared to an estimated 2,600 in 2016.[24] This history is also reflected in the latest Airport Master Plan Update for the Douglas Municipal Airport. It is important to recognize that aircraft operations at airports with an air traffic control tower reflect actual counts that are logged by air traffic control. For non-towered airports such as Douglas Municipal, airport operations are more difficult to track and are

[22]http://www.faa.gov/nextgen/media/general aviation.pdf
[23]2016 DGL Airport Master Plan
[24]Local Airport Management Data

often comprised of estimates or extrapolations of actual counts made by airport management and staff.

3.6 Trends Analysis

The analysis of aviation data for the Douglas Municipal Airport in recent years has been inconsistent at best. While the shift in general aviation airports nationally as well as regionally has been from the small aircraft market to a substantially larger corporate aircraft market, the Douglas Municipal Airport does not seem to follow this trend. However, this facility is in a unique position to not only re-establish a solid 'typical' general aviation market, but also launch and support niche or unconventional general aviation activities. For example, expanding on existing unmanned aircraft system/vehicle (UAS/UAV) training or activity operations for military and national security uses. Since Sierra Vista/Fort Huachuca Army Airfield (FHU) is approximately 45 nautical miles west of the Airport, the potential for UAS/UAV conflicts with air traffic is minimal. Additionally, to bolster economic development in the regional area, a civilian UAS/UAV training/operations base may attract business users that may want to tap into this segment of the general aviation market.

SECTION 4 – MISSION, VISION, VALUES, AND GOALS

4.1 Introduction

This Section establishes a range of Goals for the Airport based on its mission, vision, and values statements; a Strengths, Weakness, Opportunities, and Threats (SWOT) analysis, and an analysis of the practical implications associated with each of those options. The following sections describe the details of that process and ultimately, the identified markets and related programs that will be important for future development of the Airport.

4.2 Mission Statement

An understanding of the local government and Airport environment and each of their unique perspectives is essential to the development of a viable ASBP for the Airport. This constitutes an understanding of the basis for formulating a mission direction and concise vision that creates the framework for the development of an appropriate ASBP study.

The purpose of Douglas Municipal Airport Mission Statement is to define the organization's purpose and primary objectives. These statements define the basis of the ASBP and give direction for its development. The basis for the Mission Statement was drawn from several sources including input from the ASBP's first working group meeting. Individual comments and input from members of this group were instrumental in the formulation of a draft Mission Statement for the Airport. From this initial work, a final statement was developed that clearly defined the input of all of the working group members, Airport management, and City government representation.

The following identified areas represent a compilation of the workshop input by those members:

Douglas Municipal Airport is known for:

- Aviator convenience - "Hidden Gem"
- Corporate business operators
- Distinguished aviation history
- Ease of ingress and egress
- Facilitator of general aviation activities
- Friendly staff and tenants
- Geographic location
- Lower aviation fuel prices
- Provides good service
- Proximity to Mexico border

Douglas Municipal Airport stands out from the competition because:

- City support
- Ease of access
- Friendly staff
- Good fuel prices
- Location and growth region
- Potential for development
- Services
- Support from the City of Douglas
- U.S. - Mexico Border Access

Douglas Municipal Airport excels at:

- Adaptability to business needs
- Business support
- Competitive fuel costs
- Convenience to users
- Flexibility
- Involving the community
- Outreach to business community
- Quality and customer service

Douglas Municipal Airport wants customers to:

- Choose Douglas to spend their aviation dollars
- Come back
- Feel safe and secure
- Feel welcome
- Return to the Airport
- Share their great experience with others
- Think of Douglas as a fueling and crew preparation site
- Think of Douglas as a great place for local general aviation services
- Think of Douglas as the landing facility for cross border opportunities

After consideration of each of the elements listed above, the ASBP working group formulated a Mission Statement that best describes the mission of Douglas Municipal Airport.

4.2.1 Douglas Mission Statement

The Mission Statement captures the intent of the Airport to grow into the future as a safe, secure, and responsible facility that serves as an economic engine to achieve those desired economic opportunities sought after by the community and region. To fulfill the intent of its Mission Statement, the Airport must build on its current foundation and improve its capabilities into the future to accommodate those goals for operational effectiveness and economic opportunities set forth by the Airport and community.

> ***The Douglas Municipal Airport provides a safe, secure, and welcoming airport where the economic environment drives aviation opportunities for both resident and business communities.***

The Mission Statement provides a general description of what the Airport will become in future years. Maintaining the community core values, establishing an appropriate vision for the future, and developing practical and obtainable objectives provides a road map for accomplishing that mission.

4.3 Vision Statement

A Vision Statement for the Airport is an assertion or image of the ideals of the Airport in the future that helps to inspire and empower the organization's stakeholders. The Vision Statement is used to project the Airport into the future and to visualize its ideal state.

The following identified areas are a compilation of the workshop input by the working group members of elements important to the Vision Statement:

What is the human value in the development of Douglas Municipal Airport?

- A highly efficient airport and a productive tax base
- Convenience to international access
- Efficiency of time and location
- Employment
- Home-town feel
- Ideal location to develop an Airport related business
- Privacy
- Recognition by the community of the value of the Airport
- The people who run and own businesses at the Airport are the key to success

Identify what Douglas Municipal Airport and its customers and other stakeholders value the most about the organization:

- Development potential
- Ease of travel for air commerce
- Efficiency and low cost services for the airport users
- Employment in and around the Airport
- Location
  Tax base

What does success look like?

- Aviation-related Business Park and catalyst for the region
- Creating significant return on investment
- Develop and maintain adequate infrastructure
- Economic magnet
- Erasing local and regional borders
- Increased corporate traffic
- More business to the Airport
- Name recognition
- Operating a successful and profitable airport facility
- Sustainability

The Vision Statement is the organizational tenet upon which the vision for the future of the Airport is predicated and is developed to answer questions such as:

- How is this interpreted and translated into a vision for the future of the Airport?
- What does this mean in terms of what the airport is expected to look like in 20 years?

While the Airport will continue to accommodate a broad spectrum of general aviation users, the Airport will maintain its long-established primary focus on business aviation. Ideally, the Airport of the future will be an integral part of the City, with a focus on public safety and consistent, high aesthetic standards for buildings, landscaping, and signage, and superior services. The working group's consensus was that when you are in the City – be it at the Airport or anywhere

else in Douglas – you will know you are in Douglas; there will be a strong sense of place, supported by a welcoming culture.

> ***Douglas Municipal Airport is committed to becoming a regional hub of aviation business activity, economic development, and gateway to attractions of the Sonoran Desert.***

The Vision Statement provides descriptions for the City's vision for the future of the Airport. These are mainly aspirational, examples of what could be done and not necessarily what will be done.

4.4 Core Values and Value Proposition

A Values Proposition Statement communicates to the community, airport users, and all others, the values of the airport. Based on the working group input and the outcomes of the Mission and Vision Statements, the following draft Value Proposition Statement was proposed:

Douglas Municipal Airport core values are:

- Always maintain the highest level of safety;
- Encourage community involvement;
- Strive to provide professional and courteous service at all times;
- Aspire to build a progressive airport business climate by promoting investment and opportunities consistent with the nature of the community; and
- Value our environment and strive to maintain sustainable growth.

An organization's value proposition is, after in-depth analysis, its proclamation of the benefits, costs, and values it believes it can deliver to its customers, prospective customers, and stakeholders within and outside the organization. The City's Value Proposition for the Airport is to exemplify the general aviation industry's "best business practices," while maintaining consistency with the City's own "best product" Value Proposition, emphasizing innovation and creativity. The Airport will provide services to its customers, prospective customers, and stakeholders that will be clearly recognized as of such quality that they will be willing to pay a premium for those services, if necessary. The Airport will not always be the lowest-price service provider, but it will provide services of high quality that customers will ask for it by name.

Thus, the City's Value Proposition for the Airport is:

> ***Become an industry-leading general aviation airport serving the needs of aviation commerce and general aviation by: Aspiring to build a progressive airport business climate by promoting investment and opportunities consistent with the nature of the community, and by always maintaining the highest level of safety, providing professional and courteous service always, being actively engaged with the community, valuing our environment, and striving to maintain sustainable growth.***

4.5 Douglas Municipal Airport - Future Possibilities

This section is intended to describe the ideal general future vision and direction that the City of Douglas would like to see for the Douglas Municipal Airport, and identify some of the challenges that will be met aong the way. Generally, the Airport sponsor builds, maintains, and improves common-use infrastructure: particularly the runway, taxiways, certain navigational aids, airfield lighting and guidance signs, perimeter fencing and access controls, and general utilities including water and sewer. Whenever possible, the Airport leverages its own capital investments with grant funding obtained from ADOT and any other sources that may be available. The Airport usually does not build hangar facilities, shops, and office spaces. That type of development is customarily built using private funding, most often in the context of a ground lease agreement. This does not mean that the Airport could not or would not ever participate in a hangar development project, but it would be a departure from the normal manner of Airport development, and it would presumably require a compelling reason to do so.

In some circumstances, the Airport may partner with a private developer, improving common-use infrastructure to facilitate desirable private development. Another key consideration is that most Airport development is market-driven: in the absence of sufficient demand for a particular project, there is little incentive to build, either for the Airport or (especially) for a private developer seeking a return on an investment. On the other hand, not every project should be evaluated or executed based solely on the prospects of its financial return: if that were the case, there would be no public parks, aircraft viewing areas, or public art amenities of the type that have long been much valued by the City's community. Different measures of value surely apply to these kinds of projects; return on investment is not the only measure of success.

The City's ideal Airport of the future would accommodate a wide, diverse variety of aviation users and uses. Airport businesses would provide a comprehensive range of aviation products and services. The Airport would provide high quality amenities for tenants, pilots, passengers, and visitors; it would be a pleasant place to work or visit, with a strong sense of community and a professional and friendly atmosphere. The Airport's stakeholders and the surrounding community would take great pride in the Airport. The Airport and City would coordinate to promote and take advantage of local attractions, amenities, and events. The Airport and the City would be the destination of choice for a wide spectrum of general aviation users.

The Airport of the future would ideally have an area designed to support and grow a community of aviation enthusiasts and aircraft owners. This area would feature new T-hangars and a host of amenities including a self-service fueling installation, an aircraft washing facility, public tie-down spaces for visiting aircraft, an executive terminal with pilot weather and flight planning facilities, maintenance facilities, and perhaps aircraft viewing and special event areas for the public.

The Airport of the future would have a "front door" facility serving as the gateway from the Airport to the community and from the community to the Airport. This "front door" facility would be distinct, uniquely recognizable, emblematic of the Airport and reflective of Douglas's unique culture of creativityAdditional branding elements to help define the Airport of the future would include way-finding signage and iconic structures that are distinct and instantly recognizable as "Douglas." The Airport would also have elements that are attractive and accessible to the general

public as well, such as public art, the Border Air Museum, aircraft viewing areas with hospitality features such as an airport restaurant.

The Airport of the future will have a strong business presence. It will be an engine for economic development not just for the City, but for the entire region. The Airport will partner with the City's Economic Development Department to attract aviation-related business to the City. The Airport will also partner with the Economic Development Departments of neighboring communities to support their programs to attract, retain, and grow businesses.

The Airport can be the regional leader and model for best practices among general aviation airports and will be an asset in which the community will take immense pride.

4.6 Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis

The preceding Sections have presented an extensive amount of information about the Airport, its current markets, and the status of the aviation industry. While compilation of this type of data is critical to the ultimate success of any planning effort, the challenge for most business plans is how to take the information that has been generated and use it most effectively. Due to the amount and diversity of data that has been gathered on the study area, a SWOT analysis has been conducted to strategically summarize the information.

Generally defined, a SWOT analysis is a standard strategic business planning tool used to identify the strengths, weaknesses, opportunities, and threats associated with a particular action or area. The SWOT analysis involves specifying an objective or an object (in this case the Airport) and identifying the internal and external factors that are favorable and unfavorable for that object being successful in a given environment. For this ASBP, the following sections summarize the SWOT analysis factors related to the Airport that provide the greatest indicators of the Airport's current condition.

On October 3, 2016 the SWOT process was initiated by gathering the ASBP working group together to conduct one of the most important elements of the building of a strategic business plan – the SWOT workshop. This workshop provided a venue for the working group to input their diverse perspectives on the unique elements of the Airport and the future development of the ASBP. The SWOT analysis workshop isolated and categorized actual and perceived strengths and weaknesses of the Airport and its organization from an internal perspective and opportunities and threats from an external perspective. As noted in the workshop:

- **Strengths** – internal items accomplished particularly well or unique assets of the Airport or the organization, especially in comparison to competitive and comparable airports or organizations.

  Strengths need to be preserved, built on, and leveraged.

- **Weaknesses** – internal items that: (1) are not accomplished particularly well; (2) hinder or prevent desired performance; or (3) are acutely lacking or need to be improved.

  Weaknesses need to be addressed and remedied.

- **Opportunities** – external items that could help realize the mission and vision for the Airport. Opportunities may be identified by studying changes or trends within the industry, the marketplace, or the community.

Opportunities need to be seized or capitalized on.

- **Threats** – external items that could threaten the realization of the Airport's mission and vision. Threats are typically identified by studying changes or trends within the industry and the local marketplace.

Threats need to be managed or, if possible, eliminated.

The following matrix depicted in **Exhibit 4-1** shows the inter-relationship between the various SWOT elements and how they work with each other.

Exhibit 4-1 Douglas Municipal Airport SWOT

Source: Airport Corporative Research, Report 77, sponsored by the Federal Aviation Administration. Library of Congress Control Number 2012948352 © 2012 National Academy of Sciences.

The Douglas Municipal Airport Working Group identified the following categories to be utilized in the Airport's SWOT determinations.

Strengths

- Airpark Capabilities
- Available Land
- Border Location
- Border Patrol Facilities
- Business Friendly
- Community Support
- Convenience
- Flight Training Potential
- Free Trade Zone (FTZ)
- Fueling Capability
- Good Weather
- Historical Aviation Museum
- Room for Expansion
- Strong Leadership
- U.S. Customs

Weaknesses

- Ageing Population
- Aging Infrastructure
- Funding Issues
- General Business Decline
- Insufficient Airport Operations Budget
- Lack of Marketing Plan (Cohesive)
- Low Public Awareness
- No Scheduled Public Transportation
- Pavement Weakness: runway, aprons, and taxiways
- Perceived International Airspace Issues
- Regional Airport Competition
- Under-developed
- Utility infrastructure
- Understanding of the Douglas Market

Opportunities

- Increase Corporate Traffic
- New Terminal and Development Space
- Business/Industrial Park
- More Focused Advertising
- Medical Tourism
- Growing population in Mexico
- U.S. Customs Service
- Charter Service
- Hangar/Aviation Storage
- Land Development
- Increased Grant Funding (ADOT)
- Current Favorable Airport Fee Structure

Threats

- Unsecured Funding
- Border Security Precautions
- Regional Airport Competition
- Passport Regulations (Mexican Side)
- Current Limited Maintenance Funding
- Limited Staff
- Poor Runway PCI Index
- Lack of Infrastructure
- Rising Costs
- Waning General Aviation Interest

4.7 Goal Preparation Using SWOT

The findings of the SWOT analysis served as the basis for the development of Goals that realize the Mission and Vision for the Airport. **Table 4-1** presents a summary of those working documents used with the Airport Working Group to facilitate development of goals for the Airport. The following SWOT Matrix describes how the Airport can leverage its strengths to take advantage of its stated opportunities. It also addresses the Airport's weaknesses and threats and the best available course of action to overcome them.

Table 4-1 Douglas Municipal Airport (DGL) SWOT Matrix

Internal / **External**	**Strength (S)**	**Weaknesses (W)**
	S1 Available areas of Growth	W1 Lack Focused Marketing Plan
	S2 Proximity to Borders and Business Friendly Catchment	W2 Poor Runway Surface
	S3 Free Trade Zone (FTZ)	W3 International Airspace Issues
	S4 Strong Leadership	W4 Funding Issues
	S6 Border Patrol	W5 Local Business Decline
	S7 Historical Museum	W8 Regional Airport Competition

Opportunities (O)	**SO Goals** ***(that leverage strengths to take advantage of opportunities) Quadrant One***	**WO Goals** ***(address weaknesses & take advantage of opportunities) Quadrant Two***
O1 New Facilities	1. Build New Facilities/Terminal	
O2 Existing Aviation Business	2. Expand and Develop/Specialty Air Services for General Aviation and Corporate	

O3 Infrastructure & Runway Strength Improvements	3. Improve infrastructure by capturing funding sources	New development/funding plan to achieve infrastructure upgrade.
O4 Funding Opportunities Available for Airport Projects	4. Improve relationships with FAA and other funding source	
O5 Strong Support from Town, Economic Development Dept., and Rotary Club		5. Develop and implement Airport Marketing Plan
Threats (T)	**ST Goals** **(that leverage strengths to manage/avoid threats)** **Quadrant Three**	**WT Goals** **(that address weaknesses to manage/avoid threats)** **Quadrant Four**
T6 Shrinking General Aviation Market	6. Market additional flight services & businesses	8. Implement Marketing Plan to halt Douglas market attrition
T7 Regional Airport Competitors	7. Advertise advantages of doing business with Douglas Municipal	
T8 Conflicting Airspace, Pinal County Airport		

Source: Airport Corporative Research, Report 77, sponsored by the Federal Aviation Administration. Library of Congress Control Number 20129483352 National Academy of Science.

4.7.1 Smart Model Goals Evaluation

A SMART Model is designed to assist decision makers with goal development by evaluating each proposed goal against specific standards, that help assure the completeness and continuity of those proposals. A SMART Model worksheet was developed and applied to each of the eight Goals identified by the working group and Airport management to assist with evaluating these Goals and assuring that each met the SMART criteria:[25]

[25]Airport Corporative Research, Report 77, sponsored by the Federal Aviation Administration. Library of Congress Control Number 2012948352 © 2012 National Academy of Sciences

Specific – Is each goal simply stated, straightforward, and compelling?

Measurable – Is each goal tangible, able to be tracked, and identifiable when a final solution has been reached?

Attainable – Is each goal possible to accomplish without being too burdensome? Is it reasonable?

Relevant – Is the accomplishment of each goal relevant and meaningful to the Airport? Does it tie in with the Airport's core values and general mission?

Time Bound – Does each goal have a beginning and end point? Is it identified with a viable time frame for accomplishment?

After general discussion of the identified Goals, and reaching an agreement that each stated Goal satisfied the SMART Model criteria, the detailed analysis of the GROW Model was applied to each of those goals.

4.7.2 GROW Model Goals Evaluation

The GROW Model worksheet was designed to help refine the stated goals using the **G**oal, **R**eality, **O**ptions, **W**ill model. The GROW Model was applied to each of the stated goals. Generally stated, each element of the GROW Model is described as follows:

Goal – A goal is a statement of a desired result, outcome, or level of attainment that needs to be reached to realize the mission and vision for the airport. All goals need to be SMART goals.

Reality – This component focuses on the current state of the Airport. It includes an assessment of the current reality of the situation at the Airport, the magnitude of the work that needs to be accomplished, and the people who need to do the work.

Options – This component focuses on identifying the various ways to achieve a specific goal. An analysis of the alternatives and the issues, challenges, problems, and risks associated with each option can be used to help identify the most appropriate alternative.

Will – This component focuses on determining whether or not the resources will be available and the people will be ready, willing, and able to perform the tasks necessary to achieve the goal. There is a subjective element to this decision as Airport directors and policymakers will need to assess the readiness, willingness, and ability of others to make and keep a commitment to achieve the goal.

Each of the eight identified Goals were subjected to the detailed analysis of the GROW Model, and specific information and requirements for each were applied and analyzed.

After the GROW Model evaluations of the stated Goals were complete, it was determined that the majority of the Airport's Goals centered around the development and implementation of a Marketing Plan, and related marketing and development efforts for specialty areas of the Airport. Of equal priority were facility goals to improve the Airport's infrastructure, and new business development.

4.8 Prioritized Goals

Utilizing the SMART and GROW models, the Airport has identified eight primary Goals from the ASBP. Since many of the goals are related, such as those tied to future marketing efforts, several Goals may be pursued simultaneously, depending on the availability of resources to do so.

Prioritizing the Airport's Goals requires the careful consideration of several factors such as:

- Which of the goals do you need the most, and how quickly do you need them?
- Consideration must be given to the cost of achieving each Goal.
- Can the City afford a Goal now, or should it be moved down in priority when required funds may be more available?
- Which Goals are the most essential to future airport development, and should they be moved up in priority?

Even though Goals have been prioritized, in practice, it may be necessary to pursue more than one Goal at a time, or in parallel with each other. An example of Goals that should be pursued in parallel might be: develop a new marketing plan and identify new funding opportunities for infrastructure improvements. In the case of the Airport, an immediate need to market the Airport to new business opportunities exists now. However, the Airport's infrastructure does not currently meet the requirements that new business is likely to bring. Thus, both Goals need to be pursued simultaneously.

After the eight initial Goals for the Airport were selected, the ASBP working group prioritized them based on considerations of need, cost, and the ability to accomplish each in a timely manner. The results of that prioritization are shown in **Exhibit 4-2**.

Exhibit 4-2 Douglas Municipal Airport Prioritized Goals

Priority	Goals
1	**Goal:** Develop new comprehensive marketing plan for Douglas Municipal Airport **Justification:** This goal is necessary to the identification and recruiting of new future business and operators for the Airport.
2	**Goal:** Improve working and political relationships with Federal, State, and Local funding agencies **Justification:** Building a positive image of Douglas Municipal Airport and the City of Douglas by maintaining the high standards of conduct and fiscal responsibility to facilitate greater opportunities for future traditional funding will improve working relationships.
3	**Goal:** Identify new funding opportunities for infrastructure improvements **Justification**: Traditional State funding sources as utilized in past years are insufficient to meet the timing of future required infrastructure development. Additional sources of funds must be developed or identified.
4	**Goal:** Increase fuel and services sales to general aviation and corporate aviation customers **Justification:** Additional marketing of sales and services will heighten the profile of the Airport and increase operating revenues.
5	**Goal:** Improve working and trade relations on both sides of the Border by working with Mexican and American immigration officials to facilitate better access **Justification:** Access of persons and goods important to the Douglas economy is currently inhibited by border crossing regulations and restrictions.
6	**Goal:** Develop Douglas Municipal Airport as an operational base for border protection drones and other Border Patrol services **Justification:** The Douglas Municipal Airport is well positioned to offer additional services to the Department of Homeland Security operations such as being a base for drone operations and other border patrol operations.
7	**Goal:** Increase medical tourism **Justification:** A large market currently exists for medical services on the Mexican side of the border, which could be better serviced by raising awareness of services and border crossing opportunities at Douglas Municipal Airport.
8	**Goal:** Attract new air services to Douglas Municipal Airport **Justification:** This goal speaks to continued efforts to attract additional General Aviation and Corporate aircraft to the region.

4.9 Community Stakeholder Interviews

To gain insight into the daily challenges and direction of stakeholders associated with the Airport, a number of interviews were conducted, both by telephone and in person, with Airport tenants, local government, City officials, and members of the general public, to determine the primary issues facing successful Airport development today. Those interviewed were encouraged to discuss historical issues they have encountered with the Airport, as well as, future needs and opportunities where association with the Airport would be beneficial to future growth. While perspectives varied, all of those interviewed agreed on a number of basic issues that must be addressed at the Airport for business to move forward.

Infrastructure issues seemed to be primary in all discussions. The immediate need for runway, taxiway, and apron repairs and upgrades was deemed vital not only for safety, but for the Airport's ability to accommodate current and future growth. Other issues such as an "on site" weather observation system, and the benefit of acquiring an instrumnent landing system were also discussed.

Marketing issues also emerged as a major concern. Many of those interviewed felt that the world had forgotten what a historic and important place the Douglas Municipal Airport was, and how it had contributed to development of the region. It was generally felt that a comprehensive marketing effort should be undertaken that would highlight not only the historical significance of the Airport, but also showcase the new opportunities for development present in the market today.

Financial constraints and the limitations of current City and Airport budgets were widely discussed. Funding for routine repairs and even matching funds for State sponsored capital projects have been lacking in the past. Most felt that this was the primary issue pertaining to the general deterioriation of the Airport's infrastructure. General discussions of additional or non - traditional funding sources were also included.

Key points and other information obtained during the course of these interviews were factored into the formulation of future airport Goals and related Action Plans to assist in identifying and accomplishing those Goals.

SECTION 5 – DOUGLAS AND AIRPORT DEVELOPMENT FACTORS

5.1 Introduction

There is a need to understand the current function of the Airport as it exists today and compare it against its expected role in the future, in order to effectively chart a successful path to future development.

This section is dedicated to a more in depth look at the elements influencing businesses at Douglas Municipal Airport, an analysis of the future activity forecasts, and a discussion of the existing facilities and tools that the Airport can bring to bear to support future business development. A number of these discussions will also indicate the need for improvements or additional services beyond what currently exists, to adequately address future needs.

5.2 Douglas Municipal Airport Market Drivers

All of the economic factors that influence markets in the City of Douglas and Cochise County also influence the activity levels at Douglas Municipal Airport. As new businesses are developed in the City, and as tourism and special event visitors increase, a certain percentage of those new activities will utilize the services of the Airport in some fashion.

Economic development officials in Douglas believe that the Airport has the potential to lead the region in attracting technology and industrial business partners. As stated above in the 2014 *AZ-wsj _state of_ business* white paper, Aerospace and Defense and Advanced Manufacturing related industries are two of the economic drivers that can support the local area by basing associated activities at the Airport. Douglas Municipal Airport can benefit from United States Homeland Security operational activity in Cochise County by promoting and supporting the existing unmanned aerial systems/vehicle (UAS/UAV) operations at Fort Huachuca, which in turn could attract associated defense and industry contractor fixed wing and rotor craft aircraft to the Airport. Advanced manufacturing industries typically increase the number and frequency of large corporate jets utilizing the Airport. While considering potential increases in business and traffic for the Airport, it is important not to lose sight of the fact runway repairs remain key to the Airport's ability to accommodate future traffic.

As Douglas Municipal Airport and the community move forward to accommodate this changing marketplace, it is appropriate to understand the Airport's current capabilities, and analyze the potential impacts of forecast future demand. The current Airport Master Plan Update contains evaluations that will help define the measures necessary to effectively carry the Airport into the future, and accommodate the demand of the future marketplace.

5.3 Douglas Municipal Airport Future Forecast

The current Airport Master Plan Update indicates that Douglas Municipal Airport will see limited, but steady growth in based aircraft and annual operations throughout the 20-year projection period. This growth is primarily driven by the Airport's advantageous proximity to both Douglas and Agua Prieta, as well as the existing facilities at the Airport. Business and corporate activity has also

steadily increased in recent years, which is largely attributed to the Maquiladoras in Agua Prieta. Furthermore, the availability of both Jet A and 100LL fuel at DGL is an attractive facility for itinerant users. Lastly, projected socioeconomic data show that Cochise County will similarly grow at a slow, steady rate over the next 20 years, similar to projected growth in aviation-related activity at the Airport.

As the market develops in future years, many of the products and services currently provided by the Airport will need to be expanded and improved upon to accommodate future growth. A discussion of current capabilities follows in the next section.

5.4 Aviation Products, Services, And Facilities

Douglas Municipal Airport offers a number of services and facilities to the general aviation community. Fueling services offering both 100 LL and Jet-A products are available. Maintenance services, and aircraft storage services are all resident on the airfield. Hangar space is still available, and the Airport is currently identifying areas for future growth and facility development to meet the demands of the future. Some of the major elements of Douglas Municipal Airport services are listed below:

5.4.1 Aviation Fueling Facilities

The City of Douglas provides both Airport Management and fueling services on the airfield, and provides both 100LL Avgas and Jet A fuels to both based and transient aircraft operators. The City also provides parking and hangar services, pilot supplies, and courtesy transportation services.

The fuel storage capacity is adequate for current levels of business. It is not anticipated that an expansion in fuel storage capabilities will be necessary in the foreseeable future.

5.4.2 Hangar Facilities

Douglas has three hangars on the airfield: one large T-hangar, one large conventional hangar, and one small conventional hangar. The large T-hangar has 10 units that are currently all being utilized. The large conventional hangar has six based aircraft, while the small conventional hangar has one Lifeline based helicopter. Additional aircraft storage is provided in the form of open air tie downs in various locations across the Airport.

As the Airport grows and continues to experience a shift in use from smaller aircraft towards larger and heavier corporate aircraft additional structures may become necessary. Generally, owners of larger corporate type aircraft prefer to have their aircraft hangered in times of bad weather or heat, or if they are staying for an extended period of time. If a maintenance service providers chooses to operate at the Airport, they will also need to provide structures capable of accommodating larger aircraft that may require heavy maintenance out of the weather. The locations of these larger facilities should be carefully considered, and placed in areas that are convenient to the user and perhaps adjacent to other services that may be required.

5.4.3 Terminal Building

Douglas Municipal Airport currently has three on-airport buildings and a trailer that are owned by the City of Douglas. Portions of the permanent structures have been used for GA terminal services

in the past. One structure is 800 square feet while the other is 600 square feet. Additionally, a small trailer of approximately 600 square feet provides additional office space as needed. Currently, the permanent structures are not being used for a specific purpose. While the Airport currently does not have a designated terminal building, construction of one is a specific recommendation identified in the 2016Airport Master Plan Update.

5.4.4 Aircraft Rescue and Fire Fighting (ARFF) Station

According to FAA guidance, operators of Part 139 certificated airports must provide Aircraft Rescue and Fire Fighting (ARFF) services. The Douglas Municipal 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 should be emphasized that Douglas Municipal Airport is not an FAR Part 139 facility, and as such an onsite ARFF station is not required. However, as a matter of policy many corporate flight departments utilizing larger corporate aircraft of the type that are becoming increasingly popular at Douglas, will not dispatch their aircraft to an airport without some type of firefighting capabilities. The timely development of such capabilities, even if only on an “on call” basis, will likely be an influential factor in the future success of Douglas Municipal Airport’s corporate aircraft development.

5.4.5 Support and Maintenance Facility

Another facility that the Airport does not currently have is a dedicated support and maintenance building. It is recommended that the Airport construct such a building in the long-term planning period in order to have a secure, functional, and organized location for the airfield’s maintenance equipment. It is recommended that the building be approximately 5,000 - 10,000 square feet, although this is flexible.

5.4.6 Airport Access and Vehicle Parking

The surface transportation network and local community surrounding the Airport include State Route 80 and U.S. Route 191, which provide primary north-south access between Douglas and other cities within the state of Arizona. Access between the major routes and the Airport are primarily provided by 15th Street and 10th Street. Douglas Municipal Airport borders W. Airport Rd and E. Geronimo Trail. The southern edge of the Airport is located directly on the U.S. – Mexico border.

Auto parking at DGL is accommodated by the 30 paved parking spots just north of the primary apron and large conventional hangar. These spots are also shared with the Border Air Museum.

Immediately to the west of the main aircraft parking apron is an unpaved lot outside the western fence that can accommodate approximately 20 vehicles. Vehicles are frequently parked on the apron near the Lifeline building and near the small hangar away from aircraft parking areas.

5.5 Airport Infrastructure

The general infrastructure of Douglas Municipal Airport has developed over the years to meet the needs of the current business and operations levels. While the existing infrastructure is considered adequate for today, with the exception of the condition of Runway 03-21, many of its systems will need to be upgraded and expanded to meet future needs. Much of the information for this section has been drawn from the recent Douglas Municipal Airport Master Plan Update, which evaluated the current infrastructural elements and made recommendations for future improvements.[26]

5.5.1 Utilities

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 should be evaluated, as future development scenarios are refined.

5.5.2 Airfield Pavements

Douglas Municipal Airport is currently served by a single paved runway, Runway 03-21. Runway 03-21 is 5,760 feet in length and 75 feet in width and is constructed of asphalt. The weight bearing capacity of the runway is listed at 12,500 pounds, single wheel gear. Douglas previously had a second unpaved runway, Runway 18-36. This runway has been closed indefinitely as it was described as having large brush, rocks, and an uneven surface. Runway markings are generally faded and in need of re-painting across the airfield.

Most of the taxiway and parking apron pavements are in fair to poor condition, with noticeable pavement failures in many areas. Pavement strengths are generally in the 12,500 pounds category and less in areas of apparent failure. Many of the pavement areas across the Airport are in need of crack sealing, seal coating, or rehabilitation to bring them back to full strength. Additionally, as future demand develops, and the Airport continues its transition towards heavier aircraft, primary taxiways and apron parking areas will need to be strengthened to accommodate the regular use of larger corporate jets. Additionally, rehabilitation or reconstruction of the existing runway is needed, and should be the Airport's primary near term objective.

5.5.3 Airfield Lighting

Airport lighting and runway markings are important to supporting the control and movement of aircraft in the airfield area. They also help pilots visually identify their location relative to the airport and the airfield area. Existing airfield lighting consists of MIRLs (Medium Intensity Runway Lights) which define the lateral limits of a runway and are spaced 200 feet apart.

[26] 2017 Douglas Municipal Airport Master Plan Update

5.5.4 Airfield Signage

All of the lighted airfield destination signs have deteriorated with age and should be replaced as appropriate; the new signs should be internally lit with LED fixtures. This system upgrade should serve the Airport well into the future.

5.5.5 Instrument Aids to Navigation

Currently, Douglas Municipal Airport does not have any Instrument Approach Procedures or related NAVAID's. Potential future jet traffic may warrant this. An examination of potential instrument approaches are currently being analyzed in the Airport's Master Plan Update.

One possibility would be the development of a GPS approach specific to Douglas Municipal 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. 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. Further investigation as to whether or not a non-precision instrument approach can in fact be created for Douglas Municipal Airport can be determined by the FAA Flight Procedures Office.

5.5.6 Visual Aids to Navigation

The Precision Approach Path Indicators (PAPIs) on Runway 3 are posted out of service indefinitely, but the PAPI's on Runway 21 are currently in good working condition. There are Runway End Identification Lights (REIL's) located on both ends of Runway 3-21. The runway is equipped with medium intensity runway lights which should be maintained until they have reached the end of their useful life-cycle. It is anticipated that some or all of the components of these systems may need to be replaced in the medium- to long-term planning period. The wind cones and segmented circle are also in relatively good condition. The Airport should maintain and replace/paint as needed over the course of the planning period. Finally, the Airport rotating beacon is also in adequate condition, although it was noted that the fixture and tower are outdated. Possible replacement in the medium-term planning period may be warranted.

5.5.7 Weather Aids

The nearest weather station is an Automatic Surface Observation System (ASOS) that is located nine miles away at Bisbee Douglas International Airport. This ASOS meets the existing needs of the Airport and is in good overall condition. Installation of an ASOS system physically located on Douglas Municipal Airport property would be preferable in future years.

SECTION 6 – AIRPORT BUSINESS DEVELOPMENT

6.1 Introduction

This Section expands upon the information contained in Section 5 pertaining to existing aeronautical activities and infrastructure into an analysis of future business development opportunities and configurations. An evaluation of existing economic development centers located both on and adjacent to the Airport is provided, followed by a discussion about appropriate zoning to help achieve future business development.

The results of this analysis help to identify appropriate economic zones for future development that are compatible with both Airport operations and other activities immediately adjacent to it. This provides an overview of existing businesses and services at the Airport and within the City that are conducive to driving future development, and identify specific business types and their associated marketing requirements that the Airport wishes to attract in the future.

6.2 Current Business Configurations

Douglas Municipal Airport is surrounded by open land uses to the north and east of its boundaries, and by a medium density residential area to its west. Directly south and adjacent to the Airport boundary is the Mexico border, and high-density development in the City of Agua Prieta.

The major business and service areas of Douglas Municipal Airport today are primarily situated in the central and western portions of the airfield. A row of T-hangars is located in the central section of the Airport and surrounded by available space for future tie down or hangar development. Larger conventional hangars are located towards the western perimeter of the field, along with fuel storage facilities, the main aircraft parking apron, and a self-service aircraft fueling island. The Airport also maintains a small trailer on the western side of the airfield that is used as administrative offices and project offices for onsite Airport projects. Automobile parking is located west of the perimeter fence adjacent to the aircraft parking apron.

The general layout of the Airport is reasonably segregated into compatible and related business centers. However, some of the service functions like the fuel farm may suffer from space constraints when required to service multiple aircraft simultaneously. As the primary service function of the Airport shifts from smaller to larger aircraft, some reallocation of existing space may need to be made to effectively accommodate the demands of future business. Additionally, as discussed earlier several infrastructure upgrades to the Airport's runway and aircraft parking areas will need to be addressed in the short-term to accommodate those larger aircraft and the businesses that service them. At the present time, the poor condition of the runway is a serious detriment to the development of new aviation services, as business operators are currently showing a preference for utilizing Bisbee-Douglas International Airport and other nearby facilities with runways that are in better shape.

Although the Airport currently has a large amount of undeveloped space within its boundaries, it is constrained by access limitations. The west side of the Airport is easily accessed by existing roadways. However, no access roadway systems currently exist on the north and east sides of the

facility, and access to the south side is constrained due to the immediate location of the Mexico border. It seems likely that any initial new business development will have to occur on the west side of the field for the foreseeable future. Major elements of the existing Douglas Municipal Airport infrastructure are shown in **Exhibit 6-1.**

Exhibit 6-1 Douglas Municipal Airport Terminal Area Infrastructure

Douglas Municipal Airport Master Plan Update 2017

6.3 Airport Development Areas and Recommendations

The most effective utilization of land at Douglas Municipal Airport will occur if the available properties on the airfield are zoned for specific types of development that are compatible with each other. This type of segregation by use will allow for the most efficient development of similar businesses and help promote the highest and best use of the available developable land. For purposes of this study, six general categories or "zones" have been developed to accommodate those businesses or services most likely to base at Douglas Municipal Airport. These include the separation of based general aviation aircraft from corporate aviation activities and also from special operations and services. The Border Air Museum was also given its own development category, as well as Homeland Security and Airport Compatible Development zones. A description of how such developments should be grouped follows:

Specialty Aviation Services Zone: This district shown in yellow in **Exhibit 6-2** is located on the west side of the Airport and can be developed to accommodate specialty operations such as aircraft refurbishing, airframe modifications, hangars for mechanical and avionics shops, and other specialty work associated with aircraft maintenance. As demand for such development occurs, consideration should be given to expansion of the main aircraft parking apron or perhaps a connecting taxiway to the new business developments.

General Aviation Zone: A General Aviation Complex, shown in blue, and related development should occur in the central portions of the airfield, around the existing T-hangars and associated parking areas. This area should be designed to accommodate a variety of aircraft hangars, shade hangars, and open aircraft parking facilities as demand warrants. Other buildings in this area should include possible FBO facilities and the fuel farm. Future growth in this area will be directed towards hangar and facility development for small to medium sized general aviation aircraft.

Corporate Development Zone: The Corporate Development Complex, shown in green, should be located on the western side of the Airport, adjacent to what is now the main aircraft parking apron. Future planning indicates that this area is best designated for the development of facilities and services to accommodate larger corporate type aircraft and their related service requirements. Such development will likely include larger hangars, satellite fueling services, specialty maintenance operations geared towards larger corporate aviation, and an expanded executive terminal building. This development would also serve to separate the larger corporate aircraft and their operations from the resident general aviation population, and their related parking or hangar requirements.

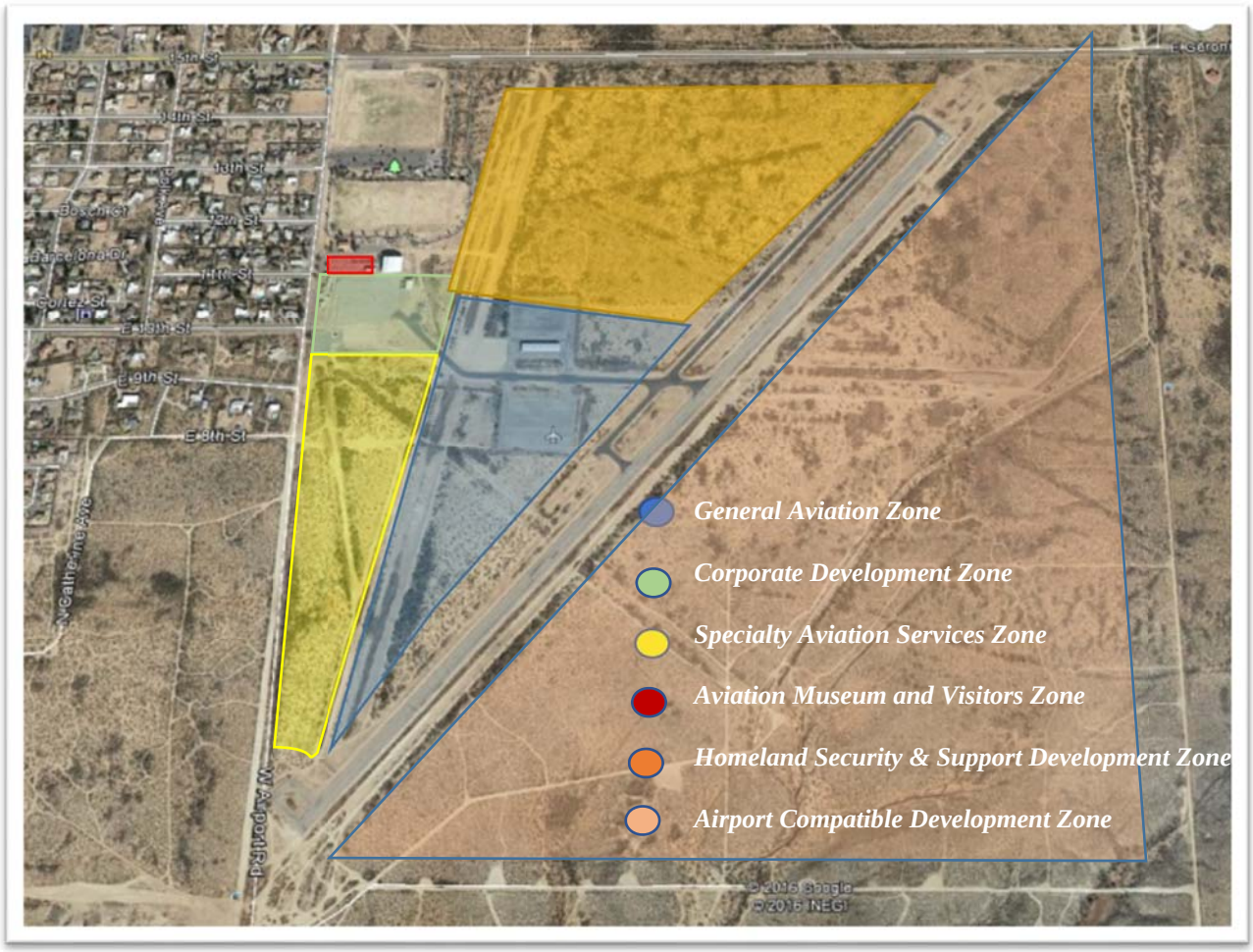
Aviation Museum and Visitors Zone: This area currently accommodates the existing Border Air Museum that details the history and development of Douglas Municipal Airport from its early days as an international airport to its current day function as a general aviation facility. The future development area, shown in red, should continue to be set aside and developed as an attraction for tourism to the area for those who are interested in the historical aspects of the Airport. Activities for the Museum can also be coordinated with the adjacent park located immediately north of its location.

Homeland Security and Support Development Zone: This area is a large section of land located in the north central portion of the Airport. Its location would provide reasonable space for development of buildings and facilities necessary to the various functions of Homeland Security agencies and their support agencies. It also provides reasonable access to airport runways and taxiways for the aviation applications of these agencies.

Airport Compatible Development Zone: This area encompasses a large section of undeveloped land on the east side of the Airport's runway, inside of its boundary. While most FAA-NPIAS airports are required to limit development inside boundaries to aeronautical uses, Douglas is not a NPIAS airport and has some latitude as to the types of compatible business and industrial development it can accommodate within its fence line. It is recommended that development within this zone be made available to businesses and light industries that are considered compatible with the Airport's operation.

These six Zones are recommended designations for development likely in the immediate future. Additional room exists for expansion of each of these development zones in the future as conditions warrant and funding becomes available for expansion of the Airport's infrastructure.

Exhibit 6-2 Douglas Municipal Airport Recommended Development Zones



Sources: Douglas Municipal Airport Master Plan Update 2017, Google Earth

6.4 City of Douglas Economic Activity Centers Adjacent To DGL

All of the Airport property is within the City of Douglas limits, however, the Airport itself does not have a specific zoning classification. The extents of the City of Douglas zoning jurisdiction terminate at Airport Road which serves as the western border of the Airport property. Zoning designations immediately to the west of the Airport property include single family residential and multi-family residential. The land surrounding the Airport to the east is zoned by Cochise County as RU-4 (Rural). Cochise County identifies an RU-4 parcel as having a minimum lot size of four acres. Examples of uses in RU-4 parcels include all single and multiple household dwellings. Land use immediately south of the Airport in Mexico is a medium to high density mix of residential and commercial uses.

Therefore, opportunities for "off airport" development in the immediate vicinity of Douglas Municipal Airport are limited without a change in the current zoning designations. Even though most of the Airport's immediate development opportunities can likely be accommodated on Airport property, it is important for the City of Douglas to properly screen future developments in those areas to ensure future conflicts with Airport operations do not occur. Examples of developments that could interfere with Airport operations include sensitive residential development including churches and schools, heavy industries that produce smoke or vapors that may impede visibility around the Airport, tall towers or chimneys that may penetrate critical airspace surfaces, or water attractions that may attract wildlife and birds creating a wildlife hazard for Airport operations. The greatest and best use of lands surrounding Douglas Municipal Airport are served by developing businesses and industries that share a synergy with the Airport that mutually benefits the growth of each.

Even though most economic activity centers in the City are located away from the Airport, the business and economic connections remain. The City of Douglas hosts a strong core of merchants and other businesses that attribute between 20% and 70% of their trade to cross border traffic, depending on the type of business. Douglas also has several manufacturing entities and transportation firms that will benefit directly from an improved economy. Government and educational institution residents in the area will also see benefits from improved community access resulting from a busier airport.

The largest economic activity center for the Douglas area is the City of Agua Prieta in Mexico and its associated manufacturing and business community. Cross border traffic in previous years has been substantial with Douglas merchants and businesses routinely relying on Mexican visitors for half of their annual revenues. Conversely, the City of Douglas also serves as a major gateway for firms doing business with the manufacturing entities in Agua Prieta and the surrounding area. The principal economic activity in the area is manufacturing. Several maquiladoras and over 30 companies operate in Agua Prieta, which is also a major commercial port for Mexican products and goods being exported to the United States. Improvements in Douglas Municipal Airport infrastructure should allow more individuals and firms with corporate aircraft to take advantage of Douglas's unique location when accessing business interests across the border. Additionally, Agua Prieta is a popular shopping area for southern Arizona residents. Agua Prieta craftsmen are known for their saddlery and boot making skills and the City is known as a location to find and

purchase handmade pottery, blankets, and other such products. Other important economic drivers in Agua Prieta include agriculture and cattle ranching.

The current political situation between the United States and Mexico is complicating today's cross border commerce picture. Immigration issues, illegal traffic, potential construction of a border wall, and stringent limits on border passage by both governments all have the cumulative effect of limiting the beneficial economic impacts that Douglas and Agua Prieta have on each other than when people, goods, and services can flow more freely. The possible future opening of another cross-border port of entry nearby may help to ease some of these issues.

6.5 New Business Analysis

The proposed business sectors for Douglas Municipal Airport have been developed using "standard categories of Business Products and Services" as developed by Business Week. These categories follow the Standard Industrial Classification system of the U.S. Department of Commerce. Under the Business Week program, there are 28 categories of Business Products and Services. These categories cover all of the classifications for any type of business that operates in the United States. The primary purpose of this classification inventory is to give decision makers a sense of the availability of the various business resources in the region. The current locations for each of the businesses listed, i.e.; "At the Airport", "In the area", or "Not in the area" are noted and taken as a whole, produce a picture of the general business structure and resources available in the Douglas area today. This information in turn can be built on to help attract future target markets that Douglas and the Airport wish to exploit. The full 28 categories are noted in **Table 6-1**.

Based on interviews with various community and business leaders, the goal of the community is to help existing businesses expand and attract new companies supporting and generating tourism and support small manufacturing and industry applications in the area. The Douglas Municipal Airport can contribute to expanding the base of business for the community. Developable land for aeronautical activities still exists inside the boundaries of the Airport and in other areas of the City as well. The City of Douglas and the Airport can optimize revenues with an effective business development program targeted towards general aviation, corporate aviation services, specialty aviation services, and other aviation-related businesses that fit the general business characteristics of the community. With appropriate infrastructure repairs and upgrades, the Airport is well designed to meet the demands of forecast future general aviation and corporate aviation development.

The strengths of the Airport include: central location for residents in southern Arizona, valuable highway access, lower cost land and facilities compared to larger population centers like Phoenix, Tucson, Albuquerque, a major push for more tourism, and a strong business community. Some of the primary weaknesses of Douglas Municipal Airport, as noted in Section 5, include infrastructure issues such as pavement strengths, utility limitations, and limited facilities to accommodate future growth of the corporate aviation market.

Table 6-1 Inventory of Business Products and Services

INVENTORY OF BUSINESS PRODUCTS & SERVICES LOCATED IN DOUGLAS AREA			
Product or Service	**At the Airport**	**In the Area**	**Not in the Area**
1. Aerospace/Aviation			
a. Gov. & DOD	X		
b. Non-Gov.	X		
2. Agriculture			
a. Production		X	
b. Processing		X	
3. Automotive			
a. Vehicle Manufacturing			X
b. Parts Manufacturing			X
c. Sales & Service		X	
d. Tire & Rubber		X	
4. Banks		X	
5. Business Services		X	
6. Chemicals		X	
7. Conglomerates		X	
8. Consumer Products		X	
a. Apparel		X	
b. Appliance & Furnishings		X	
c. Beverages		X	
d. Personal Care		X	
9. Containers & Packaging			
a. Glass, Metal, Plastic			X
b. Paper			X
10. Fashion		X	
11. Education a. Services		X	
a. College			X
12. Electrical/Electronics			
a. Electrical Products		X	
b. Electronics		X	
c. Instruments		X	
d. Semi-Conductors			X
13. Food			
a. Distribution		X	
b. Processing		X	
c. Retailing		X	
14. Fuel			
a. Coal			X
b. Oil and Gas	X		
c. Petroleum Services		X	
15. Health Care			
a. Drug Manufacturing			X
b. Research			X
c. Medical Services		X	
d. Medical Products		X	
16. Housing & Real Estate			
a. Building Materials		X	
b. Construction		X	
c. Real Estate Sales		X	
17. Leisure Activities			
a. Eating Establishments		X	
b. Entertainment		X	
c. Hotel/Motel		X	
d. Recreation Products		X	

Source: Standard Industrial Classification system of the U.S. Department of Commerce. Under the Business Week, Program

Product or Service	At the Airport	In the Area	Not in the Area
18. Manufacturing			
a. Fabricated Metal		X	
b. Furniture		X	
e. Primary Metals		X	
f. Rubber & Plastics		X	
g. Textiles			X
19. Metals and Mining		X	
20. Non-Bank Financial			
a. Financial Services		X	
b. Insurance		X	
c. Thrift and Loan		X	
21. Office Equipment and Computers			
a. Business Machines/Services		X	
b. Computers/peripherals		X	
c. Software Services		X	
22. Paper & Forest Products		X	
23. Public Administration	X		
a. Federal Government		X	
b. State Government		X	
c. Local Government		X	
24. Publishing & Broadcasting			
a. Broadcasting		X	
b. Publishing and Printing		X	
25. Service Industries			
a. Advertising		X	
b. Construction		X	
c. Distribution		X	
d. Engineering		X	
e. Consultants		X	
f. Other Services		X	
26. Telecommunications			
a. Equipment & Services		X	
b. Telephone Companies		X	
27. Transportation			
a. Airlines			X
b. Bus		X	
c. Rail			X
d. Ship			X
e. Trucking		X	
28 Utilities & Power		X	

Source: Standard Industrial Classification system of the U.S. Department of Commerce. Under the Business Week, Program

6.6 Customer Requirements

The key to the recruitment of a new business to the City of Douglas and Cochise County area is the ability to meet the requirements of that business. The potential customer will create jobs for the area residents and contribute to the overall aviation business at the Airport. The following are considered the most important requirements of the customer or new business wishing to relocate.

- Low-cost labor and non-union environment
- Low-cost land and low taxes for facility
- Pre-constructed and/or build-to-suit facilities
- Limited environmental restrictions

- Economic incentive and availability of training funds
- Location that offers "Quality of Life" for employees
- Transportation access to major markets
- Strong community support for business

The City of Douglas and Cochise County have reasonably low-cost labor and low-cost land. The cost of labor and land is lower than other metro areas like Tucson, Phoenix, and Albuquerque which allows this area to be very competitive in this region. Indications from some developers are that they have some empty facilities available and are willing to build-to-suit the client requirements. The City of Douglas will move to quickly accommodate new developments in town where appropriate as well, which is very positive.

All of the ASBP working committee members interviewed indicated that the "quality of life" is the number one attribute of the area. Housing in the area is very reasonable and the area has low crime. Family values and education are key to the area. Many community leaders would like to see companies in the 50-employee size or smaller with higher wages. The highway system, eventual connection to Interstate 10, and the continued development of the Airport are all key assets to new business or industrial customers.

6.7 Market Characteristics for Airport-Related Business

There are certain products and services that are directly related to aviation and air service. These products and services, by their nature, may be required to be located at or near an airport. In reviewing various aviation guides and directories, a list of 52 aviation and airline products and services has been developed. In reviewing the list, it was discovered that, in most cases, the air service and aviation-related products and services need to be onsite or near Douglas Municipal Airport. In the survey, it was identified that 39 of the 52 activities need to be at or near the Airport. These activities are the service-related businesses that support air service passenger and freight and general aviation services. These products and services are dependent on being physically located on an airport.

Thirteen activities were identified that do not depend on an airport location to operate effectively. These products or services included manufacturing, engineering, training, publishing, and consulting. These products and services could be located at an airport or near an airport as long as the cost of operation is lower than a location away from the airport.

Table 6-2 lists the location characteristics for aviation-related businesses. As mentioned in the Customer Requirements section of the ASBP, the need for low-cost land, low taxes, build-to-suit facilities, economic incentives, and limited environmental restrictions are the market drivers for companies that would also locate in development areas on and around the Airport.

Table 6-2 Location Characteristics of Aviation

LOCATION CHARACTERISTICS OF AVIATION-RELATED PRODUCTS AND SERVICES			
Aviation Activity	**Onsite at the Airport**	**Near the Airport**	**No Airport Requirement**
1. Accessory Manufacturers			X
2. Acoustics			X
3. Air Ambulance	X		
4. Air Cargo	X		
5. Air Charters	X		
6. Air Courier	X		
7. Air Taxi	X		
8. Aircraft Brokers		X	
9. Aircraft Cleaning Services	X		
10. Aircraft Interior, Design, & Modifications			X
11. Aircraft Manufacturer	X		
12. Aircraft Parts Manufacturer			X
13. Airframe Repair and Overhaul	X		
14. Associations/Clubs			X
15. Auto Parking Lots	X	X	
16. Auto Rental	X	X	
17. Aviation Attraction	X		
18. Aviation Fueling	X		
19. Aviation Medical Services	X		
20. Avionics Distributors and Dealers		X	
21. Aviation Training School	X		
22. Catering	X	X	X
23. Component Design Engineering			X
24. Computer Software			X
25. Aircraft Electrical Repair		X	
26. Aircraft Engine Repair and Overhaul	X		
27. Flight Planning Services	X		
28. Freight Forwarder		X	
29. General Aviation Center	X		
30. Gift/Retail Shop	X	X	X
31. Ground Equipment Manufacturer			X
32. Ground Equipment Repair		X	X
33. Government Agency			X
34. Helicopter Charter	X		
35. Helicopter Repair/Overhaul	X		
36. Hotel		X	X
37. Flight Attendant Training			X
38. Instrument Manufacturer			X
39. Aircraft Instrument Repair	X	X	
40. Aircraft Modifications, Repair, Painting	X	X	
41. Private Passenger Terminal	X		
42. Pilot Training	X		
43. Publications			X
44. Reservations Training			X
45. Restaurants/Food Service		X	X
46. Safety and Emergency Equipment			X
47. Scheduled Airline	X		
48. Scheduled Airline Corporate Office		X	
49. Scheduled Airline Maintenance Base	X		
50. Aircraft Simulators		X	
51. Weather Services	X		

Source: Standard Industrial Classification system of the U.S. Department of Commerce. Under the Business Week, Program

6.8 Market Segmentation

The Airport is dealing with a very broad and diverse market in its efforts to find companies that will relocate to the Douglas and Cochise County area. Available options are numerous, widely scattered, and varied in their selection requirements. Some of the Airport's competitors are in a better position to serve certain segments of the market. Instead of competing everywhere, it is in the best interest of Douglas Municipal Airport to identify the most attractive segments of the market that it can serve most effectively.

The market consists of companies that differ in their wants, resources, geographical location requirements, buying attitudes, and practices. These industrial markets can be segmented by variables such as: demographic variables, operating variables, business character, situational factors, and personal characteristics. Based on the market segment variables that apply to the Airport, the segmentation strategy for the City of Douglas and Cochise County should be evaluated on the following areas:

- *Demographic Variables*– Area population experienced steady growth in previous years. Currently, Douglas exhibits a flat growth picture when compared to other metro markets in the West. However, reasonable cost of living makes the area very attractive to younger families and retirees.

- *Operating Variables* – Companies will need low-cost facilities and a skilled labor force to be competitive. Land and building costs will need to be very competitive. New businesses will need reliable and quality internet and communications capabilities.

- *Business Character* – Professional and technical companies that have the greatest flexibility in locating in the smaller metro markets. The City of Douglas should continue to add to its existing areas of business specialty niches and clusters.

- *Situational Factors* – In the short-term, Douglas, Cochise County, and the Airport should focus on companies that need a quick change of location. Companies seeking to leave the high crime areas in the large metropolitan areas are often the best candidates.

- *Personal Characteristics* – The companies that Douglas, Cochise County, and the Airport are seeking to attract, in most cases, are privately owned. The existing location of these companies is based on various business factors and the companies are close to where the owner wants to live. "Quality of Life" and lower cost of operations are the key selling points of the area and this should be emphasized.

6.9 Business Development Opportunities

Analysis of recent trends in the City of Douglas and corresponding air traffic and service demands at Douglas Municipal Airport, highlight the potential for new business development opportunities. The primary focus of this ASBP is to analyze and highlight aviation and other business opportunities that can be accommodated on Douglas Municipal Airport that will contribute towards its successful growth in the future. In general terms, Douglas's various attractions are instrumental to attracting an increasing number of corporate aircraft into the community and

creating an associated increase in demands for fuel and other revenue-producing services. The net result is that the Airport appears to be on the front end of several developing opportunities that could mark a period of growth for the facility if its infrastructure issues can be addressed in a timely fashion. There is development potential both on Douglas Municipal Airport property and in the adjacent areas zoned for industrial use near the Airport. Some of the best development potential appears to fall into several categories listed in the following subsections.

6.9.1 Aircraft Services

The Airport is already in the business of providing some aircraft services, including fueling and courtesy transportation. However, in previous years the primary market centered on smaller single and twin-engine aircraft. Today there is an increase in larger, more complex corporate jet aircraft In the U.S. fleet. The full-service package many of these customers usually require may include much larger volumes of fuel, major maintenance capabilities, security, large overnight hangar accommodations, water and lavatory services, catering, pilot lounge, flight planning and weather briefings, ground transportation, and reasonably private terminal accommodations for their passengers.

Service requirements for smaller aircraft can continue to be accommodated and expanded in the southwestern portions of the Airport as previously mentioned. However, the parking and hangar requirements of the larger aircraft desired for the future will likely be best developed on the Airport's large primary apron, located on the west side of the facility. Careful planning of this area will allow for future development of fueling facilities, larger corporate type hangars for storage and related aircraft services, and an adjacent executive terminal building with office accommodations to meet the needs of these clients. In today's corporate aircraft world, having such facilities often makes the difference between a company flying to your airport or to another airport that does have such accommodations.

In future years, the City of Douglas will need to target business and service operators that can provide:

- ***Expanded FBO Services:*** Douglas Municipal Airport has always provided quality services to meet the demands of based and transient aircraft from the region. However, to meet the demand for future business, the scope and type of services that future aviation customers may demand may include:
    - General aircraft maintenance and cleaning services
    - Appropriate hangar and storage service
    - Ground transportation services and rental car options
    - Catering services
    - Flight planning and weather services
    - Executive security services
    - Expanded and up-scale rest areas, including restrooms and other private areas

- ***Maintenance, Repair, and Overhaul Facilities (MROs):*** MROs encompass a multitude of maintenance functions and service providers that may be present on an airport. Based on the local history, and the forecasts for increasing use of the Airport by heavy aircraft, Douglas has an opportunity to develop its reputation as a maintenance base for aircraft throughout the region. As operations increase, and as demand for such services for newer and larger aircraft grow as well, new opportunities for MROs could present themselves.

  There are three broad categories of MROs including airline affiliate MROs, original equipment manufacturers (OEM), and independent MROs. At present, approximately three quarters of the MRO market is comprised of component overhaul, engine overhaul, and line maintenance. The commercial aircraft engine MRO market is the largest of those groups, and due to the increasing complexity and costs of modern engines, demand for quality services in this area are forecast to rise. Demand for other facets of the MRO market will grow as well creating opportunities for other operators such as avionics specialists, airframe and power plant (A&P) mechanics, aviation paint shops, and specialty aircraft and airframe refurbishing businesses. Specialty operators of this type should be targeted when considering future development opportunities.

  The market for MRO facilities reflects levels of demand for direct aircraft maintenance activities including line maintenance, base maintenance, and component overhaul as well as supporting activities such as technical services including engineering, maintenance planning, publications, purchasing and materials management, and quality assurance and control. Line maintenance activities include pre-flight and transit checks, daily checks, weekly checks, A-checks, and technical fault and troubleshooting and recertification. Base or heavy maintenance is performed on an out-of-service aircraft and includes major system modifications, schedule checks above the A-level, special inspections due to Airworthiness Directives, aircraft interior modifications, and aircraft painting. Component overhaul involves maintenance of specialized equipment on the aircraft such as engines, landing gear, avionics, hydraulic and pneumatic systems.

  Future development of heavier aircraft operations, and attraction of the appropriate MRO support services would form a synergistic relationship that supports growth into the future. Ample room exists today on the western side of Douglas Municipal Airport to accommodate the heavier MRO functions shown above. Target markets should include MRO operators and services that will be in demand as aircraft operations grow.

- ***Flight Schools and Training Facilities:*** The Douglas Municipal Airport occasionally receives student pilots from other airports that fly to Douglas to perform flight training exercises. It is certainly within reason that the Airport could support a small flight school "on site" as well. The benefits of such development would translate into higher fuel sales, increased lease revenues, and higher activity levels for the facility.

  Depending on the size of the flight school organization and its activity level, space on the aircraft parking apron would have to be assigned, and office space acquired sufficient to accommodate the school's activities. As the Airport moves towards future development it would be wise to designate available space for flight school activities, and target flight schools that might have an interest in expanding or relocating to Douglas.

- ***Charter Aircraft Operators:*** On-demand aircraft charter operators fill a niche for the traveler that occaisonally requires personalized air travel accommodations. These are usually point-to-point charters outside of traditional commercial airline services. Often times the charter aircraft operator requires nothing more than a parking spot, or hangar for their aircraft, and small office accommodations.

  Charter service providers should be targeted and marketed as appropriate to fill the need for local demand. While this service may not represent a large segment of the overall Douglas aviation picture, it is a normal and expected service airport users look for.

6.9.2 Facility and Office Development

As aircraft traffic and related services continue to grow in future years, which is anticipated assuming the Airport's facilities are upgraded including the runway condition, so would the demand for appropriate facilities to house their activities. In addition to hangars for aircraft storage, classrooms and offices for flight schools, facilities for small aviation businesses, and general office space would grow in demand. Many businesses associated with the logistics of moving goods and freight or providing services to the community often benefit by having an operating location on, or immediately adjacent to, an airport. Trucking companies and freight haulers, technical companies that are involved in the development of small components or electronics, small office complexes that may serve as a home base for airport tenants, or other business entities all represent viable future development opportunities. Future recruiting efforts should target such airport compatible businesses capable of utilizing or developing such facilities both on or off the Airport. Examples of potential businesses or operators include:

- ***Trucking and Logistics Companies:*** Trucking and logistics companies can require large amounts of outdoor space for parking, maneuvering and terminal activities. While businesses of this type do not generally require direct airside access, they do benefit from locating in areas nearby the airport and access to local transportation systems. Additionally, development areas immediately adjacent to an operating airport should be considered semi-industrial in nature, and trucking and logistics firms are a good fit for that environment without presenting negative impacts to the airport.

- ***Aircraft Parts and General Manufacturing:*** Manufacturing of aircraft parts, or general light manufacturing of a nature that does not interfere with local airport operations is another category of compatible businesses that can be located adjacent to an airport boundary. Specifically, aircraft parts or systems manufacturing could also support the activities of the MROs operating on the facility, or help attract clients with aircraft undergoing system upgrades or modifications. In similar fashion, any manufacturing entity producing a product that does not impede the operations of the airport by structure or emissions (smoke, steam, etc.) would also be a good neighbor to the facility, and fit well into the light industrial environment around the Airport.

  When recruiting manufacturing entities, priority should be given to those entities that best compliment the adjacent environment of the Airport. Aviation or aviation-related goods or services first, and general manufacturing that is compatible with the airport environment

second. This represents the application of a policy of "the highest and best use of available land" when targeting new development.

- ***Office Park Development:*** A small office park development may be an appropriate development opportunity if the Airport grows. Many firms that transit into and out of the Douglas and Tucson area might see the benefit of a local office presence near the Airport.

  Additionally, other industrial park operators, aviation and non-aviation alike, may benefit from the ability to extend management and operations controls over their enterprises from a local office. Training facilities, reservations centers, and research facilities can all be accommodated in an office park development. High-tech firms that specialize in electronics, component development, communications, and other similar disciplines that may require a combination of office/engineering space, and small warehousing or light manufacturing space can be strong candidates for a modified office park as well.

  The diversity of businesses that can be accommodated in a properly designed office park/light industrial park will give the City of Douglas a great deal of flexibility when placing new entrant businesses desiring to relocate to the community.

- ***Educational Facilities:*** When considering compatible land uses on and around an airport, facilities like schools, hospitals, and churches sensitive to noise or other impacts generated by an operating airport are conspicuously absent. One exception to that rule would be an educational facility associated with flight training or other aviation pursuits that would benefit from a location adjacent to an airport.

  The prospect of Douglas Municipal Airport hosting an auxiliary element of an aeronautical school or university is worthy of consideration if the prospect were to materialize. Other opportunities may be found in several Vocational Educational schools, or Airframe and Powerplant training as well, where the airport's industrialized environment is not a detriment to the course of study.

- ***Flight Museum:*** Douglas Municipal Airport already has an excellent aviation history portrayed in the Border Air Museum that displays the rich aeronautical history of the facility and region. This should be highlighted, and promoted in all future tourism development efforts. If possible the facility should be expanded if more material becomes avaliable, and promoted as a central attraction for all future airport related events or activities in the area.

6.9.3 Non-Aeronautical Use

In general terms, both FAA, and ADOT regulations dictate that all land and facilities located inside the fence will be utilized for aeronautical purposes. This includes the entire obvious infrastructure like runways, taxiways, NAVAID's, and apron areas. It also includes airport businesses and operators. Facilities like an aviation paint shop, an FBO, aircraft hangars, or other aviation service provider are acceptable functions on the airside. However, since Douglas Municipal Airport is a non-NPIAS airport, other operations such as a non-aviation manufacturing facility, an office building, or other non-aviation commercial operations may also be accommodated within the fence.

It is recognized that a variety of non-aeronautical uses are both beneficial and appropriate to an airport's function. Hotels, restaurants, rental car facilities, gas stations, parking facilities, and a variety of other concessions are appropriate to the structure of services offered by an airport. Such operations provide a necessary service to airport users and are typically located on airport property, but outside of the airside fence or boundary.

Many other businesses or industries can enjoy a symbiotic relationship with the airport as well. Development around the perimeter of an airport should be compatible in nature with the impacts that are produced by routine airport operations. While it is recognized that sensitive types of developments such as churches, schools, hospitals, and residential areas should be avoided in the immediate impact areas of an airport, other industrial or business types of development are compatible with the airport environment. Additionally, many businesses such as manufacturing entities, infrastructure and transit companies, and business parks directly benefit from the nearby access to the airport for transportation of their people, products, and services.

The areas immediately adjacent to the Airport are currently zoned for residential use by both the City and County. It is not anticipated that a need to change the existing zoning will be necessary in the immediate future. However, a balance must be maintained to assure that the specialized aeronautical requirements of the Airport are not compromised by the activities and functions of its immediate neighbors. This is best achieved by trying to attract compatible development that benefits from being located adjacent to the airport.

6.9.4 Through the Fence Operations

Through the fence operations represent a situation where the airport allows access, generally from private land outside of the airport perimeter, through the fence onto the airport operating area. This allows private entities to utilize the benefits of access to the airport's runways, taxiways, and facilities without necessarily being subject to normal airport fees and other controls for "on airport" operators. That means through the fence operators contribute to the wear and tear of the airport's runways, taxiways, and other systems by their use, but do not necessarily pay land rent, hangar fees, parking fees, and other associated users fees that would offset the airport's costs for maintenance and operations.

The FAA encourages all airports to be as self-sustaining as possible and charge fair market value for their services in an effort to offset the need for outside funding and grants. While both the FAA and ADOT do not prohibit through the fence operations, they do not encourage them either, believing that such access increases the maintenance and operation costs of the airport, without any substantial revenue return.

In the future, Douglas Municipal Airport may have an opportunity to pursue through the fence operations if appropriate. If a business or industry that required direct access through the fence was developed in an adjacent location, then appropriate access and security measures could be implemented to accommodate that function. With that being said, the most appropriate action for the Airport would be to attempt to locate such businesses with airside requirements physically on the Airport first, where appropriate lease and fee controls could be put in place. The most beneficial situation for the airport occurs when aeronautical activities and development are physically located on airport property. While other businesses and industries may benefit by

being located in the immediate vicinity of the airport, direct access onto the airport operations area should be reserved only for special circumstances, if at all.

6.9.5 Qualitative Analysis

Potential exists for developing each of the target markets listed above. However, pursuit of these opportunities should take place within a well-structured understanding of what businesses can be accommodated in what areas. For example, aircraft services can be anchored in three of the six development zones on the Airport depending on the market they serve. FBO services for corporate aviation may best be developed in the Corporate Development Zone, while existing services continue to service smaller general aviation in the General Aviation Zone. Heavy maintenance may occur in either the Corporate Development Complex or the Specialty Aviation Services Zone depending on circumstances and target market.

Non-aviation landside businesses such as restaurants, retail facilities, offices, museums, educational and training facilities do not necessarily need direct access to the airside to function, and can be accommodated on the landside, or outside the Airport Operations Area (AOA) fence portion of the Airport.

Adjacent off-airport development for businesses and industries that may benefit by being located close to the Airport, but do not normally require direct airside access, may represent the majority of development opportunities. This immediate adjacent industrial zone can accommodate numerous opportunities for development for everything from manufacturing entities, office parks, and transportation and logistics companies to specialty educational and training facilities.

When planning in all its various configurations, it is also important to understand the limits of Douglas Municipal Airport's current infrastructure. The condition of the existing runway must be repaired first to continue viable fixed wing operations. Taxiways and apron areas must be upgraded and repaired as well to accommodate additional aircraft traffic. Likewise, utilities, water, and sewer systems must be expanded and upgraded to accommodate the proposed large-scale growth, and electrical and communications systems expanded and extended to meet future demand. It is important that each new development be placed in a designated area where it is appropriate and functions best, in unison with similar trades and developments around it. As the necessary infrastructure is upgraded and improved and each zone is appropriately developed, this approach will create a balanced business and operating environment for all.

SECTION 7 – DOUGLAS MUNICIPAL AIRPORT FINANCIAL ANALYSIS

7.1 Introduction

Proper execution of an airport's fiduciary responsibilities is a key factor in the long-term success of an airport and its operation. Additionally, under the FAA's Airport Improvement Program (AIP) certain grant assurances such as Airport Sponsor Assurance No. 24 apply, and the FAA requires that any AIP funded airport be as financially self-sustaining as possible given the circumstances that exist at the airport. While FAA's grant assurances do not apply to Douglas Municipal, ADOT and their grant program operate under similar requirements. The development and implementation of an ASBP provides the opportunity for airport managers and policymakers to demonstrate that fiduciary responsibilities and the requirements of ADOT are being taken seriously. An airport's financial statements, budgets, and other performance measures are considered essential tools for achieving goals and realizing the mission and vision for the airport.

In recent years, Douglas Municipal Airport has maintained a modest annual budget providing Airport management, operations, and basic maintenance services necessary to meet the facilities obligations. The City is looking for funding opportunities in an effort to move forward with the funding of essential projects necessary to the Airport's long-term operations. The majority of capital projects at Douglas Municipal are funded by ADOT grants and programs, with required matching funds coming from the City of Douglas. Consequently, even with state assistance, the Airport has numerous high-priority capital projects that should be addressed in the immediate future for the facility to keep up with market demand that will require City funding.

As noted in the 2017 Douglas Municipal Airport Master Plan, the composition of aviation services demand is changing. Traditional Airport traffic consisting of small to mid-sized single and twin-engine aircraft is beginning to subside slightly, while potential activities from larger corporate jet traffic appears to be on the verge of an upswing. These activities are expected to translate into demand for higher volumes of fuel sales, maintenance services, and associated facilities within the next few years, if the Airport's basic infrastructure needs can be addressed. Additionally, this potential surge in heavier aircraft traffic could impact the Airport's runways, taxiways, and parking facilities as aircraft that exceed the current load bearing capacity of these pavements begin to utilize Douglas on a regular basis.

All of the factors described above drive the need for essential capital projects such as runway, taxiway, and parking apron rehabilitation and/or strengthening, facility development, and general infrastructure upgrades. Since many of these capital projects may be necessary to the Airport's development sooner rather than later, the Airport will need to work with ADOT, and perhaps others to evaluate sources of funds and priorities necessary to accomplish critical work in time to meet the demands of new business.

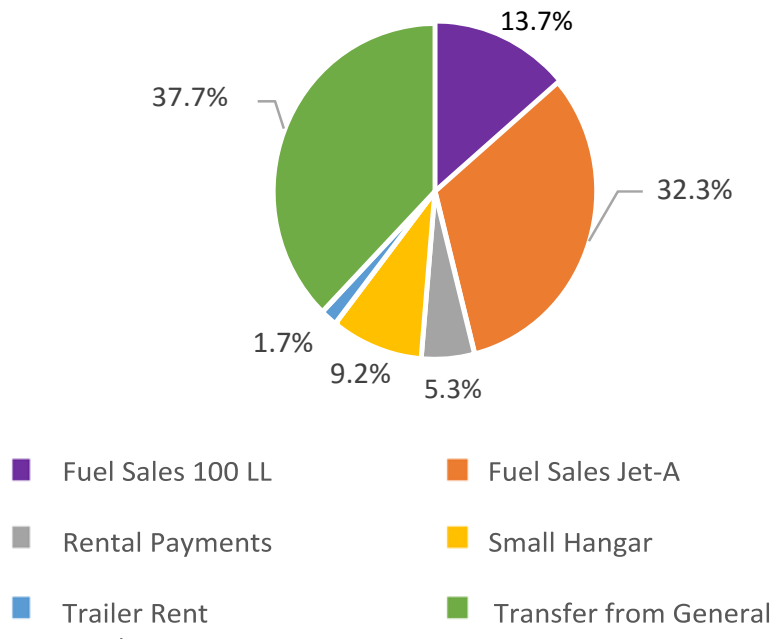
As Douglas Municipal Airport moves into the next phase of its development, Airport and City officials are planning to upgrade various aspects of its financial structure, and begin evaluation of

a comprehensive financial program necessary to meet demands of future development and operation.

7.2 Financial Overview

The overall City budget was initially discussed in Section 2, and indicated the Airport's expenses for 2016 were projected to be $159,762 dollars. However, projected revenues for the Airport only equal $99,460 dollars, necessitating the transfer of $60,302 dollars to balance the year's budget, as indicated below in **Exhibit 7-1**.

Exhibit 7-1 2016 Budget – Douglas Municipal Airport



Source: City of Douglas 2016 Budget

Annual revenues generated by the Airport have not always kept up with expenses. The Airport's general revenue outlook could improve if larger jets frequent the Airport on a more regular basis, and if new Airport tenants locate to Douglas. Nonetheless, a backlog of capital projects, increasing costs of repairs and operations, and an urgent need to upgrade facilities to accommodate new business will also translate into increased expenses for the Airport in the near term.

7.2.1 Sources and Uses of Funds

Douglas Municipal Airport is a Department under the City of Douglas Public Works. A portion of revenues necessary to its annual operations are generated by Airport services, rents, and other contractual revenue sources. The Airport may also receive monies from the City of Douglas General Fund as necessary to its operation, subject to the financial processes and approvals of the City. Major capital improvement or planning projects are traditionally funded by appropriate grant programs from ADOT's aviation fund. In the case of ADOT, project assistance can come in the

form of grants or the State's airport pavement maintenance program for specific runway, taxiway, or apron area pavement preservation projects.

7.3 Projected Revenues

Projection of future revenues for Douglas Municipal Airport are based on several factors including estimates of future aircraft activity, fuel sales, and associated revenues from services and leases. The Airport will, collect additional fuel sales revenue, along with any applicable landing fees, percentages of gross sales, and parking fees when aircraft utilize the public areas.

Over the last four years, basic Airport revenues have averaged approximately $99,460 annually, excluding grant funds or other outside funding dedicated to specific CIP projects. It seems reasonable to assume that direct Airport revenues could increase approximately 20% in the near term to approximately $120,000 annually. However, this is likely contingent upon the restoration of grant funding from ADOT in the very near future, because repair of the runway is critical to any future development. After runway repairs, a number of possibilities exist that could help achieve this additional revenue flow:

- The Airport would acquire a greater share of the corporate aircraft fueling business, approximately doubling its fuel sales over the next five years through appropriate marketing efforts.
- New businesses such as flight schools and technical service companies to service the corporate aircraft fleet and others will locate on the Airport.
- New hangar and land leases for business will be developed over the next five years that will be marketed at fair market value compared to other airports and similar lands in the region.

If the development as described above occurs in the next five years, this will represent a modest growth trend for Douglas Municipal Airport. These factors will also represent a marked increase in corporate aircraft operations, much higher fuel sales, and a small increase in Airport tenants and businesses.

Opportunities for the Airport to improve its annual revenue picture can also increase over the long-term in a number of areas. More aircraft operations in the future translates into more service fees, and higher fuel and related commodity sales. Future development will also increase land lease revenues and related developmental revenues.

7.3.1 Fuel Sales

The fuel storage facility at Douglas Municipal Airport is located to the south of the small conventional hangar near the primary apron. On this site, the Airport maintains two above ground storage tanks, one with AvGas and the other with Jet A fuel. Each tank holds approximately12,000 gallons of fuel. Self-serve Jet A fuel is available at the tank site, while AvGas is available on the main apron. The Airport primarily provides self-fueling service, but offers assistance upon request. Airport fuel is provided 24 hours a day. Historical fuel sales are indicated in **Table 7-1**.

Table 7-1. Historical Fuel Sales

Year	100LL	100LL Gallons Sold	Jet A	Jet A Gallons Sold
2007	$0.00	N/A	$15,815.50	N/A
2008	$34,278.99	N/A	$18,091.63	N/A
2009	$53,035.76	11,960	$35,207.48	4,310
2010	$179,197.52	24,550	$26,048.84	6,010
2011	$69,138.58	16,100	$59,041.73	12,110
2012	$53,124.59	11,600	$26,392.09	5,830
2013	$56,328.70	11,580	$34,478.81	6,140
2014	$74,065.46	15,190	$18,312.81	3,120
2015	$64,387.62	15,210	$20,147.55	3,520

Source: Douglas Municipal Airport Master Plan Update 2017

With the exception of a couple of peak years around 2010, annual combined fuel sales at Douglas Municipal Airport average approximately 18,000 gallons annually. It is not unreasonable to assume that with proper marketing efforts, and appropriate runway and facility repairs, total fuel sales might rise 30% to approximately 27,000 gallons annually. Depending on the type of fuel demands in future years this could result in an increase in fuel sale revenues from approximately $84,000 dollars annually to $120,000 dollars or more annually in the relative near term.

7.3.2 Land Lease and Operating Fees

Over the long-term, the Airport has development potential in the areas of hangar development, terminal development, and new business and office development. It is unlikely that the Airport or the City will engage in direct development and construction of these facilities. Most airports tend to be in the "land business," which encourages appropriate land leasing options for facility developers and others wishing to locate on the airport. Leasing rates should be tied to fair market value and duration of lease terms structured to allow recovery of investment and operation appropriate to each type of business.

7.3.3 General Services

Douglas Municipal Airport provides several services to the flying public directly. Landing fees, aircraft parking fees, special event accommodations, long-term storage services, and a variety of other call-out services are charged as needed. The Airport should update its rates and charges structure on a regular basis to assure that Douglas remains competitive with other similar facilities in the region. The Airport should continue to remain current with all its rates and charges to cover as much of the Airport overhead cost of operations as possible.

Douglas Municipal Airport has potential for the development of a new market in the corporate aircraft realm. Other opportunities for development appear to be present as well. It appears that circumstances may change rapidly, making it difficult to accurately forecast new revenue in the short-term. However, it appears reasonable to assume that Douglas Municipal Airport can likely raise its base annual revenues to higher levels in the next few years, assuming that critical infrastructure issues associated with the runway can be addresses.

7.4 Projected Operating Costs

Operating costs should be expected to continue to rise over the short-term as well. Inflation, employee salaries and benefits, costs of utilities, insurance, and other routine costs seem to increase at 3 percent to 5 percent annually over recent years in the State of Arizona. Fuel costs can be more volatile, but have remained reasonably steady over the last few years, only recently beginning to climb again in 2016. Maintenance costs tend to rise slowly each year as well, as costs of materials and supplies grow.

The real exposure for Douglas Municipal Airport is the immediate need for accomplishing certain capital programs in the near-term. Many runway and apron areas critical to current Airport operations are badly in need of repair. While most are eligible for State grants, the Airport is still catching up after several years of inactivity, and funds are not yet available to address all issues.

In general terms, most of the Airport's projected operating costs will continue to grow somewhere between 3-5 percent annually. However, costs for the maintenance or rehabilitation of critical portions of the airfield that may be prone to failure in the near-term could cause an unexpected spike in the Airport's cost of doing business.

7.5 Projected Capital Costs

The Douglas Municipal Airport Master Plan Update indicates a comprehensive capital program necessary to meet ADOT standards and promote the safe and efficient operation of the facility. The overall Airport capital improvement plan (ACIP) shown in Douglas Municipal Airport Master Plan Update totals **$5,074,000** in various capital projects over the next five years. These projects are phased and generally accomplished in order of priority as funding becomes available.

7.6 Costs, Phasing and Prioritization of Capital Programs

The current Douglas Municipal Airport ACIP from the Master Plan Update is shown below in **Table 7-2** in order of priority, along with associated costs, and phasing.

Table 7-2 Douglas Municipal Airport Capital Improvement Plan

Item #	Phase I: Near-Term Development (0-5 Years)	Total Project	State Grant	Local Match
1	Conduct environmental documentation (Categorical Exclusion) for reconstruction of Runway 03-21	$60,000	$54,000	$6,000
2	Obstacle removal, brush clearing	$5,000	$4,500	$500
3	Reconstruct Runway 03-21	$2,500,000	$2,250,000	$250,000
4	Reconstruct turnaround taxiways on Runway End 03	$150,000	$135,000	$15,000
5	Conduct study for implementation of an instrument approach	$50,000	$45,000	$5,000
6	Main Apron pavement maintenance	$150,000	$135,000	$15,000
	Total Phase I Costs	**$2,915,000**	**$2,623,500**	**$291,500**
Item #	**Phase II: Long-Term Development (6-20 Years)**	**Total Project**	**State Grant**	**Local Match**
7	Construct terminal building	$42,000	$37,800	$4,200
8	Construct permanent helipad with taxilane, fencing	$200,000	$180,000	$20,000
9	Install weather reporting station (AWOS or ASOS)	$150,000	$135,000	$15,000
10	Crosswind Runway Feasibility Study	$70,000	$63,000	$7,000
11	Update Airport Layout Plan	$150,000	$135,000	$15,000
Item #	**Phase II: Long-Term Development (6-20 Years)**	**Total Project**	**State Grant**	**Local Match**
12	Construct full-length parallel taxiway	$500,000	$450,000	$50,000
13	Land acquisition for runway protection zones and crosswind runway (± 75 acres)	$350,000	$315,000	$35,000
14	Install unpaved/gravel crosswind runway	$500,000	$450,000	$50,000
15	T-Hangar Apron pavement maintenance	$150,000	$135,000	$15,000
	Total Phase II Cost	**$2,159,000**	**$1,943,100**	**$215,900**
	Total Development Costs	**$5,074,000**	**$4,566,600**	**$507,400**

Source: Douglas Municipal Airport Master Plan Update 2017

7.7 Overview of Potential Funding Sources

Douglas Municipal Airport must evaluate all internal and external funding sources and opportunities to develop a comprehensive funding picture capable of supporting its operations.

7.7.1 Operational Sources of Funds

The Airport collects fees for many direct services to its based and transient customers, including landing fees where appropriate, parking, tie-down, or hangar fees, Special Aviation Service Organization (SASO) and various commercial business fees, and fueling fees and permits. The compilation of all such direct fees constitute Douglas Municipal Airport's Rates and Charges Structure, as updated and amended to reflect current markets.

The revenues derived from such direct Airport charges are generally applied as an offset to its expenses and costs of operation. If revenues are sufficient, they can also be applied against local share requirements for State grants. The amount of revenue Douglas Municipal Airport receives from this category of funding varies from year to year depending on the amount and type of aviation traffic that frequents the facility and the number and type of other special events that may occur during that year.

7.7.2 Non-Operational Sources of Funds

In addition to operational revenue sources such as landing fees, parking fees, operating agreements and leases, airports generally must look to non-operational funding sources to support the capital improvement programs. Non-operating sources of funds typically come from external sources, are not debt related, and are not directly related to the use of the airport or the leasing of airport land, improvements, and facilities. Some specific examples of non-operating sources of funds include the following:

State Grants – In the State of Arizona ADOT is the government agency responsible for providing a safe, efficient, cost-effective multimodal transportation system including airports. Monies collected from flight property tax, aircraft lieu tax, aircraft registration, and aviation fuel tax are deposited into the State Aviation Fund and distributed by the Multimodal Planning Division (MPD) Aeronautics Group. On an annual basis, money is allocated for airport development across five major programs. Projects eligible for state grant funding include design, construction, safety, security, capacity enhancement, environmental, planning, and land acquisition. An airport loan program is available for revenue generating improvements such as hangars and fuel storage facilities.

The size of the program varies from year to year depending on available funding. Due to numerous legislative sweeps from the Aviation Fund, three of the five programs have been suspended until Fiscal Year 2019. These include the state/local grant program, airport pavement management system (APMS), and airport loan program, which have historically been a significant source of funding for Douglas Municipal Airport.

Taxation and Government Subsides - In many cases, general aviation airports receive subsidies from the airport sponsor to cover operating deficits or provide matching funds required to receive state grants. Some airports may also receive subsidies from other municipalities or counties that benefit from the presence of the airport. Douglas Municipal Airport receives support from the City of Douglas for matching funds and other resources as appropriate.

Some general aviation airports receive funding through property taxes, both directly and indirectly. An airport may be granted direct taxing authority through state legislation when a stand-alone entity, such as an airport authority, is established to own and operate an airport. In other situations, airports may indirectly benefit from the taxing authority of the airport sponsor, such as a municipality or county, when a portion of the taxes collected by the airport sponsor are designated for the airport.

Investment Income - Investment income is associated with interest or gains directly tied to the investment of airport funds. Currently this study has not identified any direct Airport resources available for outside investment. However, the City of Douglas may pursue such investments from time to time as circumstances warrant.

Donations - While less common, private donations may also be a source of funding. Donations can be used as matching funds to help secure a grant or as capital for projects, vehicles, equipment, tools, and materials that may not be eligible under federal and state grant programs.

Sale of Surplus Assets - An airport's vehicles, equipment, tools, and other capital assets should be evaluated periodically to identify items that may no longer be needed, are beyond useful life, or have become obsolete. Such assets should be sold in accordance with airport policies and procedures. The sale of surplus assets may require the reimbursement or reinvestment of the state share of grant monies used for the initial acquisition.

Debt Financing - Long-term loans are typically used to finance the acquisition of land; the purchase of vehicles, equipment, or tools; and the development of infrastructure, improvements, or facilities not eligible for grant funding. Short-term loans or lines of credit are typically used to supplement working capital to cover operating expenses during cash flow short falls. Douglas Municipal Airport has no capacity to incur debt directly, but the City of Douglas does in its capacity as the Airport sponsor.

Bonding - Various bonding mechanisms can be used to raise funds for projects not eligible for grants. A general obligation bond is typically backed by the general tax revenues of the airport sponsor. However, the airport's revenue stream, not the tax revenues of the airport sponsor or revenues specifically associated with the bonding project, is typically used to service the debt associated with revenue bonds. Special facility bonds can be used to fund the development of a single or multi-tenant facility and the revenue generated through leasing the facility can then be used to service the debt.

7.8 Funding Considerations

Most of the funding resources listed may be available to Douglas Municipal Airport through its sponsor, the City of Douglas. Consequently, a number of considerations are involved in making the proper selection of a funding mechanism for specific projects or applications on the Airport.

Currently, the primary funding source for Airport improvements is ADOT's airport development grant program. These funds can be used for airport planning, design, construction, or land acquisition projects and may cover 90-95 percent of an eligible projects cost. The sponsor is responsible for matching the remaining 5-10 percent of project costs. These programs are limited by the fact that total grant monies available may be limited in any given year and grants are awarded on a priority basis. However, the ADOT Aeronautics grant programs represent the best and most efficient use of the sponsor's available money and should be utilized first whenever possible. Matching funds may be drawn off any of the Airport's operational revenues as available or otherwise provided by the City of Douglas.

Some special projects that may not be eligible for ADOT funding could be financed utilizing debt financing, or medium- to long-term loans. In these circumstances, the "cost of money" including total interest and other related charges associated with a loan package is the primary consideration. Municipalities may be eligible for low interest loans, and it is clearly in the best interest of the City and Airport to "shop" such available loan programs to locate the best deal.

Bonding is another vehicle that can be especially useful for medium- to long-term money. Often times the best deals in the current bond market are dependent on current interest rates, the available bond rating that can be obtained for the project or program, and the current market interested in purchasing such bonds. This is another area where the available market should be analyzed to determine the "cost of money," and the best bonding vehicle available for a particular program.

Other funding considerations including donations and sales of surplus equipment are also available to the Airport and City to fund future improvements. Usually these sources are relatively small in comparison to other funding sources. Anything that assists the Airport with achieving its matching fund requirements for grants or otherwise contributes to the available money necessary for projects should be considered.

The current identified CIP infrastructure and development projects needed for Douglas Municipal Airport total over $5 million. Douglas Municipal Airport should utilize state funding opportunities wherever possible. In some instances, certain infrastructure projects both on and off the Airport may not be eligible for grant funding or such funding may not be available on a timely basis. These cases may be addressed with longer term bonding opportunities and satisfied with future revenues from the Airport and City.

SECTION 8 – IMPLEMENTATION AND ACTION PLANS

8.1 Introduction

Previous Sections have explored the Airport's business history, its financial status, and evaluated current and potential future markets. As part of that process, goals and objectives were developed and prioritized to meet the demands of the future. Logical next steps call for the development and execution of specific action plans for each of the stated goals to move the Airport forward on its infrastructure and business development track. This section addresses those previously developed goals and outlines the required actions necessary for proper implementation of each. Responsibility for execution of specific action plans is also identified.

8.2 Goals and Action Plans

A total of eight primary goals were developed for Douglas Municipal Airport and prioritized in order of importance from one to eight. It is important to note that the current position of the Airport will require that many of these goals be pursued simultaneously in order to meet future market demand. Responsibility for taking required actions to meet these future goals will be divided among numerous individuals and departments within the City, and must be coordinated with each other to effectively address market demands. A summary of each goal and associated action plan is as follows:

Goal # 1 - Develop new comprehensive marketing plan for Douglas Municipal Airport.

The working group of the ASBP felt that the immediate development of a new Airport marketing plan was necessary for the identification and recruitment of new future business operators at the Airport. Such a plan should identify critical aviation businesses and trends that can be accommodated on Douglas Municipal Airport, and outline a plan of action to contact and recruit those businesses operators that might take advantage of specific future opportunities in Douglas.

Action Plan:

An airport marketing plan is not within the scope of this current ASBP, but should be developed as a separate effort. The City of Douglas already has certain marketing resources within its Economic Development department, and those should be coordinated within the new Airport marketing plan. Specifically, a new Airport marketing plan should include several objectives:

- The marketing plan should include recognition that Airport business is closely tied to other general businesses, opportunities, and attractions within the City of Douglas and the surrounding region; the Airport fills an important transportation link necessary to the general economic health of the area.

- The marketing plan should target specific portions of the aviation market that have shown potential for growth and require the services and capabilities that Douglas has to offer. Currently there is an identified corporate aircraft market that appears to have a strong

growth potential, and is tied to cross border business and manufactoring, tourism, and other attractions in Douglas. Other aviation service opportunities exist as well.

- A firm familiar with the economic conditions and drivers of the City of Douglas, and the aviation operational requirements of Douglas Municipal Airport, should be contracted to develop the new marketing plan. An effective plan will need to be more than a standard community marketing approach; it will entail a thorough understanding of the City's economy, opportunities, and direction, and an understanding of Douglas Municipal Airport's operational capabilities and development potential. Furthermore, a comprehensive marketing plan will need to merge the requirements and attributes of both entities to present a complete picture of the community to potential future clients.

- As part of the process for developing Request for Proposals (RFPs) and acquiring a marketing firm, both the Airport and Economic Development Department need to occupy key roles in its development. The designated Airport Manager will spearhead the process by providing relevant information as to the capabilities and development direction of the Airport, and the Economic Development Department will provide information pertaining to current economic trends and attractions within the City and region. Each of these departments can also provide lists of appropriate economic development targets and companies to be analyzed and approached within the new marketing plan.

- At a minimum, a new marketing plan should address the following six points:
    - What are the **marketing goals?**
    - Who are **the target audiences?**
    - What is **the message** the airport intends to communicate?
    - What **methods of communication** will the airport use to reach its audience?
    - What **staffing and financial resources** will support the effort?
    - How will the airport **measure success?**
- Upon receipt of the completed marketing plan, Airport management and economic development should divide implementation responsibilities and execute the plan promptly.

Goal # 2 - Improve working and political relationships with federal, state, and local funding agencies.

The ASBP working group believes improved relationships begin by building a positive image of Douglas Municipal Airport and the City Douglas by maintaining high standards of conduct and fiscal responsibility. Improvements in local standards and operations, followed by political outreach and partnering with the various federal and state funding agencies, will improve working relationships and opportunities for future funding initiatives. The priority of this goal needs to be pursued concurrently with all initial goals as it is basic to the long-term success of the Airport.

Action Plan:

The City of Douglas and the Airport can improve their status in the eyes of federal and state funding agencies in a number of ways, such as improving communications, conducting regular meetings to share information and developments, requesting guidance on regulatory issues, and working within the system. Some recommended actions include:

- Familiarizing the upper levels of City government with federal and state regulations pertaining to Airport operations, development, and funding.
- Inclusion of appropriate members of upper management in meetings with the state will promote a more thorough understanding of the processes involved, and show commitment by the City to be involved and work with those agencies on critical funding and project issues.
- Ongoing networking efforts between City and Airport management at local and regional conferences like the Arizona Airports Association, and regional FAA and ADOT conferences help keep an informed familiarity with issues between airport owners and federal and state agencies.
- Working with congressional delegates and other political bodies to educate and highlight the operational and development issues of Douglas Municipal Airport, and to garner their support where needed, should be an ongoing exercise.
- Seek guidance and concurrence from ADOT when developing Airport Capital Improvement Programs or other planning and development activities. An open discussion of the pros and cons of a program or project can streamline the effort and allow the agencies to better understand the issues involved and provide better direction.
- Airport managers should always be pro-active when dealing with federal or state agencies on funding or regulatory issues. It is important that the Airport's voice be heard. This also gives the Airport the opportunity to see and be seen when new issues arise, and to better understand any related impacts.
- In general terms, Airport management needs to stay informed about the evolution of regulations and procedures in our government bodies, and cultivate relationships within those organizations that can aid the airport in dealing with such changes as they occur.

Goal # 3 - Identify new funding opportunities for infrastructure improvements.

Traditional state funding sources utilized in past years are insufficient to meet the timing of future required infrastructure development. As such, additional funding sources must be identified to accomplish required infrastructure upgrades necessary to accommodating future growth and development of the airport. Current infrastructure concerns will be one of the biggest impediments to the successful growth and future development of Douglas Municipal Airport. Potential solutions should be investigated and implemented as soon as possible.

Action Plan:

A relatively recent shift to larger corporate aircraft has occurred at Douglas Municipal Airport for the past several years. These aircraft typically weigh far more than the existing Airport runway, taxiway, and apron areas were designed for, and the runway is currently in poor condition. Future air traffic growth hinges on runway improvements, and other infrastructure development.

The solution is to repair those runways and apron surfaces, to support the forecasted levels of future traffic, and install other infrastructure improvements as necessary to ensure the safety of operations. Unfortunately, current levels of state funding are insufficient to address all of the issues over the near-term, and a reorganized approach to available funding is required. Future actions could include:

- Meeting with ADOT to discuss current project priorities and funding opportunities in the near-term to address infrastructure needs. Opportunities for new or expanded funding opportunities should be discussed, and any applicable special programs that would improve the Airport's overall funding picture in the short-term should be explored. However a moratorium on ADOT funding mechanisms may be in place until FY 2019.

- Certain building infrastructure projects may lend themselves to public-private partnerships. The viability and availability of such partnerships should be explored as a way to share the burden of future costs associated with development.

- The State of Arizona should also be approached via ADOT to ascertain the availability of special grants or Airport Pavement Management Systems (APMS) programs that could be accessed for infrastructure improvements. However a moratorium on these funding mechanisms may be in place until FY 2019.

- In critical situations where lack of immediate development resources threatens to slow or halt Airport development, the City may wish to consider other measures such as special tax levies or bonding for specific projects.

- The City of Douglas's Financial Division should be consulted to determine if other financial resources from other federal, state, or regional sources can be brought to bear on behalf of Airport infrastructure projects.

- The Airport should establish, maintain and update its rates and charges structure and remain as self-sufficient as possible utilizing fees from services provided.

Goal # 4 - Increase Fuel and Services sales to GA and Corporate aviation customers.

Finding a way to increase revenues from Airport fuel sales and services is at the heart of any airport development plan. Additional revenues mean additional capability to address infrastructure issues, and expand the capabilities of the Airport. The path to more revenue production has to address two major issues in this case. The primary issue is the necessity of repairing the runway and related infrastructure so the airport can safely accommodate more and larger fixed wing aircraft. As that issue is addressed, the Airport should embark on a general marketing plan to pursue new

aviation customers, and educate the public about the capabilities of Douglas Municipal Airport. When these efforts are successful, then increased revenues will follow.

Action Plan:

Utilizing a new Airport Marketing Plan, the Airport should identify and reach out to established regional flight schools or startups that might be interested in locating their business on Douglas Municipal Airport. This would be a multifaceted process that would include the following elements:

- Development of marketing proposals for flight schools that would be interested in relocating all or part of their operation to Douglas Municipal Airport.
- Negotiating appropriate terms and conditions, building, hangar and land rents for a prospective flight school.
- Development of media for other regional flight schools or charter operators marketing the attributes and services of Douglas Municipal Airport.
- Development of appropriate operating agreements for use of the Airport.

Goal # 5 - Improve working and trade relations on both sides of the border by working with Mexican and American immigration officials to facilitate better access.

The political issues that affect cross border commerce are very complex today. The flow of people and materials between Agua Prieta and Douglas is currently constrained, and has had a detrimental effect on the local economies in recent years. Discussion of opening a second border crossing in the local area have raised hopes for some relief with these situations, but true progress depends on higher level actions by the governments on both sides of the border.

Action Plan:

The following actions are recommended to achieve the goal of improving working and trade relations on both sides of the border:

- Begin discussions with higher levels officials in both City and Cochise County government. Even though support already exists for a second border crossing, the educational process about what is at stake should continue.
- Involve State Representatives and Congressional liaisons in the process, educating them on the economic issues involved and garnering their support.

Goal # 6 - Develop Douglas Municipal Airport as an operational base for border protection drones, and other Border Patrol services.

This goal is intended to highlight the advantages of establishing certain unique border protection services at Douglas Municipal Airport. Drone operations and related servicing would appear to be a natural fit for the Airport.

Action Plan:

The key to achieving this goal is educating local border protection entities of the availability and operational benefits of operating from Douglas Municipal Airport. The Airport could provide several categories of service to their benefit including;

- Capability to accommodate operations of small aircraft and helicopters utilized by government services.
- Ability to desiginate areas of the Airport strictly for drone operations.
- Avaliable development space for various government services.

Goal # 7 - Increase Medical Tourism.

This goal ties in with previous goals, and the development of an Airport Marketing Plan. Improvements in the Airport's infrastructure, and subsequent implementation of an Airport Marketing Plan will raise the awareness and profile of Douglas. As the public becomes more aware that the Airport can provide access for tourism and business interests alike, individuals interested in "Medical Tourism" will recognize that Douglas is available for that function.

Action Plan:

A new general marketing plan for Douglas Municipal Airport will target several different business and tourism objectives. While new business attraction is a major part of any marketing plan, some sections of that plan should be directed to a more personal level that speaks to the attractions for individuals, either for standard, or medical tourism opportunities. A general discussion about how Douglas Municipal Airport operates as a gateway not only for business, but also for individuals and personal travel to the area is appropriate.

Goal # 8 - Attract new specialty air service providers to Douglas Municipal Airport.

This goal speaks to continued efforts to attract commercial or specialty air service in the form of air charter and air taxi services to Douglas to augment air access to the area.

Action Plan:

Douglas Municipal Airport already provides excellent access to the community for general aviation and corporate aircraft customers. On the other hand, commercial charter and specialty air taxi operations remain an underserved market. The Airport should extend its marketing efforts to the commercial segment of the aviation community by offering the following:

- Develop marketing collateral to be distributed to regional air taxi operators within the State of Arizona to heighten the profile of services offered at Douglas.
- Explore opportunities with specialty aviation operators such as charters, agricultural applications, firefighting support, and air show events.

Goals Summary

As initially stated, the goals and action plans listed above have been shown in order of priority. However, several of these priorities need to be executed simultaneously to enable the Airport to move into a competitive position and meet on-coming demand in a timely manner.

Goals one, two, three, and five speak to the establishment of a comprehensive Marketing Plan, improvements in critical political relationships, and identification of expanded future funding opportunities. These elements are critical to the operational viability of the Airport, and may require an extended period of time to be accomplished. As such, it is in the best interest of the City and Airport to begin work on these goals simultaneously and immediately.

Other goals speak to the development of additional aviation services and operators to expand the business base of the Airport. These goals are important and necessary to the appropriate future development of the Airport. Work should commence in the near-term for development of each, keeping in mind that certain infrastructure developments must come first to accommodate new growth.

8.3 Implementation

The Douglas Municipal Airport ASBP is intended to be a living document reviewed and updated at least annually to address economic changes in the community and market. It serves as a roadmap to provide direction for obtaining the Airport's goals, and should always be maintained with the most current information.

Additionally, many people will play an active role in the implementation of the ASBP. Management from the Airport and Economic Development and Tourism departments may do much of the heavy lifting, but there are roles to play for many others within the structure of the Airport and City as well.

8.3.1 Proposed Division of Responsibilities

The Manager of Douglas Municipal Airport will be the primary focal point for implementing and following the guidelines of the ASBP. It is anticipated that the City of Douglas's Economic Development Department may also assist with the projection of the Business Plan where their activities involve the recruitment of businesses or industries that are to be placed on or adjacent to Douglas Municipal Airport. Aviation-related activities such as recruiting new air services or attracting new general and corporate aviation customers should occur under the general direction of the designated Airport Manager.

Other pursuits involving improvements to relationships with federal and state agencies will include the designated Airport Manager, but should also include higher level City officials, and perhaps even state and federal representation from the congressional delegation as appropriate.

A major element of the ASBP involves the identification of additional financial resources to fund Airport infrastructure and development. The designated Airport Manager should provide direction in such issues, often time in conjunction with the City Director of Finance, or other personnel versed in the topics at hand.

As a general statement, the designated Airport Manager should provide direction for all actions necessary to achieve the goals of the Airport, supported by the various factions within the City of Douglas that can bring their specific expertise (political, economic, financial) to bear as appropriate to the issues at hand.

It is recommended that a standing Business Plan and Marketing Advisory Committee be established, utilizing members of the Airport and City staff that can contribute to the ongoing implementation efforts outlined in the Business and Marketing Plans. It is also suggested that such a committee meet at least quarterly to ascertain the status of those efforts and recommend modifications in direction as appropriate.

8.3.2 Follow on Marketing Plan

A follow-on Airport Marketing Plan will need to be developed that outlines the approach necessary to recruit specific business targets. The Marketing Plan should address each of the identified goals of the Airport, and provide details about the approach to be used for target audiences.

An effective marketing program will develop the message that the Airport and City wishes to convey to prospective clients and establish cost effective methods to communicate that message. It will also indicate the required staffing and financial resources necessary to mount an effective and ongoing campaign to expand the Airport's business base.

Finally, the marketing plan will need to establish measurable metrics to help the Airport measure the success of its marketing efforts, and make appropriate changes as the market evolves.

8.3.3 Metrics for Measuring Success

Douglas Municipal Airport can evaluate its progress in the future by measuring its performance against several different types of metrics. Comparisons can be made between current and past financial performance data. Likewise, physical comparisons that evaluate capital improvements and when they are completed against existing infrastructure today. Operational indicators that include data on based aircraft numbers and types, fuel sales, and annual operations data will be charted and evaluated against corresponding goals for growth.

Some of the major performance indicators to be monitored and tracked include the following:

- Annual Airport fuel sales
- Based aircraft
- Annual Airport revenues
- Annual Airport expenses
- Number and type of Airport lease agreements
- Capital Improvement Programs
- Annual Airport operations (takeoffs and landings)

- Infrastructure improvements

The Airport should engage in an annual forecast and goals exercise prior to the beginning of each fiscal year, and based on current circumstances establish educated performance goals for each of the above categories. The following year, those goals should be examined to determine if they were met, were exceeded, or fell short. If those goals fell short of expectations then an analysis of why performance was short should occur, and a possible modification in the Airport's business direction may be in order. This process should be conducted annually in an effort to keep the Airport on track towards accomplishing its goals and objectives, and keeping its overall business direction on course.

8.3.4 Summary

The Douglas Municipal Airport ASBP has evaluated the existing business environment of the area and constructed future goals and objectives to assist Airport growth and development into the future. Action plans were developed, and recommendations for a follow-on Marketing Plan have been made.

The information contained in this document is time sensitive, and conditions may change in a relatively short timeframe. Douglas Municipal Airport is poised to execute the guidelines set forth in the ASBP, and move forward with its infrastructure and business development efforts. Therefore, it is recommended that Douglas Municipal Airport continue its momentum and follow through on the development of a Marketing Plan and execution of its goals as soon as possible.