FINAL
AIRPORT LAYOUT PLAN
NARRATIVE REPORT

FOX STEPHENS FIELD – GILMER MUNICIPAL AIRPORT

Gilmer, Texas

Prepared for:

The City of Gilmer

Prepared by:

Coffman Associates
Airport Consultants

February 2021

GILMER MUNICIPAL AIRPORT
Fox Stephens Field

Table of Contents

TABLE OF CONTENTS

EXECUTIVE SUMMARY

ALP NARRATIVE REPORT

GILMER MUNICIPAL AIRPORT
Fox Stephens Field

Executive Summary

Executive Summary

Airport planning begins with an analysis of future demand expected to occur at the facility. For Gilmer Municipal Airport, this involved generating forecasts to identify potential aviation demand for based aircraft and annual aircraft operations over the next 20 years. Recognizing the realities of year-to-year fluctuations in activity, the report focused on potential demand levels rather than future dates in time. These "demand planning horizons" were established as levels of activity that will call for consideration of implementation of the next step in the development program. By developing the airport to meet aviation demand levels, it will serve the actual needs of users while maintaining a safe and efficient environment. For Gilmer Municipal Airport, the number of based aircraft and annual aircraft operations are forecast to increase during the planning period when considering a diverse economy and continued development of airport facilities. Given that activity and growth may not occur as predicted, flexibility will be very important to future development. The study provides airport stakeholders with a general guide that, if followed, can maintain the airport's long-term viability and allow the airport to continue to provide general aviation services to the region.

The forecast approach utilized historical and forecasted general aviation and economic trends in the region resulting in based aircraft and annual aircraft operations projections for the airport through the long-term planning period. The forecast planning horizons are summarized in **Table IA**.

TABLE IA
Planning Horizon Activity Levels
Fox Stephens Field – Gilmer Municipal Airport

	Base Year	Short Term	Intermediate Term	Long Term
BASED AIRCRAFT				
Single Engine Piston	37	39	43	49
Multi-Engine Piston	4	3	3	2
Turboprop	1	2	2	4
Jet	0	1	2	3
Helicopter	0	0	0	1
TOTAL BASED AIRCRAFT	**42**	**45**	**50**	**59**

ANNUAL OPERATIONS				
Itinerant				
General Aviation	4,400	5,700	7,400	10,000
Air Taxi	10	50	100	300
Military	-	-	-	-
Total Itinerant	**4,410**	**5,750**	**7,500**	**10,300**
Local				
General Aviation	13,200	13,200	13,700	15,100
Military	-	-	-	-
Total Local	**13,200**	**13,200**	**13,700**	**15,100**
TOTAL OPERATIONS	**17,610**	**18,950**	**21,200**	**25,400**

RECOMMENDED DEVELOPMENT CONCEPT

The Recommended Development Concept, presented on **Exhibit IA**, includes improvements to airside (runways, taxiways, navigational aids, etc.) and landside (hangars, aprons, terminal area, etc.) facilities to satisfy Federal Aviation Administration (FAA) design and safety standards and to meet current and forecast needs. Improvements are also designed to ensure a viable aviation facility for the region and state well into the future. The following summarizes recommendations in the Recommended Development Concept. A more detailed discussion of the proposed development can be found in the Recommended Development Concept section of this report.

Major Airside Improvements

The major airside issues addressed in the Recommended Development Concept include the following:

- Adhere to existing and ultimate FAA runway design code (RDC) B-II-5000 standards on Runway 18-36.

- Consider a 5,000-foot runway extension on Runway 18-36 to better accommodate turboprop and business jet aircraft utilizing the airport, pending further justification and coordination with Texas Department of Transportation (TxDOT).

- Construct a full-length parallel taxiway serving Runway 18-36. At present, Runway 18-36 is served by a partial parallel taxiway. As a result, aircraft are forced to back-taxi on the runway when landing to the south or taking off to the north. To increase the safety and efficiency of aircraft movements on the airfield, this project considers the construction of a full-length parallel taxiway maintaining 240-foot separation from runway to taxiway centerline.

- Widen Runway 18-36 to a width of 75 feet. Currently, Runway 18-36 is 60 feet wide. Under existing and ultimate RDC B-II-5000 conditions, FAA standards mandate that the runway be 75 feet wide.

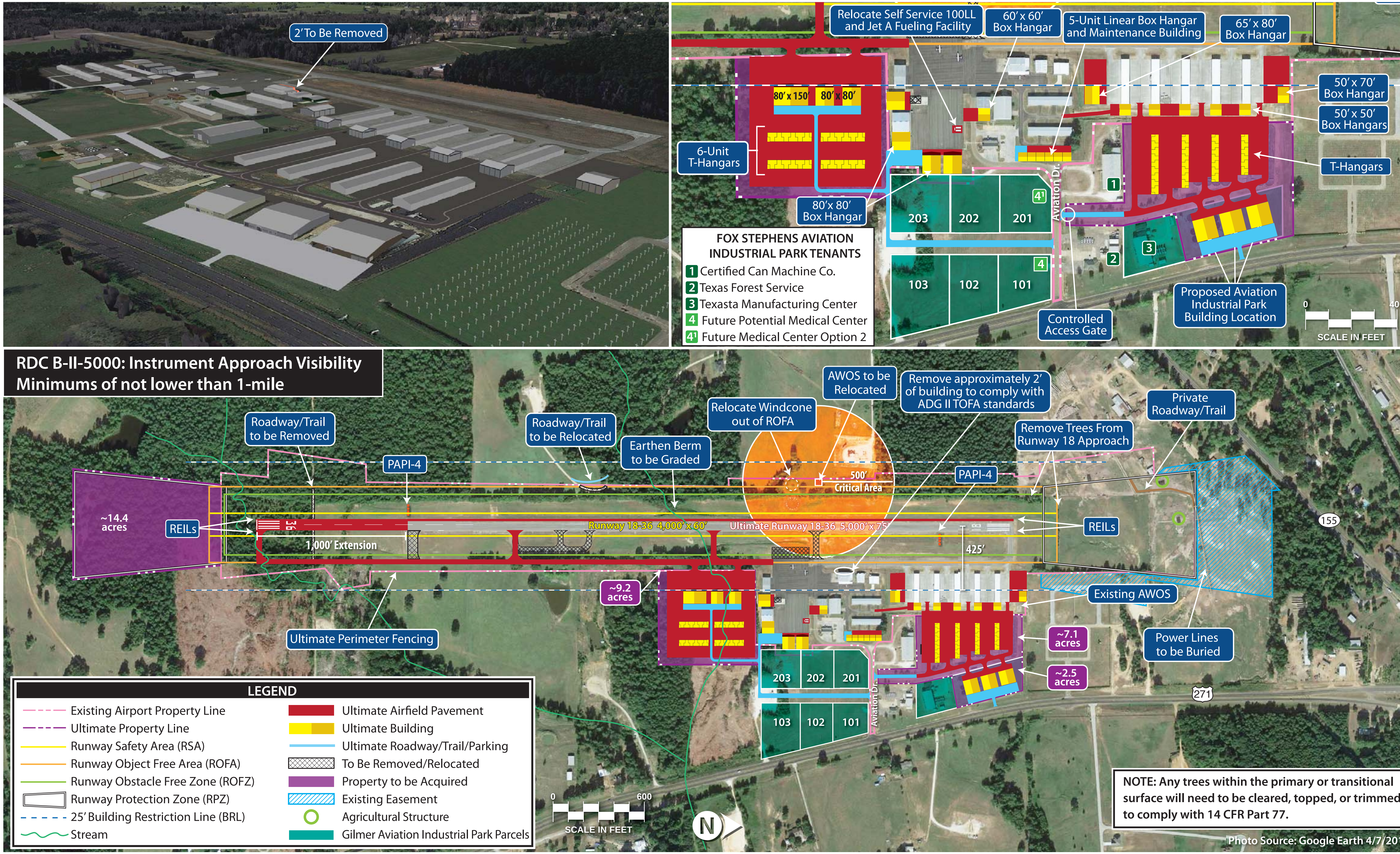


Exhibit IA
RECOMMENDED DEVELOPMENT CONCEPT

This page intentionally left blank

- Address safety area deficiencies on Runway 18-36, which include an incompatible location for the windcone and segmented circle serving the runway as well as vegetation, roadway, and aircraft apron area obstructions associated with the existing and ultimate runway.

- Realign the existing taxiway connecting the aircraft apron to the runway to eliminate direct access and meet FAA airfield geometry standards.

- Maintain the existing instrument approach visibility minimums of not lower than one mile serving Runway 18-36 and make necessary improvements to clear existing approach obstructions. Ultimately, this will help gain nighttime approval on GPS instrument approach procedures.

- Analyze property acquisition needed to protect the ultimate runway environment including airspace and safety areas adjacent to and beyond both ends of Runway 18-36.

- Enhance visual approach aids serving the runway with the installation of four-box precision approach path indicators (PAPI-4s) and runway end indicator light (REILs) systems serving each end of the runway.

Landside Improvements

The landside facility recommendations have been devised to efficiently accommodate potential aviation demand and provide revenue enhancement possibilities. Landside facility development will only occur as demand dictates; in this manner, the facilities will only be constructed if required by verifiable demand. Landside improvements include the following:

- Currently, the most significant landside need at the airport is for expanded aircraft storage hangar capacity. The plan first seeks to maximize hangar development potential within the existing bounds of the airport and includes plans for a variety of hangar types. Proposed hangars range from T-hangar facilities for small single-engine aircraft to executive/conventional and corporate style hangars for multiple small aircraft or large business jet aircraft, which could be constructed on existing airport property should demand dictate.

- The plan also considers the relocation of the self-service fueling facility to the north and east to the opposite side of the apron to allow space for additional hangar facilities. At the same time this project is completed, the airport should consider the addition of a 12,500-gallon Jet A fuel tank and increase the fuel capacity for 100LL to 12,500 gallons.

- With much of the existing airport property currently developed, the plan has identified areas adjacent to the airport that could be suitable for additional hangar development if continued demand for landside development is realized. As such, the plan recommends the acquisition of approximately 9.6 acres of property from the Gilmer Industrial Foundation, located adjacent to the northeast side of the existing landside development area. The acquisition of this property could allow for the construction of four T-hangars of varying sizes. Furthermore, the plan includes the potential for three large buildings that could be used for industrial or corporate purposes located immediately west of Highway 271. Similarly, approximately 9.2 acres of property are proposed for acquisition south of the existing landside development area. Proposed development in this area includes T-hangars, executive box hangars, and a large clear-span conventional hangar. Landside access and automobile parking supporting the southern development area is provided via a roadway extension from Aviation Drive.

- For planning purposes, property owned by the Gilmer Industrial Foundation located adjacent to the airport is depicted on the Recommended Development Concept. This property is located on the east side of the airport and has three existing Industrial Park tenants including Certified Can Machine Company, Texas Forest Service, and Texasta Manufacturing Center. Additionally, future potential exists for the development of a critical car medical facility located in parcels 101 or 102.

DEVELOPMENT FUNDING

The full implementation of the plan is likely to take two decades or more at a cost of $98.2 million. It should be noted that these costs have been adjusted for inflation throughout the long-term planning horizon. The breakdown of funding over the three planning horizons is presented in **Table IB**. Approximately 29 percent of the total is eligible for grant funding from the FAA and TxDOT. The airport or local funding estimate is approximately 71 percent of the total, which is largely driven by the construction costs of T-hangars, executive box, and conventional hangars. It should be clearly stated that costs associated with hangar development will likely be offset by the airport in pursuing private developers for hangar construction. The source for FAA funding is the Aviation Trust Fund, which is funded through user fees and taxes on airline tickets, aviation fuel, and aircraft parts. TxDOT provides a separate state funding mechanism, the Texas Aviation Facilities Development Program, which receives annual funding appropriation from the state legislature.

TABLE IB
Development Funding Summary
Fox Stephens Field – Gilmer Municipal Airport

PLANNING HORIZON	Total Costs	Federal/State Share	Airport/Local Share
Short-Term Program	$5,970,000	$3,519,000	$2,451,000
Intermediate-Term Program	$28,800,000	$15,228,000	$13,572,000
Long-Term Program	$63,457,000	$10,338,300	$53,118,700
Total Program Costs	**$98,227,000**	**$29,085,300**	**$69,141,700**

Note: Totals may not add up exactly due to rounding

PLAN IMPLEMENTATION

This planning effort has been undertaken to evaluate the airport's capabilities and role and to plan for the timely development of new or expanded facilities that may be required to meet future demand. The ultimate goal of the plan is to be a proactive document providing systematic guidelines for the airport's overall maintenance, development, and operation.

Gilmer Municipal Airport serves as a vital economic asset for the City of Gilmer and surrounding region. As such, it should be carefully and thoughtfully planned and subsequently developed in a manner which matches the development goals of the community. The continued development of the airport demonstrates the city's commitment to growth and prosperity while also remaining sensitive to the needs of the residences and businesses it serves. This plan provides the tools that the City of Gilmer will need to meet the challenges of the future. By providing a safe and efficient facility, Gilmer Municipal Airport will remain a valuable component to the surrounding region.

GILMER MUNICIPAL AIRPORT
Fox Stephens Field

ALP Narrative Report

ALP Narrative Report

This report is intended to provide Fox Stephens Field – Gilmer Municipal Airport (JXI), the City of Gilmer, and Texas Department of Transportation (TxDOT) a document that depicts the most current plans for airport improvements for JXI. This document focuses primarily on the existing facilities available at JXI and provides a concept for future development potential over the next 20 years. This report provides a narrative and updated Airport Layout Plan (ALP) drawing set, which consists of a computer-generated drawing that depicts the current and future facility conditions.

AIRPORT BACKGROUND

JXI is located approximately two miles south of Gilmer's central business district along U.S. Highway 271 South, centrally located in Upshur County, Texas, approximately 100 miles east of the Dallas/Fort Worth Metroplex. A majority of airport property is located within the Gilmer city limits and primarily surrounded by Upshur County property. Owned and operated by the City of Gilmer, JXI is on approximately 51 acres at an elevation of 415 feet above mean sea level (MSL). **Exhibit A** identifies the location of the airport and surrounding environs. **Table A** below describes land uses immediately surrounding the airport.

The City of Gilmer's Zoning Map identifies the zoning designation of those properties within the city limits, identified in **Exhibit B**. As depicted, the airport is surrounded by unincorporated Upshur County with the City-zoned property to the north.

TABLE A
Surrounding Land Uses
Fox Stephens Field – Gilmer Municipal Airport

North	Sunset Memorial Park cemetery Agricultural land used for grazing
East	Currently vacant property formally used for algae production Agricultural uses
South	Agricultural uses
West	Agricultural uses Single-family residential Gilmer County Club golf course

Source: City of Gilmer Zoning Map, 2014; Airport Communication; Google Maps Satellite Photo, 2017.

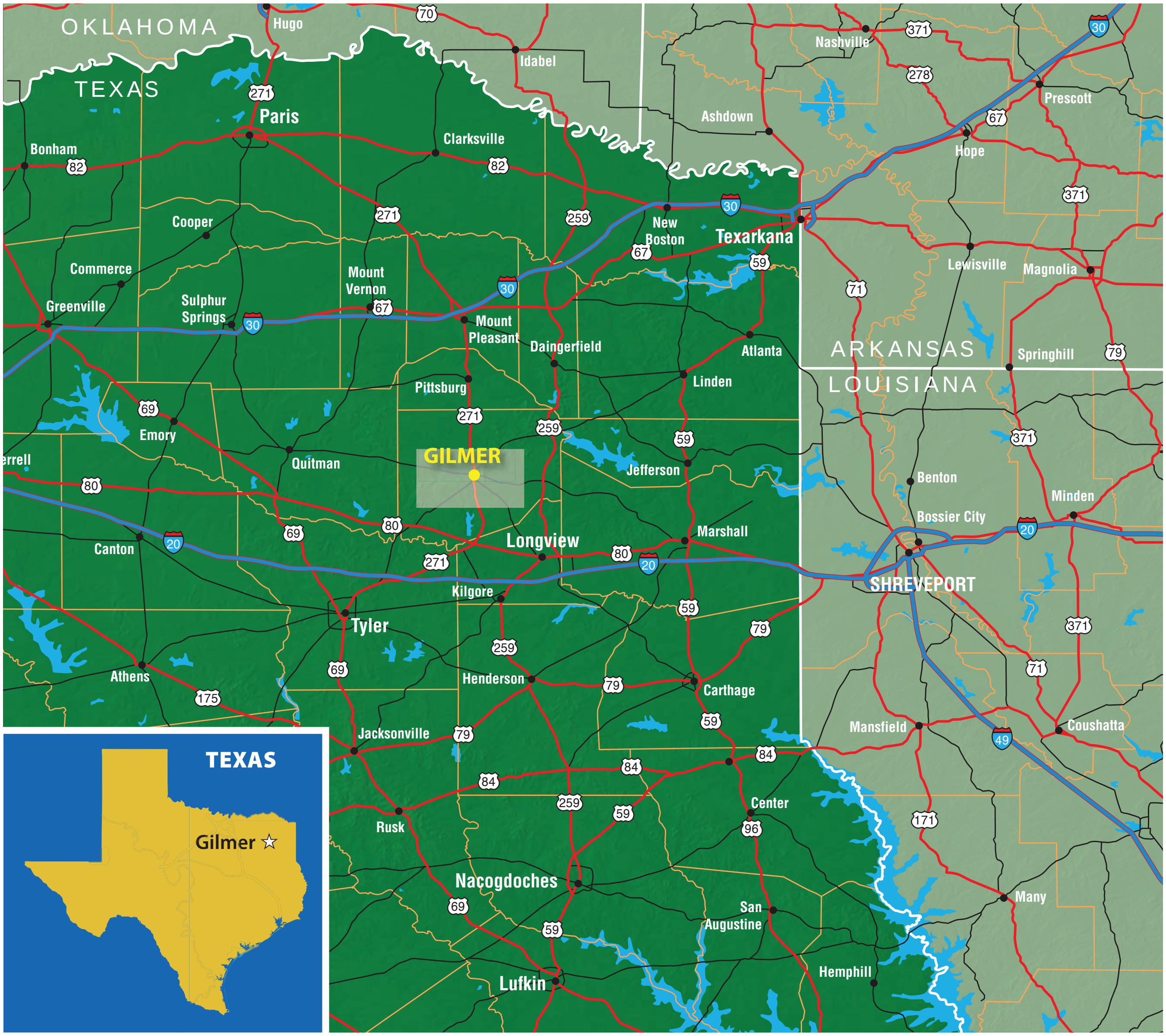


Exhibit A
AIRPORT VICINITY MAP

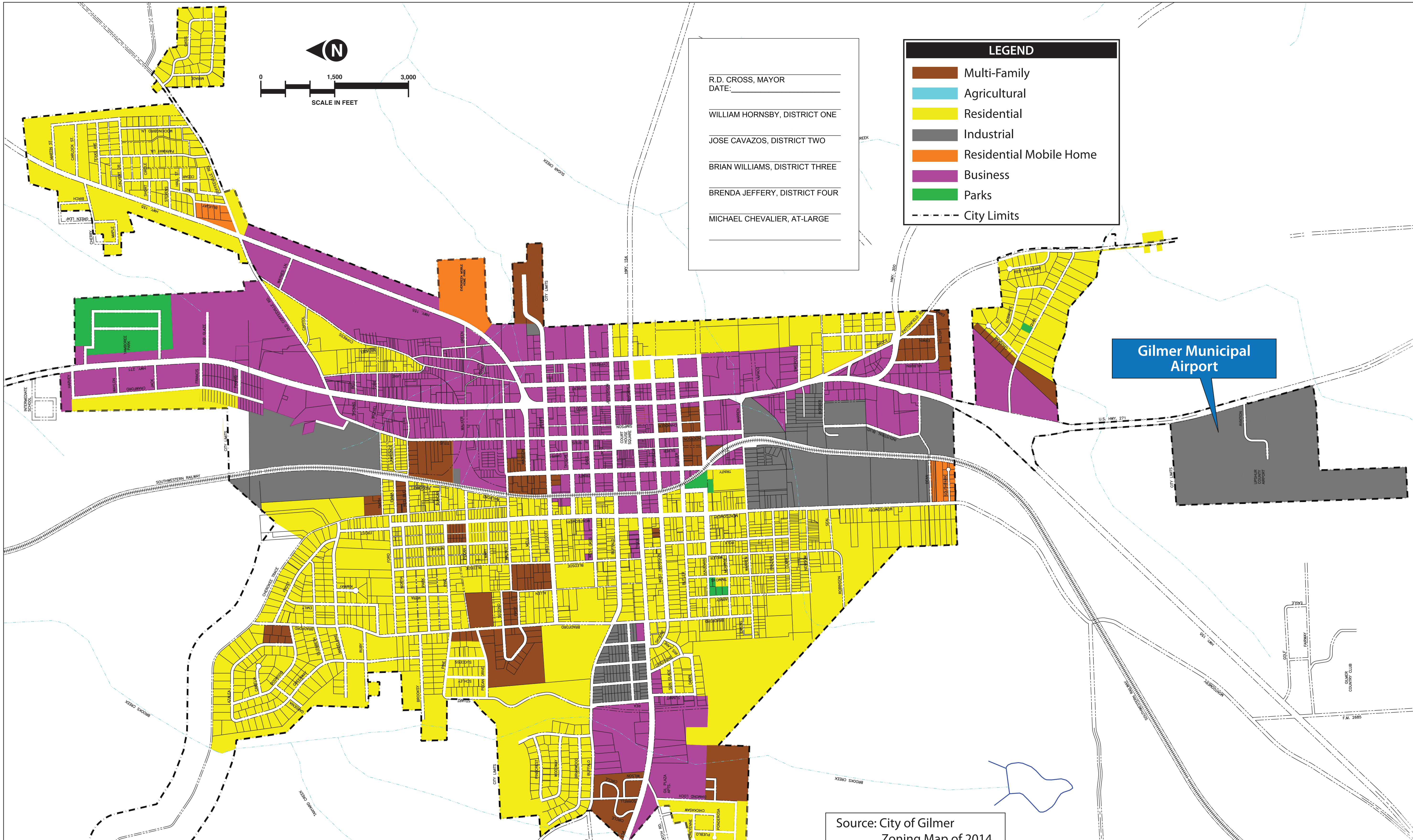


Exhibit B
CITY OF GILMER ZONING MAP

This page intentionally left blank

AIRPORT HISTORY

JXI was originally dedicated on October 23, 1969 and was intended to be utilized as a tool to bring industry to Upshur County and the City of Gilmer. In 2000, the airport was renamed to the Fox Stephens Field – Gilmer Municipal Airport in memory of Robert L. "The Silver Fox" Stephens, a Gilmer-born World War II fighter pilot who later became a test pilot, setting an air speed record in the 1960s.

Airport Terminal Building

AIRPORT ROLE

The FAA maintains a database of public use airports eligible for Airport Improvement Program (AIP) funding called the *National Plan of Integrated Airport Systems* (NPIAS). The current NPIAS includes 3,328 existing and proposed airports which are considered significant to the national air transportation system. The NPIAS is published and used by the FAA in administering the AIP, which is the source of federal funds for airport improvement projects across the country.

The AIP program is funded exclusively by user fees and user taxes, such as those on fuel and airline tickets. The 2019-2023 NPIAS estimates that $35.1 billion worth of needed airport improvements are eligible for AIP funding across the country over the next five years. An airport must be included in the NPIAS to be eligible for federal funding assistance through the AIP. **Figure 1** gives a brief description of nonprimary airport classifications and functions. Currently, JXI is recognized within the NPIAS as a General Aviation (GA) airport.

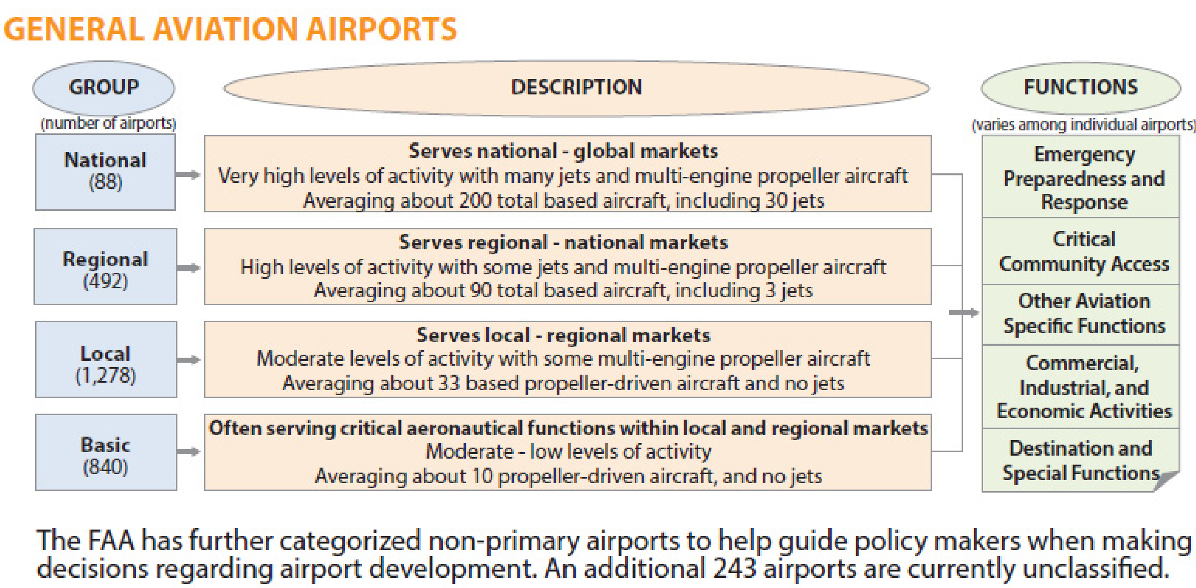


Figure 1: *Airport Classifications and functions*
Source: 2019-2023 National Plan of Integrated Airport Systems (NPIAS)

Given that JXI is designated as a GA airport within the NPIAS, certain criteria must be met in order for the federal government to view the airport as an asset to the air transportation system. Typically, GA airports have at least 10 based aircraft and are approximately 20 miles from any other airport listed in the NPIAS. Within the GA designation, there are four different airport categories: National, Regional, Local, and Basic. JXI is classified within the Local category. Local GA airports are critical components of the GA system, providing communities with access to local and regional markets, are typically located near larger population centers but not necessarily in metropolitan areas, and accommodate flight training and emergency services.

TABLE B
TASP Minimum Standards for Community Service GA Airports
Fox Stephens Field – Gilmer Municipal Airport

Facility Design	TASP Design Standard
Airport Design	ARC B-I, B-II
Design Aircraft	Light Twin, turboprop, light business jet
Minimum Land Requirements	
Runway Safety Area	62 or 40 acres
Runway Protection Zone	60 or 50 acres
Landside Development	24 or 12 acres
Runways	
Length	5,000' or 4,000'
Width	75' or 60'
Strength	30,000 lb. or 12,500 lb.
Lighting	MIRL
Taxiways	
Type	Full or partial parallel
Approach	
Type	Non-precision
Visibility minimum	400' – 1-mile LPV
Services	Terminal, restrooms, telephone, avgas, Jet A, attended 16 hrs.

Source: Texas Airport System Plan, 2010; FAA *Airport Master Record (Form 5010-1).*

In addition to its inclusion in the NPIAS, JXI is part of the *Texas Airport Systems Plan* (TASP)[1]. Within the TASP, JXI is designated as a Community Service GA airport. The Community Service GA airport is defined as a facility providing community access by single and light twin-engine aircraft, with a limited number of business jets. Community Service GA airports also generally meet the standards outlined in **Table B** and have the following characteristics:

- Provide primary business access to smaller communities
- Add capacity in metropolitan areas
- Provide access to agricultural and mineral production areas
- Generally located within a 30-minute drive from a Business / Corporate, Reliever or Commercial Service airport
- Have, or are forecasted to have, 20 based aircraft or 6,000 annual operations within five years
- Potentially located within 25 miles of a significant national recreation or preservation area

BASED AIRCRAFT

Identifying the current number of based aircraft is important to the ALP Narrative analysis as this number helps determine existing demand for several different facilities, including aircraft storage hangar space, parking aprons, pilot and passenger services, and various other aircraft support facilities. According to *FAA Airport Master Record* (Form 5010-1), 44 aircraft (39 single engine planes and 5 multi-engine planes) are based on the field. It should be noted, however, that only 42 of these aircraft are verified within the

[1] http://ftp.dot.state.tx.us/pub/txdot-info/avn/tasp_2010.pdf

FAA's National Based Aircraft Inventory Program. The FAA database program verifies aircraft at one location only, so even if an aircraft is based at a particular airport, it is not counted if it has already been verified at another airport.

EXISTING FACILITIES

Airport facilities can be categorized into two separate classifications: airside facilities and landside facilities. The airside facilities are directly associated with aircraft operations. These facilities generally include runways, taxiways, airport lighting, and navigational aids. Landside facilities pertain to facilities necessary to provide safe and efficient transition from surface transportation to air transportation, as well as support aircraft servicing, storage, maintenance, and safe operation. The existing airside and landside facilities are presented on **Exhibit C**.

AIRSIDE FACILITIES

JXI is served by a single runway configuration oriented in a north-south manner. Runway 18-36 is 4,000 feet long by 60 feet wide with basic runway markings and is noted in FAA publications as being in good condition. The centerline of Runway 18-36 is marked with a white dashed centerline assisting pilots to maintain the proper clearance from pavement edges and objects near the taxiway edges. Adjacent to the northern third of Runway 18-36 is a partial parallel taxiway, while the south end is served only by a hold apron/taxiway turnarounds. Centerline separation between Runway 18-36 and the partial parallel taxiway is 240 feet, while centerline separation between the runway and taxiway turnaround is 155 feet, as shown on **Exhibit C**. Holding position markings for the partial parallel taxiway are 200 feet from Runway 18-36 centerline. Evidence of hold position markings are present on the taxiway turnaround but have either faded over time or been removed. These holding position marking are located approximately 90 feet from runway centerline. No hold position markings are present on the hold apron/taxi turnaround at the south end of Runway 18-36.

Runway 18

Segmented Circle and Lighted Windcone

PAPI-2

Runway 18-36 has a gradient of 0.6 percent, sloping up from south to north. Runway 18-36 is equipped with medium intensity runway lighting (MIRL) and two-light precision approach path indicator (PAPI-2) systems serving both ends of the runway. In addition, the pavement strength rating for Runway 18-36 is published as 12,000 pounds single wheel gear loading (S). **Table C** and **Exhibit C** detail airside facilities for JXI.

TABLE C
Airside Facilities Data
Fox Stephens Field – Gilmer Municipal Airport

	Runway 18-36
Runway Length (feet) Runway Width (feet) Runway Surface Material Condition Pavement Markings	4,000' 60' Asphalt Good Basic / in fair condition
Runway Weight Bearing Capacity	12,000 lbs.
Runway Lighting	MIRL/SS-SR
Beacon	White-green / SS-SR
Runway End Identifier Lights	None
Approach Lighting System	None
Taxiway Lighting	Limited MITL
Approach Aids	PAPI-2
Instrument Approach Procedures	RNAV GPS and VOR/DME
Obstructions -Runway 18 -Runway 36	 35' powerline marked, 1,075' from runway 50' trees, 200' from runway
Wind Indicator	Illuminated
Weather or Navigational Aids	CTAF/UNICOM AWOS Segmented Circle Lighted Wind Indicator Rotating Beacon

AWOS: Automated Weather Observation System
CTAF: Common Traffic Advisory Frequency
DME: Distance Measuring Equipment
GPS: Global Positioning System
MIRL: Medium Intensity Runway Lighting
MITL: Medium Intensity Taxiway Lighting
PAPI: Precision Approach Path Indicator
RNAV: Area Navigation
SS-SR: Sun set to sun rise
UNICOM: Universal Communication Frequency
VOR: Very High Frequency Omnidirectional and Range

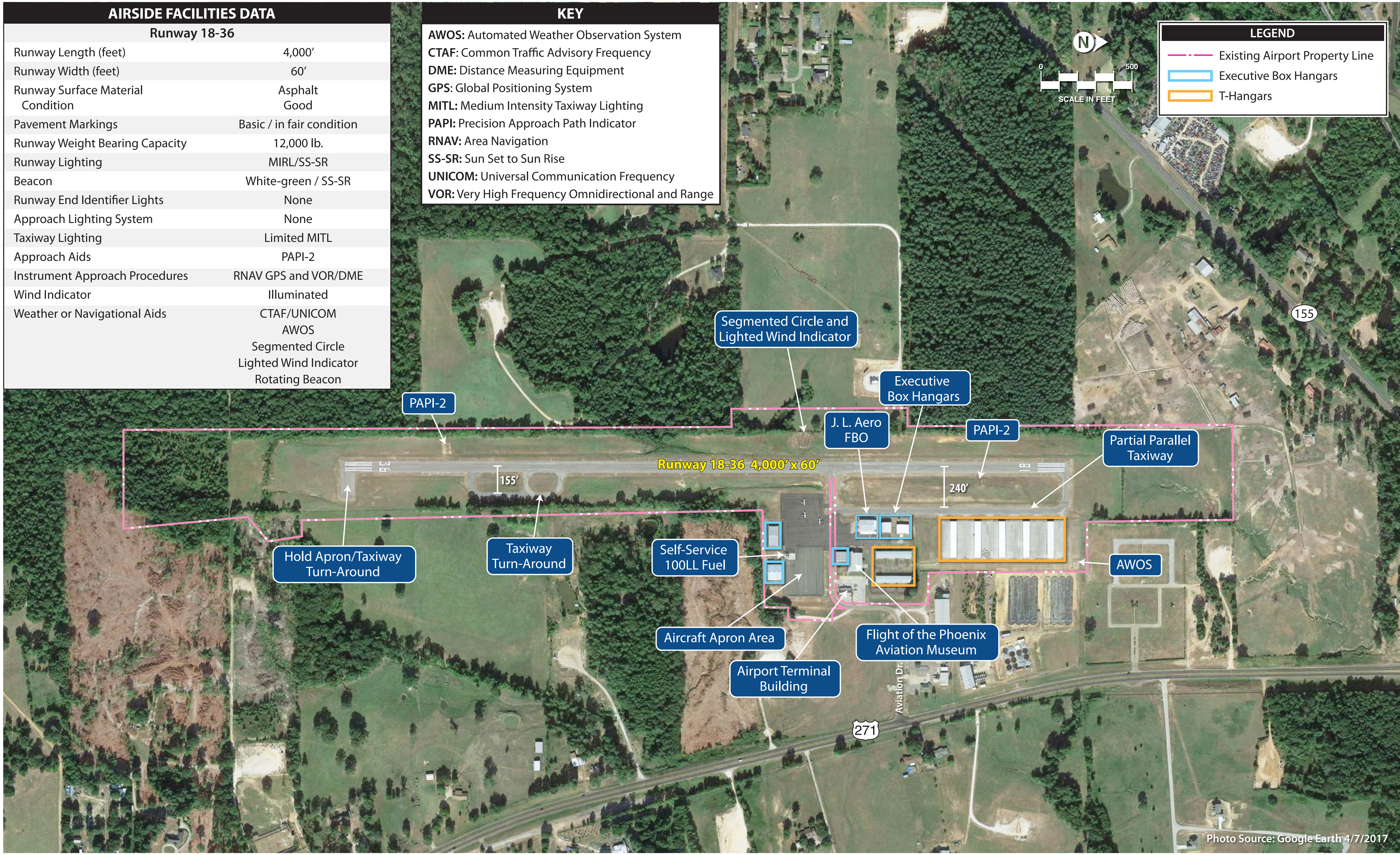
Source: FAA Airport Master Record (Form 5010-1)

AIRSIDE FACILITIES DATA

Runway 18-36	
Runway Length (feet)	4,000′
Runway Width (feet)	60′
Runway Surface Material Condition	Asphalt Good
Pavement Markings	Basic / in fair condition
Runway Weight Bearing Capacity	12,000 lb.
Runway Lighting	MIRL/SS-SR
Beacon	White-green / SS-SR
Runway End Identifier Lights	None
Approach Lighting System	None
Taxiway Lighting	Limited MITL
Approach Aids	PAPI-2
Instrument Approach Procedures	RNAV GPS and VOR/DME
Wind Indicator	Illuminated
Weather or Navigational Aids	CTAF/UNICOM AWOS Segmented Circle Lighted Wind Indicator Rotating Beacon

KEY

AWOS: Automated Weather Observation System
CTAF: Common Traffic Advisory Frequency
DME: Distance Measuring Equipment
GPS: Global Positioning System
MITL: Medium Intensity Taxiway Lighting
PAPI: Precision Approach Path Indicator
RNAV: Area Navigation
SS-SR: Sun Set to Sun Rise
UNICOM: Universal Communication Frequency
VOR: Very High Frequency Omnidirectional and Range



This page intentionally left blank

LANDSIDE FACILITIES

Aircraft hangars and apron area are available for both itinerant and based aircraft. Building and facility footprint measurements are summarized in **Table D** with locations depicted on **Exhibit C**. The airport has 24 marked tiedown positions and approximately 17,900 square yards (sy) of aircraft apron and movement area. Currently, JXI has approximately 71,400 square feet (sf) of hangar space on the airfield. Hangar styles available the airport include T-hangars and executive box hangars.

TABLE D
Landside Facilities Data
Fox Stephens Field – Gilmer Municipal Airport

	Total Footprint Area
Terminal Area	2,600 sf
FBO Area	7,250 sf
Aviation Museum	7,650 sf
T-Hangers	50,700 sf
Executive Box Hangers	20,700 sf
Marked Tie-Down Spaces	24
Total Apron and Movement Area	17,900 sy

Source: Google Maps Satellite Photo (2017)

JL Aero, LLC

100LL Self-Service Fueling Facility

Businesses that choose to locate on airport property or adjacent to the airport provide a significant impact not only to the airport, but also to the region. Encouraging businesses to locate in the vicinity of an airport is a good practice for several reasons. First, the business will benefit from being near a transportation hub. Second, the community will benefit because, if planned and executed properly, the airport will develop a buffer of industry and manufacturing that will restrict incompatible land uses, such as residential housing, from locating too close to the airport. Third, business development on and around airports can generate a direct revenue stream to the airport. Some airports have done this successfully, leading to airport self-sufficiency. JXI has one fixed base operator (FBO), JL Aero, LLC, supplying aircraft repair and services, such as maintenance on the airframe, the powerplant, and propeller/rotor blades. JL Aero, LLC also supplies and dispenses 100LL fuel, which is stored in an aboveground 4,000-gallon tank and is available for self-service via a credit card reader.

At present, the City of Gilmer owns and maintains the airport terminal building, which encompasses approximately 2,600 sf. The Flight of the Phoenix Aviation Museum (FOTPAM), a non-profit museum dedicated to providing the community with a learning environment for aviation education, is also located at JXI. The museum provides a variety of displays and makes a special effort to recognize community leaders who contributed to Gilmer's aviation history. The museum is open limited hours on weekdays and by appointment on weekends. FOTPAM also offers military flyovers honoring fallen heroes and flight experiences.[2]

Aircraft Apron and Executive Box Hangars

T-Hangars

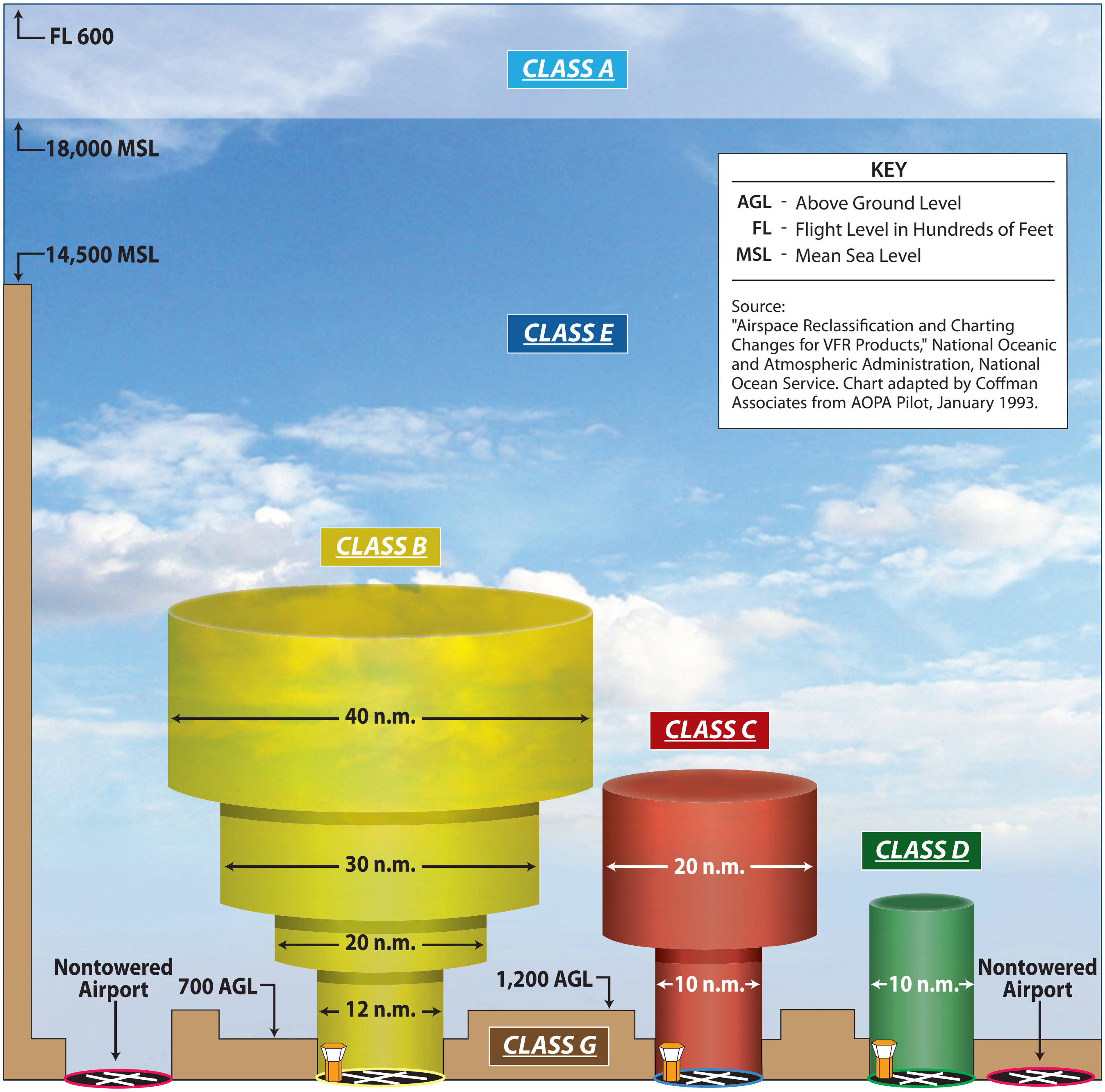
Airport Access

Access to the airport is by a single access drive from U.S. Highway 271 South via Aviation Drive. The perimeter of the airport is partially surrounded by a four-foot chain link fence, and vehicular access onto the airfield is controlled by rolling metal gates secured by pad locks. Parking for the terminal building is accessible from Aviation Drive, where a total of 36 parking spaces are available on the north, east, and west sides of the terminal. Two of the 36 parking spaces available are handicap accessible. Two pedestrian-only access gates are also provided. One access is through the west parking at the terminal building, while the second is south of the terminal building near the aircraft apron area.

VICINITY AIRSPACE

The airspace within the National Airspace System is divided into six different categories or classes. The airspace classifications that make up the National Airspace System are presented in **Exhibit D**. These categories are made up of Classes A, B, C, D, E, and G airspace. Each class of airspace contains its own criteria that must be met in terms of required aircraft equipment, operating flight rules (visual or instrument flight rules), and procedures. Classes A, B, C, D, and E are considered controlled airspace, which requires pilot communication with the controlling agency prior to airspace entry and throughout operation within the designated airspace. Pilot communication procedures, required pilot ratings, and required minimum aircraft equipment vary depending upon the class of airspace, as well as the type of flight rules in use. Class G airspace is uncontrolled and extends from the surface to the base of the overlying Class E airspace. Although air traffic control (ATC) has no authority or responsibility to control air traffic within this airspace, pilots should remember there are visual flight rule minimums that apply to Class G airspace.

[2] http://flightofthephoenix.org/



DEFINITION OF AIRSPACE CLASSIFICATIONS

CLASS A Generally airspace above 18,000 feet MSL up to and including FL 600.

CLASS B Generally multi-layered airspace from the surface up to 10,000 feet MSL surrounding the nation's busiest airports.

CLASS C Generally airspace from the surface to 4,000 feet AGL surrounding towered airports with service by radar approach control.

CLASS D Generally airspace from the surface to 2,500 feet AGL surrounding towered airports.

CLASS E Generally controlled airspace that is not Class A, Class B, Class C, or Class D.

CLASS G Generally uncontrolled airspace that is not Class A, Class B, Class C, Class D, or Class E.

JXI is within the Class E airspace, which is a controlled form for airspace designed to contain Instrument Flight Rule (IFR) operations near an airport and while aircraft are transitioning between the airport and enroute environments. This class of airspace does not require a specific pilot certification or equipment requirements to operate in Class E airspace. Basic Visual Flight Rules (VFR) visibility and distance from the clouds must be maintained. Below 10,000 feet MSL this is three statute miles visibility and 500 feet below, 1,000 feet above, and 2,000 feet horizontally. Above 10,000 feet MSL, this increases to five statute miles visibility, 1,000 feet below, and one mile horizontally.[3] Only aircraft operating under IFR are required to be in contact with air traffic control when operating in Class E airspace.

SPECIAL USE AIRSPACE

Special use airspace is defined as airspace where activities must be confined because of their nature or where limitations are imposed on aircraft not taking part in those activities. The designation of special use airspace identifies for other users the areas where military activity occurs, provides for segregation of that activity from other fliers, and allows charting to keep airspace users informed. These areas are depicted on **Exhibit E**.

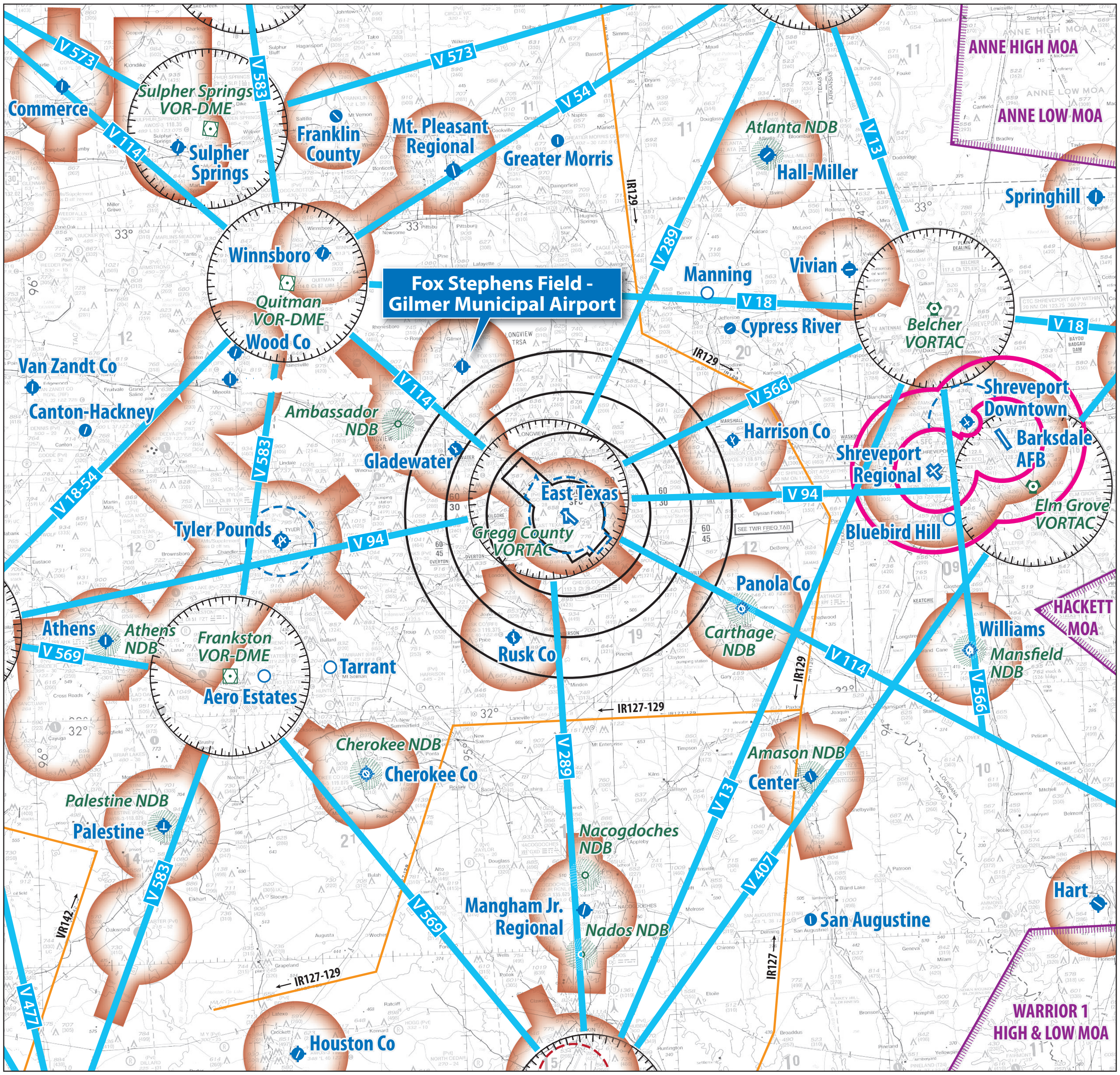
Military Training Routes: Military training routes (MTRs) are designated airspace that has been generally established for use by high performance military aircraft to train below 10,000 feet AGL (above ground level) and in excess of 250 knots. There are VR (visual) and IR (instrument) designated MTRs. MTRs with no segment above 1,500 feet AGL will be designated with the "VR" or "IR," followed by a four-digit number (e.g., VR1520, IR1521). MTRs with one or more segments above 1,500 feet AGL are identified by the route designation, followed by a three-digit number (e.g., VR531). The arrows on the route show the direction of travel. MTRs within the vicinity of JXI are shown on **Exhibit E**.

Military Operating Area: Military Operations Areas (MOAs) are designated areas of airspace established outside Class A airspace to separate or segregate certain military activities from IFR traffic and to identify where these activities are conducted for VFR traffic. While the FAA does not prohibit civilian VFR traffic from transiting an active MOA, it is strongly discouraged. MOAs in the vicinity of the airport include the following and identified on **Exhibit E**:

- Anne High MOA
- Anne Low MOA
- Hackett MOA
- Warrior 1 High and Low MOA

Victor Airways: Victor Airways are designated navigational routes extending between VOR facilities. Victor Airways have a floor of 1,200 feet above ground level (AGL), extend upward to an altitude of 18,000 feet MSL, and are eight nautical miles wide. **Exhibit E** identifies multiple Victor Airway routes in the vicinity of JXI.

[3] https://www.faasafety.gov/gslac/alc/course_content.aspx?cID=42&sID=505&preview=true



LEGEND

- Airports with other than hard-surfaced runways
- Airports with hard-surfaced runways 1,500' to 8,069' in length
- Airports with hard-surfaced runways greater than 8,069' or some multiple runways less than 8,069'
- VORTAC
- VOR-DME
- Non-Directional Radiobeacon (NDB)
- Compass Rose
- Terminal Radar Service Area
- Class C Airspace
- Class D Airspace
- Class E Airspace
- Class E Airspace with floor 700' above surface
- Military Training Routes
- Victor Airways
- Alert Area and MOA - Military Operations Area

Source: Dallas, Memphis, and Houston Sectional Charts, US Department of Commerce, National Oceanic and Atmospheric Administration, September 13, 2018

INSTRUMENT APPROACH PROCEDURES

Instrument approach procedures are a series of predetermined maneuvers established by the FAA, using electronic navigational aids that assist pilots in locating and landing at an airport, especially during instrument flight conditions. There are currently three published instrument approach procedures using area navigation (RNAV) GPS equipment for Runway 18-36 and VOR/DME. Precision instrument approaches provide vertical descent information and course guidance information to the pilot. Non-precision approaches only provide course guidance to the pilot; however, the relatively new GPS localizer performance with vertical guidance (LPV) approaches are currently categorized by the FAA as a non-precision approach even though it provides vertical guidance.

The capability of an instrument approach procedure is defined by the visibility and cloud ceiling minimums associated with the approach. Visibility minimums define the horizontal distance the pilot must be able to see in order to complete the approach. Cloud ceilings define the lowest level a cloud layer (defined in feet above the ground) can be situated for the pilot to complete the approach. If the observed visibility or cloud ceilings are below the minimums prescribed for the approach, the pilot cannot complete the instrument approach. **Table E** presents the instrument approaches and associated visibility minimums currently serving JXI.

TABLE E
Instrument Approach Procedures
Fox Stephens Field – Gilmer Municipal Airport

	WEATHER MINIMUMS BY AIRCRAFT TYPE							
	Category A		Category B		Category C		Category D	
	CH	VIS	CH	VIS	CH	VIS	CH	VIS
Runway 18								
LP MDA	405	1	405	1	405	1.125	NA	NA
LNAV MDA	465	1	465	1	465	1.375	NA	NA
Circling (GPS)	585	1	585	1	765	2.25	NA	NA
Circling (VOR/DME)	765	1	765	1.25	765	2.25	NA	NA
Runway 36								
LP MDA	405	1	405	1	405	1.125	NA	NA
LNAV MDA	425	1	425	1	425	1.25	NA	NA
Circling (GPS)	585	1	585	1	765	2.25	NA	NA
Circling (VOR/DME)	765	1	765	1.25	765	2.25	NA	NA

Aircraft categories are based on the approach speed of aircraft, which is determined as 1.3 times the stall speed in landing configuration. The approach categories are as follows:
Category A: 0-90 knots (i.e., Cessna 172)
Category B: 91-120 knots (i.e., Beechcraft King Air)
Category C: 121-140 knots (i.e., Citation X, Challenger 604)
Category D: 141-165 knots (i.e., Gulfstream IV)
Abbreviations:
CH - Cloud Height (feet above ground level)
VIS - Visibility (statute miles)
RNAV - Area Navigation
GPS - Global Positioning System
LP - Localizer Performance
MDA - Minimum Descent Altitude (used for non-precision approaches)
LNAV - Lateral Navigation
N/A - Not Authorized

The most sophisticated instrument approach procedures at JXI are associated with the RNAV GPS approaches to Runways 18 and 36. Both approach procedures offer LP (localizer performance only, no vertical component) and LNAV minimums. Each of these approaches offer visibility minimums not lower than 1-mile, also denoted as 5,000 feet runway visual range (RVR) for approach categories A and B. For Approach Category C aircraft, the minimums increase to 1-⅛ to 1-¼ mile visibility minimums. Cloud heights associated with each approach with the LP components offer slightly lower 425-foot AGL cloud height minimums. The LNAV cloud height minimums increase to 465 feet AGL. It should be noted that the instrument approach procedures available are not applicable to Approach Category D aircraft. Instrument approaches based on GPS have become very common across the country. GPS is inexpensive, as it does not require a significant investment in ground-based systems by the airport or FAA. The VOR/DME-A instrument approach serving JXI is categorized as a circling approach only, with visibility minimums of not lower than one-mile and cloud ceilings of 765 feet AGL.

SOCIOECONOMIC CHARACTERISTICS

Socioeconomic characteristics can provide valuable information and insight regarding growth and economic well-being of the study area. This information can contribute to the understanding and determination of the aviation service level requirements, as well as forecasting future operation and based aircraft levels.

POPULATION

Trends in population can provide an indication of the potential for the region to sustain growth in aviation activity. Population trends for the City of Gilmer, Upshur County, State of Texas, and the United States are outlined in **Table F**.

TABLE F
Historical Population
Fox Stephens Field – Gilmer Municipal Airport

	1990	2010	2017	CAGR (1990 – 2017)	CAGR (2010 – 2017)
City of Gilmer	4,822	4,905	5,184	0.27%	0.79%
Upshur County	31,360	39,380	41,380	1.03%	0.71%
State of Texas	17,056,760	25,244,310	28,274,280	1.89%	1.63%
United States	249,622,804	309,348,139	328,910,940	1.03%	0.88%

CAGR: Compound Annual Growth Rate
Source: The Complete Economic and Demographic Data Source, Woods and Poole 2018
U.S. Census Bureau – City of Gilmer, TX; https://www.census.gov/en.html

Population projections through 2038 retrieved from 2018 Woods and Poole Complete Economic and Demographic Data Source (CEDDS) are identified in **Table G**. As presented, the State of Texas is projected to grow at a compound annual growth rate (CAGR) of 1.37 percent through 2038, reaching a population total of approximately 38.6 million. The Upshur County population is forecasted to grow at a CAGR of

0.86 percent, resulting in a population of approximately 50,435 by 2038. As a point of comparison, the United States is projected to grow at a CAGR of 0.77 percent throughout the planning horizon.

TABLE G
Forecast Populations
Fox Stephens Field – Gilmer Municipal Airport

	2017	2023	2028	2038	CAGR (2017 – 2038)
Upshur County	41,380	44,049	46,299	50,435	0.86%
State of Texas	28,274,280	31,010,690	33,469,070	38,622,340	1.37%
United States	328,910,940	334,505,100	360,689,500	392,026,500	0.77%

CAGR: Compound Annual Growth Rate
Source: The Complete Economic and Demographic Data Source, Woods and Poole 2018

EMPLOYMENT AND PERSONAL INCOME

An overview of the community's employment and personal income base can provide pertinent information regarding the economic health of the community. The economic well-being of the community is influenced by variety and availability of employment opportunities, as well as wages offered by local employers. **Table H** summarizes employment and income data obtained from Woods and Poole CEDDS since 1990 for Upshur County, the State of Texas, and the United States.

TABLE H
Historical Employment and Income Populations
Fox Stephens Field – Gilmer Municipal Airport

	1990	2010	2017	CAGR (1990 – 2017)
Upshur County				
Total Employment	9,530	13,320	13,950	1.42%
PCPI (2009 Dollars)	$19,472	$29,965	$31,773	1.83%
Mean Household Income (2009 Dollars)	$52,490	$78,066	$78,368	1.50%
State of Texas				
Total Employment	9,242,970	14,272,930	17,148,150	2.32%
PCPI (2009 Dollars)	$25,750	$37,276	$42,727	1.89%
Mean Household Income (2009 Dollars)	$70,613	$103,068	$116,535	1.87%
United States				
Total Employment	138,331,940	173,034,710	198,989,690	1.36%
PCPI (2009 Dollars)	$29,050	$39,622	$45,335	1.66%
Mean Household Income (2009 Dollars)	$76,861	$102,642	$113,991	1.47%

CAGR: Compound Annual Growth Rate
PCPI: Per Capita Personal Income
Source: CEDDS, Woods and Poole 2018

As presented in **Table H**, total employment in Upshur County increased by 4,420 over a 27-year period, equating to a CAGR of 1.42 percent, a slower rate than State of Texas (2.32 percent); however, employment growth outpaced the United States with a CAGR of 1.36 percent over the same time period. Over this 27-year timeframe, the county also grew at a slower rate in both the per capita personal income and mean household income; however, it did outpace the United States.

Table J presents forecasts for employment, PCPI, and mean household income in Upshur County, the State of Texas, and the United States. If realized, the projected employment growth could provide a base for increased aviation demand in the region. Moreover, PCPI is determined by dividing the total income by population. For PCPI to grow, income growth must outpace population growth significantly.

TABLE J
Forecast Employment and Income Populations
Fox Stephens Field – Gilmer Municipal Airport

	2017	2023	2028	2038	CAGR (2017 - 2038)
Upshur County					
Total Employment	13,950	14,807	15,489	16,846	0.82%
PCPI (2009 Dollars)	$31,773	$34,575	$36,694	$40,078	1.01%
Mean Household Income (2009 Dollars)	$78,368	$84,503	$90,440	$101,419	1.13%
State of Texas					
Total Employment	17,148,150	19,214,800	20,926,960	24,423,730	1.55%
PCPI (2009 Dollars)	$42,727	$46,372	$49,372	$49,084	1.00%
Mean Household Income (2009 Dollars)	$116,535	$125,631	$134,642	$152,544	1.18%
United States					
Total Employment	198,989,690	217,444,800	232,064,800	259,305,800	1.16%
PCPI (2009 Dollars)	$45,335	$49,084	$51,342	$56,228	0.94%
Mean Household Income (2009 Dollars)	$113,991	$122,600	$130,962	$146,464	1.10%

CAGR: Compound Annual Growth Rate
PCPI: Per Capita Personal Income
Source: CEDDS, Woods and Poole 2018

Over the planning period, Upshur County's total employment is anticipated to grow at 0.82 percent CAGR, a rate slower than both than the State of Texas and the United States, which are projected to grow at 1.55 percent and 1.16 percent CAGR respectively. PCPI and mean household income for the county are projected to grow at 1.01 percent and 1.13 percent CAGR, while the State of Texas is projected to grow at 1.00 percent and 1.18 percent CAGR. PCPI and mean household income for the United States is projected to grow at 0.94 percent and 1.10 percent CAGR.

ENVIRONMENTAL INVENTORY

This environmental inventory identifies potential environmental sensitivities, based on the 14 environmental impact categories outlined in FAA's Order 1050.1F *Environmental Impacts: Policies and Procedures*, that should be considered when planning future improvements at the airport.

- Air Quality
- Biological Resources (including fish, wildlife, and plants)
- Climate

- Coastal Resources
- Department of Transportation Act, Section 4(f)
- Farmlands
- Hazardous Materials, Solid waste, and Pollution Prevention
- Historical, Architectural, Archeological, and Cultural Resources
- Land Use
- Natural Resources and Energy Supply
- Noise and Compatible Land Use
- Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks
- Visual Effects (including light emissions)
- Water Resources (including wetlands, floodplains, surface waters, groundwater, and wild and scenic rivers)

It was determined that the following resources are not present with the airport environs or cannot be inventoried because they are evaluated as part of project implementation:

- Resources Not Present
  - Coastal Resources (Coastal Barriers and Coastal Zones) – the airport is inland and not subject to any coastal restrictions.
  - Wild and Scenic Rivers – There are no designated Wild and Scenic Rivers within the vicinity of the airport. The closest designated river is the Cossatot River, located in Arkansas.
- Resources Not Inventoried
  - Visual effects (including light emissions)
  - Natural resources and energy supply

AIR QUALITY

The concentration of various pollutants in the atmosphere describes the local air quality. The significance of a pollution concentration is determined by comparing it to the state and federal air quality standards. In 1971, the U.S. Environmental Protection Agency (EPA) established standards that specify the maximum permissible short-term and long-term concentrations of various air contaminants. The National Ambient Air Quality Standards (NAAQS) consist of primary and secondary standards for six criteria pollutants, which include: Ozone (O_3), Carbon Monoxide (CO), Sulfur Dioxide (SO_2), Nitrogen Oxide (NO_x), Particulate matter (PM_{10} and $PM_{2.5}$), and Lead (Pb).

Based on both federal air quality standards, a specific geographic area can be classified as either an "attainment," "maintenance," or "non-attainment" area for each pollutant. The threshold for non-attainment designation varies by pollutant. Upshur County, where the airport is located, is designated as an attainment area for all federal criteria pollutants.[4]

[4] https://www3.epa.gov/airquality/greenbook/anayo_tx.html

BIOLOGICAL RESOURCES

Biotic resources include the various types of plants and animals that are present in an area. The term also applies to rivers, lakes, wetlands, forests, and other habitat types that support plants and animals.

The U.S. Fish and Wildlife Service (USFWS) is charged with overseeing the requirements contained within Section 7 of the *Endangered Species Act* (ESA). This Act was put into place to protect animal or plant species whose populations are threatened by human activities. Along with the FAA, the USFWS reviews projects to determine if a significant impact to these protected species will result with implementation of a proposed project. Significant impacts occur when the proposed action could jeopardize the continued existence of a protected species or would result in the destruction or adverse modification of federally designated critical habitat in the area.

According to the USFWS Information for Planning and Consultation (IPaC), three federally listed threatened or endangered species have the potential to occur in the vicinity of the airport. Additionally, Texas Parks & Wildlife Department (TPW) maintains a list of animal and plant species of conservation concern under the authority of state law. These species, which are all birds, have been identified in **Table K**.

TABLE K
Federally Listed Species Potentially Occurring Near JXI
Upshur County

Species Name	Scientific Name	Federal Status	State Status	Habitat
Least tern	*Sterna antillarum*	Endangered	Endangered[5]	The least tern occupies base or sparsely vegetated sand, shell, and gravel beaches, often along rivers and reservoirs.[6]
Piping plover	*Charadrius melodus*	Threatened	Threatened	The piping plover lives on sandy beaches and lakeshores.[7]
Red knot	*Calidris canutus rufa*	Threatened	NA	The red knot tends to winter in warmer climates, Texas Gulf Coast included, and migrates annually to the Canadian tundra to breed.[8]

Source: US Fish and Wildlife Service: Information for Planning and Consulting, https://ecos.fws.gov/ipac/
Texas Parks & Wildlife: https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/nongame/listed-species/birds.phtml

The red knot was not identified on the TPW list of species of conservation concern. Habitat for these species is not found on airport property and there are no areas of designated critical habitat within the vicinity of the airport.

In addition to the ESA, the *Migratory Bird Treaty Act* (MBTA) is also applicable at the airport as much of the study area constitutes habitat for birds protected under this Act. The IPaC report lists six bird species that may be present at the airport.

[5] The least tern is also referred to as the interior least tern, according to Texas Parks & Wildlife.
[6] https://www.fws.gov/midwest/endangered/birds/leasttern/IntLeastTernFactSheet.html
[7] https://www.fws.gov/midwest/endangered/pipingplover/pipingpl.html
[8] https://www.fws.gov/northeast/redknot/pdf/Redknot_BWfactsheet092013.pdf

Birds protected under the MBTA may nest, winter, or migrate throughout the area, including those protected by the ESA. Under the requirements of the MBTA, all project proponents are responsible for complying with the appropriate regulations protecting birds when planning and developing a project. Migratory birds with potential to occur in the study area are listed in **Table L**.

TABLE L
Birds Protected Under the *Migratory Bird Treaty Act*
Fox Stephens Field – Gilmer Municipal Airport

Species Name	Scientific Name	Breeding Season
American kestrel	*Falco sparverius paulus*	April 1 – August 31
Bald eagle	*Haliaeetus leucocephalus*	September 1 – July 31
Kentucky warbler	*Oporornis formosus*	April 20 – August 20
Prothonotary warbler	*Protonotaria citrea*	April 1 – July 31
Red-headed woodpecker	*Melanerpes erythrocephalus*	May 10 – September 10
Wood thrush	*Hylocichla mustelina*	May 10 – August 31

Source: U.S. Fish and Wildlife Service, Information for Planning and Conservation, https://ecos.fws.gov/ipac/ (Source cited December 2018)

CLIMATE

The EPA's *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2016*, found that the transportation sector, which includes aviation, accounted for 27 percent of U.S. greenhouse gas (GHG) emissions in 2016. Of this, aviation contributed 168.0 million metric tons (MMT) of carbon dioxide equivalent (CO_2e), or nearly nine percent of all transportation emissions.[9, 10] Transportation sources include cars, trucks, ships, trains, and planes. Most of the GHG emissions from transportation are CO_2 emissions resulting from the combustion of petroleum-based products in internal combustion engines. Relatively insignificant amounts of methane (CH_4), hydrofluorocarbon (HFC) and nitrous oxide (N_2O) are emitted during fuel combustion.

From 1990 to 2016, total transportation emissions increased. The upward trend is largely due to increased demand for travel; however, much of this travel was done in passenger cars and light-duty trucks. In addition to transportation-related emissions, **Figure 2** shows all GHG emissions sources in the U.S. in 2016.

Increasing concentrations of GHGs can affect global climate by trapping heat in the Earth's atmosphere. Scientific measurements have shown that Earth's climate is warming, with concurrent impacts, including warmer air temperatures, rising sea levels, increased storm activity, and greater intensity in precipitation events. This climate change is a global phenomenon that can also have local impacts (Intergovernmental Panel on Climate Change, 2014). GHGs, such as water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and ozone (O_3), are both naturally occurring and anthropogenic (man-made).

[9] Aviation activity consists of emissions from jet fuel and aviation gasoline consumed by commercial aircraft, general aviation, and military aircraft.
[10] Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2016, Table 2-13 (available: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2016)

Research has also shown a direct correlation between fuel combustion and GHG emissions. GHGs from anthropogenic sources include CO_2, CH_4, N_2O, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). CO_2 is the most important anthropogenic GHG because it is a long-lived gas that remains in the atmosphere for up to 100 years.

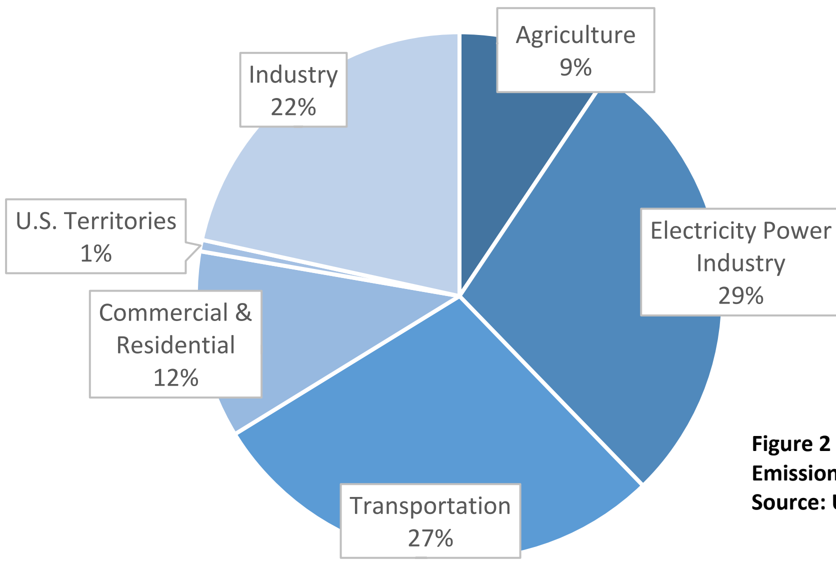


Figure 2 2016 Sources of Greenhouse Gas Emissions in the U.S.
Source: U.S. EPA (2018)

DEPARTMENT OF TRANSPORTATION ACT, SECTION 4(f)

Section 4(f) of the DOT Act, which was recodified and renumbered as Section 303(c) of 49 USC, provides that the Secretary of Transportation will not approve any program or project that requires the use of any publicly owned land from a historic site, public parks, recreation areas, or waterfowl and wildlife refuges of national, state, regional, or local importance unless there is no feasible and prudent alternative to the use of such land, and the project includes all possible planning to minimize harm resulting from the use.

The following list summarizes the nearest properties of each type that may be protected under Section 4(f) of the DOT Act:

- Recorded Texas Landmark – Dickson Colored Orphanage Cemetery, 0.85 miles north of the airport
- Recorded Texas Landmark – Warren-Futrell House, 1.25 miles north of the airport
- Recorded Texas Landmark - 1925 Gilmer Post Office, 1.67 miles north of the airport
- Recorded Texas Landmark – Enon Baptist Church, 7.18 miles northwest of airport
- National Register of Historic Places – Upshur County Courthouse, 1.73 miles north of the airport
- Local Park – Warner Memorial Park, 2.5 miles northeast of the airport
- Local Park – Lake Gilmer Park, located 4.51 miles northwest of the airport

FARMLANDS

Under the *Farmland Protection Policy Act* (FPPA), federal agencies are directed to identify and consider the adverse effects of federal programs on the preservation of farmland, evaluate appropriate alternative actions which could lessen adverse effects, and to assure that such federal programs are, to the extent practicable, compatible with state or local government programs and policies to protect farmland. The FPPA guidelines, developed by the U.S. Department of Agriculture (USDA), apply to farmland classified as prime or unique, or of state or local importance as determined by the appropriate government agency, with concurrence by the Secretary of Agriculture.

Information obtained from the Natural Resource Conservation Service's (NRCS) Web Soil Survey (WSS) indicates that approximately 50 percent of airport property has soil classified as "prime farmland." The other 50 percent of airport property has a classification of "not prime farmland." These soil classifications are shown on **Exhibit F**.

HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION

Federal, state, and local laws regulate hazardous materials use, storage, transport, and disposal. These laws may extend to past and future landowners of properties containing these materials. In addition, disrupting sites containing hazardous materials or contaminates may cause significant impacts to soil, surface water, groundwater, air quality, and organisms using these resources. According to the EPA's *EJSCREEN*, there are no Superfund or brownfield sites within five miles of the airport.[11]

HISTORICAL, ARCHITECTURAL, ARCHEOLOGICAL, AND CULTURAL RESOURCES

Determination of a project's environmental impact to historic and cultural resources is made under guidance in the *National Historic Preservation Act* (NHPA) *of 1966*, as amended, the *Archaeological and Historic Preservation Act* (AHPA) *of 1974*, the *Archaeological Resources Protection Act* (ARPA), and the *Native American Graves Protection and Repatriation Act* (NAGPRA) *of 1990*. In addition, the *Antiquities Act of 1906*, the *Historic Sites Act of 1935*, and the *American Indian Religious Freedom Act of 1978* also protect historical, architectural, archaeological, and cultural resources. Impacts may occur when a proposed project causes an adverse effect on a property which has been identified (or is unearthed during construction) as having historical, architectural, archaeological, or cultural significance.

There are four places of historic significance located within five miles of the airport. These locations are:

- The Dickson Colored Orphanage Cemetery is located 0.85 miles north of the airport and is listed as a Recorded Texas Landmark.
- The Warren-Futrell House is located 1.25 miles north of the airport and is listed as a Recorded Texas Landmark.

[11] https://ejscreen.epa.gov/mapper/

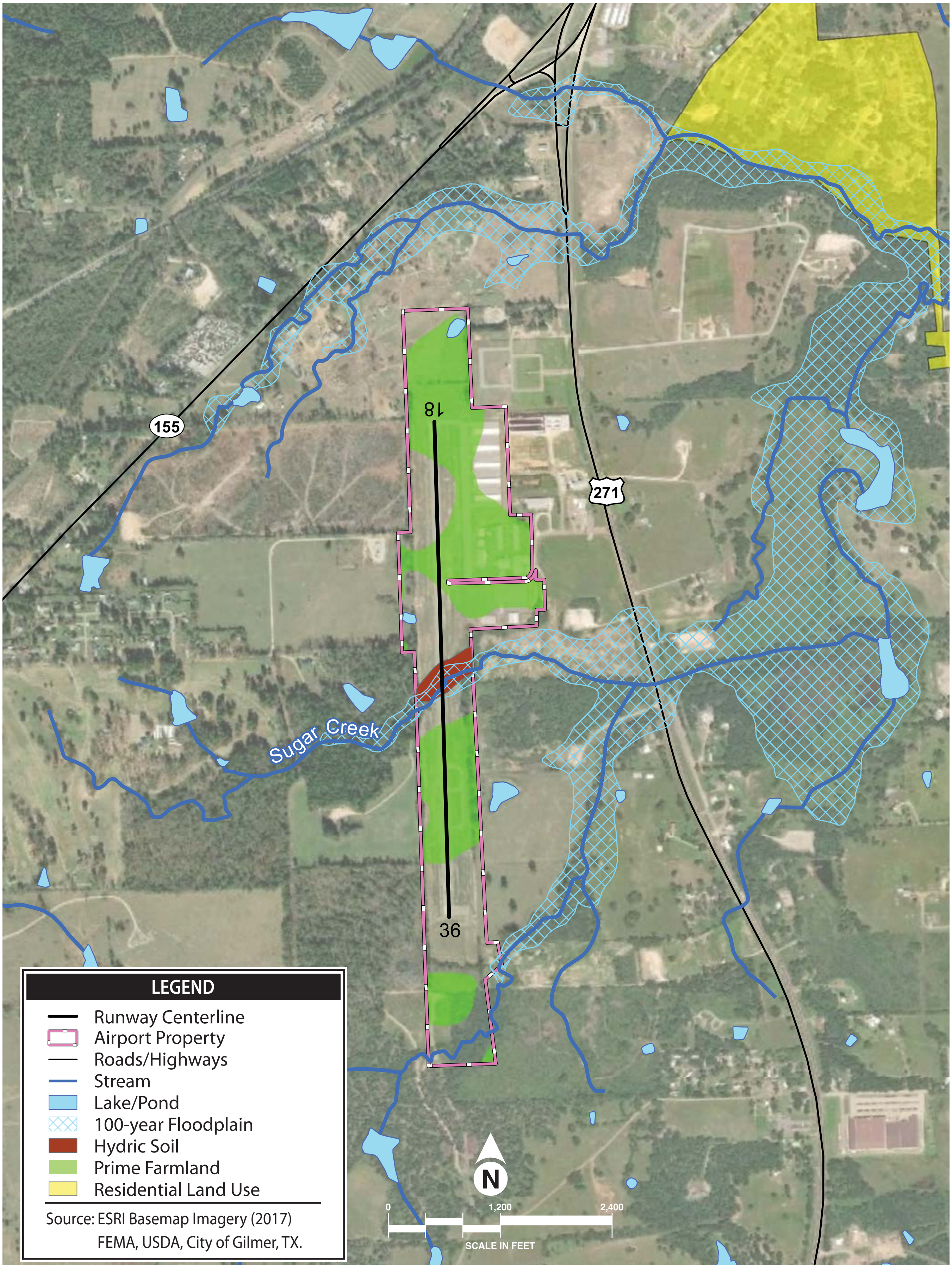


Exhibit F
ENVIRONMENTAL SENSITIVITIES

- The 1925 Gilmer Post Office, also noted as a Recorded Texas Landmark, is located 1.67 miles north of the airport.
- The Upshur County Courthouse is located 1.73 miles north of the airport is listed on the National Register of Historic Places within five miles of the airport.

LAND USE

Land uses around the airport are described earlier in the Airport Background section and are displayed on **Exhibit B**.

NOISE AND COMPATIBLE LAND USE

Federal land use compatibility guidelines are established under 14 CFR Part 150 (Part 150), *Airport Noise Compatibility Planning*. According to 14 CFR 150, residential land uses and schools are noise-sensitive land uses that are not considered compatible with a 65 decibel (dB) Day-Night Average Sound Level (DNL). Other noise-sensitive land uses (such as religious facilities, hospitals, or nursing homes), if located within a 65 dB DNL contour, are generally compatible when an interior noise level reduction of 25 dB is incorporated into the design and construction of the structure. Special consideration also needs to be given to noise-sensitive areas within Section 4(f) properties where the land use compatibility guidelines in 14 CFR 150 do not account for the value, significance, and enjoyment of the area in question (FAA 2015). A Part 150 study has not been previously conducted for the airport.

Noise-sensitive land uses near the airport consist primarily of low-density residential uses; other noise-sensitive land uses in the vicinity of JXI include:

- Schools
  - Bruce Junior High School – 1.00 mile north-northeast
  - Gilmer High School – 1.79 miles north-northwest
  - Gilmer Intermediate School – 3.59 miles north
  - Gilmer Elementary School – 3.66 miles north
- Hospitals / Nursing Homes
  - Wesley House – 0.62 miles northeast
  - Gilmer Nursing & Rehabilitation Center – 2.16 north
  - Focused Care of Gilmer – 2.48 miles north-northeast
  - The Bradford House – 2.92 miles northwest
- Religious Facilities
  - Faith Church – 0.70 miles west
  - Southside Baptist Church – 1.16 northwest
  - Gilgal Baptist Church – 1.18 miles north-northeast
  - Gilmer Missionary Baptist Church – 1.72 miles northwest
  - First United Methodist Church – 1.74 miles north
  - First Baptist Church – 1.78 miles north
  - Church of Christ – 1.79 miles north-northwest

- Pine Acres Baptist Church – 1.81 miles north
- Calvary Baptist Church – 1.86 miles north-northwest
- Moses Chapel CME Church – 1.97 miles north-northeast

Chapter 10 of the City of Gilmer Code of Ordinances is dedicated to airport regulations. These regulations establish the Airport Board and regulate height and land uses within protected zones around airports. Article IV titled "Gilmer Municipal Airport - Fox Stephens Field Hazard Zoning Regulations," specifically Section 10-204, establishes and defines protected zones for JXI, such as the approach zone, conical zone, horizontal zone, and transitional zone. Within these protected zones, no structure shall be erected, altered, or replaced, and no tree shall be allowed to grow in in excess of applicable height limitations defined in the code for these zones.

Prohibited land uses in protected zones include those which create hazards to safe flight and/or electrical interference with navigational signals or radio communications between the airport and aircraft, any use which makes it difficult for pilots to distinguish between airport lights and others, any use which results in glare in the eyes of pilots using the airport, uses which impair visibility in the vicinity of the airport, uses creating potential bird strike hazards, or otherwise in any way endanger or interfere with aircraft using the airport.

Section 42.021, Texas Local Government Code defines the Extraterritorial Jurisdictions which are unincorporated areas outside a city's municipality that is contiguous to the corporate boundaries of a municipality.[12] In the case of Gilmer, those areas include all unincorporated lands up to one mile beyond the city boundary. The Code of Ordinances for the city allow comprehensive planning and powers of the Planning Commission in the extraterritorial jurisdiction of the city, to ensure the most appropriate and beneficial use of land, water, and other natural resources are consistent with the public interest.[13]

Areas adjacent to the airport that are within unincorporated Upshur County are subject to the county development regulations. The county does not have any airport-related development restrictions or zoning requirements regarding land under county jurisdiction around the airport.

Exhibit B depicts the City of Gilmer zoning map.

SOCIOECONOMICS, ENVIRONMENTAL JUSTICE, AND CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS

General socioeconomic information, such as population and economic trends, are addressed earlier in Chapter One. However, FAA Order 1050.1F specifically requires that a federal action causing disproportionate impacts to an environmental justice population (i.e., a low-income or minority population) be considered, as well as an evaluation of environmental health and safety risks to children. The EPA's *EJSCREEN* online tool was consulted regarding the presence of environmental justice areas within the airport environs. Within five miles of the airport, 40 percent of the population is considered low-income

[12] https://statutes.capitol.texas.gov/Docs/LG/htm/LG.42.htm
[13] https://library.municode.com/tx/gilmer/codes/code_of_ordinances?nodeId=COORGITE

and 27 percent is considered a minority population. Likewise, according to *EJSCREEN*, five percent of the population is under the age of five within a five-mile radius of the airport.

WATER RESOURCES

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

According to USFWS, which manages the National Wetlands Inventory on behalf of all federal agencies, a riverine has been identified as wetlands on airport property. It is important to note that this area was identified as a wetland based on a review of aerial photography dated 1980 and may no longer be present. The location of the wetlands is identified on **Exhibit F**.

Based on information from the NRCS-WSS, most of the airport property does not contain hydric soils. However, a small portion of airport property, which is equivalent to less than three percent of the site, has been identified as being somewhat hydric. These soils are a fine sandy loam that has potential to flood frequently.

Floodplains. EO 11988 directs federal agencies to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by the floodplains. Based on a review of Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) map dated October 19, 2010 (FIRM Map Number 48459C0305F), a portion of Runway 18-36 has been identified as a Special Flood Hazard Area – Zone A subject to flooding by a 100-year flood event; however, no Base Food Elevations have been determined. This floodplain has been identified around Sugar Creek.

Surface Waters. The *Clean Water Act* provides the authority to establish water quality standards, control discharges, develop waste treatment management plans and practices, prevent or minimize the loss of wetlands, and regulate other issues concerning water quality. Water quality concerns related to airport development most often relate to the potential for surface runoff and soil erosion, as well as the storage and handling of fuel, petroleum products, solvents, etc. Additionally, Congress has mandated (under the *Clean Water Act*) the National Pollutant Discharge Elimination System (NPDES). Using NPDES permits, certain procedures are required to prevent contamination of water bodies from storm water runoff. In 1998, the State of Texas assumed authority to administer the NPDES program in Texas through the Texas

Commission on Environmental Quality (TCEQ) Texas Pollutant Discharge Elimination System (TPDES) program. TPDES has authority over discharges of pollutants into state surface waters, with exception of discharges associated with oil, gas, and geothermal exploration and development activities.[14]

Examples of direct impacts to surface waters include any in-water work resulting from expansion of an existing FAA facility adjacent to surface waters, or a withdrawal of water from a surface water for construction or operations. Little Cypress Creek, located approximately 4.5 miles north-northeast of the airport, is listed as impaired stream under section 303(d) of the *Clean Water Act*. A review of the National Hydrography Dataset, published by the United States Geological Survey, indicates there are drainage channels on airport property.

Wild and Scenic Rivers. The National Wild and Scenic Rivers Act was established to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The closest designated Wild and Scenic River is a portion of the Cossatot River, located 117.68 miles north-northeast of the airport in Arkansas.[15]

Groundwater. Groundwater is subsurface water that occupies the space between sand, clay, and rock formations. The term aquifer is used to describe the geologic layers that store or transmit groundwater, such as to wells, springs, and other water sources. Examples of direct impacts to groundwater could include withdrawal of groundwater for operational purposes, or reduction of infiltration or recharge area due to new impervious surfaces. There is no sole source aquifer near the airport. The airport is underlain by semi-consolidated sand, interbedded with silt, clay, and minor carbonate rock, with a moderate to high hydraulic conductivity.[16]

FORECASTS OF AVIATION DEMAND

Facility planning requires a definition of demand that may be expected to occur during the useful life of the facility's crucial components. For JXI, this involves projecting aviation demand for a 20-year timeframe. In this report, forecasts of registered aircraft, based aircraft, based aircraft fleet mix, annual airport operations, and forecasts of airport peaking characteristics are projected.

The forecasts generated may be used for a multitude of purposes, including facility needs assessments and environmental evaluations. The forecasts will be submitted to TxDOT – Aviation Division for review and approval to ensure accuracy and reasonable projection of aviation activity. The intent of the projections is to enable the City of Gilmer and JXI to make facility improvements to meet demand in the most efficient and cost-effective manner possible.

It should be noted that aviation activity can be affected by numerous outside influences on local, regional, and national levels. As a result, forecasts of aviation demand should be used only for advisory purposes. It is recommended that planning strategies remain flexible enough to accommodate any unforeseen facility needs.

[14] https://www.tceq.texas.gov/permitting/wastewater/pretreatment/tpdes_definition.html
[15] https://www.rivers.gov/map.php
[16] https://water.usgs.gov/ogw/aquifer/101514-wall-map.pdf

FORECASTING APPROACH

Typically, the most accurate and reliable forecasting approach is derived from multiple analytical forecasting techniques. Analytical forecasting methodologies typically consist of regression analysis, trend analysis and extrapolation, market share or ratio analysis, and smoothing. Using multiple forecasting techniques based upon each aviation demand indicator, an envelope of aviation demand projections can be generated. Ultimately, the preferred planning forecast can consist of a combination of forecasts or, it is possible to use just one forecast result.

Regression analysis can be described as a forecasting technique that correlates certain aviation demand variables (such as passenger enplanements or operations) with economic measures. When using regression analysis, the technique should be limited to relatively simple models containing independent variables for which reliable forecasts are available (such as population or income forecasts).

Trend analysis and *extrapolation* is a forecasting technique that records historical activity (such as airport operations) and projects this pattern into the future. Oftentimes, this technique can be beneficial when local conditions of the study area are differentiated from the region or other airports.

Market share or *ratio analysis* can be described as a forecasting technique that assumes the existence of a top-down relationship between national, regional, and local forecasts. The local forecasts are presented as a market share of regional forecasts, and regional forecasts are presented as a market share of national forecasts. Typically, historical market shares are calculated and used as a base to project future market shares.

Smoothing is a statistical forecasting technique that can be applied to historical data, giving greater weight to the most recent trends and conditions. Generally, this technique is most effective when generating short-term forecasts.

NATIONAL GENERAL AVIATION TRENDS

Each year, the FAA updates and publishes a national aviation forecast. Included in this publication are forecasts for the large air carriers, regional/commuter air carriers, GA, and FAA workload measures. The forecasts are prepared to meet budget and planning needs of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and the general public. The current edition when this chapter was prepared was FAA *Aerospace Forecasts – Fiscal Years 2018-2038*, published in March 2018. The FAA primarily used the economic performance of the United States as an indicator of future aviation industry growth. Similar economic analyses are applied to the outlook for aviation growth in international markets. The following discussion is summarized from the FAA Aerospace Forecasts.

The FAA forecasts the fleet mix and hours flown for single engine piston aircraft, multi-engine piston aircraft, turboprops, business jets, piston and turbine helicopters, light sport, experimental, and others (gliders and balloons). The FAA forecasts “active aircraft,” not total aircraft. An active aircraft is one that is flown at least one hour during the year. It is important to note that from 2010 through 2013, the

FAA undertook an effort to have all aircraft owners re-register their aircraft. This effort resulted in a 10.5 percent decrease in the number of active general aviation aircraft, mostly in the piston category.

The long-term outlook for general aviation is stable to optimistic, as growth at the high-end offsets continuing retirements at the traditional low end of the segment. The active general aviation fleet is forecast to remain relatively stable between 2018 and 2038. While steady growth in both gross domestic product (GDP) and corporate profits results in continued growth of the turbine and rotorcraft fleets, the largest segment of the fleet, fixed-wing piston aircraft, continues to shrink over the FAA's forecast.

In 2017, the previous slow decline in aircraft deliveries of the general aviation industry reversed course with increases in the piston segment. Single engine piston deliveries by U.S. manufacturers were up 8.8 percent, while the smaller category of multi-engine piston deliveries went up by 24.2 percent. Business jet deliveries were about the same as the previous year, marginally down by 0.2 percent. Turboprop deliveries were also slightly down by 0.5 percent.

In 2017, the FAA estimated there were 143,265 piston-powered fixed-wing aircraft in the national fleet. The total number of fixed-wing piston-powered aircraft in the fleet is forecast to decline by 0.9 percent from 2017-2038, resulting in 119,645 by 2038. This includes -1.0 percent annually for single engine pistons and -0.4 percent for multi-engine pistons.

Total turbine aircraft are forecast to grow at an annual growth rate of 2.0 percent through 2038. The FAA estimates there were 30,905 turbine-powered aircraft in the national fleet in 2017, and there will be 46,160 by 2038. This includes annual growth rates of 1.7 percent for turboprops, 2.2 percent for business jets, and 1.9 percent for turbine helicopters.

While comprising a much smaller portion of the general aviation fleet, experimental aircraft, typically identified as home-built aircraft, are projected to grow annually by 0.8 percent through 2038. The FAA estimates there were 27,865 experimental aircraft in 2017, and these are projected to grow to 33,105 by 2038. Sport aircraft are forecast to grow 3.6 percent annually through the long-term, growing from 2,585 in 2017 to 5,440 by 2038. **Exhibit G** presents the historical and forecast U.S. active general aviation aircraft.

The FAA also forecasts total operations based upon activity at control towers across the United States. Operations are categorized as air carrier, air taxi/commuter, general aviation, and military. General aviation operations, both local and itinerant, declined significantly as a result of the 2008-2009 recession and subsequent slow recovery. Through 2038, total general aviation operations are forecast to grow 0.3 percent annually. Air taxi/commuter operations are forecast to decline by 2.1 percent through 2028, and then increase slightly through the remainder of the forecast period. Overall, air taxi/commuter operations are forecast to decline by 0.6 percent annually from 2017 through 2038.

General Aviation Aircraft Shipments and Revenue

The 2008-2009 economic recession has had a negative impact on general aviation aircraft production, and the industry has been slow to recover. Aircraft manufacturing declined for three straight years from

2008 through 2010. According to the General Aviation Manufacturers Association (GAMA), there is optimism that aircraft manufacturing will stabilize and return to growth, which has been evidenced since 2011. **Table M** presents historical data related to general aviation aircraft shipments.

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

Year	Total	SEP	MEP	TP	J	Net Billings ($millions)
1994	1,132	544	77	233	278	3,749
1995	1,251	605	61	285	300	4,294
1996	1,437	731	70	320	316	4,936
1997	1,840	1043	80	279	438	7,170
1998	2,457	1508	98	336	515	8,604
1999	2,808	1689	112	340	667	11,560
2000	3,147	1,877	103	415	752	13,496
2001	2,998	1,645	147	422	784	13,868
2002	2,677	1,591	130	280	676	11,778
2003	2,686	1,825	71	272	518	9,998
2004	2,962	1,999	52	319	592	12,093
2005	3,590	2,326	139	375	750	15,156
2006	4,054	2,513	242	412	887	18,815
2007	4,277	2,417	258	465	1,137	21,837
2008	3,974	1,943	176	538	1,317	24,846
2009	2,283	893	70	446	874	19,474
2010	2,024	781	108	368	767	19,715
2011	2,120	761	137	526	696	19,042
2012	2,164	817	91	584	672	18,895
2013	2,353	908	122	645	678	23,450
2014	2,454	986	143	603	722	24,499
2015	2,331	946	110	557	718	24,129
2016	2,268	890	129	582	667	20,092
2017	2,324	936	149	563	676	20,197

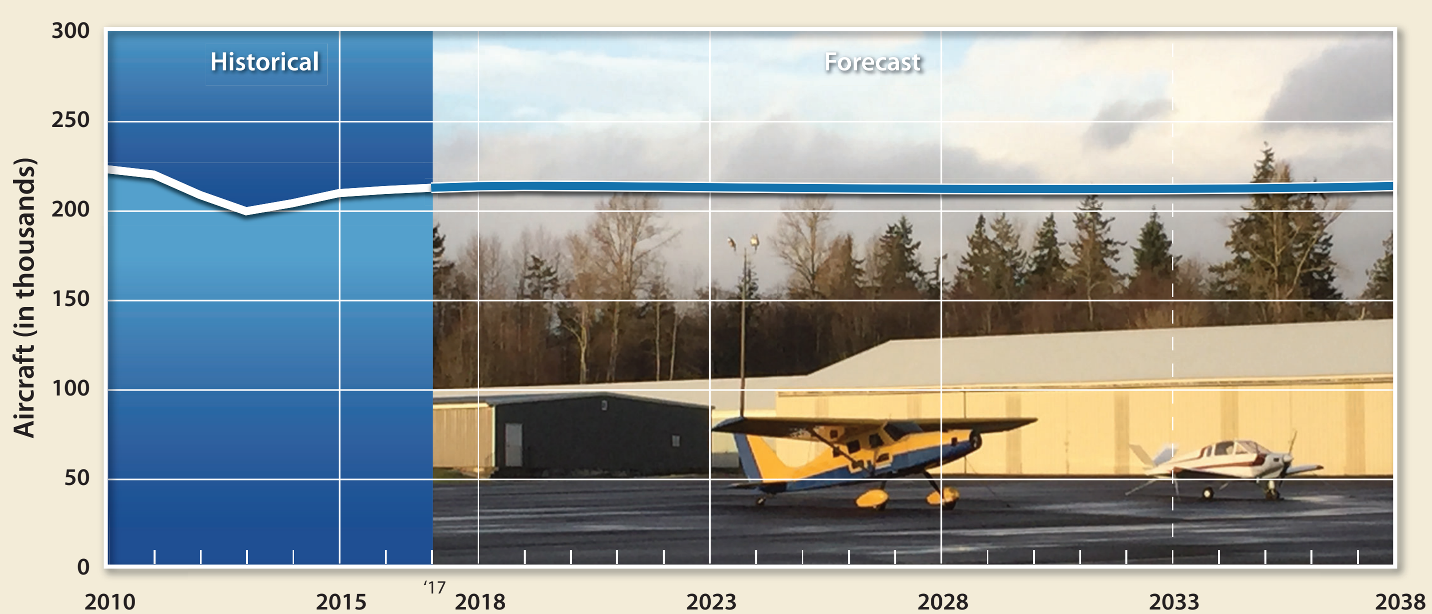
SEP - Single Engine Piston; MEP - Multi-Engine Piston; TP - Turboprop; J - Turbofan/Turbojet
Source: General Aviation Manufacturers Association 2017 Annual Report.

Worldwide shipments of general aviation airplanes increased in 2017 with a total of 2,324 units delivered around the globe, compared to 2,268 units in 2016. However, worldwide general aviation billings were lower than the previous year. In 2017, $20.2 billion in new general aviation aircraft were shipped, but year-end results were mixed across the market segments. North America is the largest market for general aviation aircraft. The Asian-Pacific region is the second largest market for piston-powered aircraft, Latin America is the second largest market for turboprops, and Europe is the second largest market for business jets.

Business Jets: General aviation manufacturers business jet deliveries grew from 667 units in 2016 to 676 units in 2017. The North American market accounted for 63.8 percent of business jet deliveries, which is a 1.8 percent increase in market share compared to 2016.

U.S. ACTIVE GENERAL AVIATION AIRCRAFT

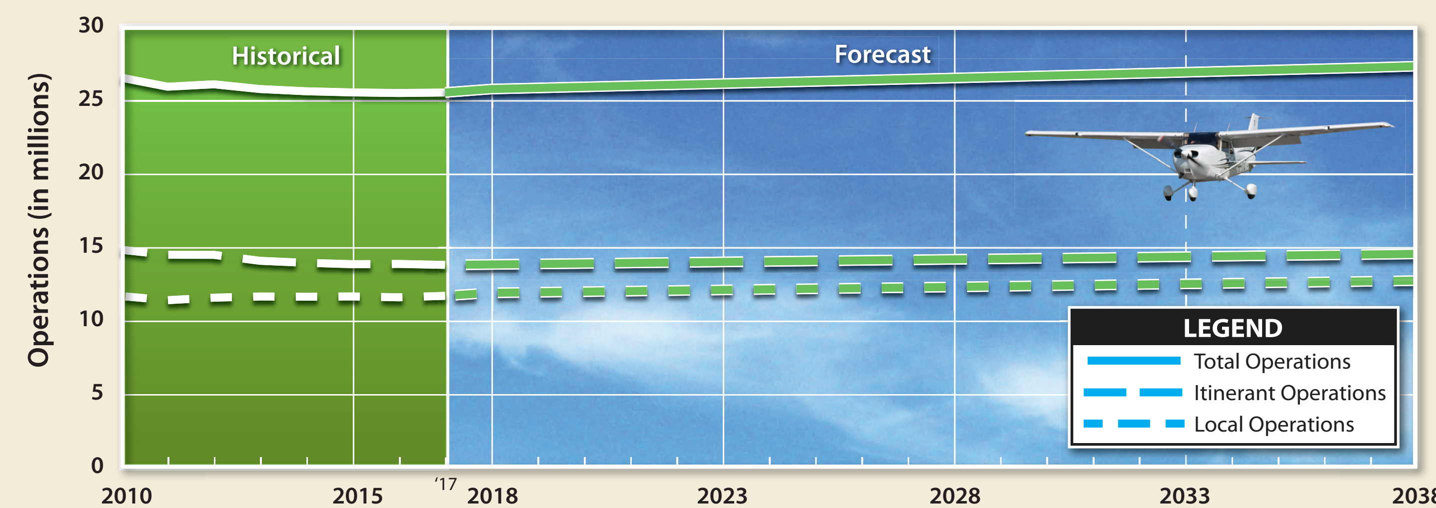
	2017E	2023	2028	2038	AAGR 2018-2038
Fixed Wing					
Piston					
Single Engine	130,330	125,330	118,740	107,800	-1.0%
Multi-Engine	12,935	12,720	12,465	11,845	-0.4%
Turbine					
Turboprop	9,430	9,025	9,870	12,855	1.7%
Turbojet	14,075	16,220	18,120	22,195	2.2%
Rotorcraft					
Piston	3,405	3,750	4,035	4,675	1.5%
Turbine	7,400	8,375	9,200	11,110	1.9%
Experimental					
	27,865	29,595	30,980	33,105	0.8%
Sport Aircraft					
	2,585	3,330	3,995	5,440	3.6%
Other					
	5,025	5,045	5,060	5,065	0.0%
Total Pistons	**146,670**	**141,800**	**135,240**	**124,320**	**-0.8%**
Total Turbines	**30,905**	**33,620**	**37,190**	**46,160**	**2.0%**
Total Fleet	**213,050**	**213,390**	**212,465**	**214,090**	**0.0%**



Notes: An active aircraft is one that has a current registration and was flown at least one hour during the calendar year.
Source: *FAA Aerospace Forecast - Fiscal Years 2018-2038*

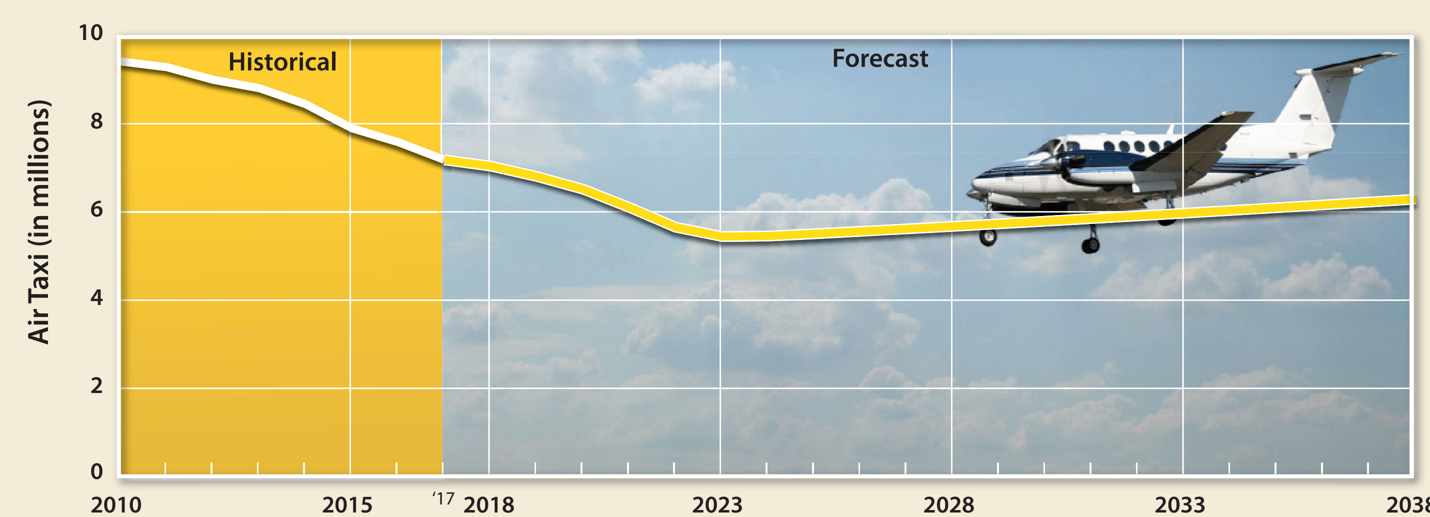
U.S. GENERAL AVIATION OPERATIONS

	2017E	2023	2028	2038	AAGR 2018-2038
Itinerant					
	13,838,029	14,039,925	14,217,031	14,587,442	0.3%
Local					
	11,731,596	12,135,595	12,338,286	12,763,556	0.3%
Total GA Operations	**25,569,625**	**26,175,520**	**26,555,317**	**27,350,998**	**0.3%**



U.S. AIR TAXI

	2017E	2023	2028	2038	AAGR 2018-2038
Air Taxi/Commuter Operations					
Itinerant	7,179,301	5,442,448	5,671,740	6,287,749	-0.6%



This page intentionally left blank

Turboprops: Turboprop shipments were down from 582 in 2016 to 563 in 2017. North America's market share of turboprop aircraft dropped by 3.6 percent in the last year, while the European, Asian-Pacific, and Latin American markets increased their market share.

Pistons: In 2017, piston airplane shipments grew to 1,085 units over last year's shipment of 1,019 units for a 6.5 percent increase. However, North America's market share of piston aircraft deliveries dropped from 69.6 percent in 2016 to 65.6 percent in 2017. The Asian-Pacific market saw the largest increase in market share at 3.2 percent growth.

AIRPORT SERVICE AREA

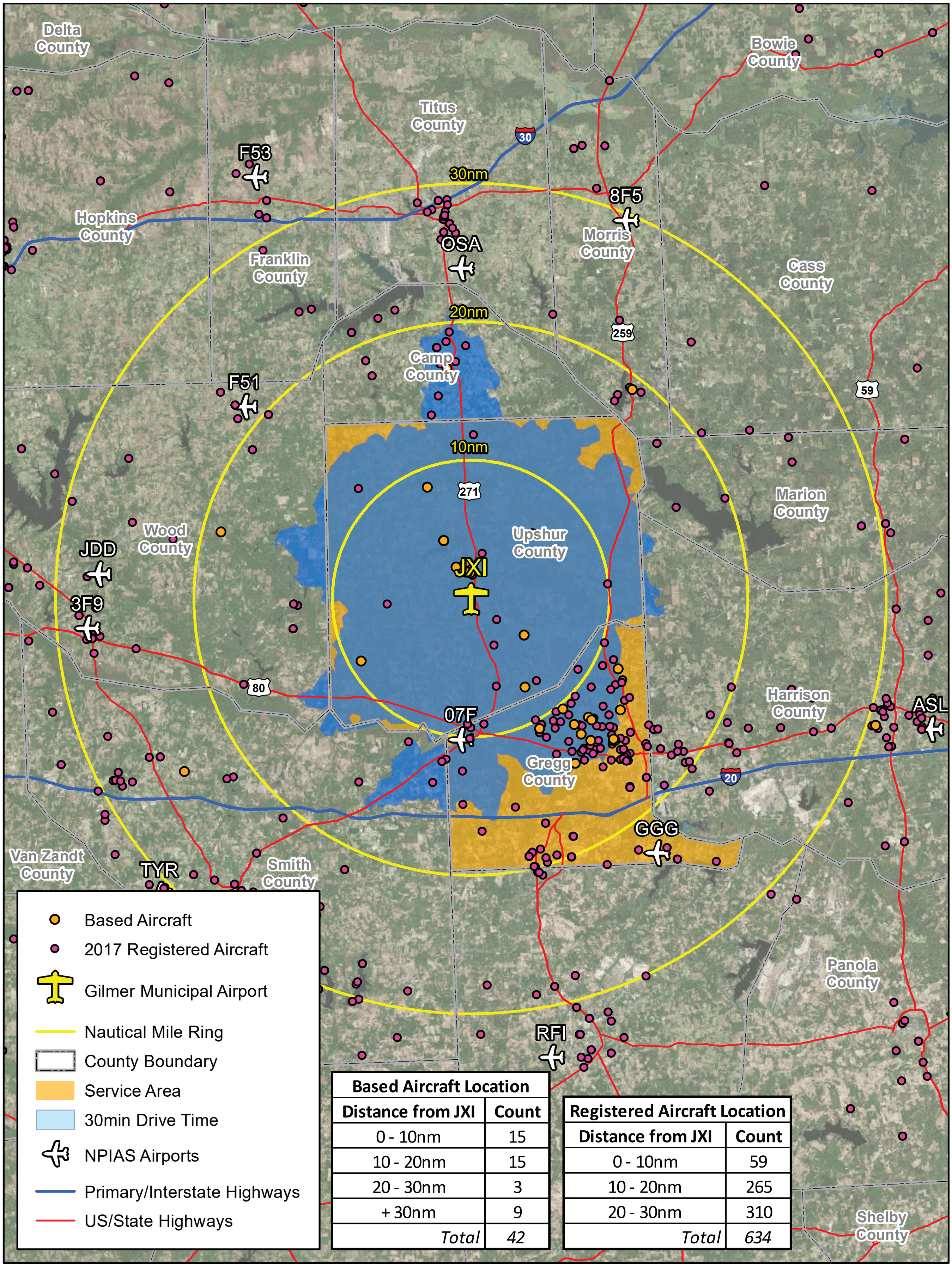
In determining aviation demand for an airport, it is necessary to identify the role of that airport. JXI is classified as a Local GA airport in the NPIAS. According to the NPIAS and as previously described in the Airport Role section of this document, Local airports are those that supplement local communities by providing access to markets within the state or immediate region. These airports should be designed to accommodate a full range of general aviation activity ranging from single engine aircraft up to and including small- to medium-sized corporate aircraft.

The primary role of the airport is to serve the needs of GA in the service area. GA is a term used to describe a diverse range of aviation activities, which includes all segments of the aviation industry except commercial air carriers and the military. GA is the largest component of the national aviation system and includes activities such as pilot training, recreational flying, and the use of sophisticated turboprop and jet aircraft for business and corporate use.

The initial step in determining the GA demand for an airport is to define its generalized service area. The airport service area is a generalized geographical area where there is a potential market for airport services, particularly based aircraft. Access to GA airports and transportation networks enter the equation to determine the size of a service area, as well as the quality of aviation facilities, distance, and other subjective criteria.

As in any business enterprise, the more attractive the facility is in terms of service and capabilities, the more competitive it will be in the market. If an airport's attractiveness increases in relation to nearby airports, so will the size of its service area. If facilities and services are adequate and/or competitive, some level of aviation activity might be attracted to an airport from more distant locales.

Typically, the service area for a local GA airport can range from a minimum of 30 miles, extending up to approximately 50 miles. The proximity and level of GA services are largely the defining factors when describing the GA service area. A description of nearby airports was previously completed in the Vicinity Airports section, as presented on **Exhibit H**. There are currently seven public-use airports located within 30 nautical miles (nm) of JXI. Beyond 30 nm, there are an additional 13 airports within 50 nm of JXI.
Of the seven public-use airports within 30 nm of JXI, three of these airports are non-NPIAS airports and do not receive funding through the FAA's Airport Improvement Program (AIP). East Texas Regional Airport's (GGG) primary function is to serve scheduled commercial passenger and cargo airline services;



Based Aircraft Location

Distance from JXI	Count
0 - 10nm	15
10 - 20nm	15
20 - 30nm	3
+ 30nm	9
Total	*42*

Registered Aircraft Location

Distance from JXI	Count
0 - 10nm	59
10 - 20nm	265
20 - 30nm	310
Total	*634*

Exhibit H
AIRPORT SERVICE AREA

however, the airport also caters to general aviation operators including a wide array of corporate aviation activity. The three other NPIAS airports in the region provide various levels of general aviation services. **Table N** presents comparative summary information related to JXI and the seven airports in proximity. Each airport's level of services and facilities available will play a role in limiting JXI's service area.

TABLE N
Regional Airports

Airport	Distance from JXI (nm)	NPIAS Service Level	Based Aircraft	Annual Operations	Longest Runway (feet)	Lowest Visibility Minimums
Gilmer Municipal (JXI)	-	GA	42	17,600	4,000'	1-mile
Gladewater Municipal (07F)	10.2 S	GA	54	17,600	3,299'	1-mile
Winnsboro Municipal (F51)	22.0 NW	GA	13	2,900	3,213'	1-mile
East Texas Regional (GGG)	22.3 SSE	PCS	107	74,741	10,000'	≥ ½-mile
Mount Pleasant Regional (OSA)	23.9 N	GA	109	16,550	6,004'	1-mile
Wood County (JDD)	27.8 W	NA	50	20,000	4,002'	1-mile
Mineola Wisener Field (3F9)	28.4 W	NA	64	8,500	3,203'	1-mile
Greater Morris County (8F5)	29.8 NNE	NA	0	50	3,000'	None

GA: General Aviation; PCS: Primary Commercial Service; NA: not applicable nm: nautical mile
Source: FAA Form 5010-1, Airport Master Record; www.airnav.com

The service area for JXI is fundamentally limited by Gladewater Municipal Airport (07F) and GGG to the south and south-southeast, respectively. While 07F primarily caters to the GA community, GGG offers an array of corporate and general aviation services, including aircraft fuel, aircraft maintenance, hangar storage, etc. As previously mentioned, GGG also caters to commercial airline services. Additionally, Mount Pleasant Regional Airport (OSA) is located approximately 24 nm northwest of JXI and houses approximately 109 based aircraft and is well suited to serve larger business aircraft given its primary runway length of 6,004 feet. Combined, it is estimated that 270 aircraft are based at GGG, OSA, and 07F.

The remaining airports situated between 20 nm and 30 nm from JXI are Winnsboro Municipal, Wood County, Mineola Wisener Field, and Greater Morris County Airports. These airports also provide an array of general aviation services and have runway lengths ranging between 3,000 and 4,000 feet. They also somewhat limit the JXI service area, however, are not as competitive as 07F, OSA, and GGG.

JXI has remained a very important aviation facility, meeting the needs of general aviation operators in the region. The airport is a hub for recreational aircraft activity and is well positioned for potential business opportunity. The potential for increased aviation demand for JXI lies in business growth and the growing population within the City of Gilmer and the surrounding region as detailed in the Socioeconomic section of this report. Within its capacity as a local GA airport, JXI should continue to fare well in its ability to compete for GA activity, considering the existing and future potential services and amenities it has to offer. It should be noted, aside from GGG and OSA, JXI currently shares the third longest primary runway length (approximately 4,000 feet) within the 30 nm primary service area. The only other airport within the 30 nm radius with a primary runway of this length is Wood County Airport, located approximately 28 nm west of JXI.

Currently, the City of Gilmer is considering the addition of a critical care medical facility to the community. A facility such as this could spur an increase in itinerant operations as well as demand for facilities required to enable operations associated with medical transport. In addition, the Gilmer Industrial Foundation owns property adjacent to the airport that is poised for development of a business or industrial park. The proximity of the potential business or industrial park is a large advantage for businesses/business leaders as the park tenants and visitors utilizing JXI could have the ability to fly almost directly to and from their place of business.

As a local GA airport, JXI's service area is also driven by aircraft owners/operators and where they choose to base their aircraft. The primary consideration of aircraft owners/operators when choosing where to base their aircraft is convenience (i.e., easy access and proximity to the airport). However, some aircraft owners have other priorities, such as runway length, specific services, hangar availability, airport congestion, etc. The most effective method of defining an airport's service area is by examining based aircraft by their registered address. **Exhibit H** presents the number of JXI-based aircraft located within the region according to airport records. Current registered aircraft that are based at JXI are presented as the larger orange dots.

As depicted on **Exhibit H**, approximately 71 percent of JXI based aircraft owners reside or work within 20 miles of the airport. It should be noted that nine based aircraft (approximately 21 percent) are registered to addresses outside the regional area, many of which are registered out of state. It is not uncommon for an aircraft based in one location to be registered in another, especially for owners with more than one residence or corporate aircraft which typically are registered by the controlling ownership entity, such as a bank. By far the most concentrated areas of based aircraft ownership are located near the City of Gilmer, as well as the greater Longview metropolitan area and rural Upshur and Gregg Counties. As presented on the exhibit, many of the based aircraft owners located outside Upshur County are positioned within or near the 30-minute drivetime contour.

Total registered aircraft within the region are also presented on **Exhibit H**. The regional registered aircraft are depicted as the smaller purple dots and total 634 registered aircraft within 30 miles of JXI. A large cluster of these aircraft are located southeast of JXI within the 10-20 nm rings and likely base at 07F or GGG. Many of the regional registered aircraft are also located within the 20-30 nm ring and most likely base at any of the airports surrounding JXI within (or just outside of) this range. However, there are a total of 59 registered aircraft within 10 miles of JXI. At present, JXI has 15 of these aircraft based at the airport, leaving a difference of 44 aircraft that have registered owners within 10 miles of the airport.

This data shows that a high percentage of based aircraft owners reside or do business near the airport. The remainder of the based aircraft owners are rurally located, surrounding the City of Gilmer and Longview metropolitan area. Considering all previous factors associated with competing airports, available aviation services, and based aircraft ownership, the airport's primary service area is generally comprised of the City of Gilmer and a portion of the Longview metropolitan area located within the 30-minute drive contour. A secondary service area extends to the entirety of Upshur and Gregg Counties, which are the primary drivers of based aircraft at JXI.

REGISTERED AIRCRAFT FORECAST

Table P depicts the historical registered aircraft for the airport service area, which includes Upshur and Gregg Counties, for years 1998 to 2018. The registered aircraft in the area shows a fluctuating, but steadily increasing trend from years 1998 through 2015. However, after 2015, the service area has experienced a downward trend in aircraft registration. The service area is currently at a 10-year registered aircraft low, with 267 registered aircraft. Although there are no recently prepared forecasts for the airport service area regarding registered aircraft, one was prepared for this study using market share projection and ratio projection methods.

TABLE P
Service Area Historical Registered Aircraft

Year	Helicopter	MEP	Other[2]	SEP	Turbojet	Turboprop	Total
1998	7	15	13	159	6	3	203
1999	6	16	13	146	6	4	191
2000	8	15	15	157	6	3	204
2001	8	16	19	163	6	5	217
2002	8	16	19	164	6	6	219
2003	7	19	24	180	10	11	251
2004	7	18	24	175	11	10	245
2005	7	18	27	179	13	13	257
2006	7	26	31	188	12	5	269
2007	8	28	34	187	9	3	269
2008	8	25	33	186	10	5	267
2009	7	24	36	195	14	7	283
2010	8	24	36	209	17	7	301
2011	8	25	38	213	17	8	309
2012	10	27	31	208	18	12	306
2013	9	26	30	205	20	13	303
2014	12	24	25	222	19	11	313
2015	13	24	27	223	18	14	319
2016	12	27	27	220	18	14	318
2017	12	23	25	204	18	10	292
2018[1]	-	-	-	-	-	-	267

[1] 2018 year-end FAA registered aircraft counts are not yet available. The 2018 total registered aircraft count was retrieved from the daily updated registered aircraft counts in February 2019.
[2] The "Other" aircraft category refers to aircraft such as gliders, electric aircraft, balloons, and dirigibles.
MEP: Multi-Engine Piston
SEP: Single Engine Piston
Source: FAA Registered Aircraft

When projecting the registered aircraft, it is helpful to calculate the service area's market share of the total active GA aircraft in the U.S. In conducting this market share analysis, comparison of service area aircraft ownership trends against the nation's ownership trends can be carried out. **Table Q** details the market share analysis, which shows the service area market share of the U.S. active GA aircraft fleet has held a consistent increasing trend, ranging from a low of 0.09 percent in 2000 to a high of 0.15 percent in 2016; however, a declining trend has prevailed over the past two years. Holding the 2018 market share of 0.12 percent constant, the market share can be applied to the forecast of U.S. active GA aircraft to generate the forecast registered aircraft in the airport service area. According to this projection, 257 aircraft could be registered in the service area by 2038, yielding a CAGR of -0.19 percent. In addition, an increasing market share percentage was also applied. Despite the recent declining market share trend, there could be potential for increased market share capturing slightly above historical values should the service area experience economic growth as projected. Utilizing this forecasting technique, registered aircraft within the service area could reach 343 by 2038 and grow at a CAGR of 1.25 percent.

Population trends have also been used to analyze and project aircraft registrations within the service area. This projection method analyzes the service area population as a ratio of the historical registered aircraft per 1,000 residents. In 2018, the population of the service area was calculated by *Woods and Poole Complete Economic and Demographic Data Source* to be approximately 168,228. Population within the service area is forecasted to increase to 204,155 by 2038. Over a 20-year period, the ratio of registered aircraft to 1,000 population has generally been trending upward from a ratio of 1.39 in 1998 to a high of 1.94 in 2015. Similar to the historic market share, the ratio of registered aircraft per 1,000 service area residents has also declined in recent years. A constant ratio projection maintaining the 2018 ratio of 1.59 yields 325 aircraft in the service area by 2038, growing at a CAGR of 0.98 percent.

Like the market share analysis, an increasing ratio projection was also utilized, which applies an increasing ratio of registered aircraft to the forecast population of the service area. By increasing the ratio to the historic high of 1.94 over the planning horizon, a total of 396 aircraft could be registered by 2038, growing at a CAGR of 1.99 percent. Similarly, an increasing ratio to the 10-year historical average ratio projection was also applied to the projected population to reflect a return to historic average ratio levels. This forecast method examined a ratio up to 1.83 aircraft per 1,000 people, yielding a total of 374 registered aircraft and a CAGR of 1.69 percent.

The registered aircraft forecast produced a high range of 396 and a low of 257 registered aircraft for the service area by 2038. Recent declines in registered aircraft and U.S. active aircraft following the 2008-2009 recession have slowly leveled off and are projected to return to growth over time, although at a lower rate than what has been projected in the past. Ultimately, the constant ratio projection of aircraft per 1,000 service area residents is considered the most reasonable forecast as it maintains historic trends that have been realized in the past, while accounting for growth in population projected in the service area. In 2023, registered aircraft are forecast to increase to 282. By 2038, registered aircraft for the county are forecast to reach 325. Over the next 20 years, registered aircraft within the county are forecast to grow at a CAGR of 0.98 percent annually.

The registered aircraft projection is one variable to be used in the development of a based aircraft forecast for JXI. The following section will present several potential based aircraft forecasts, as well as the selected based aircraft forecast, to be utilized in this study.

TABLE Q
Registered Aircraft Forecast
Airport Service Area - Upshur and Gregg Counties

Year	Service Area Registered Aircraft	U.S. Active GA Aircraft	% of U.S. Active GA Aircraft	Service Area Population	Aircraft per 1,000 Residents
1998	203	204,710	0.10%	146,232	1.39
1999	191	219,464	0.09%	146,933	1.30
2000	204	217,533	0.09%	146,657	1.39
2001	217	211,446	0.10%	147,537	1.47
2002	219	211,244	0.10%	149,506	1.46
2003	251	209,606	0.12%	151,007	1.66
2004	245	219,319	0.11%	152,071	1.61
2005	257	224,257	0.11%	153,359	1.68
2006	269	221,942	0.12%	155,122	1.73
2007	269	231,606	0.12%	156,535	1.72
2008	267	228,664	0.12%	157,863	1.69
2009	283	223,876	0.13%	160,322	1.77
2010	301	223,370	0.13%	161,387	1.87
2011	309	220,453	0.14%	162,199	1.91
2012	306	209,034	0.15%	162,778	1.88
2013	303	199,927	0.15%	162,840	1.86
2014	313	204,408	0.15%	163,250	1.92
2015	319	210,031	0.15%	164,308	1.94
2016	318	211,794	0.15%	164,714	1.93
2017	292	213,050	0.14%	166,406	1.75
2018	267	213,905	0.12%	168,228	1.59
Constant Market Share Projection of U.S. Active GA Aircraft (CAGR -0.19%)					
2023	256	213,390	0.12%	177,481	1.44
2028	255	212,465	0.12%	186,833	1.36
2038	257	214,090	0.12%	204,155	1.26
Increasing Market Share Projection of U.S. Active GA Aircraft (CAGR 1.25%)					
2023	277	213,390	0.13%	177,481	1.56
2028	297	212,465	0.14%	186,833	1.59
2038	343	214,090	0.16%	204,155	1.68
Constant Ratio Projection Per 1,000 Residents (CAGR 0.98%)—Selected					
2023	282	213,390	0.13%	177,481	1.59
2028	297	212,465	0.14%	186,833	1.59
2038	325	214,090	0.15%	204,155	1.59
Increasing Ratio Projection Per 1,000 Residents (CAGR 1.99%)					
2023	293	213,390	0.14%	177,481	1.65
2028	336	212,465	0.16%	186,833	1.80
2038	396	214,090	0.18%	204,155	1.94
Historical Ratio Projection to the 10-Year Average Per 1,000 Residents (CAGR 1.69%)					
2023	293	213,390	0.14%	177,481	1.65
2028	321	212,465	0.15%	186,833	1.72
2038	374	214,090	0.17%	204,155	1.83

Source: Historical Registered Aircraft – FAA Aircraft Registry; Historical and Forecast U.S. Active GA Aircraft – FAA Aerospace Forecast, Fiscal Years 2018-2038; Historical and Forecast Population – Woods and Poole Complete Economic and Demographic Data Source, 2018.

BASED AIRCRAFT FORECAST

According to airport records, there are currently 42 aircraft based at the airport that are validated within the FAA's National Based Aircraft Inventory Program. Historical based aircraft data prior to 2018 was not readily available; therefore, the FAA's TAF historical based aircraft count for JXI was used to analyze historical based aircraft trends. Building upon the projections previously developed, market share analysis and trend line projection forecasting approaches were used to generate forecasts for the future based aircraft totals at JXI.

As presented in **Table R**, the JXI market share of registered aircraft within the service area has experienced a fluctuating, but generally increasing trend from 1998 to 2018, reaching a 10-year high of 15.53 percent in 2018. This is the second highest market share percentage in JXI's based aircraft history, next to the 2007 spike to 17.47 percent. It should be noted that the TAF reports zero based aircraft at JXI during years 2004, 2008, and 2009. This is not believed to be the case, but rather, a misreporting.

Holding the current market share constant at 15.53 percent, future based aircraft projections were calculated by applying the service area registered aircraft projection to the market share of registered aircraft. This approach results in a projection of 51 based aircraft by the year 2038. The second projection assumes the airport's market share will increase throughout the planning period, reflecting the increasing trend experienced over the previous 20 years. An increasing market share projection results in 59 based aircraft by 2038 and a CAGR of 1.67 percent.

Additional projections were prepared by examining the ratio of based aircraft to population. Historic data shows the ratio of based aircraft per 1,000 residents has followed a trend like the JXI based aircraft market share, generally increasing over the past 20 years. The 20-year high of 0.30 based aircraft per 1,000 service area residents was reached in 2007, while the second highest ratio of 0.27 was achieved in 2014 and 2015. Since 2015, the ratio has decreased to 0.25 in 2018. Holding the current value of 0.25 based aircraft per 1,000 residents constant results in a projection of 51 based aircraft by 2038. An increasing ratio of based aircraft per 1,000 residents was also applied to the forecast service area population. Given that the service area population is projected to increase at a CAGR of 0.97 percent over the planning horizon, it is reasonable to assume that based aircraft within the service area could also experience some growth. Increasing the ratio of registered aircraft per 1,000 residents within the service area to the historic high of 0.30 over the planning horizon results in a projection of 61 based aircraft by 2038 and a CAGR of 1.90 percent.

The forecasts summarized in **Table R** represent a reasonable planning envelope. The selected forecast considers the airport experiencing an increase in market share by 2.27 percent to a total of 18.00 percent and an increase in the ratio of the service area population by 0.04 percent to a total of 0.29 percent. The selected forecast is similar to the JXI based aircraft market share and ratio of based aircraft per 1,000 service area residents last experienced in 2007. By 2038, 59 aircraft are projected to be based at JXI. This forecast results in a 1.67 percent CAGR through the long-term planning period, which returns to a based aircraft market share and ratio of the service area population experienced historically.

Future aircraft basing at the airport will depend on several factors, including the state of the economy, fuel costs, available facilities, competing airports, and adjacent development potential. Forecasts assume a reasonably stable and growing economy, as well as reasonable development of airport facilities necessary to accommodate aviation demand. Competing airports will play a role in deciding demand; however, JXI should fare well in this competition given the proximity of registered aircraft located near the airport and the potential for improved services and facilities offered at JXI.

TABLE R
Based Aircraft Forecast
Fox Stephens Field – Gilmer Municipal Airport

Year	JXI Based Aircraft	Service Area Registrations	JXI Market Share	Service Area Population	Aircraft per 1,000 Residents
1998	22	203	10.84%	146,232	0.15
1999	23	191	12.04%	146,933	0.16
2000	23	204	11.27%	146,657	0.16
2001	23	217	10.60%	147,537	0.16
2002	23	219	10.50%	149,506	0.15
2003	23	251	9.16%	151,007	0.15
2004	0	245	0.00%	152,071	0.00
2005	23	257	8.95%	153,359	0.15
2006	23	269	8.55%	155,122	0.15
2007	47	269	17.47%	156,535	0.30
2008	0	267	0.00%	157,863	0.00
2009	0	283	0.00%	160,322	0.00
2010	39	301	12.96%	161,387	0.24
2011	39	309	12.62%	162,199	0.24
2012	40	306	13.07%	162,778	0.25
2013	42	303	13.86%	162,840	0.26
2014	44	313	14.06%	163,250	0.27
2015	44	319	13.79%	164,308	0.27
2016	43	318	13.52%	164,714	0.26
2017	44	292	15.07%	166,406	0.26
2018	42	267	15.73%	168,228	0.25
Constant Market Share Projection of Registered Aircraft (CAGR 0.98%)					
2023	44	282	15.73%	177,481	0.25
2028	47	297	15.73%	186,833	0.25
2038	51	325	15.73%	204,155	0.25
Increasing Market Share Projection of Registered Aircraft (CAGR 1.67%)—Selected					
2023	45	282	16.00%	177,481	0.25
2028	50	297	16.75%	186,833	0.27
2038	59	325	18.00%	204,155	0.29
Constant Ratio Projection Per 1,000 Residents (CAGR 0.98%)					
2023	44	282	15.73%	177,481	0.25
2028	47	297	15.73%	186,833	0.25
2038	51	325	15.70%	204,155	0.25
Increasing Ratio Projection per 1,000 Residents (CAGR 1.90%)					
2023	46	282	16.36%	177,481	0.26
2028	52	297	17.61%	186,833	0.28
2038	61	325	18.85%	204,155	0.30

Note: Historical based aircraft totals are derived from the FAA's *Terminal Area Forecast*.
Source: Historical Registered Aircraft – FAA Aircraft Registry; Historical and Forecast U.S. Active GA Aircraft – FAA Aerospace Forecast, Fiscal Years 2018-2038; Historical and Forecast Population – Woods and Poole Complete Economic and Demographic Data Source, 2018.

BASED AIRCRAFT FLEET MIX

The current fleet mix based at JXI consists of 37 single engine piston aircraft, four multi-engine piston aircraft, and one turboprop. Given that the total number of aircraft based at the airport is projected to increase, it is important to have an idea of the type of aircraft expected to utilize the airfield. A forecast of the fleet mix will ensure that adequate facilities are planned to accommodate these aircraft in the future.

The projection for the fleet mix of based aircraft was generated by comparing the existing fleet mix of based aircraft at JXI with the U.S. GA fleet trends. The forecast for the active U.S. GA fleet shows declining trends in the single and multi-engine categories; however, the larger and more sophisticated aircraft, such as turboprop and turbojet, are forecast to increase. In addition, both piston and turbine rotorcraft are projected to increase through 2038. Taking the national trends and airport communication into consideration, a projected based aircraft fleet mix has been prepared and is detailed in **Table S**.

TABLE S
Based Aircraft Fleet Mix
Fox Stephens Field – Gilmer Municipal Airport

Aircraft Type	2018	%	2023	%	2028	%	2038	%
Single Engine Piston	37	88.10%	39	87.50%	43	86.00%	49	83.50%
Multi-Engine Piston	4	9.52%	3	9.00%	3	8.50%	2	5.50%
Turboprop	1	2.38%	2	3.50%	2	4.50%	4	6.00%
Jet	0	0.00%	1	0.00%	2	1.00%	3	3.00%
Helicopters	0	0.00%	0	0.00%	0	0.00%	1	2.00%
Total	**42**	**100.00%**	**45**	**100.00%**	**50**	**100.00%**	**59**	**100.00%**

Source: Airport records; Coffman Associates' analysis

GENERAL AVIATION ANNUAL OPERATIONS

General aviation operations are classified as either local or itinerant. A local operation is a take-off or landing performed by an aircraft that operates within sight of the airport, or which executes simulated approaches or touch-and-go operations at the airport. Generally, local operations are characterized by training operations. Itinerant operations are those performed by aircraft with a specific origin or destination away from the airport. Typically, itinerant operations increase with business and commercial use, since business aircraft are not typically used for large scale training activities.

Since the airport is not equipped with an airport traffic control tower (ATCT), precise operational (takeoff and landing) counts are not available. The FAA TAF does maintain annual operations estimates, which show 17,600 annual operations for each year from 2016 through 2018. To confirm these estimates, a method for estimating operations was utilized. This method, the *Model for Estimating General Aviation Operations at Non-Towered Airports*, was prepared for the FAA Statistics and Forecast Branch in July 2001. This report develops and presents a regression model for estimating general aviation operations at non-towered airports. The model was derived using a combined data set for small towered and non-towered general aviation airports and incorporates a dummy variable to distinguish the two airport types. In addition, the report applies the model to estimate activity at 2,789 non-towered general aviation airports contained in the FAA's *Terminal Area Forecast*. The estimate of annual operations at JXI was computed using the recommended equation (#15) for non-towered airports. Independent variables used in the equation include airport characteristics (i.e., number of based aircraft, number of flight schools), population totals, and geographic location. The results of the equation confirm the TAF operational estimate of 17,600 annual operations for 2018.

According to the TAF, the local/itinerant operations split is approximately 75 percent local and 25 percent itinerant. With the potential for service and facility enhancement over the planning horizon, it is assumed that the local/itinerant operations split will gradually transition to approximately 60 percent local and 40 percent itinerant, which is typical of most GA airports.

General Aviation Operations Forecast

Utilizing the operations estimate derived from the FAA's TAF, five forecasts of general aviation operations have been developed and are presented in **Table T**. The forecasts presented examine and/or manipulate variables, such as JXI's operations per based aircraft and forecast growth rates in the FAA's *Aerospace Forecast 2018-2038*. As shown in the table, the estimated 17,600 annual general aviation operations equate to 419 operations per based aircraft. Typically, general aviation airports will experience between 250 and 500 operations per based aircraft. As previously mentioned, the FAA TAF estimates that the current general aviation operational split is 75 percent local and 25 percent itinerant. However, it is projected that the operational split between local and itinerant operations will transition to approximately 60 percent local and 40 percent itinerant through the forecast period. It should be noted that all operations forecasts have been rounded to the nearest hundred for planning purposes.

The first projection maintains the existing general aviation operations per based aircraft of 419 through the long-term planning period, resulting in 24,700 operations by year 2038 and a CAGR of 1.71 percent. Applying low, medium, and high growth rates of 425, 450, and 500 operations per based aircraft by year 2038 results in annual operations forecasts of 25,100, 26,600, and 29,500 with respective CAGRs of 1.79, 2.09, and 2.62 percent. The high growth model is unlikely unless significant aircraft pilot training operations were to base at the airport. If a large volume training operation were to base at the airport, operations could jump in a very short period. Those operations, however, would likely be primarily local (training) by small aircraft.

The national general aviation operations forecasts presented in the FAA's 2018 TAF were also examined. Using the base year of 2018, the TAF's national forecasted growth rate of 0.64 percent was carried forward throughout the planning horizon. This projection yields 20,000 annual general aviation operations by 2038.

Ultimately, the increasing operations per based aircraft—low growth projection has been selected. The potential for additional based aircraft at JXI could drive local as well as itinerant demand. The selected forecast maintains a reasonable and modestly increasing level of operations per based aircraft, while increasing local and itinerant general aviation annual operations slightly above the FAA TAF national projection. It is believed that the moderate and higher growth models represent the top end of the planning envelope without evidence of reasonable expectation.

TABLE T
General Aviation Operations Forecast
Fox Stephens Field – Gilmer Municipal Airport

Year	JXI GA Operations	Itinerant GA Operations	Local GA Operations	JXI Based Aircraft	GA Operations per Based Aircraft
2018	17,600	4,400	13,200	42	419
Constant Operations per Based Aircraft (CAGR 1.71%)					
2023	18,900	5,700	13,200	45	419
2028	21,000	7,400	13,700	50	419
2038	24,700	9,900	14,800	59	419
Increasing Operations per Based Aircraft—Low Growth (CAGR 1.79%) - *Selected Forecast*					
2023	18,900	5,700	13,200	45	420
2028	21,100	7,400	13,700	50	422
2038	25,100	10,000	15,100	59	425
Increasing Operations per Based Aircraft—Medium Growth (CAGR 2.09%)					
2023	19,100	5,700	13,400	45	425
2028	21,800	7,600	14,200	50	435
2038	26,600	10,600	16,000	59	450
Increasing Operations per Based Aircraft—High Growth (CAGR 2.62%)					
2023	19,400	5,800	13,600	45	430
2028	22,500	7,900	14,600	50	450
2038	29,500	11,800	17,700	59	500
FAA TAF National Forecast Growth Rate (CAGR 0.64%)					
2023	18,200	5,500	12,700	45	404
2028	18,800	6,600	12,200	50	376
2038	20,000	8,000	12,000	59	339

Sources: FAA *Aerospace Forecast 2018-2038*; FAA Form 5010; FAA *Terminal Area Forecast*; FAA National Based Aircraft Inventory Program

AIR TAXI OPERATIONS FORECAST

The air taxi category can be classified as a sub-set of the itinerant operations category and includes aircraft involved in on-demand passenger charter, fractional ownership aircraft operations, small parcel transport, and air ambulance activity. While not typically a large percentage of total airport operations, air taxi operations can be conducted via more sophisticated aircraft, ranging from multi-engine piston aircraft up to large business jet aircraft. As a result, it is important to factor these types of operations at airports that experience air taxi operations.

The FAA national air taxi forecast projects a 2.1 percent decrease in air taxi operations through 2028, followed by modest increases thereafter. The primary reason for this decrease is the transition by commuter airlines to larger aircraft with more than 60 passenger seats, which are then counted as air carrier operations. While air taxi operations that are represented by commuter airlines using aircraft with fewer than 60 seats are decreasing, the business jet segment of the air taxi category is expected to continue to grow nationally.

As previously discussed, the City of Gilmer is currently interested in locating a critical care medical facility within the city. Moreover, JXI is located directly adjacent to land owned by the Gilmer Industrial Foundation, which is slated for development as an industrial or business park development in association with the airport over the long-term. It is believed that these two developments, should they occur, could be key drivers of future air taxi operations. Therefore, it is reasonable to expect the business jet and cabin class turboprop component of air taxi activity to increase moderately over time at JXI.

Based upon historical air taxi operations found in an examination of flight plans filed and closed on the ground from years 2009-2018, it was determined that JXI experienced approximately 10 annual air taxi operations.

Table U presents four forecasts for air taxi operations at JXI. Like the general aviation operations forecast above, the air taxi forecast has been rounded to the nearest hundred for planning purposes. To generate a reliable air taxi forecast, two different forecasting techniques were utilized, generating a total of four forecasts. The first method examines a constant market share of national air taxi operations. Carrying the existing 0.00014 percent market share of national air taxi operations forward through the long-term planning horizon, a forecast emerges of nine air taxi operations and a CAGR of -0.64 percent by year 2038.

TABLE U
Air Taxi Operations Forecast
Fox Stephens Field – Gilmer Municipal Airport

Year	JXI Air Taxi Operations	U.S. Air Taxi Operations	JXI Market Share
2018	10	7,037,000	0.00014%
Constant Market Share of U.S. Air Taxi Operations (CAGR -0.64%)			
2023	8	5,442,000	0.00014%
2028	8	5,672,000	0.00014%
2038	9	6,288,000	0.00014%
Increasing Market Share of U.S. Air Taxi Operations —Low Growth (CAGR 18.54%) - *Selected Forecast*			
2023	50	5,442,000	0.001%
2028	100	5,672,000	0.002%
2038	300	6,288,000	0.004%
Increasing Market Share of U.S. Air Taxi Operations —Medium Growth (CAGR 21.60%)			
2023	200	5,442,000	0.004%
2028	300	5,672,000	0.005%
2038	500	6,288,000	0.008%
Increasing Market Share of U.S. Air Taxi Operations —High Growth (CAGR 25.89%)			
2023	300	5,442,000	0.006%
2028	600	5,672,000	0.010%
2038	1,000	6,288,000	0.016%

Sources: FAA *Aerospace Forecast 2018-2038*; FAA Form 5010; FAA *Terminal Area Forecast*; FAA National Based Aircraft Inventory Program

The second forecast method applies an increasing market share of national air taxi operations throughout the planning period, generating three forecasts at low, medium, and high growth rates. The low, medium, and high growth rates yield totals of 300, 500, and 1,000 air taxi operations by year 2038 and CAGRs of 18.54, 21.60, and 25.89 percent, respectively.

The increasing operations per based aircraft—low growth projection has been selected as the most reasonable forecast. As was discussed, with the potential for more regular turbine aircraft traffic at JXI associated with air medical transport, the possible development of a business/industrial park, growth in local businesses, and long-term growth projected for the business jet market segment nationally, JXI could expect air taxi operations to grow.

Military Operations Forecast

Military aircraft can and do utilize civilian airports across the country; however, current operational data reported in the FAA TAF does not identify any military operations occurring at JXI. Forecasting of military activity is inherently difficult because of the national security nature of their operations and the fact that missions can change often. Thus, it is typical for the FAA to utilize a flat-line forecast number for military operations. At JXI, the FAA TAF reflects virtually no change in military operations at the airport through the long-term planning horizon. For planning purposes, annual military operations are forecast to remain at zero through the 20-year planning period.

PEAKING CHARACTERISTICS

Peaking characteristics are an important aspect in generating airport capacity and facility requirements. It should be noted that because JXI does not have a control tower, the generalized peaking characteristics of other non-towered general aviation airports have been used for the purposes of this study. The peaking periods used to develop the capacity analysis and facility requirements are described below.

- Peak Month – The calendar month in which traffic activity is highest.
- Design Day – The average day in the peak month. This indicator is derived by dividing the peak month by the number of days in the month.
- Busy Day – The busy day of a typical week in the peak month.
- Design Hour – The peak hour within the design day.

For the purposes of this study, the peak month was estimated at ten percent of the annual operations. By 2038, the estimated peak month is projected to reach 2,540 operations. The design day is estimated by dividing the peak month by its number of days, and the busy day is calculated at 1.25 times the design day. The design hour is then calculated at 15 percent of the design day. These projections can be viewed in **Table V**.

TABLE V
Peak Operations Forecast
Fox Stephens Field – Gilmer Municipal Airport

	2018	2023	2028	2038
Annual Operations	17,610	18,950	21,200	25,400
Peak Month	1,761	1,895	2,120	2,540
Design Day	57	61	68	82
Busy Day	71	76	85	102
Design Hour	9	9	10	12

Source: Coffman Associates analysis.

ANNUAL INSTRUMENT APPROACHES

An instrument approach, as defined by the FAA, is "an approach to an airport with the intent to land by an aircraft in accordance with an Instrument Flight Rule (IFR) flight plan, when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude." To qualify as an instrument approach, aircraft must land at the airport after following one of the published instrument approach procedures in less than visual conditions. Forecasts of annual instrument approaches (AIAs) provide guidance in determining an airport's requirements for navigational aid facilities, such as an instrument landing system. It should be noted that practice or training approaches do not count as annual AIAs, nor do instrument approaches conducted in visual conditions.

During poor weather conditions, pilots are less likely to fly and rarely would perform training operations. As a result, an estimate of the total number of AIAs can be made based on a percentage of itinerant operations regardless of the frequency of poor weather conditions. An estimate of two percent of total itinerant (general aviation, air taxi, and military) operations is utilized to forecast AIAs at JXI, as presented in **Table W**.

TABLE W
Annual Instrument Approaches
Fox Stephens Field – Gilmer Municipal Airport

Year	Annual Instrument Approaches	Itinerant Operations	Ratio
2018	88	4,410	2.00%
2023	115	5,750	2.00%
2028	150	7,500	2.00%
2038	206	10,300	2.00%

Source: Coffman Associates analysis

FORECAST COMPARISON TO THE FAA TAF

The FAA will review the forecasts presented in this ALP Narrative for consistency with the *Terminal Area Forecast*. Typically, the local FAA Airport District Office (ADO) or Regional Airports Division (RO) are responsible for forecasting. When reviewing a sponsor's forecast, FAA must ensure the forecast is based on reasonable planning assumptions, uses current data, and is developed using appropriate forecast methods. Forecasts of operations and based aircraft are considered consistent with the TAF if they differ by less than 10 percent in the five-year period and 15 percent in the 10-year forecast period. If the forecast is not consistent with the TAF, differences must be resolved if the forecast is to be used for FAA decision-making. **Table X** presents the direct comparison of planning forecasts with the TAF published in January 2018.

The reason the FAA allows this differential is because the TAF forecasts are not meant to replace forecasts developed locally (i.e., in this ALP Narrative Report). While the TAF can provide a point of reference or comparison, their purpose is much broader in defining FAA national workload measures.

In examining this planning effort and FAA TAF projections of itinerant operations, the forecast developed for this study differs from the TAF by 16.98 percent in the five-year forecast and 31.96 percent in the 10-

year forecast. Thus, the forecast of itinerant operations is not considered to be consistent with the FAA TAF. This is largely due to the assumption that the operational split between local and itinerant operations will transition to approximately 60 percent local and 40 percent itinerant through the forecast period. Given the gradual shift in local versus itinerant operations, the 10-year forecast differs from the TAF by 2.46 percent. The total operations forecast at JXI differs from the TAF by 4.86 percent in the five-year forecast and 12.00 percent in the 10-year forecast, which is consistent with the FAA TAF total operations forecast.

For based aircraft, the TAF identifies a total of 44 based aircraft in 2018; however, this planning effort identified 42 based aircraft at JXI that are currently validated within the National Based Aircraft Inventory Program. As a result, the base year count has a 3.13 percent difference from the TAF. Ultimately, the based aircraft forecast decreases to 1.49 percent difference from the TAF in the five-year forecast period and climbs to 8.33 percent difference in the 10-year forecast.

TABLE X
Forecast Comparison to the *Terminal Area Forecast*
Fox Stephens Field – Gilmer Municipal Airport

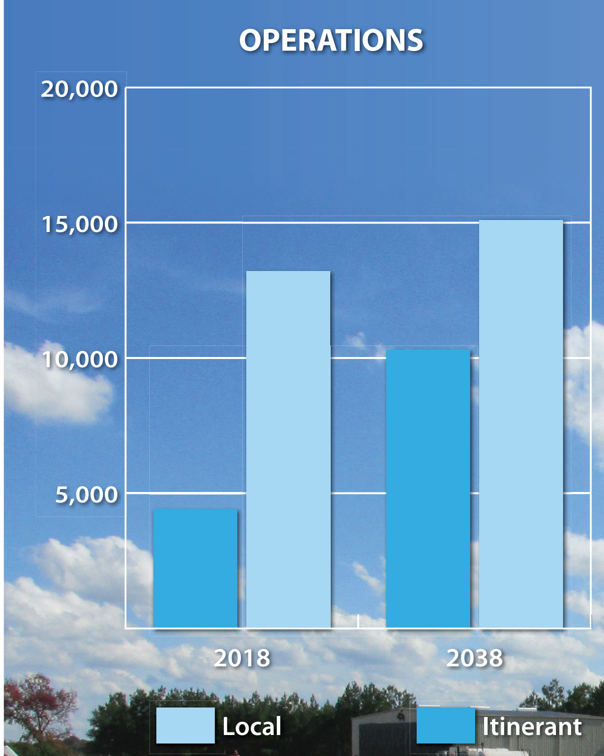
	BASE YEAR	FORECAST			
	2018	**2023**	**2028**	**2038**	**CAGR 2018-2038**
Itinerant Operations					
ALP Narrative Forecast	4,410	5,750	7,500	10,300	4.33%
2018 FAA TAF	4,400	4,400	4,400	4,400	0.00%
% Difference	0.15%	16.98%	31.96%	47.20%	
Local Operations					
ALP Narrative Forecast	13,200	13,200	13,700	15,100	0.67%
2018 FAA TAF	13,200	13,200	13,200	13,200	0.00%
% Difference	0.00%	0.00%	2.46%	8.76%	
Total Operations					
ALP Narrative Forecast	17,610	18,950	21,200	25,400	1.85%
2018 FAA TAF	17,600	17,600	17,600	17,600	0.00%
% Difference	0.04%	4.86%	12.00%	22.81%	
Based Aircraft					
ALP Narrative Forecast	42	45	50	59	1.71%
2018 FAA TAF	44	44	44	44	0.00%
% Difference	3.13%	1.49%	8.33%	18.52%	

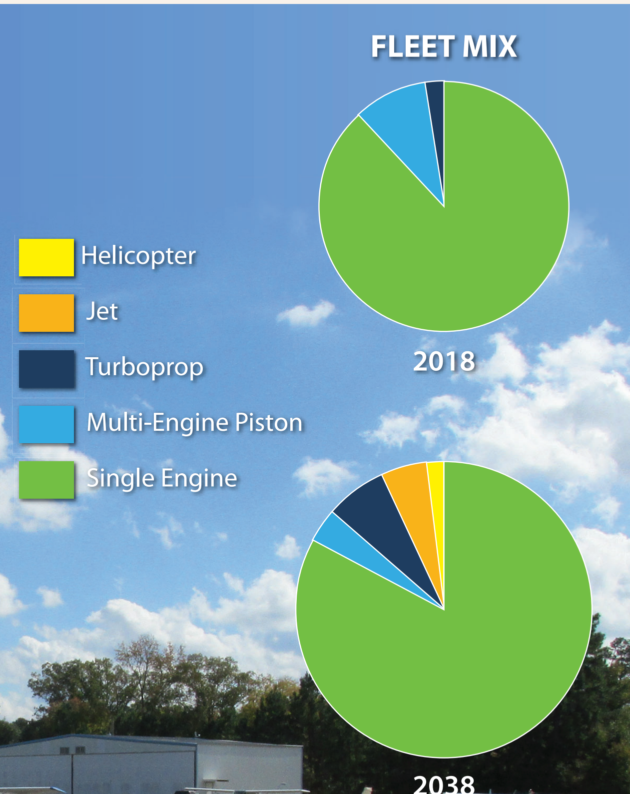
CAGR - Compound annual growth rate
Source: Coffman Associates analysis

FORECAST SUMMARY

This section has provided demand-based forecasts of aviation activity at JXI over the next 20 years. An attempt has been made to define the projections in terms of short (1-5 years), intermediate (6-10 years), and long (11-20 years) term planning horizons. **Exhibit J** presents a 20-year forecast summary as previously detailed in this chapter. Elements such as local socioeconomic indicators, anticipated regional development, historical aviation data, and national aviation trends were all considered when determining future conditions.

DEMAND SEGMENT	BASE YEAR	2023	2028	2038
ANNUAL OPERATIONS				
Itinerant				
Air Taxi	10	50	100	300
General Aviation	4,400	5,700	7,400	10,000
Military	-	-	-	-
Total Itinerant	*4,410*	*5,750*	*7,500*	*10,300*
Local				
General Aviation	13,200	13,200	13,700	15,100
Military	-	-	-	-
Total Local	*13,200*	*13,200*	*13,700*	*15,100*
TOTAL ANNUAL OPERATIONS	**17,610**	**18,950**	**21,200**	**25,400**
BASED AIRCRAFT				
Single Engine	37	39	43	49
Multi-Engine Piston	4	3	3	2
Turboprop	1	2	2	4
Jet	0	1	2	3
Helicopter	0	0	0	1
Other	0	0	0	0
BASED AIRCRAFT TOTAL	**42**	**45**	**50**	**59**
ANNUAL INSTRUMENT APPROACHES	**88**	**115**	**150**	**206**





AIRPORT/AIRCRAFT/RUNWAY CLASSIFICATION

The FAA has established multiple aircraft classification systems that group aircraft based upon performance (approach speed in landing configuration) and on design characteristics (wingspan and landing gear configuration). These classification systems are used to design certain airport elements, such as separation standards, safety areas, runways, taxiways, and aprons, based upon the aircraft expected to use the airport facilities most frequently.

AIRCRAFT CLASSIFICATION

The use of appropriate FAA design standards is generally based upon the characteristics of aircraft commonly using, or expected to use, the airport facilities. The aircraft used to design the airport is designated as the critical aircraft. The design criteria used in the aircraft classification process are presented in **Exhibit K**. An airport's critical aircraft can be a single aircraft or a collection of multiple aircraft commonly using the airport that fit into a single aircraft category. The design aircraft or collection of aircraft is classified by three different categories: Aircraft Approach Category (AAC), Airplane Design Group (ADG), and Taxiway Design Group (TDG). The FAA Advisory Circular (AC) 150/5300-13A, *Airport Design,* describes the following classification systems and parameters.

Aircraft Approach Category (AAC): A grouping of aircraft based on a reference landing speed (V_{REF}), if specified, or if V_{REF} is not specified, 1.3 times stall speed (V_{SO}) at the maximum certificated landing weight. V_{REF}, V_{SO}, and the maximum certificated landing weight are those values as established for the aircraft by the certification authority of the country of registry. The AAC generally refers to the approach speed of an aircraft in landing configuration. The higher the approach speed is, the more restrictive the design standards become. The AAC, depicted by letters A-E, represents the approach category and relates to the approach speed of the aircraft (operational characteristics). The AAC typically applies to runways and runway-related facilities, such as runway width, runway safety area (RSA), runway object free area (ROFA), runway protection zone (RPZ), and separation standards.

Airplane Design Group (ADG): The ADG, depicted by a Roman numeral I through VI, is a classification of aircraft which relates to the aircraft wingspan or tail height (physical characteristics). If the aircraft wingspan or tail height fall under two different classifications, the higher category is used. The ADG is used to establish design standards for taxiway safety area (TSA), taxiway obstacle free area (TOFA), taxilane object free area, apron wingtip clearance, and various other separation standards.

Taxiway Design Group (TDG): A classification of airplanes based on outer-to-outer main gear width (MGW) and cockpit to main gear (CMG) distance. The TDG relates to the dimensions of the under-carriage of the design aircraft. The taxiway design elements determined by the application of the TDG include the taxiway width, taxiway edge safety margin, taxiway shoulder width, taxiway fillet dimensions, and, in some cases, the separation distance between parallel taxiway/taxilanes. Other taxiway elements, such as the taxiway safety area (TSA), taxiway/taxilane object free area (TOFA), taxiway/taxilane separation to parallel taxiway/taxilanes or fixed or movable objects, and taxiway/taxilane wingtip

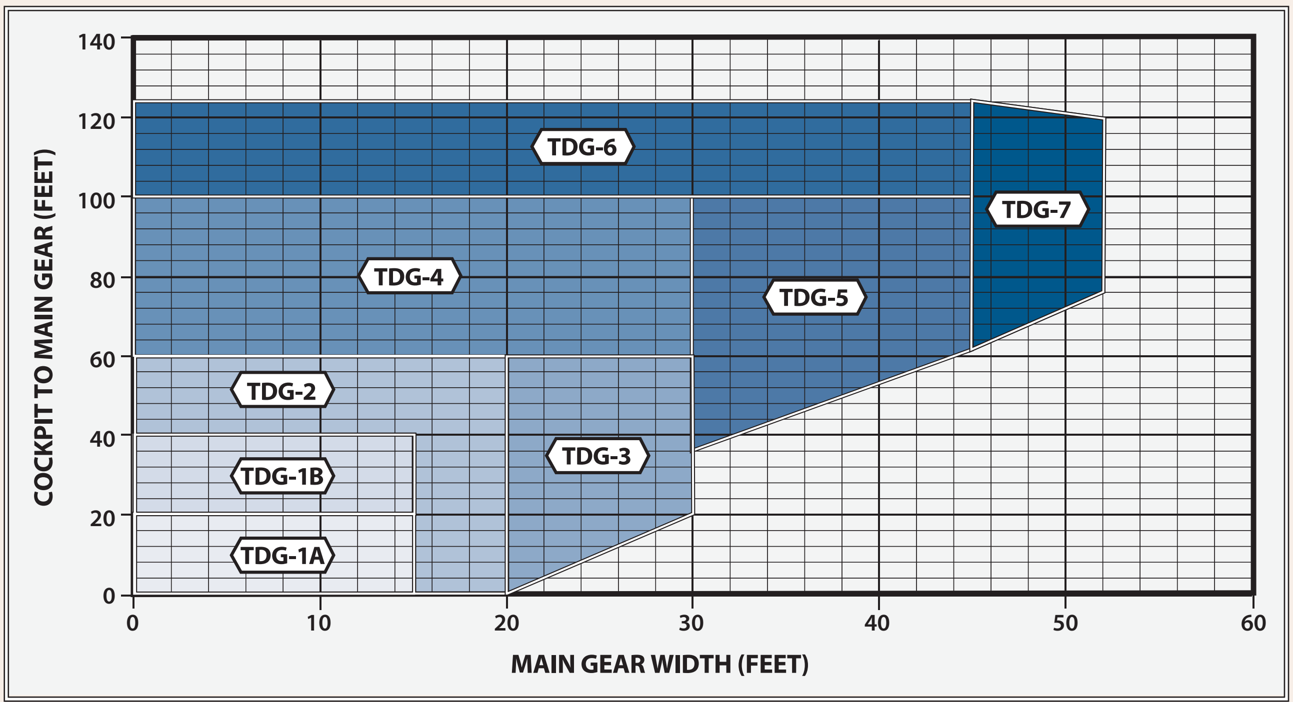
AIRCRAFT APPROACH CATEGORY (AAC)	
Category	**Approach Speed**
A	less than 91 knots
B	91 knots or more but less than 121 knots
C	121 knots or more but less than 141 knots
D	141 knots or more but less than 166 knots
E	166 knots or more

AIRPLANE DESIGN GROUP (ADG)		
Group #	**Tail Height (ft)**	**Wingspan (ft)**
I	<20	<49
II	20-<30	49-<79
III	30-<45	79-<118
IV	45-<60	118-<171
V	60-<66	171-<214
VI	66-<80	214-<262

VISIBILITY MINIMUMS	
RVR* (ft)	**Flight Visibility Category (statute miles)**
VIS	3-mile or greater visibility minimums
5,000	Not lower than 1-mile
4,000	Lower than 1-mile but not lower than ¾-mile
2,400	Lower than ¾-mile but not lower than ½-mile
1,600	Lower than ½-mile but not lower than ¼-mile
1,200	Lower than ¼-mile

***RVR**: Runway Visual Range

TAXIWAY DESIGN GROUP (TDG)



Source: FAA AC 150/5300-13A, Airport Design clearances are determined solely based on the wingspan (ADG) of the design aircraft utilizing those surfaces. It is appropriate for a taxiway to be planned and built to different taxiway design standards based on expected use.

Exhibit L presents the aircraft classification of common aircraft in operation today.

AIRPORT AND RUNWAY CLASSIFICATION

The airport and runway classifications, along with the aircraft classifications defined above, are used to determine the appropriate FAA design standards to which the airfield facilities are to be designed and built.

Airport Reference Code (ARC): An airport designation that signifies the airport's highest runway design code (RDC), minus the third (visibility) component of the RDC. The ARC is used for planning and design purposes only and does not limit the aircraft's capability of operating safely on the airport.

Runway Design Code (RDC): A code signifying the design standards to which the runway is to be built. The RDC is based upon planned development and has no operational component.

The AAC, ADG, and runway visual range (RVR) are combined to form the RDC of a runway. The RDC provides the information needed to determine certain design standards that apply. The first component, depicted by a letter, is the AAC and relates to aircraft approach speed (operational characteristics). The second component, depicted by a Roman numeral, is the ADG and relates to either the aircraft wingspan or tail height (physical characteristics), whichever is most restrictive. The third component relates to the visibility minimums expressed by RVR values in feet of 1,200 (⅛-mile), 1,600 (¼-mile), 2,400 (½-mile), 4,000 (¾-mile), and 5,000 (1-mile). The RVR values approximate standard visibility minimums for instrument approaches to the runways. The third component should read "VIS" for runways designed for visual approach use only.

Numerous airfield design standards are based upon the RDC. The RDC of any given runway is used to determine specific airfield design standards, which include imaginary surfaces established by the FAA to protect aircraft operational areas in order to keep them free of obstructions that could possibly affect the safe operation of aircraft. Airfield design standards at JXI are further described later in the report.

Approach Reference Code (APRC): A code signifying the current operational capabilities of a runway and associated parallel taxiway regarding landing operations. Like the RDC, the APRC is composed of the same three components: the AAC, ADG, and RVR. The APRC describes the current operational capabilities of a runway under meteorological conditions where no special operating procedures are necessary, as opposed to the RDC, which is based upon planned development with no operational component. The APRC for a runway is established based upon the minimum runway to taxiway centerline separation.

Currently, the runway to partial parallel taxiway centerline separation for Runway 18-36 is 240 feet. Given that Runway 18-36 is served by instrument approach procedures with minimums not lower than one mile, Runway 18-36 meets standards for APRC B/II/5000. It should be noted, however, that the

A-I

- Beech Baron 55
- **Beech Bonanza**
- Cessna 150
- Cessna 172
- Cessna Citation Mustang
- Eclipse 500/550
- Piper Archer
- Piper Seneca

C-II, D-II

- **Cessna Citation X (750)**
- Gulfstream 100, 200,300
- Challenger 300/600
- ERJ-135, 140, 145
- CRJ-200/700
- Embraer Regional Jet
- Lockheed JetStar
- Hawker 800

B-I

- Beech Baron 58
- Beech King Air A90/100
- Cessna 402
- **Cessna 421**
- Piper Navajo
- Piper Cheyenne
- Swearingen Metroliner
- Cessna Citation I (525)

C-III, D-III *less than 100,000 lbs.*

- ERJ-170
- CRJ 705, 900
- Falcon 7X
- **Gulfstream 500**, 550, 650
- Global Express, Global 5000
- Q-400

B-II

- Super King Air 200
- Cessna 441
- DHC Twin Otter
- Super King Air 350
- Beech 1900
- Citation Excel (560), Sovereign (680)
- Falcon 50, 900, 2000
- **Citation Bravo (550)**
- Embraer 120

C-III, D-III *over 100,000 lbs.*

- ERJ-90
- Boeing Business Jet
- B-727
- **B-737**-300, **700,** 800
- MD-80, DC-9
- A319, A320

A-III, B-III

- DHC Dash 7
- **DHC Dash 8**
- DC-3
- **Global Express, Global 5000**
- Fairchild F-27
- ATR 72

C-IV, D-IV

- **B-757**
- B-767
- C-130 Hercules
- DC-8-70
- MD-11

C-I, D-I

- Beech 400
- **Lear** 31, **35,** 45, 60
- Israeli Westwind

D-V

- **B-747-400**
- B-777
- B-787
- A-330, A-340

Note: Aircraft pictured is identified in bold type.

taxiway turn-around located south of mid-field has a runway to taxiway centerline separation of 155 feet, which meets APRC B/I(S)/5000 (meaning small aircraft exclusively or those under 12,500 pounds with not lower than one-mile minimums).

Departure Reference Code (DPRC): A code signifying the current operational capabilities of a runway and associated parallel taxiway regarding take-off operations. The DPRC represents those aircraft that can take off from a runway while any aircraft are present on adjacent taxiways, under meteorological conditions with no special operating conditions. The DPRC is like the APRC but is composed of two components: AAC and ADG. A runway may have more than one DPRC depending on the parallel taxiway separation distance.

As mentioned, the runway to partial parallel taxiway centerline separation for Runway 18-36 is currently 240 feet, which meets FAA DPRC standards for B/II. When taking into consideration the runway to taxiway centerline separation of 155 feet for the taxiway turn-around, the DPRC only meets FAA design standards for B/I(S).

CRITICAL DESIGN AIRCRAFT

The selection of airport design criteria is based upon the aircraft currently using, or expected to use, the airport. The critical aircraft is used to establish the design parameters of the airport. These criteria are typically based upon the most demanding aircraft using the airfield facilities on a relatively frequent basis. The critical design aircraft can be a single aircraft or a composite of multiple aircraft that represent a collection of aircraft characteristics. Upon the selection of multiple aircraft, the most demanding aircraft characteristics are used to establish the design criteria of the airport based upon the AAC, ADG, and TDG. If the airport contains multiple runways, a critical design aircraft will be established for each runway.

The primary consideration for a critical design aircraft is to ensure safe operation of the aircraft using the airport. If an aircraft larger than the critical design aircraft is to operate at the airport, it may result in reduced safety margins, or an unsafe operation. However, airports typically do not establish design criteria based solely upon the largest aircraft using the airfield facilities if it operates on an infrequent basis.

The critical design aircraft can be defined as an aircraft, or grouping of aircraft with similar characteristics, conducting at least 500 itinerant annual operations at an airport or the most regularly scheduled aircraft in commercial service. When planning for future airport facilities, it is extremely important to consider the demands of aircraft operating at the airport in the future. As a result of the separation standards based upon the critical aircraft, caution must be exercised to ensure that short-term development does not preclude the long-term needs of the airport. Thus, it is important to strike a balance between the facility needs of aircraft currently operating at the airport and the facility needs of aircraft projected to operate at the airport. Although precautions must be taken to ensure long-term airport development, airports with critical aircraft that do not use the airport facilities on a regular basis are unable to operate economically due to added development and maintenance expenses.

AIRPORT DESIGN AIRCRAFT

It is imperative to have an accurate understanding of what type of aircraft operate at the airport both now and in the future. The type of aircraft utilizing airport facilities can have a significant impact on numerous design criteria. Thus, an aircraft activity study by type and aircraft category can be beneficial in determining future airport standards that must be met in order to accommodate certain aircraft.

The FAA maintains the Traffic Flow Management System Count (TFMSC) database which documents aircraft operations at most NPIAS airports. Information is added to the TFMSC database when pilots file flight plans and/or when flights are detected by the National Airspace System, usually via radar. The database includes documentation of commercial traffic (air carrier and air taxi), general aviation, and military aircraft. Due to factors such as incomplete flight plans and limited radar coverage, TFMSC data does not account for all aircraft activity at an airport by a given aircraft type. Some VFR and non-enroute IFR traffic are excluded. Therefore, it is likely there are more operations at an airport than are captured by this methodology. TFMSC data is available for activity occurring at JXI and was utilized in this analysis.

Exhibit M presents the TFMSC operational mix at the airport for piston and turbine aircraft operations for the last 10 years. As can be seen, the airport experiences activity by a full range of piston as well as turbine powered aircraft, including a multitude of business jets.

Numerous aircraft classified within the B-II category were reported by TFMSC as operating at JXI. Of the B-II aircraft identified, some have a maximum takeoff weight (MTOW) of less than 12,500 pounds, identifying with the small aircraft category, while others have MTOWs greater than 12,500 pounds which are classified as large aircraft. The operational characteristics of a sampling of the B-II category turbine aircraft operating at JXI are presented in **Table Y**.

TABLE Y
Category B-II Aircraft Characteristics
Fox Stephens Field – Gilmer Municipal Airport

	MTOW (lbs)	Approach Speed (kts)	Wingspan (ft)	Tail Height (ft)
Aero Commander 1000 Series	11,200	100	52.12	14.95
Aero Commander 690T	8,950	97	49.05	14.50
Beechcraft King Air 200	12,590	102	54.50	14.80
Beechcraft King Air 350	15,000	99	57.90	14.30
Beechcraft King Air 90	10,100	101	50.00	14.25
Cessna CJ3	13,870	107	53.33	15.17
Cessna CJ4	17,110	107	50.83	15.42
Cessna Conquest	9,850	98	49.33	13.17
Citation Excel/XLS	22,000	114	53.50	16.80
Citation II/Bravo	14,800	112	52.17	15.00
Citation Sovereign	30,775	112	72.33	20.33

Currently, ARC B-II aircraft make up the most demanding category of aircraft operating at JXI on a semi-frequent basis. According to TFMSC, ARC B-II aircraft conducted 148 operations at JXI in 2018 and have averaged 121 annual operations over the past 10 years. Operations conducted by AAC C aircraft have also occurred throughout the 10-year period; however, they are significantly lower than those conducted by AAC B aircraft.

At present, there is a Beechcraft King Air 200 based at JXI, which is a category B-II aircraft due to its MTOW of 12,590 pounds. According to the TFMSC, the King Air 200/300/350 has averaged 106 operations annually since 2008 and conducted a total of 144 operations in 2018. Although the King Air 200 is not operating more than 500 times annually, it does base at JXI. Moreover, several other B-II aircraft operate at the airport during the year. Historically, the airport was designed to for A-I/B-I (s) with minimal safety standards and pavement widths. The King Air basing at JXI indicates a need to conform to full B-II design criteria. **Thus, the existing airport design aircraft is best described as B-II**.

The aviation demand forecasts indicate the potential for growth in activity at the airport. This includes 51 based piston-powered aircraft, four based turboprops, three jets, and one helicopter by the long-term planning horizon. The type and size of aircraft using the airport regularly can impact the design standards to be applied to the airport system. Therefore, it is important to understand what type of aircraft may use the airport in the future. Factors such as population and employment growth in the airport service area, the proximity and level of service of other regional airports, and development at the airport can influence future activity.

Most operations throughout the planning period are expected to be by aircraft within AACs A and B, and within ADGs I(S) and II(S). The based aircraft fleet mix does introduce the potential for additional turboprop as well as the arrival of based jet aircraft at JXI in the future. Given the forecast potential for based aircraft and itinerant operations growth, including turboprop and jet aircraft, **this study will consider ARC B-II the long-term design standard as well. This decision is based on the likelihood of operations remaining in the B-II range as well as the significant limitations for the airport to be upgraded to meet RDC C/D-I/II standards as will be detailed later in this report**.

RUNWAY DESIGN CODE

As previously discussed, each runway has a designated RDC. The RDC relates to specific design criteria set forth by the FAA that should be met. The RDC is determined by the particular aircraft or category of aircraft expected to use each runway and takes into consideration the AAC, ADG, and the RVR. In most cases, the critical design aircraft will also be the RDC for the primary runway.

Runway 18-36 Runway Design Code

Given that Runway 18-36 is the sole runway serving JXI, it should be designed to accommodate the critical design aircraft. This runway is currently 4,000 feet in length and 60 feet wide. The runway is equipped with instrument approach procedures with visibility minimums not lower than one mile. As a result of these characteristics and the current critical aircraft identified within ARC B-II, **Runway 18-36 is currently categorized as RDC B-II-5000**. As previously noted, the airport was designed and built to ARC B-I (s) with minimal safety and pavement dimension standards. Based on the existing Beechcraft King Air basing at JXI and the forecast potential for additional based turbine aircraft and increased itinerant operations by larger and faster aircraft, **the existing need and ultimate planning RDC will consider B-II-5000.** The existing and ultimate RDC, APRC, and DPRC are presented in **Table Z**.

ARC	Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
A-I	Piper Malibu/Meridian	4	0	0	0	0	2	0	2	0	2
	Socata TBM 7/850/900	0	2	0	0	0	0	2	2	0	0
	TOTAL	4	2	0	0	0	2	2	4	0	2
A-II	Cessna Caravan	0	0	2	8	6	0	0	0	2	0
	Pilatus PC-12	2	0	0	6	2	4	0	0	0	0
	TOTAL	2	0	2	14	8	4	0	0	2	0
B-I	Cessna 425 Corsair	0	0	0	0	0	0	0	2	0	2
	Citation CJ1	0	0	0	0	2	8	10	18	10	6
	Citation I/SP	2	0	0	0	0	0	0	0	2	0
	Citation Mustang	0	0	0	0	4	10	42	50	22	22
	King Air 90/100	10	0	0	2	0	4	0	0	8	2
	Mitsubishi MU-2	10	16	8	4	4	2	4	4	2	4
	Phenom 100	0	2	0	0	0	0	0	0	0	0
	Piper Cheyenne	2	2	0	0	0	2	0	0	0	0
	Premier 1	2	2	6	6	2	0	0	4	0	0
	T-6 Texan	0	0	0	0	2	0	0	0	0	0
	TOTAL	26	22	14	12	14	26	56	78	44	36
B-II	Aero Commander 1000 Series	0	0	0	0	0	0	2	0	0	0
	Aero Commander 690	14	10	4	0	2	2	6	0	0	0
	Cessna Conquest	0	0	0	0	2	2	0	0	0	0
	Citation CJ2/CJ3/CJ4	0	0	0	0	0	0	0	2	12	0
	Citation II/SP/Latitude	6	8	4	0	2	8	8	12	8	2
	Citation V/Sovereign	2	0	0	0	0	4	0	0	0	2
	Citation XLS	0	0	0	0	0	2	0	2	0	0
	King Air 200/300/350	66	86	88	90	54	76	96	168	192	144
	King Air F90	0	0	6	0	0	0	18	0	0	0
	TOTAL	88	104	102	90	60	94	130	184	212	148
C-I	Learjet 31	0	0	0	2	0	0	0	0	0	0
	Learjet 60 Series	0	0	2	0	4	0	0	0	0	0
	Westwind II	0	0	0	0	0	2	0	0	0	0
	TOTAL	0	0	2	2	4	2	0	0	0	0
C-II	Challenger 600/604	0	0	0	0	0	0	0	0	2	0
	TOTAL	0	0	0	0	0	0	0	0	2	0
C-V	Boeing P-8 Poseidon	0	0	0	0	0	0	2	0	0	0
	TOTAL	0	0	0	0	0	0	2	0	0	0

AIRCRAFT REFERENCE CODE (ARC) SUMMARY

ARC	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
A-I	4	2	0	0	0	2	2	4	0	2
A-II	2	0	2	14	8	4	0	0	2	0
B-I	26	22	14	12	14	26	56	78	44	36
B-II	88	104	102	90	60	94	130	184	212	148
C-I	0	0	2	2	4	2	0	0	0	0
C-II	0	0	0	0	0	0	0	0	2	0
C-V	0	0	0	0	0	0	2	0	0	0
TOTAL	120	128	120	118	86	128	190	266	260	186

APPROACH CATEGORY (AC)

AC	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
A	6	2	2	14	8	6	2	4	2	2
B	114	126	116	102	74	120	186	262	256	184
C	0	0	2	2	4	2	2	0	2	0
TOTAL	120	128	120	118	86	128	190	266	260	186

DESIGN GROUP (DG)

DG	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
I	30	24	16	14	18	30	58	82	44	38
II	90	104	104	104	68	98	130	184	216	148
V	0	0	0	0	0	0	2	0	0	0
TOTAL	120	128	120	118	86	128	190	266	260	186

TFMSC: Traffic Flow Management System Count (FAA database)

This page intentionally left blank

TABLE Z
Existing/Ultimate Design Characteristics
Fox Stephens Field – Gilmer Municipal Airport

	RDC	APRC	DPRC
Historic/Previous	B-I(S)-5000	B/II/5000	B/II
Existing Need/Ultimate	B-II-5000	B/II/5000	B/II

FACILITY REQUIREMENTS

As previously mentioned in the report, components of an airport contain both airside and landside facilities. Airside facilities include facilities that are related to the approach, departure, and ground movement of aircraft on the airport. Airside facility components encompass runways, taxiways, navigational approach aids, airport signage, marking, and lighting. Landside facilities are needed on an airport to foster the interface of air and ground transportation. Landside facility components include terminal facilities, aircraft hangars and tiedowns, aircraft parking aprons, automobile parking, and airport support facilities.

AIRSIDE FACILITY REQUIREMENTS

Components included within the airside facility requirements and alternatives section encompass the runway, safety area design standards, taxiways, navigational and approach aids, lighting, marking, and signage.

Airfield Design Standards

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

The entire RSA, ROFA, and ROFZ must be under the direct ownership of the airport sponsor to ensure these areas remain free of obstacles and can be readily accessed by maintenance and emergency personnel. The RPZ should also be under airport ownership. An alternative to outright ownership of the RPZ is the purchase of avigation easements (acquiring control of designated airspace within the RPZ) or having sufficient land use control measures in place which ensure the RPZ remains free of incompatible development. The various airport safety areas are graphically presented on **Exhibit N**.

Dimensional standards for the various safety areas associated with the runway are a function of the type of aircraft expected to use the runway as well as the instrument approach capability. **Table AA** presents the FAA design standards as they apply to Runway 18-36 at JXI. As identified in the previous section, the historic critical design aircraft, for which the airport has been planned, is classified as B-I(S), and the current critical design aircraft is classified as B-II. Furthermore, JXI currently has instrument approach visibility minimums of not lower than one mile. Therefore, current needs for design standards within RDC B-II-5000 are examined.

TABLE AA
Runway Design Standards
Fox Stephens Field – Gilmer Municipal Airport

	Runway 18-36	
	Historic Design	**Current Need/Ultimate**
RUNWAY CLASSIFICATION		
Runway Design Code	B-I(S)-5000	B-II-5000
Visibility Minimums	1-mile	1-mile
RUNWAY DESIGN		
Runway Width	60	75
Blast Pad Length x Width	60 x 80 (Both Runway Ends)	150 x 95 (Both Runway Ends)
RUNWAY PROTECTION		
Runway Safety Area (RSA)		
Width	120	150
Length Beyond Departure End	240	300
Length Prior to Threshold	240	300
Runway Object Free Area (ROFA)		
Width	250	500
Length Beyond Departure End	240	300
Length Prior to Threshold	240	300
Runway Obstacle Free Zone (ROFZ)		
Width	250	400
Length Beyond Departure End	200	200
Length Prior to Threshold	200	200
Approach Runway Protection Zone (RPZ)		
Length	1,000	1,000
Inner Width	250	500
Outer Width	450	700
Departure Runway Protection Zone (RPZ)		
Length	1,000	1,000
Inner Width	250	500
Outer Width	450	700
RUNWAY SEPARATION		
Runway Centerline to:		
Hold Position	125	200
Parallel Taxiway	150	240
Aircraft Parking Area	125	250

Note: All dimensions in feet
Source: FAA AC 150/5300-13A, Change 1, Airport Design

Runway Safety Area (RSA)

The RSA is defined in FAA AC 150/5300-13A, *Airport Design,* as a "surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of undershoot, overshoot, or excursion from the runway." The RSA is centered on the runway and dimensioned in accordance to the

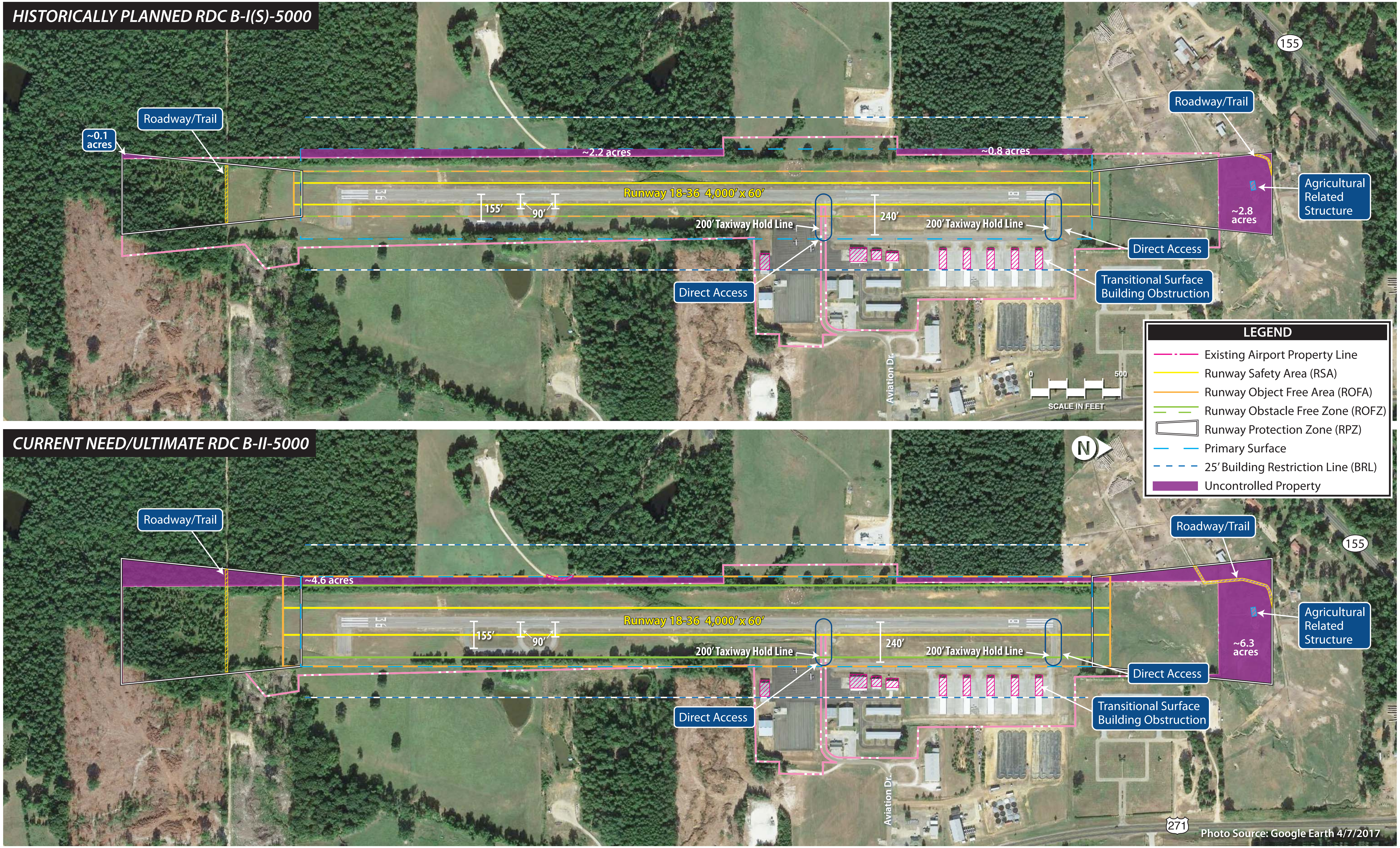


Exhibit N
EXISTING/ULTIMATE SAFETY AREAS

This page intentionally left blank

approach speed of the critical design aircraft using the runway. The FAA requires the RSA to be cleared and graded, drained by grading or storm sewers, capable of accommodating the design aircraft and fire and rescue vehicles, and free of obstacles not fixed by navigational purpose such as runway edge lights or approach lights.

The FAA has placed a higher significance on maintaining adequate RSA at all airports. Under Order 5200.8, effective October 1, 1999, the FAA established the *Runway Safety Area Program.* The Order states, "The objective of the Runway Safety Area Program is that all RSAs at federally-obligated airports…shall conform to the standards contained in Advisory Circular 150/5300-13, *Airport Design*, to the extent practicable." Each Regional Airports Division of the FAA is obligated to collect and maintain data on the RSA for each runway at the airport and perform airport inspections.

The historic RDC B-I(S)-5000 RSA serving Runway 18-36 was 120 feet wide and extends 240 feet beyond each end of the runway. Based on a site visit and airport records, there are no known obstructions to the existing RSA as presented on the top half of **Exhibit N**.

Under the current and ultimate RDC B-II-5000 conditions, the RSA is enlarged to 150 feet wide and extends 300 feet beyond each end of the runway. RDC B-II-5000 conditions, presented on the bottom half of **Exhibit N**, depict the RSA serving Runway 18-36. Under ultimate conditions, there are no known RSA incompatibilities. Future planning should ensure the RSA is maintained clear of obstructions.

Runway Object Free Area (ROFA)

The ROFA is a two-dimensional surface area that surrounds all airfield runways. This area must remain clear of obstructions aside from those that are deemed "fixed by function," such as runway lighting systems. This safety area does not have to be level or graded as the RSA does. However, the ROFA must be clear of any penetrations at the lateral elevation of the RSA. Much like the RSA, the ROFA is centered upon the runway centerline and its size is determined based upon the critical design aircraft using the runway.

Under historic RDC B-I(S)-5000, FAA standards call for the ROFA serving Runway 18-36 to be 250 feet wide and extend 240 feet beyond each end of the runway. As depicted on the top half of **Exhibit N**, the Runway 18-36 ROFA meets FAA dimensional and obstruction standards, with the exception of the segmented circle located approximately 110 feet from runway centerline. However, the segmented circle is flush with the ground and, therefore, is not considered an obstruction.

ROFA dimensional standards for current and ultimate RDC B-II-5000, also presented on **Exhibit N**, are 500 feet wide and extend 300 feet beyond each end of the runway. Under these conditions, the ROFA is obstructed by the lighted wind indicator associated with the segmented circle and trees along the east and west sides of the runway, and it includes a portion of the aircraft apron area. In addition, the ROFA extends beyond the airport property boundary along the west side of the runway, encompassing approximately 3.0 acres of combined uncontrolled property. It is recommended that the airport mitigate all obstructions and incompatibilities to the ROFA under RDC B-II-5000 standards.

Runway Obstacle Free Zone (ROFZ)

An ROFZ is defined as a portion of airspace centered about the runway, and its elevation at any point is equal to the elevation of the closest point on the runway centerline. The ROFZ extends 200 feet past each end of the runway on the runway centerline. The width of the ROFZ is determined by the critical aircraft utilizing the runway. The ROFZ width for runways accommodating small aircraft is 250 feet and the width of the ROFZ for runways accommodating large aircraft is 400 feet. The function of the ROFZ is to ensure the safety of aircraft conducting operations by preventing object penetrations to this portion of airspace. Potential penetrations to this airspace also include taxiing and parked aircraft. Any obstructions within this portion of airspace must be mounted on frangible couplings and be fixed in its position by its function. If the ROFZ is obstructed, an airport's approaches could be removed, or approach minimums could be increased.

ROFZ dimensions for a B-I(S) runway serving small aircraft weighing less than 12,500 pounds, are 250 feet wide and extend 200 feet beyond each end of the runway. As presented on **Exhibit N**, the historic ROFZ serving Runway 18-36 is unobstructed. Although the ROFZ encompasses a portion of the segmented circle, it is flush with the ground and is not considered an obstruction, similar to the ROFA.

The established FAA dimensions for a B-II runway serving large aircraft (over 12,500 pounds) require the ROFZ to be 400 feet in width and extend 200 feet beyond each end of the runway. Under current and ultimate conditions, the ROFZ encompasses overgrown vegetation and trees along the east and west side of Runway 18-36 and includes a portion of the existing aircraft apron area. The airport should mitigate all incompatibilities associated with the current and ultimate ROFZ.

Runway Protection Zone (RPZ)

An RPZ can be described as a trapezoidal area centered on the extended runway centerline and generally begins 200 feet from the end of the runway. This safety area has been established to protect the end of the runway from airspace penetrations and incompatible land uses. The RPZ is divided into two different portions: the central portion and the controlled activity area. The central portion of the RPZ extends from the beginning to the end of the RPZ, is centered on the runway centerline, and is the same width as the ROFA. The RPZ dimensions are based upon the critical design aircraft using the runway and the visibility minimums serving the runway.

While the RPZ is intended to be clear of incompatible objects or land uses, some uses are permitted with conditions and other land uses are prohibited. According to AC 150/5300-13A, the following land uses are permissible within the RPZ:

- Farming that meets the minimum buffer requirements.
- Irrigation channels as long as they do not attract birds.
- Airport service roads, as long as they are not public roads and are directly controlled by the airport operator.
- Underground facilities, as long as they meet other design criteria, such as RSA requirements, as applicable.

- Unstaffed navigational aids (NAVAIDs) and facilities, such as required for airport facilities that are fixed-by-function in regard to the RPZ.

Any other land uses considered within RPZ land owned by the airport sponsor must be evaluated and approved by the FAA Office of Airports. The FAA has published *Interim Guidance on Land Uses within a Runway Protection Zone* (September 27, 2012), which identifies several potential land uses that must be evaluated and approved prior to implementation. The specific land uses requiring FAA evaluation and approval include:

- Buildings and structures (residences, schools, churches, hospitals or other medical care facilities, commercial/industrial buildings, etc.).
- Recreational land use (golf courses, sports fields, amusement parks, other places of public assembly, etc.).
- Transportation facilities (rail facilities, public roads/highways, vehicular parking facilities, etc.).
- Fuel storage facilities (above and below ground).
- Hazardous material storage (above and below ground).
- Wastewater treatment facilities.
- Above-ground utility infrastructure (i.e., electrical substations), including any type of solar panel installations.

The *Interim Guidance on Land within a Runway Protection Zone* states, "RPZ land use compatibility also is often complicated by ownership considerations. Airport owner control over the RPZ land is emphasized to achieve the desired protection of people and property on the ground. Although the FAA recognizes that in certain situations the airport sponsor may not fully control land within the RPZ, the FAA expects airport sponsors to take all possible measures to protect against and remove or mitigate incompatible land uses."

Currently, the RPZ review standards are applicable to any new or modified RPZ. The following actions or events could alter the size of an RPZ, potentially introducing an incompatibility:

- An airfield project (e.g., runway extension, runway shift).
- A change in the critical design aircraft that increases the RPZ dimensions.
- A new or revised instrument approach procedure that increases the size of the RPZ.
- A local development proposal in the RPZ (either new or reconfigured).

Under historic RDC B-I(S) conditions, the RPZs associated with Runway 18-36 began 200 feet from the end of each runway and were 250 feet in width at the inner portion, 450 feet at the outer portion, and 1,000 feet in length and encompassed 8.04 acres of property. The historic RPZ serving Runway 18 extended off airport property to the north and encompassed approximately 2.8 acres of uncontrolled property, as depicted on the top half of **Exhibit N**. It should also be noted that there is a small agricultural related structure located within the historic and current Runway 18 RPZ. The RPZ historically serving Runway 36 extended beyond airport property to the west, encompassing approximately 0.1 acres of uncontrolled property, and was traversed by a dirt road or trail.

Current and ultimate approach RPZ design standards for B-II-5000 runways are 500 feet in width at the inner portion, 700 feet at the outer portion, 1,000 feet in length, and encompass 13.77 acres of property. Under current and ultimate conditions, depicted on the bottom half of **Exhibit N**, the RPZ associated with the Runway 18 end extends off airport property to the north and west, containing approximately 5.5 acres of uncontrolled property and two agricultural-related structures as well as a private gravel access road. Similar to the Runway 18 end, the ultimate RPZ serving Runway 36 extends south and off airport property to the west, encompassing approximately 2.4 acres of uncontrolled property, and is traversed by a dirt road or trail.

The FAA recommends that an airport have ownership of the RPZ land where feasible that could include outright fee simple ownership or an avigation easement. If an airport cannot fully control the entirety of the RPZ, the RPZ land use standards have recommendation status for that portion of the RPZ not controlled by the airport owner. In essence, this means the FAA can require a change to the runway environment to properly secure the entirety of the RPZ. Objects such as public roads have been allowed within RPZs under previous guidance unless they posed an airspace obstruction. FAA's current guidance, however, does not readily allow for public roads in the RPZ.

Since the new RPZ guidance addresses new or modified RPZs, existing incompatibilities may be grandfathered under certain conditions. For example, roads that are in the current RPZ are typically allowed to remain as grandfathered unless the runway environment changes, which would include a runway extension, change in the RDC, as well as instrument approach visibility minimums. The airport sponsor should take reasonable actions to meet RPZ design standards to the extent practicable. Further examination of the RPZs associated with each runway end will be undertaken in this study as part of the alternative analysis. The conclusion will be presented in the Development Concept section of this document.

Objects Affecting Navigable Airspace – Title 14 CFR Part 77

Title 14 Code of Federal Regulations (CFR) Part 77, *Objects Affecting Navigable Airspace*, is a federal regulation that establishes standards for determining obstructions in navigable airspace. It sets forth requirements for construction and alteration of structures (i.e., buildings, towers, etc.). It also provides for studies of obstructions to determine their effect on the safe and efficient use of airspace, as well as providing for public hearings regarding these obstructions, along with provisions for the creation of antenna farm areas. It establishes methods of identifying surfaces that must be free from penetration by obstructions, including buildings, cranes, cell towers, etc., in the vicinity of an airport. This regulation is predominately concerned with airspace-related issues. Implementation and enforcement of the elements contained in this regulation are a cooperative effort between the FAA and the individual state aviation agencies or the airports themselves. The imaginary surfaces defined in Title 14 CFR Part 77 include the primary surface, transitional surface, approach surface, horizontal surface, and the conical surface.

The runway type and capability of the instrument approach minimums contribute to the determination of the primary surface and building restriction line (BRL), depicted on **Exhibit N**. The primary surface is longitudinally centered on the runway and extends 200 feet beyond each runway end when the runway is paved. Given that the strength rating for Runway 18-36 is currently less than 12,500 pounds, it is classified as a "utility" runway. Under current and ultimate conditions, the runway should be strengthened to at least 12,500 pounds (to be discussed). The width of the primary surface for utility and "other than utility" (strength rating of 12,500 pounds or greater) runways having non-precision instrument minimums greater than ¾-statute miles is 500 feet. As shown on the exhibit, the existing and ultimate primary surface is obstructed by trees along the east and west sides of the runway, the lighted wind indicator, and contains a portion of the aircraft apron area.

The BRL is a product of 14 CFR Part 77 primary and transitional surface clearance requirements and identifies suitable building locations on the airport. The transitional surface extends out from the edge of the primary surface at a ratio of seven feet laterally for every one foot vertically. Based upon these criteria and building height, the BRL or obstructions to the BRL can be determined. Under existing and ultimate conditions, the separation requirement for a 25-foot BRL is 425 feet from runway centerline. It should be noted that it is typical for existing building obstructions to the BRL to be mitigated by equipping the building with red obstruction lighting. Moreover, any trees obstructing the primary or transitional surface must be cleared, topped, or trimmed to fully comply with 14 CFR Part 77.

Runway Orientation

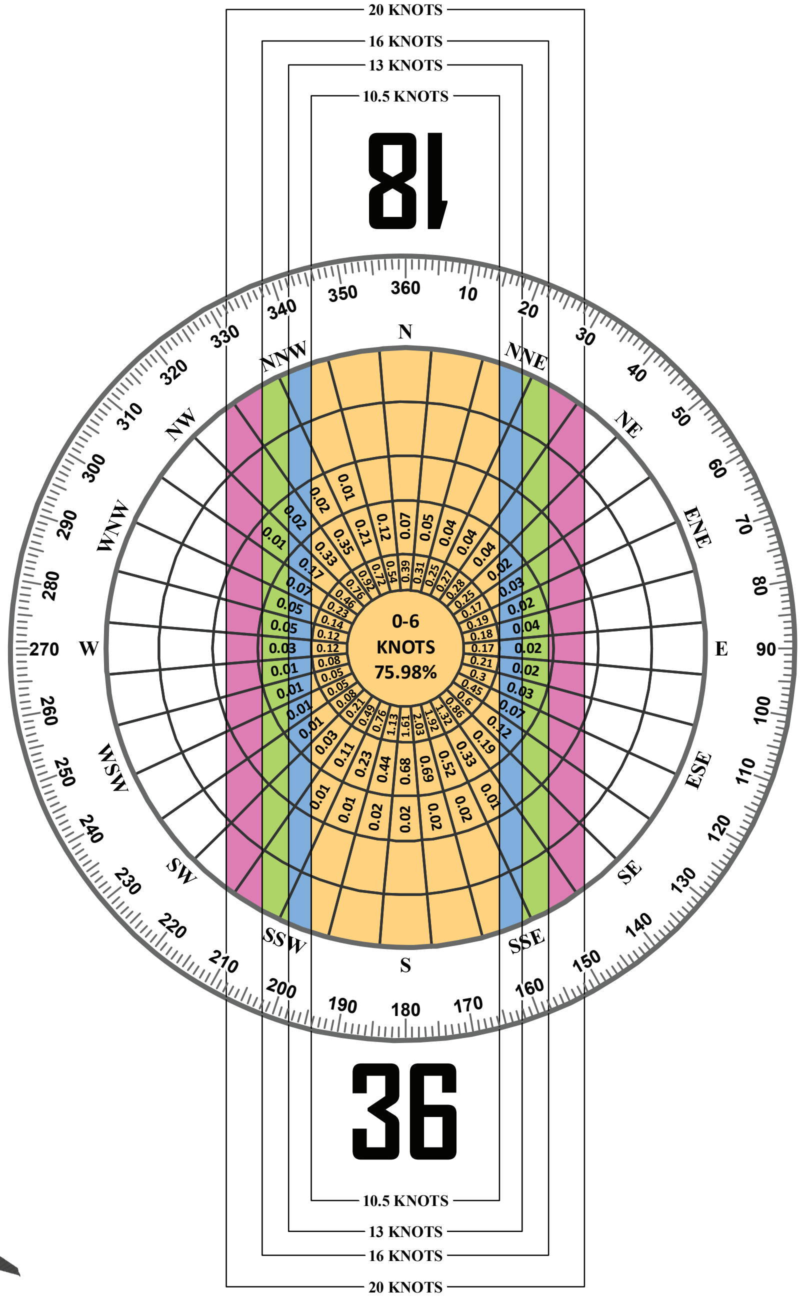
Currently, JXI is served by a single-runway system oriented in a north-south configuration. For the operational safety and efficiency of an airport, it is desirable for the runway to be oriented as close as possible to the direction of the prevailing wind. This reduces the impact of wind components perpendicular to the direction of travel of an aircraft that is landing or taking off.

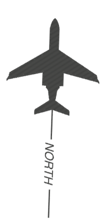
FAA Advisory Circular 150/5300-13A, *Airport Design*, recommends that a crosswind runway be made available when the primary runway orientation provides for less than 95 percent wind coverage for specific crosswind components. The 95 percent wind coverage is computed on the basis of not exceeding a 10.5-knot (12 mph) component for RDC A-I and B-I; 13-knot (15 mph) component for RDC A-II and B-II; 16-knot (18 mph) component for RDC A-III, B-III, C-I through C-III, and D-I through D-III; and a 20-knot (23 mph) component for RDC A-IV through E-VI.

Data from the automated weather observation system (AWOS) located at JXI was collected from the National Oceanic Atmospheric Administration (NOAA) National Climatic Data Center over a continuous 10-year period from January 1, 2009 through December 31, 2018. A total of 233,152 observations of wind direction and other data points were made. **Exhibit P** presents Runway 18-36 and its associated wind coverage during all-weather and IFR conditions.

In all-weather conditions, Runway 18-36 provides 99.34 percent coverage at 10.5 knots, 99.76 percent coverage at 13 knots, 99.97 percent coverage at 16 knots, and 100 percent coverage at 20 knots. Given that Runway 18-36 supports operations under IFR, wind observations under IFR conditions totaling 25,924 were also examined. The wind coverage for Runway 18-36 under IFR weather conditions accommodates 99.47 percent coverage at 10.5 knots, 99.80 percent coverage at 13 knots, and 99.98 percent coverage at 16 knots, and 100 percent at 20 knots. Runway 18-36 currently meets the 95 percent wind coverage requirement under all-weather and IFR conditions. Therefore, the existing runway orientation at JXI should be maintained as it is properly oriented to meet predominant winds, and a crosswind runway is not needed.

ALL WEATHER WIND COVERAGE				
Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 18-36	99.34%	99.76%	99.97%	100.00%



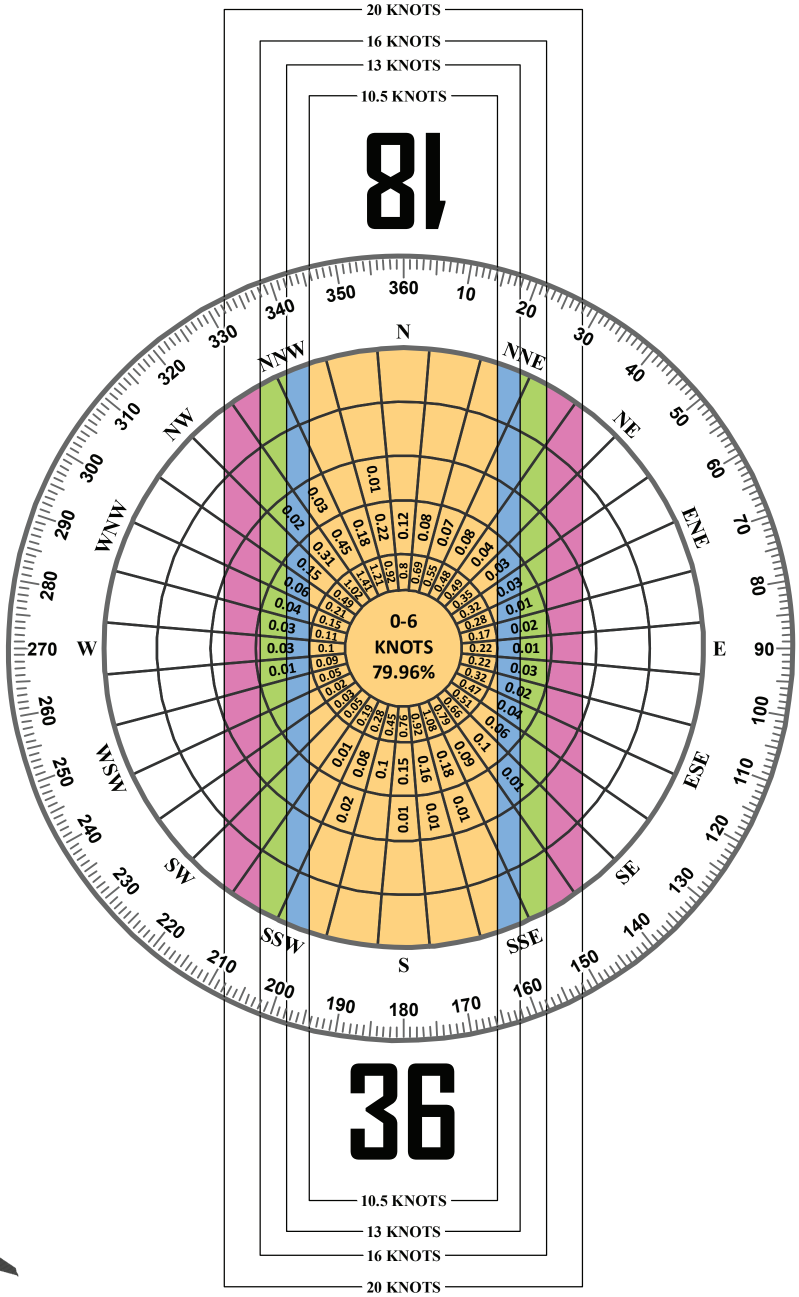


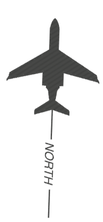
Magnetic Declination
02° 04′ 00″ East (Feb 2019)
Annual Rate of Change
00° 06′ 00″ West (Feb 2018)

SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
Fox Stephens Field - Gilmer Muni. Airport
Gilmer, TX

OBSERVATIONS:
233,152 All Weather Observations
Jan. 1, 2009 - Dec, 31 2018

IFR WIND COVERAGE				
Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 18-36	99.47%	99.80%	99.98%	100.00%





Magnetic Declination
02° 04′ 00″ East (Feb 2019)
Annual Rate of Change
00° 06′ 00″ West (Feb 2018)

SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
Fox Stephens Field - Gilmer Muni. Airport
Gilmer, TX

OBSERVATIONS:
25,924 IFR Observations
Jan. 1, 2009 - Dec, 31 2018

Runway Length Requirements

Runway length requirements for an airport typically are based on factors including airport elevation, mean daily maximum temperature of the hottest month, runway gradient (difference in runway elevation of each runway end), critical aircraft type expected to use the airport, and stage length (average distance flown per aircraft departure) of the longest non-stop trip destination. For aircraft with maximum certificated takeoff weights of less than 12,500 pounds, adjustments for runway gradient are not taken into account.

Aircraft performance declines as each of these factors increase. Summertime temperatures and stage lengths are the primary factors in determining runway length requirements. For calculating runway length requirements at JXI, the airport's elevation is 415 feet above mean sea level (MSL) and the mean maximum temperature of the hottest month (August) is 94.1 degrees Fahrenheit (F). The maximum difference in runway end elevation is 9.2 feet with a published gradient of 0.6 percent.

Using the site-specific data described above, runway length requirements for the various classifications of aircraft that may operate at the airport were examined using FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*. The FAA runway analysis groups general aviation aircraft into several categories, reflecting the percentage of the fleet within each category. The runway design should be based upon the most critical aircraft (or group of aircraft) performing at least 500 annual itinerant operations. Future plans should be realistic and supported by the FAA-approved forecasts and should be based on the critical design aircraft (or family of aircraft).

The first step in evaluating runway length is to determine general runway length requirements for the majority of aircraft operating at the airport. Most operations at JXI are conducted using smaller single engine piston-powered aircraft weighing less than 12,500 pounds.

Table BB summarizes the FAA's generalized recommended runway lengths determined for JXI based upon runway design criteria outlined in FAA AC 150/5325-4B. The advisory circular further defines the fleet categories as follows:

- 95 Percent of Small Airplane Fleet: Applies to airports that are primarily intended to serve medium-sized population communities with a diversity of usage and a greater potential for increased aviation activities. This category also includes airports that are primarily intended to serve low-activity locations, small population communities, and remote recreational areas.

- 100 Percent of Small Airplane Fleet: This type of airport is primarily intended to serve communities located on the fringe of a metropolitan area or a relatively large population community that is remote from a metropolitan area.

TABLE BB
Small Aircraft Runway Length Requirements
Fox Stephens Field – Gilmer Municipal Airport

AIRPORT AND RUNWAY DATA	
Airport elevation	415 feet
Mean daily maximum temperature of the hottest month	94.1° F
Maximum difference in runway elevation	9.2 feet
RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN	
Small airplanes with less than 10 passenger seats:	
95 percent of small airplanes	3,300 feet
100 percent of small airplanes	3,900 feet
Small airplanes with 10 or more passenger seats	4,300 feet

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

Based upon these calculations, Runway 18-36 at JXI satisfies the length requirements for 95 and 100 percent of small airplanes with its current length of 4,000 feet. The runway length requirement for small airplanes with 10 or more passenger seats is 4,300 feet, which is 300 feet longer than the existing runway length at JXI. According to the TFMSC, the airport is also utilized by aircraft weighing more than 12,500 pounds, including small to medium business jet and turboprop aircraft. The FAA runway length AC also includes methods to calculate recommended runway length for large aircraft. Runway length requirements for business jets weighing less than 60,000 pounds have also been calculated based on FAA AC 150/5325-4B. These calculations take into consideration the runway gradient and landing length requirements for contaminated runways (wet). Business jets tend to need greater runway length when landing on a wet surface because of their increased approach speeds.

AC 150/5325-4B stipulates that runway length determinations for large aircraft consider a grouping of airplanes with similar operating characteristics. The AC provides two separate "family groupings of airplanes," each based upon their representative percentage of aircraft in the national fleet. The first grouping is those business jets that make up 75 percent of the national fleet, and the second group is those making up 100 percent of the national fleet (75-100 percent of the national fleet). **Table CC** presents a representative list of aircraft for each aircraft grouping. A third group includes business jets weighing more than 60,000 pounds; however, runway length determination for these aircraft types must be based on the performance characteristics of the individual aircraft.

TABLE CC
Business Jet Fleet Mix Categories for Runway Length Determination

75 percent of the national fleet	MTOW	75-100 percent of the national fleet	MTOW	Greater than 60,000 pounds	MTOW
Lear 35	20,350	Lear 55	21,500	Gulfstream II	65,500
Lear 45	20,500	Lear 60	23,500	Gulfstream IV	73,200
Cessna 550	14,100	Hawker 800XP	28,000	Gulfstream V	90,500
Cessna 560XL	20,000	Hawker 1000	31,000	Global Express	98,000
Cessna 650 (VII)	22,000	Cessna 650 (III/IV)	22,000		
IAI Westwind	23,500	Cessna 750 (X)	36,100		
Beechjet 400	15,800	Challenger 604	47,600		
Falcon 50	18,500	IAI Astra	23,500		

MTOW: Maximum Take Off Weight
Source: FAA AC 150/5325-4B, Runway Length Requirements for Airport Design

Table DD presents the results of the runway length analysis for business jets developed following the guidance provided in AC 150/5325-4B. To accommodate 75 percent of the business jet fleet at 60 percent useful load, a runway length of 5,500 feet is recommended per the AC. This length is derived from a raw length of 4,775 feet that is adjusted, as recommended, for runway gradient, then rounded up to the nearest hundred feet (when the raw number is 30 feet or more). To accommodate 100 percent of the business jet fleet at 60 percent useful load, a runway length of 5,800 feet is recommended per the AC.

TABLE DD
Business Jet Runway Length Requirements
Fox Stephens Field – Gilmer Municipal Airport

Airport Elevation	415 feet MSL			
Average High Monthly Temp.	94.1 °F (August)			
Runway Gradient	9.2 feet			
Fleet Mix Category	**Raw Runway Length from FAA AC**	**Runway Length With Gradient Adjustment (+92')**	**Wet Surface Landing Length for Jets (+15%)***	**Final Runway Length**
75% of fleet at 60% useful load	4,775’	4,867’	5,491’	5,500’
100% of fleet at 60% useful load	5,706’	5,798’	5,500’	5,800’

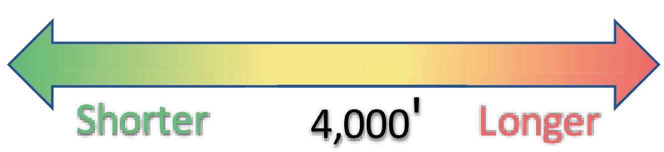
* Max 5,500' for 60% useful load in wet conditions
Source: FAA AC 150/5325-4B, Runway Length Requirements for Airport Design.

Another method to determine runway length requirements for jet and turbine powered aircraft at JXI is to examine each aircraft’s flight planning manual under conditions specific to the airport. Several aircraft were analyzed for takeoff length required with a design temperature of 94.1 degrees Fahrenheit, at a field elevation of 415 feet MSL, and runway gradient of 0.6 percent.

Exhibit Q provides a detailed runway takeoff length analysis for the most common business jet and turboprop aircraft in the national fleet. This data was obtained from Ultranav software which computes operational parameters for specific aircraft based on its flight manual data. The runway length data is presented in a “gradient” format, with runway length requirement values shown transitioning from green to increasingly darker shades of yellow and red depending upon the amount of runway length required. Runway length values identified in bold text are longer than the existing runway length of 4,000 feet. Additionally, **Exhibit Q** specifies the designation “OL” to refer to aircraft that are out of limits at a specific useful load for the runway. The analysis includes the maximum takeoff weight (MTOW) allowable and the percent useful load from 60 percent to 100 percent. This analysis shows that Runway 18-36 can generally accommodate the types of turbine powered and business jet aircraft identified operating at JXI when taking off with 80 percent useful load or less. These aircraft are classified within AAC B and include many of the smaller Cessna Citation models as well as the King Air 90, 200, and 350. However, aircraft analyzed within AAC B will have difficulty operating on the current runway length at JXI when operating at higher useful loads and on design day temperatures. Some of the larger and faster AAC B and all AAC C aircraft analyzed are restricted from operating at JXI altogether when design day temperatures prevail. The average takeoff length needed for all turbine aircraft analyzed at 60 percent useful load is 4,197 feet and 5,870 feet at 100 percent useful load. This exceeds the existing runway length at JXI by 197 and 1,870 feet, respectively.

Aircraft Name	ADG	MTOW lbs.	Payload lbs	60% Useful Load	70% Useful Load	80% Useful Load	90% Useful Load	100% Useful Load
				Takeoff Field Length (ft.)	Takeoff Field Length (ft.)	Takeoff Field Length (ft.)	Takeoff Field Length (ft.)	Takeoff Field Length (ft.)
Aircraft Approach Category B								
King Air C90GTi	II	10,100	3,150	2,600	2,787	2,989	3,190	3,392
King Air C90B	II	10,100	3,030	2,653	2,850	3,058	3,275	3,502
King Air 200 GT	II	12,500	3,720	3,387	3,494	3,606	3,723	3,844
Citation I/SP	I	11,850	4,447	2,960	3,212	3,480	3,763	**4,062**
Citation Ultra	II	16,300	6,275	3,018	3,262	3,530	3,811	**4,119**
Citation CJ3	II	13,870	5,110	3,062	3,300	3,559	3,847	**4,137**
Citation V (Model 560)	II	15,900	6,226	3,029	3,291	3,573	3,870	**4,183**
Citation Sovereign	II	30,300	12,150	3,638	3,703	3,861	**4,136**	**4,462**
King Air 350	II	15,000	5,115	3,508	3,652	3,827	**4,113**	**4,476**
Citation (525A) CJ2	II	12,375	4,575	3,370	3,638	3,962	**4,263**	**4,552**
Citation Encore	II	16,630	6,110	3,209	3,535	3,878	**4,232**	**4,672**
Citation II (550)	II	13,300	5,100	3,327	3,660	**4,012**	**4,383**	**4,773**
Citation 560 XLS	II	20,200	7,400	3,577	3,892	**4,173**	**4,515**	**4,817**
Citation Mustang	I	8,645	3,085	3,084	3,415	3,803	**4,338**	**4,925**
Beechjet 400A	I	16,300	5,315	**4,118**	**4,430**	**4,746**	**5,052**	**5,469**
Citation Bravo	II	14,800	5,475	**4,063**	**4,365**	**4,700**	**5,088**	**5,516**
Premier 1A	I	12,500	3,900	**4,129**	**4,593**	**5,135**	**5,758**	**6,404**
Citation (525) CJ1	I	10,600	3,730	**4,020**	**4,695**	**5,410**	**6,190**	**7,033**
Citation X	II	35,700	13,236	**5,046**	**5,504**	**6,053**	**6,631**	**7,240**
Hawker 800 (With T/R)	II	27,400	11,400	**6,314**	**7,030**	**7,788**	**8,591**	**9,261**
Hawker 800 (Non-T/R)	II	27,400	11,400	**5,860**	**6,629**	**7,473**	**8,397**	**O/L**
Aircraft Approach Category C								
Lear 31A	I	17,000	5,786	**4,027**	**4,366**	**4,741**	**5,149**	**6,279**
Gulfstream III	II	69,700	31,900	**4,356**	**4,820**	**5,301**	**5,798**	**6,311**
Lear 40	I	21,000	7,400	**4,463**	**4,880**	**5,330**	**5,770**	**6,314**
Gulfstream 150	II	26,100	11,000	**5,103**	**5,378**	**5,604**	**6,084**	**6,709**
Citation VII	II	23,000	8,750	**5,100**	**5,502**	**5,936**	**6,414**	**6,941**
Lear 45	I	21,500	7,500	**4,722**	**5,161**	**5,615**	**6,100**	**6,981**
Gulfstream 100	II	24,650	10,015	**4,897**	**5,424**	**5,997**	**6,567**	**7,135**
Challenger 604/605	II	48,200	21,015	**5,026**	**5,562**	**6,164**	**6,806**	**7,458**
Lear 60	I	23,500	8,728	**5,367**	**5,927**	**6,591**	**7,178**	**7,920**
Canadair 601-3A/R (Challenger 601)	II	45,100	18,850	**5,100**	**5,680**	**6,330**	**7,110**	**8,090**
Gulfstream II/IISP	II	65,500	23,500	**5,977**	**6,507**	**7,086**	**7,716**	**8,395**
Lear 55	I	21,500	8,607	**5,057**	**5,602**	**6,313**	**7,214**	**8,475**
Citation III	II	21,500	9,689	**4,921**	**5,438**	**6,000**	**6,607**	**O/L**

O/L: Climb limited, Out of limits
Note: Bolded values are longer than the existing runway length.



Aircraft Name	ADG	MLW	Landing Lengths Required for:					
			CFR Part 25		CFR Part 91K		CFR Part 135	
			Dry	Wet	Dry (.8)	Wet (.8)	Dry (.6)	Wet (.6)
Aircraft Approach Category B								
King Air 200 GT	II	12,500	1,211	**N/A**	1,514	**N/A**	2,018	**N/A**
King Air C90B	II	9,600	1,250	**N/A**	1,563	**N/A**	2,083	**N/A**
King Air C90GTi	II	9,600	1,393	**N/A**	1,741	**N/A**	2,322	**N/A**
Citation I/SP	I	11,350	2,441	2,807	3,051	3,509	**4,068**	**4,678**
King Air 350	II	15,000	2,971	3,417	3,714	**4,271**	**4,952**	**5,695**
Hawker 800 (Non-T/R)	II	23,350	2,970	3,820	3,713	**4,775**	**4,950**	**6,367**
Hawker 800 (With T/R)	II	23,350	2,970	3,820	3,713	**4,775**	**4,950**	**6,367**
Citation Mustang	I	8,000	2,746	3,869	3,433	**4,836**	**4,577**	**6,448**
Citation Sovereign	II	27,100	3,162	**4,093**	3,953	**5,116**	**5,270**	**6,822**
Citation (525) CJ1	I	9,800	3,161	**4,291**	3,951	**5,364**	**5,268**	**7,152**
Premier 1A	I	11,600	3,441	**4,459**	**4,301**	**5,574**	**5,735**	**7,432**
Citation CJ3	II	12,750	3,312	**4,512**	**4,140**	**5,640**	**5,520**	**7,520**
Citation V (Model 560)	II	15,200	3,266	**4,845**	**4,083**	**6,056**	**5,443**	**8,075**
Citation Ultra	II	15,200	3,371	**4,962**	**4,214**	**6,203**	**5,618**	**8,270**
Citation (525A) CJ2	II	11,500	3,487	**5,019**	**4,359**	**6,274**	**5,812**	**8,365**
Citation Encore	II	15,200	3,327	**5,020**	**4,159**	**6,275**	**5,545**	**8,367**
Beechjet 400A	I	15,700	3,777	**5,698**	**4,721**	**7,123**	**6,295**	**9,497**
Citation 560 XLS	II	18,700	3,674	**5,851**	**4,593**	**7,314**	**6,123**	**9,752**
Citation II (550)	II	12,700	2,461	**5,948**	3,076	**7,435**	**4,102**	**9,913**
Citation X	II	31,800	**4,225**	**6,043**	**5,281**	**7,554**	**7,042**	**10,072**
Citation Bravo	II	13,500	3,901	**6,139**	**4,876**	**7,674**	**6,502**	**10,232**
Aircraft Approach Category C								
Lear 40	I	19,200	2,875	3,691	3,594	**4,614**	**4,792**	**6,152**
Lear 45	I	19,200	2,877	3,691	3,596	**4,614**	**4,795**	**6,152**
Canadair 601-3A/R (Chal	II	36,000	3,351	**4,022**	**4,189**	**5,028**	**5,585**	**6,703**
Lear 31A	I	16,000	3,067	**4,294**	3,834	**5,368**	**5,112**	**7,157**
Challenger 604/605	II	38,000	2,810	**4,358**	3,513	**5,448**	**4,683**	**7,263**
Citation VII	II	20,000	3,370	**4,584**	**4,213**	**5,730**	**5,617**	**7,640**
Gulfstream 150	II	21,700	3,289	**4,859**	**4,111**	**6,074**	**5,482**	**8,098**
Lear 60	I	19,500	3,650	**4,961**	**4,563**	**6,201**	**6,083**	**8,268**
Lear 55	I	18,000	3,403	**5,446**	**4,254**	**6,808**	**5,672**	**9,077**
Citation III	II	19,000	**4,161**	**6,026**	**5,201**	**7,533**	**6,935**	**10,043**
Gulfstream II/IISP	II	58,500	3,175	**6,086**	3,969	**7,608**	**5,292**	**10,143**
Gulfstream III	II	58,500	3,193	**6,121**	3,991	**7,651**	**5,322**	**10,202**
Gulfstream 100	II	20,700	3,352	**6,175**	**4,190**	**7,719**	**5,587**	**10,292**

N/A: No wet data available
Note: Bolded values are longer than the existing

Exhibit Q also presents the runway length required for landing under three operational categories: Title 14 CFR Part 25, CFR Part 91k, and CFR Part 135. CFR Part 25 operations are those conducted by individuals or companies which own their aircraft. CFR Part 91k includes operations in fractional ownership programs which utilize their own aircraft under direction of pilots specifically assigned to said aircraft. CFR Part 135 applies to all for-hire charter operations, including most fractional ownership operations. Similar to the runway takeoff length requirements, the landing lengths are depicted in a gradient format with runway length requirements presented in green to increasingly darker shades of yellow and red. The bold text indicates a runway length requirement that exceeds 4,000 feet, which is the current length of Runway 18-36. The landing length analysis shows that the majority of AAC B and C aircraft analyzed can land on the existing runway when operating under CFR Part 25 and 91k dry conditions. As shown on the exhibit, most of the aircraft examined will struggle to land on the existing runway length when operating under CFR Part 25 and 91k wet conditions. Essentially, none of the aircraft analyzed can land on the existing runway when operating under CFR Part 135 wet or dry conditions, with the exception of the King Air C90B, C90GTI, and 200 GT. Based upon this analysis, the average landing length of AAC B aircraft is 4,701 feet for aircraft operating under CFR Part 25 during wet runway conditions and 5,876 feet for aircraft operating under Part 91k during wet runway conditions. Similarly, landing length requirements of all aircraft analyzed average 4,804 and 6,005 feet for aircraft operating under CFR Part 25 and 91k wet conditions, respectively. Certain aircraft, such as Gulfstream and Cessna Citation series aircraft, require over 10,000 feet of runway length for landing when operating at maximum landing weight under Part 135 during wet runway conditions.

Runway 18-36 Length Summary

As previously noted, the FAA will typically only support runway length planning to the 60 percent useful load factor unless it can be demonstrated that aircraft are frequently operating fully loaded (90 percent). Some of the turbine aircraft analyzed are capable of taking off on the runway at JXI at or above 60 percent useful load. Examples of aircraft that can operate within the 60-80 percent useful load range include the smaller Cessna Citation models as well as the King Air 90, 200, and 350. For landing situations, a large majority of the aircraft analyzed require additional runway length when operating CFR Part 25, 91k, and 135 wet runway conditions. Newer generation business aircraft tend to operate more efficiently, requiring shorter runway lengths.

Many factors are considered when determining appropriate runway length for safe and efficient operations of aircraft at JXI. The airport should strive to accommodate business jets and turboprops to the greatest extent possible as demand would dictate. Runway 18-36 is currently 4,000 feet long and can accommodate a limited mix of business jets and turboprop aircraft. The analysis notes that most aircraft are subject to weight restrictions when operating at useful loads of 70 percent or greater during hot days.

The majority of operations taking place at JXI are conducted by smaller, single engine, fixed-wing aircraft weighing less than 12,500 pounds. Following guidance from AC 150/5325-4B, to accommodate 100 percent of these small aircraft, a runway length of at least 3,900 feet is recommended. However, the airport is also utilized by aircraft weighing more than 12,500 pounds, including small- to mid-sized business jet aircraft. AC 150/5325-4B stipulates that runway length determinations for business jets consider a grouping of airplanes with similar operating characteristics. As such, runway length calculations specific to JXI for business jets that make up 75 percent of the national fleet at 60 percent useful load require a 5,500-foot runway, and business jets that make up 100 percent of the national fleet at 60 percent useful load require a 5,800-foot runway.

The existing length of Runway 18-36 does not fully provide for all turbine aircraft activity, especially during hot weather conditions and when aircraft are carrying full useful loads. Moreover, a large majority of turbine aircraft are unable to land during wet runway conditions. Given the forecast potential for increased air taxi and itinerant GA operations as well as six based turbine powered aircraft throughout the planning period, **runway length alternative analysis will examine potential scenarios that could be achieved at JXI to better accommodate the needs of larger aircraft during the 20-year planning period of this study**. Justification for any runway extension to meet the needs of turbine powered aircraft would require regular use on the order of 500 annual operations. This is the minimum threshold required to obtain FAA grant funding assistance.

Runway Width

Runway width design standards are primarily based on the critical aircraft but can also be influenced by the visibility minimums of published instrument approach procedures. Runway 18-36 is currently 60 feet wide, which meets the runway width standard for the historic RDC of B-I(S)-5000. It is recommended that the runway width be increased to at least 75 feet to meet current and ultimate RDC B-II-5000 to meet FAA design standards.

Runway Pavement Strength

Airport pavement strength is very important as it must be able to withstand repeated operations by aircraft of significant weight. The strength rating of a runway does not preclude aircraft weighing more than the published strength rating from using the runway. All federally obligated airports must remain open to the public, and it is typically up to the pilot of the aircraft to determine if a runway can support their aircraft safely. An airport sponsor cannot restrict an aircraft from using the runway simply because its weight exceeds the published strength rating. On the other hand, the airport sponsor has an obligation to properly maintain the runway and protect the useful life of the runway, typically for 20 years. According to the FAA publication, *Airport/Facility Directory*, "Runway strength rating is not intended as a maximum allowable weight or as an operating limitation. Many airport pavements are capable of supporting limited operations with gross weights in excess of the published figures." The directory goes on to say that those aircraft exceeding the pavement strength should contact the airport sponsor for permission to operate at the airport.

While the pavement strength rating is not the maximum weight limit, aircraft weighing more than the certified strength should only operate on the runway on an infrequent basis. Frequent use by aircraft heavier than the pavement rating is not recommended as it will increase the rate of pavement degradation and shorten the lifespan of the pavement. However, periodic runway resurfacing, or other maintenance methods can increase the strength rating. The FAA reports the pavement strength for Runway

18-36 at 12,000 pounds single wheel loading (S). This strength rating refers to the configuration of the aircraft landing gear. For example, S indicates an aircraft with a single wheel on each landing gear. Based upon this runway strength rating, the runway can readily accommodate activity by the family of the critical design aircraft within the B-I(S) ARC. Given the current and ultimate RDC of B-II, the airport should consider increasing the runway strength rating to a minimum of 30,000 pounds S which can accommodate a wide range of GA piston and turbine powered aircraft.

Taxiways

The taxiway system of an airport is primarily to facilitate aircraft movements to and from the runway system. While some taxiways are constructed to simply provide access from the apron to the runway, other taxiways are constructed to increase the allowable frequency of aircraft operations as air traffic increases.

Taxiway Design Considerations

FAA AC 150/5300-13A, Change 1, *Airport Design*, provides guidance on recommended taxiway and taxilane layouts to enhance safety by avoiding runway incursions. A runway incursion is defined as "any occurrence at an airport involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and takeoff of aircraft."

The taxiway system at JXI generally provides for the efficient movement of aircraft; however, recently published AC 150/5300-13A, Change 1, *Airport Design*, provides recommendations for taxiway design. The following is a list of the taxiway design guidelines and the basic rationale behind each recommendation:

1. **Taxi Method:** Taxiways are designed for "cockpit over centerline" taxiing with pavement being sufficiently wide to allow a certain amount of wander. On turns, sufficient pavement should be provided to maintain the edge safety margin from the landing gear. When constructing new taxiways, upgrading existing intersections should be undertaken to eliminate "judgmental oversteering." This is where the pilot must intentionally steer the cockpit outside the marked centerline in order to assure the aircraft remains on the taxiway pavement.

2. **Steering Angle:** Taxiways should be designed such that the nose gear steering angle is no more than 50 degrees, the generally accepted value to prevent excessive tire scrubbing.

3. **Three-Node Concept:** To maintain pilot situational awareness, taxiway intersections should provide a pilot with a maximum of three choices of travel. Ideally, these are right and left angle turns and a continuation straight ahead.

4. **Intersection Angles:** Design turns to be 90 degrees wherever possible. For acute angle intersections, standard angles of 30, 45, 60, 120, 135, and 150 degrees are preferred.

5. **Runway Incursions:** Design taxiways to reduce the probability of runway incursions.

   - *Increase Pilot Situational Awareness*: A pilot who knows where he/she is on the airport is less likely to enter a runway improperly. Complexity leads to confusion. Keep taxiway systems simple using the "three node" concept.

   - *Avoid Wide Expanses of Pavement*: Wide pavements require placement of signs far from a pilot's eye. This is especially critical at runway entrance points. Where a wide expanse of pavement is necessary, avoid direct access to a runway.

   - *Limit Runway Crossings*: The taxiway layout can reduce the opportunity for human error. The benefits are twofold – through simple reduction in the number of occurrences, and through a reduction in air traffic controller workload.

   - *Avoid "High Energy" Intersections*: These are intersections in the middle third of runways. By limiting runway crossings to the first and last thirds of the runway, the portion of the runway where a pilot can least maneuver to avoid a collision is kept clear.

   - *Increase Visibility*: Right angle intersections, both between taxiways and runways, provide the best visibility. Acute angle runway exits provide greater efficiency in runway usage but should not be used as runway entrance or crossing points. A right angle turn at the end of a parallel taxiway is a clear indication of approaching a runway.

   - *Avoid "Dual Purpose" Pavements*: Runways used as taxiways and taxiways used as runways can lead to confusion. A runway should always be clearly identified as a runway and only a runway.

   - *Indirect Access*: Do not design taxiways to lead directly from an apron to a runway. Such configurations can lead to confusion when a pilot typically expects to encounter a parallel taxiway.

   - *Hot Spots*: Confusing intersections near runways are more likely to contribute to runway incursions. These intersections must be redesigned when the associated runway is subject to reconstruction or rehabilitation. Other hot spots should be corrected as soon as practicable.

6. **Runway/Taxiway Intersections:**

   - *Right Angle*: Right angle intersections are the standard for all runway/taxiway intersections, except where there is a need for a high-speed exit. Right-angle taxiways provide the best visual perspective to a pilot approaching an intersection with the runway to observe aircraft in both the left and right directions. They also provide optimal orientation of the runway holding position signs so they are visible to pilots.

- *Acute Angle*: Acute angles should not be larger than 45 degrees from the runway centerline. A 30-degree taxiway layout should be reserved for high speed exits. The use of multiple intersecting taxiways with acute angles creates pilot confusion and improper positioning of taxiway signage.

- *Large Expanses of Pavement*: Taxiways must never coincide with the intersection of two runways. Taxiway configurations with multiple taxiway and runway intersections in a single area create large expanses of pavement, making it difficult to provide proper signage, marking, and lighting.

7. **Taxiway/Runway/Apron Incursion Prevention:** Apron locations that allow direct access into a runway should be avoided. Increase pilot situational awareness by designing taxiways in such a manner that forces pilots to consciously make turns. Taxiways originating from aprons and forming a straight line across runways at mid-span should be avoided.

   - *Wide Throat Taxiways*: Wide throat taxiway entrances should be avoided. Such large expanses of pavement may cause pilot confusion and make lighting and marking more difficult.

   - *Direct Access from Apron to a Runway*: Avoid taxiway connectors that cross over a parallel taxiway and directly onto a runway. Consider a staggered taxiway layout that forces pilots to make a conscious decision to turn.

   - *Apron to Parallel Taxiway End*: Avoid direct connection from an apron to a parallel taxiway at the end of a runway.

The existing taxiway system at JXI is found to be adequate in meeting current air traffic demand. However, the existing taxiway geometry, as shown on **Exhibit N**, conflicts with the current FAA taxiway design standards established in AC 150/5300-13A, including:

- Direct access provided from the apron area to Runway 18-36.
- Direct access provided from the northernmost taxilane to the Runway 18 threshold.

Alternative analysis will examine multiple taxiway layouts to mitigate existing deficiencies. The selected alternative will be presented in the Development Concept section of this report. Analysis will also consider improvements which could be implemented on the airfield to minimize runway incursion potential, improve efficiency, and conform to FAA standards for taxiway design. Any future taxiways planned will also take into consideration the taxiway design standards.

Runway/Taxiway Separation

The design standard for the required separation between runways and parallel taxiways is a function of the critical design aircraft and the instrument approach visibility minimum. Currently, the partial parallel taxiway is 240 feet from the runway (centerline to centerline), which meets the existing and ultimate design standard. In addition, the taxiway turn-arounds serving Runway 18-36 are positioned 155 feet from runway centerline. Current and ultimate RDC B-II-5000 standards require a runway to taxiway centerline separation of 240 feet. As such, the airport should maintain the existing runway to taxiway separation of the partial parallel taxiway, and it is recommended that the partial parallel taxiway be extended south to the Runway 36 threshold, forming a full-length parallel taxiway with a runway to taxiway centerline separation of 240 feet.

Aircraft Parking Area Separation

For historic RDC B-I(S) standards with not lower than one-mile visibility approach minimums, aircraft parking areas should be at least 125 feet from the Runway 18-36 centerline. Under current and ultimate RDC B-II-5000 design standards, the FAA requires a separation of at least 250 feet from runway centerline to aircraft parking areas. Currently, the nearest aircraft parking area is approximately 145 feet from runway centerline. As such, the airport should consider increasing the minimum aircraft parking position separation to at least 250 feet from runway centerline to comply with RDC B-II-5000 standards.

Instrument, Navigational, and Approach Aids

As previously discussed, Runway 18-36 is accommodated by RNAV GPS approaches serving each end of the runway, which provide visibility minimums not lower than one mile (5,000 feet runway visual range (RVR)) and cloud ceilings of 405 feet AGL. GPS-based instrument approaches have become very common across the country. GPS is inexpensive, as it does not require a significant investment in ground-based systems by the airport or FAA. In addition, a VOR/DME instrument approach also serves JXI and is categorized as a circling approach only, with visibility minimums of not lower than one mile and cloud ceilings of 765 feet AGL. At present, there are two published obstructions to the approaches serving Runway 18-36. The approach to Runway 18 is obstructed by a 35-foot tall powerline located 1,075 feet from the runway end and is marked appropriately as an obstruction. The approach to Runway 36 is obstructed by 50-foot tall trees located approximately 200 feet from the end of the runway. Ultimately, it is recommended that the airport take action to mitigate the existing obstructions.

The instrument approach capabilities currently available adequately serve the current and forecast users of JXI and should be maintained through the planning period. However, alternative analysis will consider impacts associated with improving the instrument approach minimums.

In most instances, the landing phase of any flight must be conducted in visual conditions. To provide pilots with visual guidance information during landings to the runway, electronic visual approach aids are commonly provided at airports. Currently, each end of Runway 18-36 is served by a two-box precision approach path indicator (PAPI-2) system. Generally, four-box precision approach path indicators (PAPI-4s) are recommended for runways that are used by jet aircraft. Given the forecast potential for increased turbine aircraft operations and based turbine aircraft at JXI, the airport should consider upgrading the existing PAPI-2 systems to PAPI-4s over the long-term planning horizon.

Runway end identification lights (REILs) are flashing lights located at the runway threshold end that facilitate rapid identification of the runway end at night and during poor visibility conditions. REILs provide pilots with the ability to identify the runway thresholds and distinguish the runway end lighting from other lighting on the airport and in the approach areas. The FAA indicates that REILs should be considered for all lighted runway ends not planned for a more sophisticated approach lighting system. Currently, Runway 18-36 is not served by REILs. As such, the airport should consider implementing REILs on Runway 18-36 in the future.

Airfield Marking, Lighting, and Signage

At present, Runway 18-36 is marked with basic runway markings. Runway 18-36 is currently served with non-precision instrument approaches. As such, it is recommended that the runway be marked as a non-precision instrument runway.

Holding positions are markings on taxiways leading to runways, which provide for adequate runway clearance for holding aircraft. Currently, the connecting taxiways extending from the partial parallel taxiway serving Runway 18-36 and the aircraft apron area contain hold position markings at runway intersections, located 200 feet from the runway centerline, which meet the current and ultimate RDC B-II standard. Faded holding position markings serving the taxiway turn-around are located 90 feet from runway centerline. Given that the taxiway-turnarounds serving Runway 18-36 are positioned 155 feet from runway centerline, it is recommended that the taxiway turn-arounds be relocated to at least 240 feet from runway centerline or removed altogether. Should demand warrant the construction of a full-length parallel taxiway serving Runway 18-36, it is recommended that any additional holding positions be placed at a minimum of 240 feet from the runway centerline to conform to RDC B-II standards. As such, the existing hold position markings serving the partial parallel taxiway and aircraft apron area should remain in their current location, adhering to current and ultimate planning.

Runway and taxiway lighting systems serve as a primary means of navigation in reduced visibility and night-time operations. Currently, Runway 18-36 is equipped with MIRL. Taxiways supporting the runway system are served by taxiway centerline reflectors. It should be noted that connecting taxiways serving Runway 18-36 are served by medium intensity taxiway lighting (MITL) at the runway intersection only, identifying the location of the connecting taxiway when transitioning from the runway environment. At present, lighting systems serving JXI continuously operate from sunset to sunrise. In the future, the airport should consider implementing a pilot-controlled lighting system, which controls MIRL, MITL, and visual approach aid lighting and can be turned on and off by pilots as needed utilizing a specific radio frequency. Ultimately, this will reduce operational costs associated with lighting systems serving JXI.

Additionally, many airports are transitioning to light emitting diode (LED) pavement edge lighting technology. LEDs have many advantages, including lower energy consumption, longer lifespan, increased durability, reduced size, greater reliability, and faster switching. While a larger initial investment is required upfront, the energy savings and reduced maintenance costs will outweigh any additional costs in the long run. Consideration should be given to gradually replacing all edge lighting with LED systems.

Airfield signage serves as another means of navigation for pilots. Airfield signage informs pilots of their location on the airport, as well as directs them to major airport facilities, such as runways, certain taxiways, and aprons. Currently, the airport is not served by airfield signage. In the future, the airport should consider the addition of LED runway/taxiway designation signage and routing/directional signage. Given the forecast potential for increased operations by turbine-powered aircraft at JXI, the airport should consider implementing runway distance remaining signage upon extending the runway, should demand warrant. These lighted signs alert pilots to how much runway length remains in 1,000-foot increments.

LANDSIDE FACILITY REQUIREMENTS

Landside facilities are those necessary for the handling of aircraft and passengers while on the ground. These facilities provide the essential interface between the air and ground transportation modes. The capacity of the various components of each element was examined in relation to projected demand to identify future landside facility needs. At JXI, this includes components for general aviation needs such as:

- General Aviation Terminal Facilities and Automobile Parking
- Aircraft Storage
- Aircraft Parking Aprons
- Airport Support Facilities

Terminal Facility and Automobile Parking Requirements

GA terminal facilities at an airport are often the first impression of the community that corporate officials and other visitors will encounter. These facilities typically provide space for passenger waiting, pilots' lounge, pilot flight planning, concessions, management, storage, and various other needs. This space is not necessarily limited to a single, separate terminal building, but can include space offered by FBOs and other specialty operators for these functions and services. At this time, the airport terminal building operated by the City of Gilmer is the only dedicated GA terminal service provider located on the airfield. It should be noted, however, that the Flight of the Phoenix Museum also advertises a designated flight planning area.

The methodology used in estimating GA terminal facility needs was based upon the number of airport users expected to utilize GA facilities during the design hour. Space requirements for terminal facilities were based on providing 125 square feet per design hour itinerant passenger. A multiplier of 2.5 in the short-term, increasing to 3.0 in the long-term, was also applied to terminal facility needs in order to better determine the number of passengers associated with each itinerant aircraft operation. This increasing multiplier indicates an expected increase in business and recreational operations through the long-term. These operations often support larger turboprop and jet aircraft which accommodate an increasing passenger load factor.

Table EE outlines the space requirements for GA terminal services at JXI through the long-term planning period. As shown in the table, the existing terminal facilities are sufficient for the long-term planning horizon. Currently, JXI offers approximately 2,600 square feet of terminal space. These spaces include designated areas for flight planning areas, pilots' lounge, restroom facilities, quiet rooms, and other amenities.

Other specialty aviation operators on the airfield also provide limited space for pilots and passengers. It can be assumed that adequate services and space is provided to accommodate their customers.
General aviation vehicular parking demands have also been determined for JXI. Space determinations for itinerant passengers were based on an evaluation of existing airport use, as well as standards set forth to help calculate projected terminal facility needs.

TABLE EE
General Aviation Terminal Area and Automobile Parking
Fox Stephens Field – Gilmer Municipal Airport

	Currently Available	Short Term Need	Intermediate Term	Long Term Need
Design Hour Itinerant Operations	2	3	4	5
Passenger Multiplier	2.5	2.7	2.8	3.0
Design Hour Itinerant Passengers	5	8	10	15
Terminal Facility Area (sf)	2,600[1]	1,000	1,300	1,900
Vehicle Parking Spaces	36[2]	22	25	33
Total Vehicle Parking Area (sf)	13,900	7,700	8,800	11,600

[1]Includes approximate space offered by the JXI terminal building.
[2]Approximate number of total marked vehicle parking spaces at the airport.
Source: Coffman Associates analysis

The parking requirements of based aircraft owners should also be considered. Although most owners prefer to park their vehicles in their hangar, safety can be compromised when automobile and aircraft movements are intermixed. For this reason, separate parking requirements, which consider one-third of based aircraft at the airport plus design hour itinerant passengers, are applied to general aviation automobile parking space requirements. Utilizing this methodology, parking requirements for general aviation activity call for approximately 22 spaces in the short-term, increasing to approximately 33 spaces in the long-term planning horizon. At present, there are 36 marked vehicle parking spaces at JXI currently serving various airport activities, including the FBO and other GA functions. As such, the existing automobile parking is adequate to support forecast demand through the long-term planning horizon.

Aircraft Storage Hangars and Maintenance Requirements

The demand for aircraft hangars typically depends on local climate, security, and owner preferences. The trend in general aviation aircraft, whether single or multi-engine, is toward more sophisticated aircraft (and, consequently, more expensive aircraft); therefore, many aircraft owners prefer enclosed hangar space to outside tiedowns.

This demand is also dependent upon the number and type of aircraft expected to be based at an airport in the future. For planning purposes, it is necessary to estimate hangar requirements based upon forecast operational activity. However, hangar development should be based upon actual demand trends and financial investment conditions.

There are a variety of aircraft storage options typically available at an airport including shade hangars, T-hangars, linear box hangars, executive/box hangars, and bulk storage conventional hangars. Shade hangars are the most basic form of aircraft protection and are common in warmer climates. These structures provide a roof covering, but no walls or doors. There are no shade hangars at JXI, and for purposes of planning, any future shade hangars are included in the T-hangar need forecast.

T-hangars are intended to accommodate one small single engine piston aircraft or, in some cases, one multi-engine piston aircraft. T-hangars are so named because they are in the shape of a "T," providing a space for the aircraft nose and wings, but no space for turning the aircraft within the hangar. Essentially, the aircraft can be parked in only one position. T-hangars are commonly "nested" with several individual storage units to maximize hangar space. In these cases, taxiway access is needed on both sides of the nested T-hangar facility. T-hangars are popular with aircraft owners with tighter budgets as they tend to be the least expensive enclosed hangar space to build and lease. Currently, JXI has a total of 50,700 square feet of T-hangar storage capacity.

The next type of aircraft hangar common for storage of GA aircraft is the executive/box hangar. Executive/box hangars typically provide a larger space, generally with an area between 2,500 and 10,000 square feet. This type of hangar can provide for maneuverability within the hangar, can accommodate more than one aircraft, and may have a small office and utilities. Executive/box hangars may be connected in a row of units with doors facing a taxilane. Executive box hangars may also be stand-alone hangars. These hangars are typically utilized by a corporate/business entity or to support an on-airport business. JXI currently has 20,700 square feet of aircraft storage capacity dedicated to executive style hangars.

Conventional hangars are the large, clear span hangars typically located facing the main aircraft apron at airports. These hangars provide for bulk aircraft storage and are often utilized by airport businesses, such as a fixed base operator (FBO) and/or aircraft maintenance business. Conventional hangars are generally larger than executive/box hangars and can range in size from 10,000 square feet to more than 20,000 square feet. Often, a portion of a conventional hangar is utilized for non-aircraft storage needs such as maintenance or office space. Currently, there is no aircraft hangar storage space dedicated to conventional hangars at JXI. Although hangar storage needs are forecast to remain within the executive/box hangar size range, conventional hangar storage options will be explored in the Landside Alternatives section to be discussed. Ultimately, user/developer demand and preference will determine ultimate hangar styles and layout options.

Planning for future aircraft storage needs is based on typical owner preferences and standard sizes for hangar space. For determining future aircraft storage needs, a planning standard of 1,200 square feet per based aircraft is utilized for T-hangars. For executive/box hangars, a planning standard of 3,000 square feet is utilized for turboprop aircraft, 6,000 square feet is utilized for business jet aircraft, and 1,500 square feet is utilized for helicopter storage needs.

In total, there is approximately 71,400 square feet of hangar, maintenance, and office space provided on the airport for GA activities. Future hangar requirements for the airport are summarized in **Table FF**. Some based aircraft owners will continue to utilize aircraft parking apron space instead of hangar facilities. Thus, the overall percentage of aircraft seeking hangar space is held constant throughout the long-term planning period. Since portions of the hangars are known to be used for aircraft maintenance servicing, requirements for maintenance/service hangar area were estimated using a planning standard of 100 square feet per based aircraft.

TABLE FF Aircraft Hangar Requirements Fox Stephens Field – Gilmer Municipal Airport	Currently Available	Short Term Need	Intermediate Term Need	Long Term Need
Aircraft to be Hangared	42	45	50	59
Hangar Area Requirements				
T-Hangar/Linear Box Area (sf)	50,700	53,100	57,900	63,600
Executive Box/Corporate Hangar Area (sf)	20,700	23,700	29,700	43,200
Office/Maintenance Area (sf)	-	4,500	9,500	15,400
Total Hangar Area (sf)	**71,400[1]**	**81,300**	**97,100**	**122,200**

[1]Includes total hangar and maintenance area currently at the airport
Source: Coffman Associates analysis

Due to the projected increase in based aircraft, annual GA operations, and hangar storage needs, facility planning will consider additional hangars at JXI. The analysis indicates that there is a potential need for 50,800 square feet of additional hangar storage space to be offered through the long-term planning period. This includes a mixture of hangar, maintenance, and office areas. It is expected that the aircraft storage hangar requirements will continue to be met through a combination of hangar types.

It should be noted that hangar requirements are general in nature and based on the aviation demand forecasts. This analysis utilizes industry standards, and actual need could vary based on individual user requirements and desires. The actual need for hangar space will further depend on the actual usage within hangars. For example, some hangars may be utilized entirely for non-aircraft storage, such as maintenance; yet from a planning standpoint, they have an aircraft storage capacity. Therefore, the needs of an individual user may differ from the calculated space necessary.

Aircraft Parking Apron

FAA Advisory Circular 150/5300-13A, *Airport Design*, suggests a methodology by which transient apron requirements can be determined from knowledge of busy-day operations. At JXI, the number of itinerant spaces required was determined to be approximately 15 percent of the busy-day itinerant operations for general aviation operations. A planning criterion of 800 square yards per aircraft was applied to determine future transient apron requirements for single and multi-engine aircraft. For business jets (which can be much larger), a planning criterion of 1,600 square yards per aircraft position was used.

A parking apron should also provide space for locally based aircraft that require temporary tiedown storage and space for maintenance activities. Maintenance activities would include the movement of aircraft into and out of hangar facilities and temporary storage of aircraft on the apron. Locally based tiedowns typically will be utilized by smaller single engine aircraft; thus, a planning standard of 650 square yards per position is utilized. Apron parking requirements are presented in **Table GG**. Transient apron parking needs are divided into business jet needs and smaller single and multi-engine aircraft needs.

TABLE GG
Aircraft Parking Apron Requirements
Fox Stephens Field – Gilmer Municipal Airport

	Available	Short-Term	Intermediate - Term	Long-Term
Based GA Aircraft Positions	-	2	3	5
Transient Single/Multi-Engine Aircraft Positions	-	3	5	6
Transient Business Jet Positions	-	0	1	2
Total Positions	17[1]	5	9	13
Total Apron Area (sy)	11,800[2]	4,400	7,200	11,300

[1]Only usable parking positions under current and ultimate conditions are being utilized for this analysis.
[2]Usable parking area only includes marked positions.

The airport currently has 24 marked tiedown positions and approximately 17,900 sy of aircraft apron and movement area. It should be noted however, that seven marked tiedown positions and approximately 6,100 sy of the existing aircraft apron and movement area are positioned within the primary surface serving Runway 18-36. Under current and ultimate B-II conditions, the separation requirement from runway centerline to aircraft parking position is 250 feet. As such, only usable aircraft parking positions and apron area under ultimate conditions have been analyzed to ensure adequate space through the long-term planning horizon. The long-term forecast indicates that the existing apron areas are sufficient if maintained properly throughout the planning horizon, although large transient marked tiedown positions could be needed for turbine aircraft. It should be noted, however, that local demands will ultimately dictate apron area and marked tiedown position needs.

SUPPORT REQUIREMENTS

Various other landside facilities that play a supporting role in overall airport operations have also been identified. These support facilities provide certain functions related to the overall operation of the airport and include aircraft rescue and firefighting, aviation fuel storage, airport maintenance facilities, utilities, and perimeter fencing and gates.

Aircraft Rescue and Firefighting

Presently, there is no dedicated ARFF facility at JXI. Requirements for ARFF services at an airport are established under Title 14 CFR Part 139, which applies to the certification and operation of airports served by any scheduled or unscheduled passenger operation of an air carrier using an aircraft with more than nine seats. Since the airport is not a Part 139 facility, an on-site ARFF facility is neither required nor justified. At present, emergency services are provided by the Gilmer Fire Department, which is located approximately two miles north of the airport.

Aviation Fuel Storage

As outlined in the Landside Facilities section, fuel storage and dispensing facilities are owned and operated by JL Aero, LLC. Fuel is stored in aboveground fuel storage tanks with a current useful capacity of

4,000 gallons for 100LL and is dispensed through a self-service system. It should be noted that the existing Jet A fuel storage tanks are not operational and have not been used for fuel storage at JXI. The existing Jet A fuel storage was simply part of the 100LL fuel storage and self-serve dispensing system acquisition. For planning purposes, only permanent usable fuel storage facilities will be considered in the fuel capacity analysis.

Maintaining a 14-day fuel supply would allow the airport to limit the impact of a disruption of fuel delivery. Current and future 100LL fuel usage assumptions have been estimated utilizing the FAA's *Aerospace Forecast, Fiscal Years 2018-2038*. In 2018, national 100LL fuel flowage averaged 2.65 gallons per piston operation. Based upon projected operational growth, maintaining the 2018 average ratio constant through the forecast period results in total flowage increasing to 76,700 gallons of 100LL. Currently, the airport has enough static fuel storage to meet the 14-day supply criteria for 100LL fuel. In the future, based on average usage assumptions, fuel storage has been estimated and is presented in **Table HH**. The existing fuel storage capacity should be adequate through the long-term planning horizon.

Given the forecast potential for increased turbine operations, the airport should consider future Jet A fuel storage capacity should demand warrant. Although fuel storage capacity has been analyzed as part of this planning effort, local demands will ultimately dictate fueling services and capacity offered.

TABLE HH
Fuel Storage Requirements
Fox Stephens Field – Gilmer Municipal Airport

			Planning Horizon		
	Available	Current	Short-Term	Intermediate - Term	Long-Term
100LL					
Daily Usage (gal.)		150	160	180	210
14-Day Supply (gal.)	4,000	2,100	2,300	2,500	3,000
Annual Usage (gal.)		54,800	58,400	65,700	76,700

100LL: 2.65 gallons per piston operation
Source: FAA *Aerospace Forecast 2018-2038*; Coffman Associates Analysis.

Maintenance Facilities

Currently, JXI does not have a building dedicated to airport maintenance or storage located on the airfield. The airport should consider the addition of a building specifically dedicated to the storage of maintenance equipment. The alternatives in the next section will examine potential locations for a dedicated storage and maintenance facility in the future.

Utilities

The availability and capacity of the utilities serving the airport are important factors in determining the development potential of the airport property, as well as the land immediately adjacent to the facility.

Ultimately, the availability of water, gas, sewer, and power sources are of primary concern when assessing available utilities. Given the forecast potential for future landside facility growth, the utility infrastructure serving the airport may need to be expanded to serve future development.

Perimeter Fencing and Gates

Perimeter fencing is used at airports primarily to secure the aircraft operational area and reduce wildlife incursions. The physical barrier of perimeter fencing has the following functions:

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

The airport has chain-link fencing partially surrounding the perimeter, which serves both operational security and as a deterrent to wildlife accessing the airfield movement areas. Several controlled-access and manual gates associated with the fencing lead to different areas on the airfield. In the future, the airport should consider security fencing topped with three strand barbed wire for added security.

FACILITY REQUIREMENTS SUMMARY

The intent of this section has been to outline the facilities required to meet potential aviation demands projected for JXI for the planning horizon, as well as to determine a direction of development which best meets projected needs. In an effort to provide a more flexible plan, the yearly forecasts from the Forecasts of Aviation Demand section have been converted to planning horizon levels. The short-term horizon roughly corresponds to a 5-year timeframe, the intermediate-term horizon is approximately 10 years, and the long-term horizon is 20 years. By utilizing these planning horizons, airport management can focus on demand indicators for initiating projects and grant requests rather than on specific dates in the future. A summary of the airside and landside requirements are presented on **Exhibit R**.

CATEGORY	HISTORICALLY PLANNED/EXISTING	CURRENT NEED/ULTIMATE
RUNWAYS	**18-36**	**18-36**
Runway Design Code (RDC)	B-I(S)-5000/B-II-5000	B-II-5000
Dimensions	4,000' x 60'	Consider Additional Runway Length and Width of 75’
Pavement Strength	12,000 lbs SWL -	Consider 30,000 SWL Consider 60,000 lbs DWL

TAXIWAYS	18-36	18-36
Parallel Taxiway	Partial Parallel	Consider Full Length Parallel Taxiway
Parallel Taxiway Separation from Runway	155'-240'	240'
Widths	35'	Maintain
Holding Position Locations from Runway	90'-200'	200'
Taxiway Geometry	Direct Access (B) Geometry Deficiencies	Consider Mitigating Taxiway

NAVIGATIONAL AND WEATHER AIDS	18-36	18-36
Instrument Approaches	≥ 1-mile GPS	Maintain
AWOS, Lighted Wind Cone, Tetrahedron, and Beacon	Maintain	



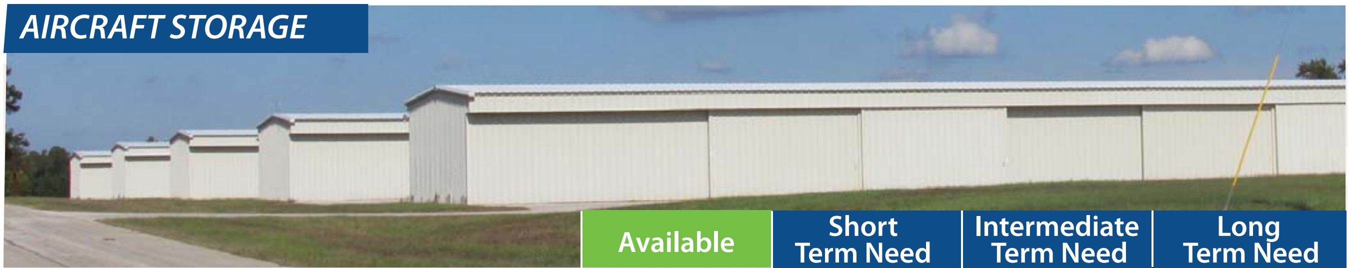
LIGHTING AND MARKING	18-36	18-36
Runway Lighting	MIRL	Maintain
Runway Marking	Basic	NPI
Taxiway Lighting	Limited MITL	Consider Additional MITL
Approach Aids	PAPI-2	PAPI-4, REILs

KEY

AWOS - Automated Weather Observation System
DWL - Duel Wheel Loading
MIRL - Medium Intensity Runway Lighting
MITL - Medium Intensity Taxiway Lighting
NPI - Non-Precision Instrument
PAPI - Precision Approach Path Indicator
SWL - Single Wheel Loading

Exhibit R
AIRSIDE FACILITY REQUIREMENTS

AIRCRAFT STORAGE



	Available	Short Term Need	Intermediate Term Need	Long Term Need
T-Hangar Area (s.f.)	50,700	53,100	57,900	63,600
Executive Box Hangar Area (s.f.)	20,700	23,700	29,700	43,200
Office/Maintenance Area (s.f.)	-	4,500	9,500	15,400
Total Hangar Storage Area (s.f.)	71,400	81,300	97,100	122,200

AIRCRAFT APRON

	Available	Short Term Need	Intermediate Term Need	Long Term Need
Single, Multi-engine Transient Aircraft Positions	-	3	5	6
Transient Business Jet Positions	-	0	1	2
Locally Based Aircraft Positions	-	2	3	5
Total Positions	17[1]	5	9	13
Total Apron Area (s.y.)	11,800[1]	4,400	7,200	11,300

TERMINAL FACILITY AND AUTOMOBILE PARKING REQUIREMENTS



	Available	Short Term Need	Intermediate Term Need	Long Term Need
GA Terminal Building Space (s.f.)	2,600	1,000	1,300	1,900
GA Terminal Parking Spaces	-	8	10	15
Based Aircraft Auto Spaces	-	14	15	18
Total GA Auto Parking Spaces	36	22	25	33
Total Parking Area (s.f.)[2]	13,900	7,700	8,800	11,600

SUPPORT FACILITY REQUIREMENTS


	Available	Short Term Need	Intermediate Term Need	Long Term Need
14-Day Fuel Storage Capacity (gal.) 100LL	4,000	2,300	2,500	3,000
14-Day Fuel Storage Capacity (gal.) Jet A	- Consider Jet A Fuel Storage			Maintain
Security Fencing/Gates	- Consider Fencing Enhancements			Maintain
Airport Maintenance Facilities	- Consider Dedicated Maintenance Facility			Maintain

[1]Accounts for usable aircraft parking areas only. [2]Accounts for marked vehicle parking only

AIRSIDE DEVELOPMENT CONSIDERATIONS

This section identifies and evaluates various airside development factors at JXI to meet the requirements set forth in the previous section. Airside facilities are, by nature, the focal point of an airport complex. Because of their primary role and the fact that they physically dominate airport land use, airfield facility needs are often the most critical factor in the determination of viable development options. Each functional area interrelates and affects the development potential of the others. Therefore, all areas are examined individually, and then coordinated as a whole, to ensure the final plan is functional, efficient, and cost-effective. The total impact of all these factors on the airport must be evaluated to determine if the investment in JXI will meet the needs of the City of Gilmer, both during and beyond the 20-year planning period.

RUNWAY DESIGN CODE C/D-II-5000 ALTERNATIVES ANALYSIS

As discussed in the Airside Facility Requirements section, applicable standards for airport design are outlined in FAA Advisory Circular (AC) 150/5300-13A, *Airport Design*, Change 1. The design of airfield facilities is primarily based on the physical and operational characteristics of the critical design aircraft using the airport, which establishes the applicable RDC. Analysis indicated that the RDC for Runway 18-36 has historically been B-I(S)-5000 and should currently and ultimately be planned for RDC B-II-5000. The airfield should continue to be planned for the most demanding fixed-wing aircraft utilizing the airport. As such, alternative analysis will also consider an ultimate RDC of C/D-II-5000 should demand dictate. The analysis will largely focus on the safety areas associated with C/D-II design criteria, which will have significant impacts on the existing runway system. The safety areas and design criteria serving RDC C/D-II-5000 runways are presented in **Table JJ**. Strategies to mitigate any safety area incompatibilities associated with alternative analysis will be discussed later in this section. **Exhibit S** depicts RDC C/D-II-5000 safety areas on the existing runway environment.

TABLE JJ
RDC C/D-II-5000 Standards
Fox Stephens Field – Gilmer Municipal Airport

	Runway 18-36
RUNWAY CLASSIFICATION	
Runway Design Code	C/D-II-5000
RUNWAY DESIGN	
Runway Width	100
Blast Pad Length x Width	150 x 120 (Both Runway Ends)
RUNWAY PROTECTION	
Runway Safety Area (RSA)	
Width	400
Length Beyond Departure End	1,000
Length Prior to Threshold	1,000
Runway Object Free Area (ROFA)	
Width	800
Length Beyond Departure End	1,000
Length Prior to Threshold	1,000
Runway Obstacle Free Zone (ROFZ)	
Width	400
Length Beyond Departure End	200
Length Prior to Threshold	200
Approach/Departure Runway Protection Zone (RPZ)	
Length	1,700
Inner Width	500
Outer Width	1,010
RUNWAY SEPARATION	
Runway Centerline to:	
Hold Position	250
Parallel Taxiway	300
Aircraft Parking Area	400

Note: All dimensions in feet
Source: FAA AC 150/5300-13A, Change 1, Airport Design

According to AC 150/5300-13A, Change 1, the FAA requires the RSA to be graded and stabilized 500 feet wide (centered on runway) and extend 1,000 feet beyond each runway end for RDC C/D-II design for take-off operations. It should be noted, however, that a 400-foot-wide RSA is permissible and has been shown in **Exhibit S** in an effort to minimize impacts. Only 600 feet of RSA is needed prior to each threshold for landing operations. As presented in the exhibit, the RSA would extend off airport property to the north and extend south over a dirt road or trail. Furthermore, the RSA would include a portion of the existing aircraft apron area as well as overgrown vegetation and trees. Ultimately, the entirety of the RSA would be required to be cleared and graded as appropriate, all overgrown vegetation and trees would have to be removed, uncontrolled property would be required to be purchased, and the dirt road or trail would need to be removed or relocated.

The FAA calls for the ROFA to be 800 feet wide, extending 1,000 feet beyond each runway end for RDC C/D-II design. Like the RSA, only 600 feet of ROFA is needed prior to the landing threshold. Under these conditions, the ROFA would extend off airport property to the north, east, south, and west and would encompass multiple dirt roads or trails, overgrown vegetation, and trees. Moreover, the ROFA would extend east, containing a large portion of aircraft apron area as well as nine hangars located along the flight line.

As discussed in the Facility Requirements section, the FAA's criterion for runways utilized by aircraft weighing more than 12,500 pounds requires a clear ROFZ to extend 200 feet beyond the runway ends and 400 feet wide (200 feet on either side of the runway centerline). The ROFZ encompasses overgrown vegetation and trees along the east and west sides of Runway 18-36 and includes a portion of the existing aircraft apron area.

Since the new RPZ guidance addresses new or modified RPZs, existing incompatibilities may be grandfathered under certain conditions. For example, roads that are in the current RPZ are typically allowed to remain as grandfathered unless the runway environment changes. As such, an upgrade to RDC C/D-II-5000 standards would necessitate a change to the RPZs serving Runway 18-36. Under C/D-II standards, each RPZ would expand to 500 feet wide at the inner portion, 1,010 feet wide at the outer portion, and 1,700 feet in overall length beginning 200 feet prior to the landing threshold.

Ultimately, the approach RPZ serving Runway 18 would expand to a total acreage amount of 29.47 acres. As presented on the exhibit, the RPZ would extend north, encompassing a portion of State Highway 155, a residential property, an agricultural-related dirt road, and multiple structures used for agricultural purposes.

Likewise, the RPZ serving Runway 36 would also be expanded to include a total acreage amount of 29.47. Under these conditions, the RPZ would extend off airport property and over an existing dirt road or trail located on private property.

In order to conform with ultimate RDC C/D-II standards, all safety area incompatibilities identified would need to be mitigated prior to compliance. All totaled, the airport would be required to purchase a minimum of approximately 69.1 acres of uncontrolled property encompassed within the safety areas serving JXI, conforming to RDC C/D-II-5000 standards. Furthermore, landside development to the east would be extremely limited as the runway centerline to parallel taxiway centerline separation increases to 300 feet and the separation requirement for aircraft parking increases to 400 feet from runway centerline.

ANALYSIS OF RDC C/D-II-5000

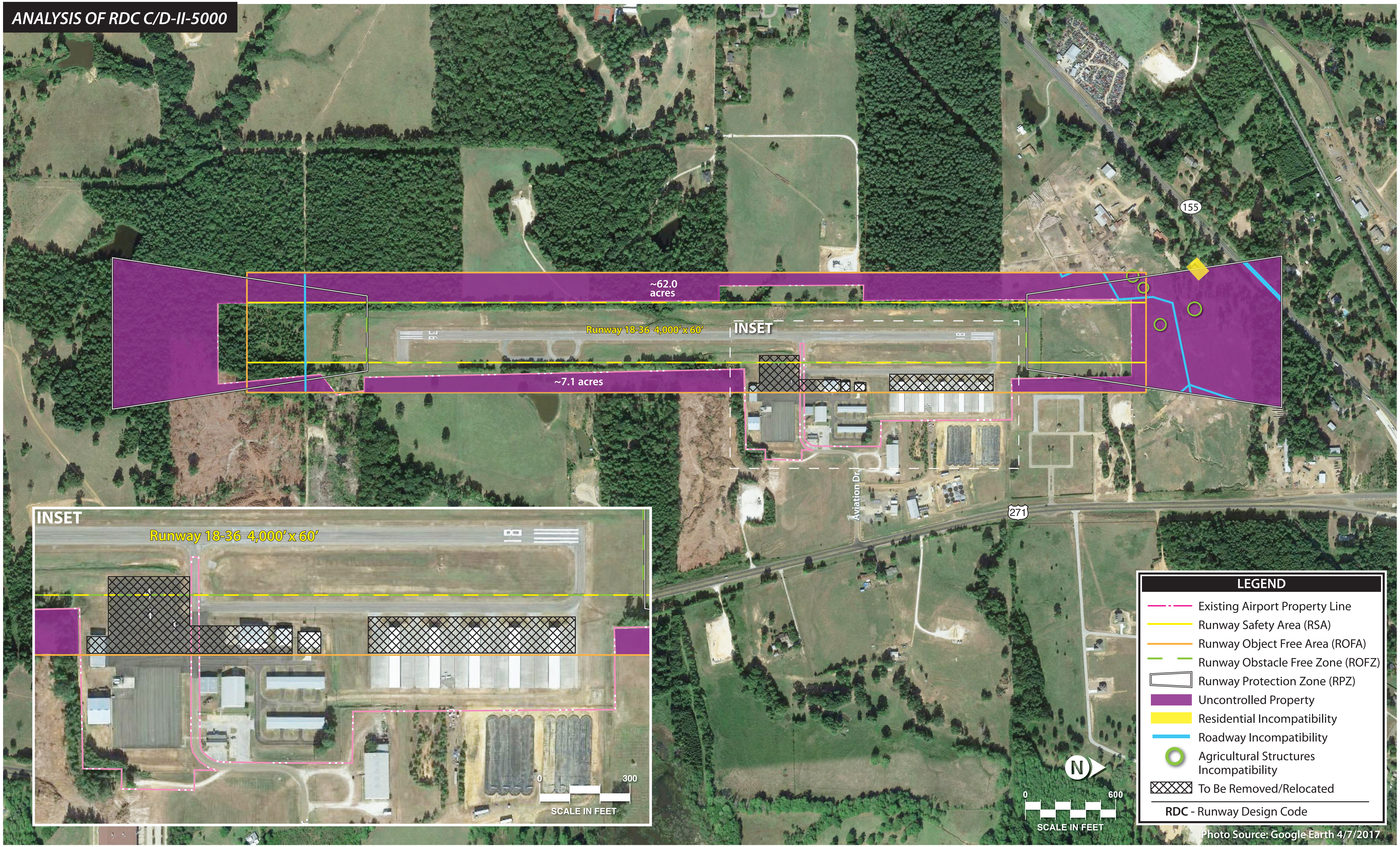


Exhibit S
C/D-II-5000 SAFETY AREAS

This page intentionally left blank

As a result of extensive incompatibilities associated with safety areas, runway width, runway to taxiway centerline separation, the proximity of existing landside development to the runway environment, and the lack of operational evidence supporting a shift to a Category C/D-II aircraft, the application of RDC C/D-II-5000 standards will not be considered further as an alternative option. Furthermore, any runway extension or instrument approach improvement will increase the impacts associated with RDC C/D-II-5000 standards. Alternatives to follow will be analyzed under the current need and ultimate RDC B-II-5000 standards.

AIRFIELD ALTERNATIVES ANALYSIS

The runway length analysis conducted in the previous section concluded that 100 percent of small aircraft can readily operate at maximum takeoff weight during the hottest periods of the summer. However, based upon TFMSC analysis, JXI can and does serve turboprop and jet traffic on a limited basis. Furthermore, JXI currently has a King Air 200 based on the airfield. The existing Runway 18-36 length of 4,000 feet does not fully provide for all jet activity, especially during hot weather conditions and when jet aircraft are carrying full useful loads. As a result of potential forecast demands of increased turboprop and jet traffic as well as the potential for two based business jets and four based turboprops, the alternatives analysis will consider runway extension options.

AC 150/5325-4B stipulates that runway length determinations for business jets consider a grouping of airplanes with similar operating characteristics. Runway length calculations specific to JXI for business jets that make up 75 percent of the national fleet at 60 percent useful load require a 5,500-foot runway, and business jets that make up 100 percent of the national fleet at 60 percent useful load require a 5,800-foot runway. In light of these runway length requirements, alternative options to accommodate runway extensions to 5,500 and 6,000 feet will be analyzed.

In addition, a significant runway extension would correspond with an upgrade in RDC. To justify a runway extension of this magnitude, the critical aircraft at JXI would need to fall within ARC B-II at minimum. Thus, each runway extension option is presented under current and ultimate RDC B-II-5000 standards, which call for a runway width of 75 feet. It is assumed that all overgrown vegetation safety area incompatibilities will be mitigated according to RDC B-II-5000 design standards. Moreover, the current and ultimate ROFA encompass a gravel roadway and the windcone, which obstruct the west side of the ROFA, while approximately 2,100 sy of existing aircraft apron area obstructs the east side. Each alternative discussed below suggests that the gravel road and windcone be relocated farther west out of the ROFA, and the obstructing aircraft apron area be removed. It should be noted that if the segmented circle is maintained flush with the ground, it will not be considered an obstruction to the ROFA.

As presented on **Exhibit T**, a series of alternatives have been prepared to examine the potential impacts of various runway extension options. A runway extension greater than 500 feet to the north would have a considerable effect on Texas State Highway 155, which is a major public roadway, as well as power lines and numerous residential properties. The costs associated with extending, paving, and mitigating the constraining factors would far outweigh those associated with a runway extension primarily to the south, making a runway extension to the north cost prohibitive.

A substantial runway extension to the south will also be challenging due to various constraining issues that need to be weighed. From a physical standpoint, any runway extension alternatives need to also include the associated impacts on the taxiway system, navigational aids, and lighting systems. A runway extension also must factor in the associated safety areas and RPZs. Land within the RSA needs to be cleared and graded to meet FAA design standards, clearing standards need to be met within the ROFA and ROFZ, and RPZs need to be cleared of incompatible land uses.

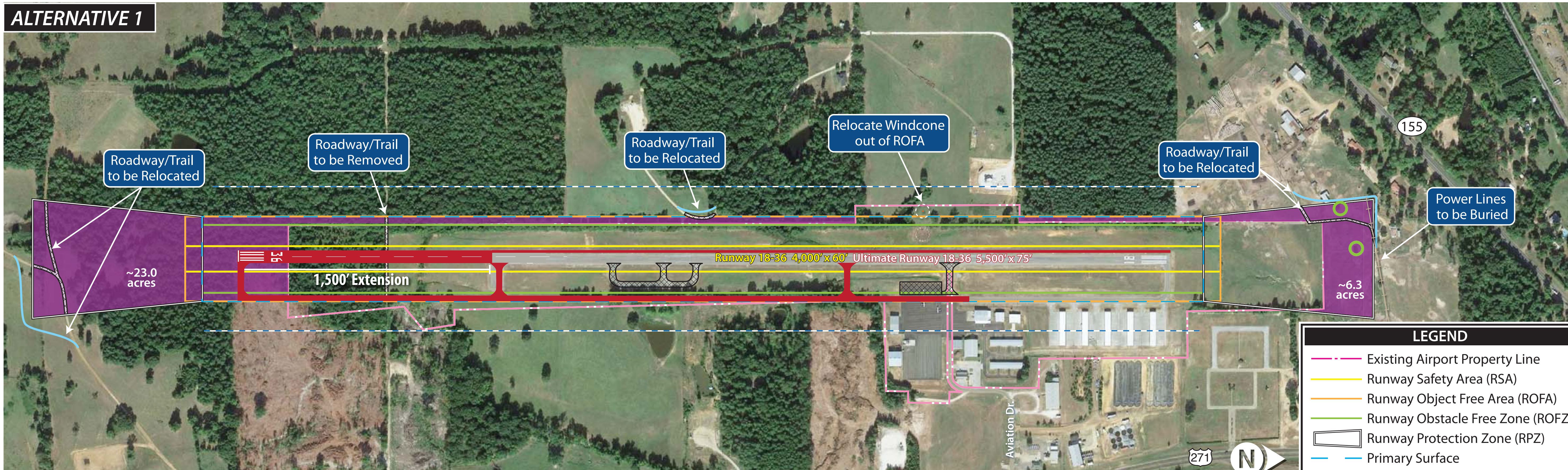
Constraining factors to consider for a southerly runway extension include multiple dirt roadways or trails in the vicinity of the extension, clearing and grading of a large amount of currently unowned property to conform with FAA design standards, and an existing oil extraction/storage facility located on the extended runway centerline. Roadways are considered incompatible land uses within the RPZs and safety areas, so an extension of the runway to the south will require the re-routing of dirt roads within runway safety areas. Residential and commercial property as well as property utilized for oil extraction or storage are also incompatible land uses, and any runway extension or relocation should seek to minimize impacts on such property; otherwise, the proposed runway may result in a need to purchase and relocate affected homes and/or businesses.

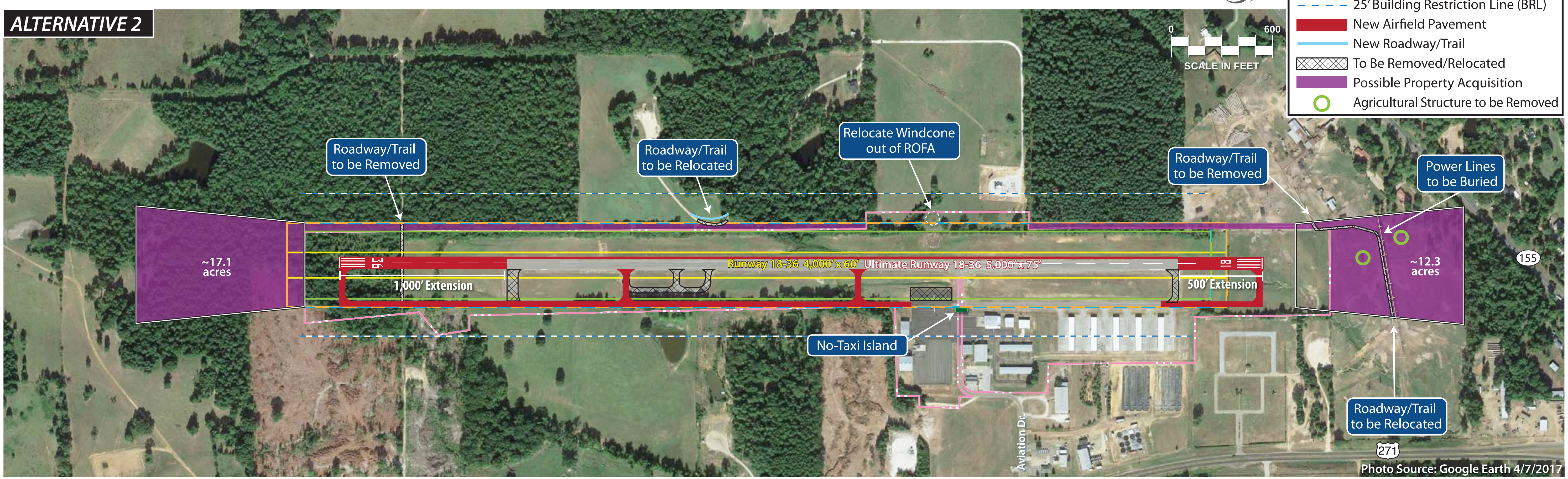
As was outlined in the previous section, the connecting taxiway extending from the apron area serving Runway 18-36 and the northernmost taxilane providing access to the Runway 18 threshold are direct access linkages, which can lead to runway incursions. Alternative considerations to correct the direct access issues identified are also presented on **Exhibit T**. Given the nature of a taxiway system, each taxiway interrelates and affects the development potential of other taxiways and the airfield environment. Ultimately, the selected alternative (or combination thereof) will be coordinated to ensure the functionality of the ultimate taxiway system depicted on the recommended development concept to be presented later.

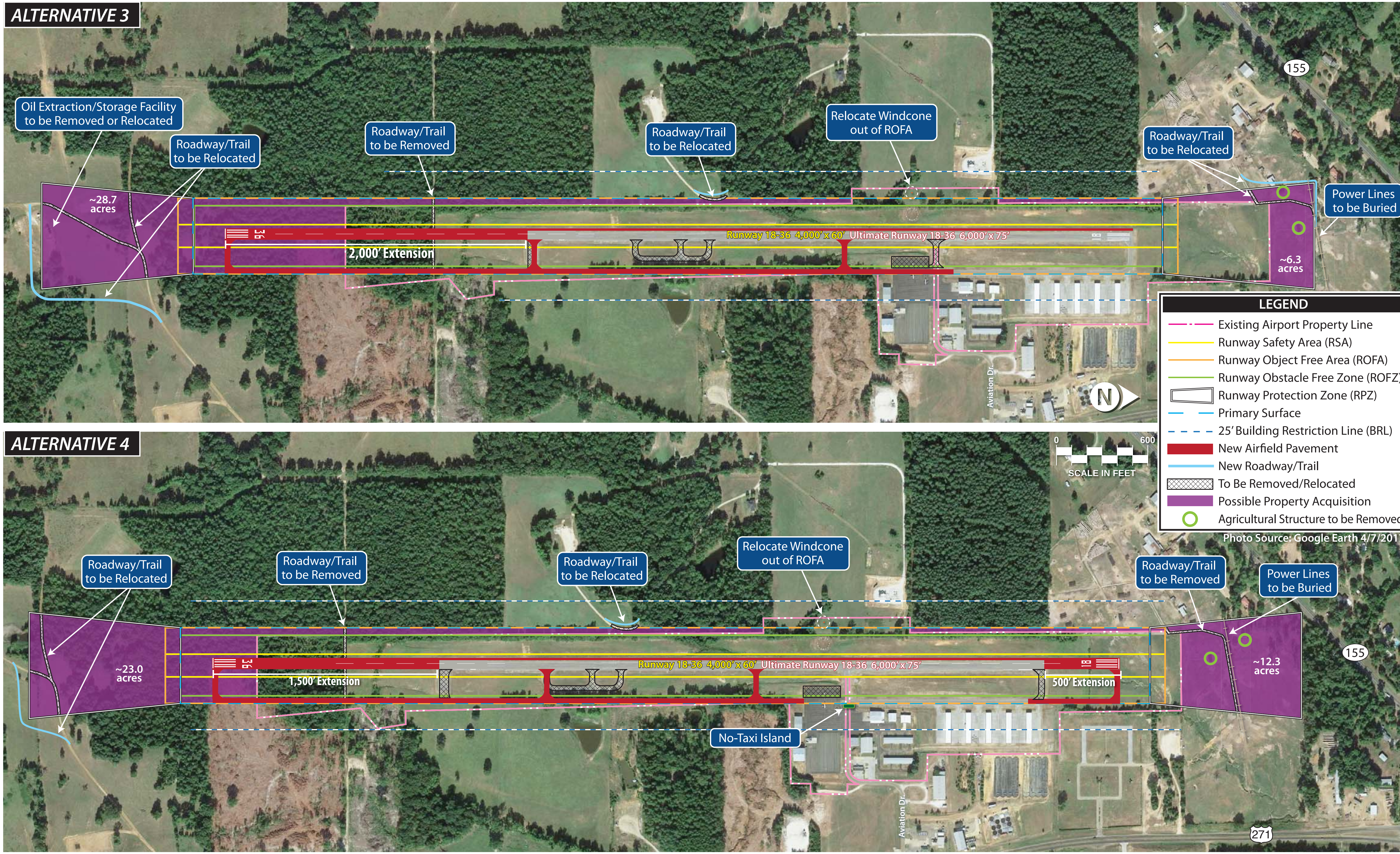
Airfield Alternative 1

Alternative 1, presented on **Exhibit T**, considers extending Runway 18-36 by 1,500 feet to the south for an ultimate runway length of 5,500 feet. As depicted, Runway 36 would extend across an existing dirt road or trail, beyond the existing property boundary, also shifting the RSA, ROFA, ROFZ, and RPZ beyond the airport property boundary. Under this alternative, RPZs serving Runways 18 and 36 encompass dirt roadways or trails located on private property. For purposes of this analysis, these roadways are to be relocated outside of the ultimate RPZs. The RPZ serving Runway 18 also contains an existing powerline and two agricultural-related structures that are slated to be removed. In total, the RSA, ROFA, ROFZ, and RPZ serving the extended Runway 36 would encompass approximately 23.0 acres of uncontrolled property. Likewise, the ROFA and RPZ serving the north and west sides of Runway 18 would extend off airport property and contain approximately 6.4 acres of uncontrolled property. All safety area incompatibilities would require mitigation prior to construction of a runway extension.

Taxiway considerations on this alternative examine the potential for a full-length parallel taxiway, which could be extended from the existing partial parallel taxiway, maintaining the existing 240-foot runway to taxiway centerline separation. In doing so, the existing midfield taxiway turn-around could be re-


ALTERNATIVE 1
Roadway/Trail to be Relocated
Roadway/Trail to be Removed
Roadway/Trail to be Relocated
Relocate Windcone out of ROFA
Roadway/Trail to be Relocated
Power Lines to be Buried
155
~23.0 acres
1,500' Extension
Runway 18-36 4,000' x 60' Ultimate Runway 18-36 5,500' x 75'
~6.3 acres
Aviation Dr.
271
N
LEGEND
Existing Airport Property Line
Runway Safety Area (RSA)
Runway Object Free Area (ROFA)
Runway Obstacle Free Zone (ROFZ)
Runway Protection Zone (RPZ)
Primary Surface
25' Building Restriction Line (BRL)
New Airfield Pavement
New Roadway/Trail
To Be Removed/Relocated
Possible Property Acquisition
Agricultural Structure to be Removed


ALTERNATIVE 2
0 600
SCALE IN FEET
Roadway/Trail to be Removed
Roadway/Trail to be Relocated
Relocate Windcone out of ROFA
Roadway/Trail to be Removed
Power Lines to be Buried
155
~17.1 acres
1,000' Extension
Runway 18-36 4,000' x 60' Ultimate Runway 18-36 5,000' x 75'
500' Extension
~12.3 acres
No-Taxi Island
Aviation Dr.
Roadway/Trail to be Relocated
271
Photo Source: Google Earth 4/7/2017


ALTERNATIVE 3
Oil Extraction/Storage Facility to be Removed or Relocated
Roadway/Trail to be Relocated
Roadway/Trail to be Removed
Roadway/Trail to be Relocated
Relocate Windcone out of ROFA
Roadway/Trail to be Relocated
Power Lines to be Buried
155
~28.7 acres
~6.3 acres
Runway 18-36 4,000' x 60' Ultimate Runway 18-36 6,000' x 75'
2,000' Extension
Aviation Dr.
N
LEGEND
Existing Airport Property Line
Runway Safety Area (RSA)
Runway Object Free Area (ROFA)
Runway Obstacle Free Zone (ROFZ)
Runway Protection Zone (RPZ)
Primary Surface
25' Building Restriction Line (BRL)
New Airfield Pavement
New Roadway/Trail
To Be Removed/Relocated
Possible Property Acquisition
Agricultural Structure to be Removed
0
600
SCALE IN FEET
Photo Source: Google Earth 4/7/2017
ALTERNATIVE 4
Roadway/Trail to be Relocated
Roadway/Trail to be Removed
Roadway/Trail to be Relocated
Relocate Windcone out of ROFA
Roadway/Trail to be Removed
Power Lines to be Buried
155
~23.0 acres
~12.3 acres
Runway 18-36 4,000' x 60' Ultimate Runway 18-36 6,000' x 75'
1,500' Extension
500' Extension
No-Taxi Island
Aviation Dr.
271

moved and the taxiway turn-around pavement serving the existing Runway 36 threshold could be extended (with excess pavement removed on either side) and utilized as a connecting taxiway. In addition, connecting taxiways are proposed south of the apron area and serving the extended Runway 36 threshold. Under this alternative, the connecting taxiway providing direct access from the apron area would be removed. Given the limited apron and movement area surrounding the direct access linkage provided by the northernmost taxilane, this alternative option proposes that the incompatibility be addressed with signage as the taxilane is infrequently traveled and serves only three hangars. Further coordination with TXDOT and FAA will be required on this mitigation strategy. The final determination will be presented on the development concept.

Actions associated with this alternative include:

- Extend Runway 18-36 1,500 feet south and widen the runway to an ultimate length and width of 5,500 x 75 feet.
- Conform to a minimum of RDC B-II-5000 standards.
- Acquire a total of approximately 29.4 acres of uncontrolled property through fee-simple acquisition or avigation easements.
- Mitigate roadway, agricultural structure, overgrown vegetation, and windcone safety area incompatibilities associated with the ultimate RSA, ROFA, ROFZ, and RPZs.
- Remove or bury powerlines in the Runway 18 RPZ.
- Top, trim, or clear any trees located within the primary and transitional surface as appropriate.
- Construct a full-length parallel taxiway and connecting taxiways as appropriate.
- Remove the existing taxiway turn-arounds, unusable apron area, and the direct access linkage extending from the aircraft apron area.
- Implement signage as appropriate to mitigate direct access provided by the northern taxilane serving the T-hangars.

Airfield Alternative 2

This alternative, also presented on **Exhibit T**, examines the potential for a runway extension to an ultimate length of 5,500 feet and width of 75 feet. Unlike Alternative 1, however, this option considers extensions to both the north and south. Due to a multitude of constraining factors to the north, including State Highway 155 and multiple residential properties, a maximum runway extension of 500 feet is being considered in this direction. A southern runway extension of 1,000 feet is also being evaluated to achieve a combined extension of 1,500 feet. Under these conditions, the RPZ serving the extended Runway 18 would encompass a dirt roadway or trail, powerlines, as well as two agricultural-related structures, which should be removed. Similarly, a 1,000-foot runway extension to the south would extend Runway 36 across a dirt roadway or trail that would have to be removed. In total, the RSA, ROFA, ROFZ, and RPZ serving the extended Runway 36 would encompass approximately 17.1 acres of uncontrolled property. Likewise, the ROFA and RPZ serving the north and west sides of the extended Runway 18 would encompass approximately 12.3 acres of uncontrolled property.

Under this scenario, taxiway improvements consider a full-length parallel taxiway by extending the existing partial parallel taxiway to the north and south to serve the ultimate thresholds of Runways 18 and

36. The existing runway to taxiway separation of 240 feet will be maintained. Taxiway connecters are considered serving the ultimate Runway 18-36 thresholds and at midfield locations as appropriate. Where practical, the existing taxiway turn-around pavement will be utilized to extend proposed connectors and any excess taxiway turn-around pavement is to be removed. This alternative option considers maintaining the existing connecting taxiway providing access from the aircraft apron and implementing a no-taxi island, which would mitigate the current direct access incompatibility. Although this option will eliminate direct access, it will also reduce the existing usable apron area. Furthermore, it is proposed that the existing connector serving Runway 18 be removed and relocated to serve the extended Runway 18, thereby eliminating direct access provided from the northernmost taxilane serving the T-hangars.

Actions associated with this alternative include:

- Extend Runway 18-36 500 feet north, 1,000 feet south, and widen the runway to an ultimate length and width of 5,500 x 75 feet.
- Conform to a minimum of RDC B-II-5000 standards.
- Acquire a total of approximately 29.4 acres of uncontrolled property through fee-simple acquisition or avigation easements.
- Mitigate roadway, agricultural structure, overgrown vegetation, and windcone safety area incompatibilities associated with the ultimate RSA, ROFA, ROFZ, and RPZs.
- Remove or bury powerlines in the Runway 18 RPZ.
- Top, trim, or clear any trees located within the primary and transitional surface as appropriate.
- Construct a full-length parallel taxiway and connecting taxiways as appropriate.
- Remove the existing taxiway turn-arounds, unusable apron area, and the direct access linkage extending from the taxilane serving the northern T-hangars.
- Implement a no-taxi island to mitigate direct access provided by the connecting taxiway extending from the apron area.

Airfield Alternative 3

Alternative 3, presented on the back of **Exhibit T**, examines the extension of Runway 18-36 by 2,000 feet to the south for an ultimate runway length of 6,000 feet. Ultimately, Runway 36 would extend across an existing dirt road or trail, beyond the existing property boundary, also shifting the RSA, ROFA, ROFZ, and RPZ beyond the airport property boundary. Under this alternative, RPZs serving Runways 18 and 36 encompass dirt roadways or trails located on private property. For purposes of this analysis, these roadways are to be relocated outside of the ultimate RPZs. Furthermore, the RPZ serving the extended Runway 36 would also encompass an oil extraction/storage facility that would have to be relocated out of the ultimate RPZ. The RPZ serving Runway 18 also contains powerlines and two agricultural-related structures that are slated to be removed. In total, the RSA, ROFA, ROFZ, and RPZ serving the extended Runway 36 would encompass approximately 28.7 acres of uncontrolled property. Likewise, the ROFA and RPZ serving the north and west sides of Runway 18 would extend off airport property, containing approximately 6.4 acres of uncontrolled property. All safety area incompatibilities would need to be mitigated prior to construction of a runway extension.

Taxiway considerations examine the potential for a full-length parallel taxiway, which could be extended from the existing partial parallel taxiway, maintaining the existing 240-foot runway to taxiway centerline separation. Under this alternative, connecting taxiways serving the extended Runway 18-36 are proposed as appropriate. Additionally, unnecessary pavement associated with the existing taxiway turn-arounds would be removed. The connecting taxiway providing direct access from the apron area would also be removed. Similar to Alternative 1, the direct access linkage provided by the taxilane serving the northern T-hangars could be mitigated by implementing signage. Again, further coordination with TxDOT and FAA will be required on this mitigation strategy. The final determination will be presented on the development concept.

Actions associated with this alternative include:

- Extend Runway 18-36 2,000 feet south and widen the runway to an ultimate length and width of 6,000 x 75 feet.
- Conform to a minimum of RDC B-II-5000 standards.
- Acquire a total of approximately 35.1 acres of uncontrolled property through fee-simple acquisition or avigation easements.
- Mitigate oil extraction/storage facility, roadway, agricultural structure, overgrown vegetation, and windcone safety area incompatibilities associated with the ultimate RSA, ROFA, ROFZ, and RPZs.
- Remove or bury powerlines in the Runway 18 RPZ.
- Top, trim, or clear any trees located within the primary and transitional surface as appropriate.
- Construct a full-length parallel taxiway and connecting taxiways as appropriate.
- Remove the existing taxiway turn-arounds, unusable apron area, and the direct access linkage extending from the aircraft apron area.
- Implement signage as appropriate to mitigate direct access provided by the northern taxilane serving the T-hangars.

Airfield Alternative 4

Alternative 4 examines an ultimate length of 6,000 feet and width of 75 feet. Similar to Alternative 2, this option considers a runway extension to the north and south. A maximum runway extension of 500 feet is being considered to the north due to a multitude of constraining factors, including State Highway 155 and multiple residential properties. As such, a southern runway extension of 1,500 feet is also being considered, to achieve an ultimate runway length of 6,000 feet. Under these conditions, the RPZ serving the extended Runway 18 would encompass a dirt roadway or trail, powerlines, and two agricultural-related structures, which should be removed. A 1,500-foot runway extension to the south would extend Runway 36 across a dirt roadway or trail that would have to be removed, and the RPZ serving the ultimate Runway 36 would encompass a dirt roadway, which should be relocated. In total, the RSA, ROFA, ROFZ, and RPZ serving the extended Runway 36 would encompass approximately 23.0 acres of uncontrolled property. Likewise, the ROFA and RPZ serving the north and west sides of the extended Runway 18 would encompass approximately 12.3 acres of uncontrolled property.

Taxiway improvements under this scenario consider a full-length parallel taxiway maintaining the existing runway to taxiway separation of 240 feet. Taxiway connecters are proposed serving the ultimate Runway 18-36 thresholds and at midfield locations as appropriate. Any excess taxiway turn-around pavement is to be removed. This alternative option also considers maintaining the existing connecting taxiway providing access from the aircraft apron and implementing a no-taxi island, which would mitigate the current direct access incompatibility, but will also reduce the existing usable apron area. Finally, the existing connector serving Runway 18 would be relocated to serve the extended Runway 18, mitigating direct access provided from the northernmost taxilane serving the T-hangars.

Actions associated with this alternative include:

- Extend Runway 18-36 500 feet north, 1,500 feet south, and widen the runway to an ultimate length and width of 6,000 x 75 feet.
- Conform to a minimum of RDC B-II-5000 standards.
- Acquire a total of approximately 35.3 acres of uncontrolled property through fee-simple acquisition or avigation easements.
- Mitigate roadway, agricultural structure, overgrown vegetation, and windcone safety area incompatibilities associated with the ultimate RSA, ROFA, ROFZ, and RPZs.
- Remove or bury powerlines in the Runway 18 RPZ.
- Top, trim, or clear any trees located within the primary and transitional surface as appropriate.
- Construct a full-length parallel taxiway and connecting taxiways as appropriate.
- Remove the existing taxiway turn-arounds, unusable apron area, and the direct access linkage extending from the taxilane serving the northern T-hangars.
- Implement a no-taxi island to mitigate direct access provided by the connecting taxiway extending from the apron area.

INSTRUMENT APPROACH CONSIDERATIONS

Another consideration to be examined is the ultimate instrument approach visibility minimums serving the runway system. The instrument approach capability is an important consideration that directly impacts the utility of the airport, with lower visibility minimums increasing the utility of an airport during instrument meteorological conditions (IMC). From an economic development standpoint, it is important to achieve the lowest possible visibility minimums. The best approach minimums possible will prevent aircraft from having to divert to another airport, which can create additional operating costs and time delays for aircraft operators, their passengers, as well as on-airport businesses.

Although achieving the lowest instrument approach visibility minimums is advantageous for airport operations, there are multiple safety area requirements tied to the level of instrument approach available. As a result, impacts to the airport environment imposed by the ultimate instrument approach visibility minimums need to be weighed.

JXI is currently served by RNAV GPS and VOR/DME instrument approaches with visibility minimums not lower than one mile. Because of forecast fleet mix demands and stakeholder development considerations, the following analysis examines improved visibility minimums on each end of Runway 18-36 at JXI.

The dimensions of the RPZ will change if the instrument approach capabilities are improved with lower minimums. **Table KK** presents the dimensions of the RPZs based upon various approach visibility minimums. **Figures 3 and 4** present the RPZs serving Runways 18 and 36 based upon improving the instrument approach visibility minimums to less than one-mile, but not lower than ¾-mile.

TABLE KK
Runway Protection Zones

	Instrument Approach Capabilities	
Visibility Minimum	≥ 1-Mile	≥ ¾-Mile
Approach Runway Protection Zone		
Inner Width	500	1,000
Outer Width	700	1,510
Length	1,000	1,700

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

Figure 3 illustrates the RPZ impacts to Runway 18 for an instrument approach providing visibility minimums of not lower than ¾-mile. Ultimately, the approach RPZ would expand to a total acreage amount of 48.98 acres. Of this area, approximately 40.5 acres would extend beyond airport property. In addition, the RPZ would extend north, encompassing a portion of State Highway 155, three residential properties, an agricultural-related dirt road, and multiple structures used for agricultural purposes. Furthermore, the RPZ would extend over an oil extraction and storage facility located north and east of Runway 18.

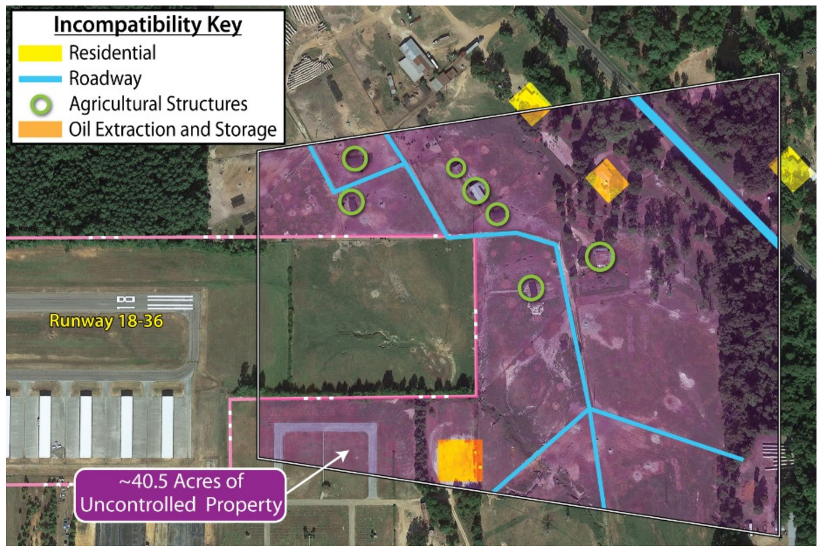


Figure 3
Runway 18 Instrument Approach Considerations

Like Runway 18, the RPZ serving Runway 36 would also be expanded to include a total acreage amount of 48.98 acres for an instrument approach providing visibility minimums of not lower than ¾-mile, as presented in **Figure 4**. Under these conditions, the RPZ would extend off airport property, encompassing approximately 36.6 acres of uncontrolled property and would extend over an existing dirt road or trail located on private property.

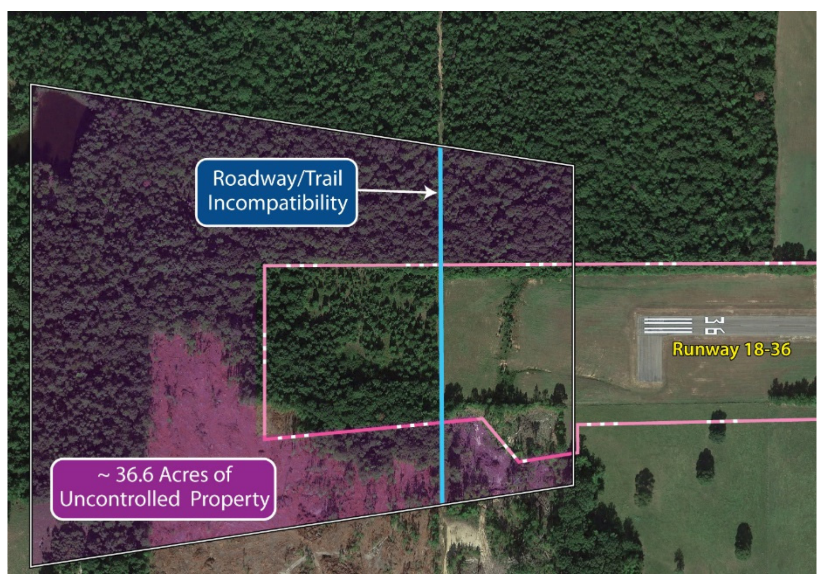


Figure 4
Runway 36 Instrument Approach Considerations

As previously detailed, any change to the runway environment that includes a new or revised instrument approach procedure that increases the RPZ dimensions is subject to a further evaluation of the RPZs meeting updated guidance from the FAA. If an airport cannot fully control the entirety of the RPZ from being free of incompatible land uses, the FAA can require a change to the runway environment to properly secure the RPZs. If enhanced instrument approach procedures are pursued on either runway end at the airport, it is important that airport management properly coordinate with the FAA to ensure full use of the runway being affected.

In addition to the RPZs, the determination of airspace obstructions that may be associated with improved approach procedures would need to be further evaluated. The two primary resources for determining airspace obstructions are Title 14 CFR Part 77, *Objects Affecting Navigable Airspace* and *Terminal Instrument Procedures* (TERPS). Part 77 is a filter which identifies potential obstructions, whereas TERPS is the critical tool in determining actual flight obstructions, as its analysis is used to evaluate and develop instrument approach procedures, including visibility minimums and cloud heights associated with approved approaches.

Further determination by the FAA would be needed to determine the extent of removing or lowering existing and potential obstructions that may exist to support an instrument approach procedure that could serve ultimate conditions proposed on Runway 18-36.

TABLE LL
Building Restriction Line Requirements

	Instrument Approach Capabilities	
Visibility Minimum	**> ¾-Mile**	**≤ ¾-Mile**
Building Restriction Line		
20 ft.	390	640
25 ft.	425	675
30 ft.	460	710
35 ft.	495	745

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

Furthermore, the runway type and capability of the instrument approach minimums contribute to the determination of the BRL, which is a product of 14 CFR Part 77 primary and transitional surface clearance requirements and identifies suitable building locations on the airport. The width of the primary surface serving other than utility runways having minimums of ¾-statute miles or lower is 1,000 feet. Based upon these criteria and building height, the BRL or obstructions to the BRL can be determined. **Table LL** presents the BRL separation from runway centerline based upon instrument approach capabilities and the selected allowable structure height. A runway strength rating of 12,500 pounds or greater would bring Runway 18-36 into the "other than utility" category. Given these criteria, improved instrument approaches having visibility minimums of not lower than ¾-mile would increase the BRL from the existing 425 feet from runway centerline to 675 feet from runway centerline, greatly limiting landside facility development options.

AIRSIDE SUMMARY

The airside development considerations have focused on several elements that include mitigating safety area deficiencies, examining runway extension options, improving existing and future taxiway development on the airfield, and enhancing instrument approach capabilities to the runway system. These alternatives will be considered by the Technical Advisory Committee (TAC), the City of Gilmer, and the public. Following discussion and review with these entities, a preferred recommended airside development concept will be drafted and presented later within this study.

LANDSIDE DEVELOPMENT CONSIDERATIONS

Generally, landside issues are related to those facilities necessary or desired for the safe and efficient parking and storage of aircraft, movement of pilots and passengers to and from aircraft, airport support facilities, and overall revenue support functions. Landside planning considerations will focus on strategies following a philosophy of separating activity levels. To maximize airport efficiency, it is important to locate facilities together that are intended to serve similar functions. The best approach to landside facility planning is to consider the development to be like that of a community where land use planning is the guide. For airports, the land use guide in the terminal area should generally be dictated by aviation activity levels.

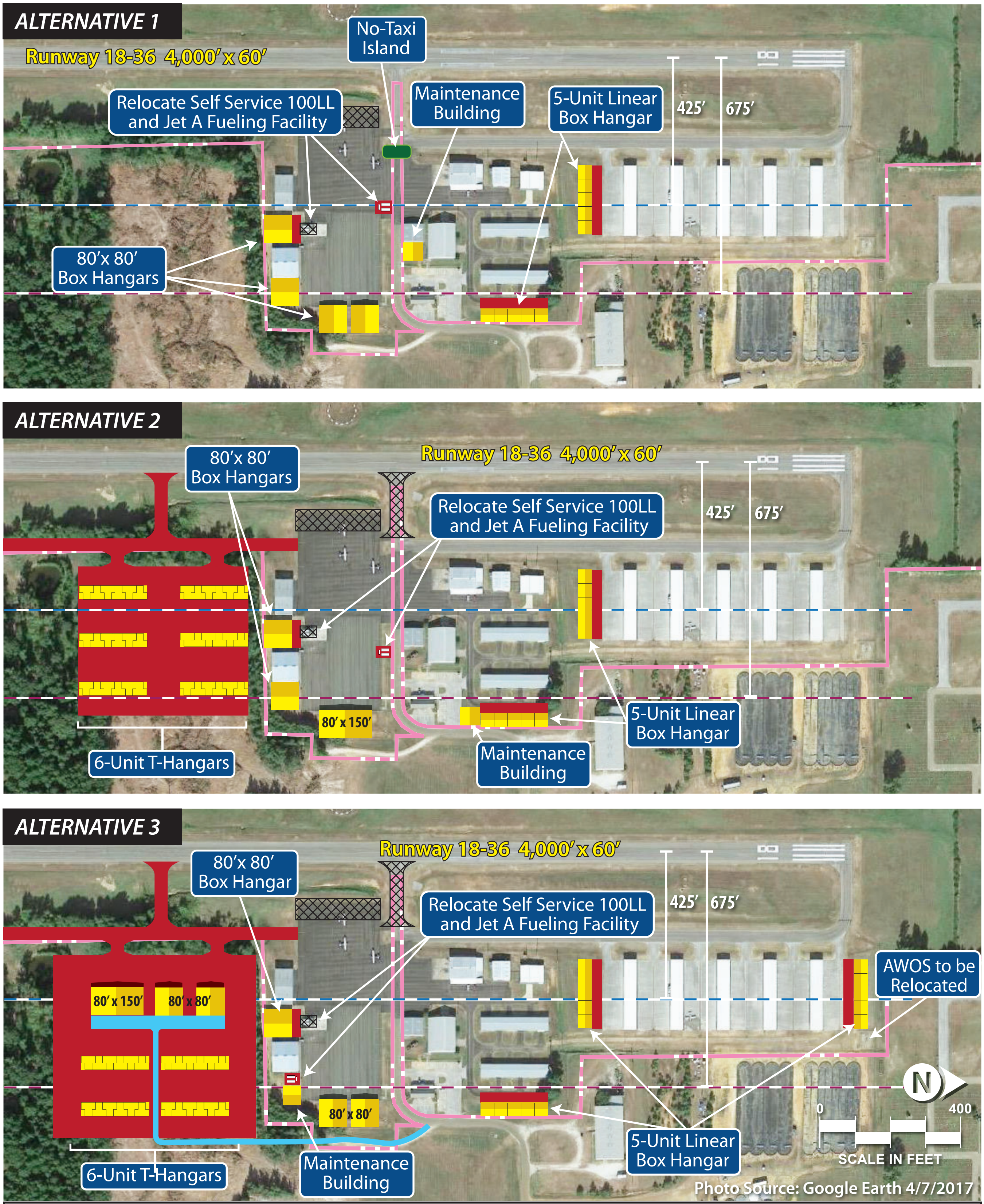
The orderly development of the airport terminal area and flight line (areas located with immediate access to the airfield) can be the most critical, and probably the most difficult, development to control on the airport. A development approach of "taking the path of least resistance" can have a significant effect on the long-term viability of an airport. Allowing development without regard to a functional plan can result in a haphazard array of buildings and small ramp areas, which will eventually preclude the most efficient use of valuable space.

In addition to the functional compatibility of the landside areas, the proposed development concept should provide a first-class appearance for JXI. Consideration to aesthetics should be given high priority in all public areas, as many times an airport can serve as the first impression a visitor may have of the community. Each of the landside alternatives will plan for adequate facilities to meet the forecast needs as defined in the previous sections.

LANDSIDE ALTERNATIVES

Analysis in the Facility Requirements section indicated that the airport should plan for the construction of additional aircraft hangars and facilities over the next 20 years. Hangar and facility development take on a variety of sizes corresponding with several different intended uses. Commercial general aviation activities are essential to providing the necessary services on an airport. This includes privately owned businesses involved with, but not limited to, aircraft rental and flight training, aircraft charters, aircraft maintenance, line service, and aircraft fueling. In addition, forecasted needs for airport parking, terminal facilities, and support facilities were also discussed. Given the need for additional facilities over the planning horizon, three landside alternatives, presented on **Exhibit U**, were developed to best determine the ideal direction for long-term development. Because the ultimate disposition of the taxiway system will affect the flow of aircraft traffic, taxiway geometry enhancements have also been presented along with landside development options.

For comparative purposes, each alternative option depicts the primary surface and 25-foot BRL associated with instrument approach visibility minimums of not lower than one-mile, as well as visibility minimums of ¾-mile, which are located at 425 and 675 feet from the runway centerline, respectively. Any future hangar or building construction should be submitted to the FAA for OE/AAA analysis to determine appropriate marking and lighting to comply with 14 CFR Part 77.



LEGEND

- Existing Airport Property Line
- Runway Protection Zone (RPZ)
- Primary Surface
- New Airfield Pavement
- New Building
- New Road/Parking
- 25' Building Restriction Line (BRL): Not Lower than 1-Mile Visibility Minimums
- 25' Building Restriction Line (BRL): ¾-Mile Visibility Minimums or Lower

Landside Alternative 1

As a result of somewhat limited area compatible for landside development, Alternative 1 seeks to maximize the development potential within the existing airport property boundary. As such, this scenario proposes the construction of four 6,400 sf executive/box hangars located on the south and westernmost edges of the aircraft apron area. Two five-unit, 7,300 sf linear box hangars are also proposed, with one hangar being located immediately south of the existing T-hangars along the partial parallel taxiway, and the other north of the terminal building. Total, this scenario examines the potential for an additional 40,200 sf of hangar storage space. The total amount of hangar square footage proposed meets the long-term demands outlined in the Facility Requirements section when accounting for hangar storage only. This assumes that office and maintenance area requirements will be met through other avenues such as the terminal building and the FBO.

This alternative also examines the possibility of a dedicated airport maintenance building located west of the terminal along Aviation Drive. The proposed location of the westernmost executive/box hangar also necessitates the relocation of the existing 100LL self-service fueling facility. Ultimately, it is proposed that the fueling facility be relocated to the north, immediately east of the apron area entrance from Aviation Drive, and re-oriented facing south on the aircraft apron area. Should demand warrant, the implementation of Jet A fuel storage is also introduced. Finally, this alternative considers the implementation of a no-taxi island preventing direct access to Runway 18-36.

Landside Alternative 2

Alternative 2 considers a variety of hangar styles and sizes. All totaled, this alternative considers approximately 83,200 sf of T-hangar space, 14,600 sf of linear box hangar space, 12,800 sf of executive box hangar space, and 12,000 sf of conventional hangar space. Similar to Alternative 1, two five-unit 7,300 sf linear box hangars are proposed. One is located immediately south of the existing T-hangars along the partial parallel taxiway, and the other north of the terminal building. Moving south, a 12,000-sf conventional hangar is proposed on the western side of the existing apron area. This alternative also considers two 6,400 sf executive box hangars along the south side of the existing apron area. This alternative includes the relocation of the 100LL self-service fueling facility and the addition of Jet A fuel storage capacity, centrally located on the northern edge of the existing apron area. The construction of a dedicated airport maintenance building is also proposed immediately north of the airport terminal parking lot.

Given limited landside development potential within existing airport property, it is proposed that the airport acquire approximately seven acres of property immediately south of the existing apron area. This scenario examines the possibility of six 7,300 sf T-hangars within this area and considers an additional 7,700 sy of apron area. Landside access to the proposed development area could be provided by extending and paving the existing gravel road that turns south from Aviation Drive. Airside access could be provided by implementing a full-length parallel taxiway or, at minimum, extending the existing partial parallel taxiway to the south. In doing so, the taxiway connector providing direct access to Runway 18-36 would be relocated to the south, while unusable apron area would be removed altogether.

Landside Alternative 3

The final alternative scenario proposes the construction of three 7,300 sf linear box hangars on the north side of the landside development area and three 6,400 sf executive box hangars located on the south and east sides of the existing apron area. As a result of the proposed location of the northernmost linear box hangar, the existing AWOS would ultimately have to be removed and relocated. Should the airport pursue this development location, the ultimate location for the AWOS will be further coordinated with the airport and TxDOT and will presented on the development concept. This option also considers the relocation of the 100LL self-service fueling facility, the addition of Jet A fuel storage capacity, and the construction of an airport maintenance building in the southeast corner of the existing apron area.

Considering the forecast potential for increased hangar demand, it is proposed that approximately seven acres of property be acquired south of the existing landside development area. This scenario examines the potential for four 7,300 sf T-hangars, two 6,400 sf executive box hangars, one 12,000 sf conventional hangar, and approximately 7,700 sy of apron area. Totaled, the proposed hangar development for this alternative would encompass approximately 95,100 sf. In addition, airside access could be provided by a full-length parallel taxiway or extension to the existing partial parallel taxiway. Furthermore, the connecting taxiway providing direct access to Runway 18-36 could be removed and relocated south, while unusable apron area could be removed completely. Additional landside access could be provided via a roadway extension from Aviation Drive.

LANDSIDE ALTERNATIVES SUMMARY

The intent of this analysis is to present alternatives that provide straightforward development concepts aimed at meeting the needs of several service levels. Additionally, the alternatives offer separation of activity levels. In some cases, a portion of one alternative could be intermixed with another, or some development concepts could be replaced with others. The final recommended plan only serves as a guide for the airport. Many times, airport operators change their plan to meet the needs of specific users. The goal in analyzing these landside alternatives is to focus on future development so that airport property can be maximized.

SUMMARY

The process utilized in assessing airside, terminal, and general aviation development alternatives involves a detailed analysis of facility requirements, as well as future growth potential. Current airport design standards were considered at each stage of development.

It is important to note that analysis presented in this section has been conducted from a standpoint that assumes the airport's commitment to funding future infrastructure development, and airside and landside alternatives assume the realization of forecast demand previously presented. Considering forecast future potential demand and assumed commitment to funding infrastructure development, alternatives presented in this section consider options to develop individualized areas on the airport.

On the airside, the major considerations involve extending Runway 18-36 to better meet the needs of larger turbine aircraft that currently utilize the runway and are forecast to utilize the runway more frequently over the 20-year planning period. The alternatives analysis also considers the potential for improved visual approach aids and correcting taxiway geometry issues associated with the existing taxiway system.

On the landside, alternatives were presented to consider hangar development layouts, additional apron area, and the construction of an airport maintenance facility. All options for future hangar and apron development meet or exceed the forecast 20-year need. After review by the TAC, City of Gilmer, and the public, a recommended concept will be presented. In addition, a financial plan and environmental overview of the proposed plan will be developed.

RECOMMENDED DEVELOPMENT CONCEPT

The alternatives that outlined future growth and development scenarios in the previous section have been refined into a Recommended Development Concept. An overview of environmental conditions that need to be considered when development projects are undertaken is also provided in this section.

One of the objectives of this study is to allow decision-makers the ability to either accelerate or slow development goals based on actual demand. If demand slows, development of the airport beyond routine safety and maintenance projects could be minimized. If aviation demand accelerates, development could be expedited. Any plan can account for limited development, but the lack of a plan for accelerated growth can sometimes be challenging. Therefore, to ensure flexibility in planning and development to respond to unforeseen needs, the Recommended Development Concept considers the full and balanced development potential for JXI.

The Recommended Development Concept, as shown on **Exhibit V**, presents the recommended configuration for JXI, which preserves and enhances the role of the facility while meeting FAA design and safety standards to the extent practicable. It is important to note that the concept provides for anticipated facility needs over the next 20 years, as well as establishing a vision and direction for meeting facility needs beyond the 20-year planning period of this study. A phased program to achieve the Recommended Development Concept is presented in the next section. When assessing development needs, this section has separated into airside and landside functional areas. The following discussion describes the Recommended Development Concept in detail.

AIRSIDE RECOMMENDED DEVELOPMENT CONCEPT

The airside plan generally considers those improvements related to the runway and taxiway system and often requires the greatest commitment of land area to meet the physical layout of an airport. Operational activity at JXI is anticipated to grow through the 20-year planning horizon of this study, and the airport is projected to continue to serve the full range of general and business aviation operations, in addition to air taxi activities. The principal airfield recommendations should always focus first upon safety and security. Of key importance is to ensure that proposed airfield improvements will be designed to meet all appropriate FAA airport design standards. Recommendations are then designed to improve the operational efficiency, circulation, and capability of the airfield. The major airside issues addressed in the Recommended Development Concept include the following:

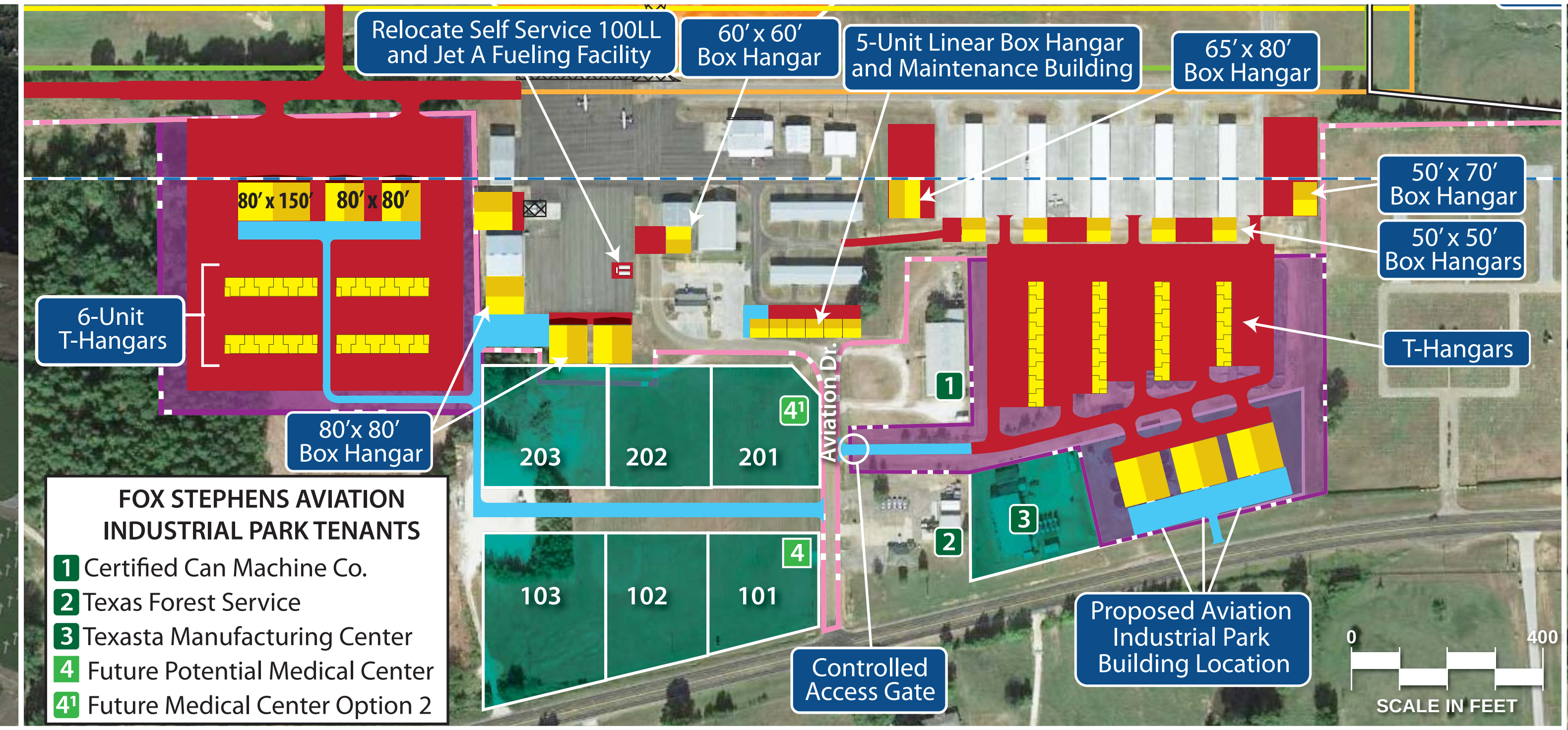
- Adhere to existing and ultimate RDC B-II-5000 standards on Runway 18-36.
- Consider runway extension options for Runway 18-36 to better accommodate turboprop and business jet aircraft utilizing the airport, pending further justification and coordination with TxDOT.
- Address safety area deficiencies on Runway 18-36, which include an incompatible location for the windcone and segmented circle serving the runway as well as vegetation and roadway obstructions associated with the existing and ultimate runway.
- Realign the non-standard connector taxiway to meet FAA airfield geometry standards.
- Maintain the existing instrument approach visibility minimums of not lower than one mile serving Runway 18-36 and make necessary improvements to clear existing approach obstructions.
- Analyze property acquisition needed to protect the existing and ultimate runway environment including airspace and safety areas adjacent to and beyond both ends of Runway 18-36.
- Enhance visual approach aids serving the runway with the installation of PAPI-4s and REIL systems serving each end of the runway.

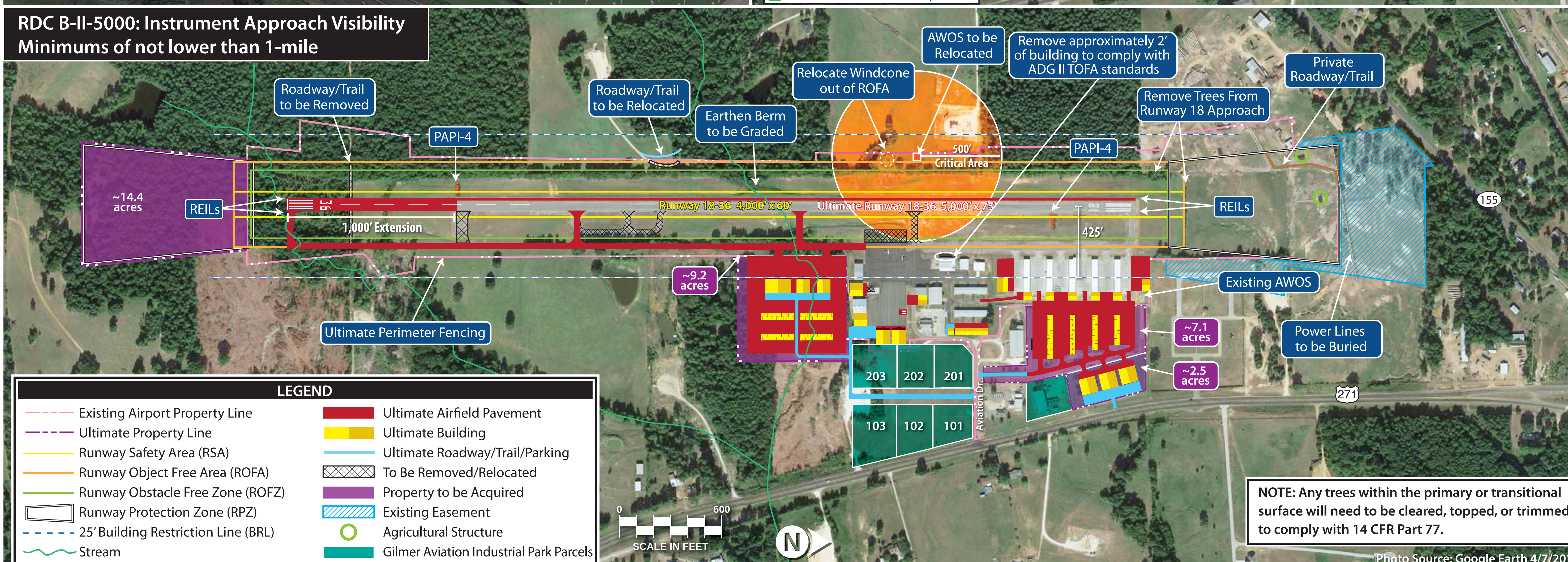
Runway 18-36

Runway 18-36 is 4,000 feet long, 60 feet wide, and oriented in a north-south manner. The runway's existing pavement strength is 12,000 pounds single wheel loading (S). The current runway strength rating should be increased to 30,000 S and 60,000 pounds dual wheel loading (D) throughout the planning horizon to accommodate larger aircraft at JXI, such as business jets, which are forecast to increase in the future. The existing runway length is capable of handling 100 percent of the small aircraft fleet and is served by instrument approach visibility minimums not lower than one mile.

Given the results of the runway analysis presented in the Facility Requirements section, the length of Runway 18-36 is adequate to accommodate the majority of aircraft operating at the airport. However, additional runway length and width could benefit larger and faster business jet aircraft by making the airport more accessible to turbine-powered aircraft. Additional runway length would also provide the opportunity for aircraft to depart with more fuel, allowing for longer stage lengths and an increase in usable payload. As such, the recommended plan includes extending Runway 18-36 by 1,000 feet to the south for an ultimate runway length of 5,000 feet. It should be noted that the proposed runway extension would extend across a portion of Sugar Creek and will require significant drainage and earthwork.


2' To Be Removed


Relocate Self Service 100LL and Jet A Fueling Facility
60' x 60' Box Hangar
5-Unit Linear Box Hangar and Maintenance Building
65' x 80' Box Hangar
50' x 70' Box Hangar
50' x 50' Box Hangars
T-Hangars
6-Unit T-Hangars
80' x 150'
80' x 80'
80' x 80' Box Hangar
203
202
201
103
102
101
Aviation Dr.
Controlled Access Gate
Proposed Aviation Industrial Park Building Location
FOX STEPHENS AVIATION INDUSTRIAL PARK TENANTS
1 Certified Can Machine Co.
2 Texas Forest Service
3 Texasta Manufacturing Center
4 Future Potential Medical Center
4¹ Future Medical Center Option 2
0
400
SCALE IN FEET


RDC B-II-5000: Instrument Approach Visibility Minimums of not lower than 1-mile
Roadway/Trail to be Removed
PAPI-4
Roadway/Trail to be Relocated
Earthen Berm to be Graded
Relocate Windcone out of ROFA
AWOS to be Relocated
Remove approximately 2' of building to comply with ADG II TOFA standards
Remove Trees From Runway 18 Approach
Private Roadway/Trail
PAPI-4
500' Critical Area
~14.4 acres
REILs
Runway 18-36 4,000' x 60'
Ultimate Runway 18-36 5,000' x 75'
1,000' Extension
425'
REILs
155
~9.2 acres
Existing AWOS
Ultimate Perimeter Fencing
~7.1 acres
~2.5 acres
Power Lines to be Buried
271
203
202
201
103
102
101
Aviation Dr.
LEGEND
Existing Airport Property Line
Ultimate Property Line
Runway Safety Area (RSA)
Runway Object Free Area (ROFA)
Runway Obstacle Free Zone (ROFZ)
Runway Protection Zone (RPZ)
25' Building Restriction Line (BRL)
Stream
Ultimate Airfield Pavement
Ultimate Building
Ultimate Roadway/Trail/Parking
To Be Removed/Relocated
Property to be Acquired
Existing Easement
Agricultural Structure
Gilmer Aviation Industrial Park Parcels
0
600
SCALE IN FEET
N
NOTE: Any trees within the primary or transitional surface will need to be cleared, topped, or trimmed to comply with 14 CFR Part 77.
Photo Source: Google Earth 4/7/2017

This page intentionally left blank

Additionally, FAA RDC B-II design standards maintain that the runway width should be 75 feet. Therefore, it is recommended that the Runway 18-36 width be increased by 15 feet on the west side of the runway, attaining an ultimate width of 75 feet which conforms to current FAA design standards.

The ROFA and ROFZ are currently obstructed by the windcone serving Runway 18-36, located approximately 150 feet from the runway centerline, as shown on **Exhibit V**. As stated in Advisory Circular 150/5340-30H, *Design and Installation Details for Airport Visual Aids,* "The primary windcone should be installed so there is no conflict with airport design criteria requirements in AC 150/5300-13." Therefore, it is recommended that the windcone and segmented circle should be relocated approximately 125 feet to the west, outside of the existing and ultimate ROFA and ROFZ. Although a portion of the relocated segmented circle would still be located within the ROFA, it will not be considered an obstruction if it is maintained flush with the ground as it is in its existing location.

Historically, the ROFA extended over a portion of apron area and extends beyond airport property to the west, encompassing approximately 1.3 and 2.2 acres (in two separate locations) as previously shown on **Exhibit N**. However, the airport has recently acquired the uncontrolled property within the ROFA along the west side of runway 18-36. The updated and most current airport property line is depicted on **Exhibit V**. The existing ROFA and ROFZ are obstructed by trees and overgrown vegetation along the east and west sides of Runway 18-36. Additionally, the ROFA is obstructed by a private gravel road on the west side of Runway 18-36, while the east side of the ROFA is obstructed by existing aircraft apron area. It is recommended that the airport clear all trees and overgrown vegetation within the ROFA and ROFZ, relocate the private gravel roadway, and remove the apron area located within the ROFA prior to extending or widening Runway 18-36.

Under ultimate conditions, the RSA, ROFZ, and ROFA serving the extended Runway 18-36 will be obstructed by vegetation located on the east, west, and south sides of the extended runway. In addition, the physical runway, RSA, ROFZ, and ROFA, would be traversed by an existing private dirt roadway, which should be removed. Moreover, the RSA, ROFA, and RPZ extend beyond airport property to the south, encompassing an additional 14.4 acres of uncontrolled airport property. As such, the airport should acquire the additional 14.4 acres of uncontrolled property contained within the ultimate safety areas serving the extended Runway 18-36. It is recommended that all ultimate safety areas be cleared of obstructing vegetation and graded appropriately at the same time the proposed runway extension is constructed.

Similar to the ROFA, the RPZ serving Runway 18 historically extended beyond airport property to the north encompassing approximately 5.7 acres of uncontrolled property. Through recent property acquisition, the entirety of the Runway 18 RPZ is now under direct control of the airport, as presented on **Exhibit V**. However, the RPZ serving the existing and ultimate Runway 18 end still contains a portion of a private dirt roadway, two agricultural structures, and powerlines, as previously discussed in the Facility Requirements section. Ultimately, the powerlines traversing the north end of the Runway 18 RPZ should be removed or buried (to be further discussed). It should be noted that the two agricultural structures are for private use only and are not being used for commercial or residential purposes. Given that the existing Runway 18 end will be maintained throughout the long-term planning horizon, the private dirt roadway and agricultural structures can remain "grandfathered" under current FAA RPZ guidance.

In any event, airport officials and the City of Gilmer should continue to monitor activity within the existing and proposed safety areas and RPZs serving Runway 18-36 and maintain them free of incompatible land uses to the extent practicable. Continued coordination with TxDOT officials will be important when implementing projects that could require changes to the existing RPZs at JXI.

BUILDING RESTRICTION LINE (BRL)

Although achieving the lowest instrument approach visibility minimums is advantageous for airport operations, there are multiple safety area requirements tied to the minimums associated with the runway's instrument approach procedure(s). As a result, impacts to the airport environment imposed by the ultimate instrument approach visibility minimums need to be addressed. The runway type and capability of the instrument approach minimums contribute to the determination of the BRL, which is a product of 14 CFR Part 77 primary and transitional surface clearance requirements and identifies suitable building locations on the airport.

Given that the strength rating for Runway 18-36 is currently 12,000 pounds S, it is classified as a "utility" runway under Part 77. The width of the primary surface for a utility runway with non-precision instrument approach minimums greater than ¾-statute miles is 500 feet (250 feet to each side of runway centerline). The width of the primary surface serving "other than utility" runways (greater than 12,500 pounds) having minimums of ¾-statute miles or lower is 1,000 feet (500 feet to each side of runway centerline). The Recommended Development Concept for current and long-term planning at JXI considers instrument approach procedures having not lower than one-mile minimums and a pavement strength rating of 30,000 S and 60,000 D, upgrading to an "other than utility runway." Under these criteria, the primary surface will remain 500 feet wide. The transitional surface then extends out and up from the edge of the primary surface at a ratio of seven feet laterally for every one-foot increase. Based upon these criteria and using a planned building height, the BRL or obstructions to the BRL can be determined. **Exhibit V** presents the BRL separation at 425 feet from runway centerline based upon instrument approach capabilities and the selected allowable structure height of 25 feet.

As shown on the Recommended Development Concept, there are multiple existing aircraft hangars located within the existing and ultimate 25-foot BRL. Nine of the aircraft hangars located within the 25-foot BRL are positioned immediately east of the partial parallel taxiway and range between 12 and 23 feet tall. Given the structure height and location of the aircraft hangars located within the BRL, each building should be equipped with red obstruction lighting. It should be noted and clearly stated that any hangars planned for construction within the BRL should be coordinated with TxDOT to ensure there will be no impact to the existing instrument approach minimums upon construction.

INSTRUMENT APPROACHES

As discussed earlier, JXI is currently served by non-precision instrument approach procedures including a circling RNAV GPS instrument approach that provides visibility minimums down to one mile and cloud ceilings of 405 feet AGL. However, none of the instrument approach procedures currently serving JXI are approved for nighttime operation. Alternative analysis, conducted in the previous section, explored the possibility of improved instrument approach visibility minimums serving Runway 18-36. However, based upon the alternative analysis, the cost of complying with increased safety standards associated with improved approach minimums would heavily outweigh the benefits. As such, the ultimate instrument approach visibility minimums serving Runway 18-36 should be maintained at not lower than one mile throughout the planning horizon. However, the existing RNAV GPS approaches serving JXI are not approved for nighttime operations due to obstructions. To eliminate obstructions to the existing approach, the airport should consider removing obstructing trees and burying the powerlines currently traversing the approach end of Runway 18, as presented on **Exhibit V**.

In addition to the GPS-based approaches serving JXI, the airport is also served by a VOR/DME circling instrument approach, which is the only instrument approach serving JXI that is approved for nighttime operations. Through recent communication with FAA and TXDOT staff, it has been discovered that the (Quitman) VOR station supporting this approach is set to be decommissioned in May of 2020. In light of this, it is imperative that the airport take action on the identified obstructions in order to gain approval for nighttime instrument approach operations using the RNAV GPS approach.

VISUAL APPROACH AIDS

Future planning considers various enhancements to visual approach aids serving the runway system at JXI, as depicted on **Exhibit V**. Currently, each end of Runway 18-36 is served by PAPI-2s.

Ultimately, PAPI-4s are planned to serve the extended Runway 18-36 to further enhance the use of the runway as well as overall airfield safety given the forecast potential for increased turbine aircraft operations. This system will provide pilots with improved visual approach guidance information during landings to the runway. Furthermore, REILs are proposed on each end of Runway 18-36, which provide pilots the ability to identify the runway thresholds and distinguish the runway end from other lighting on the airport and in the approach areas.

TAXIWAY DESIGN AND GEOMETRY ENHANCEMENTS

While no significant airfield capacity improvements should be necessary during the planning period, the Recommended Development Concept considers improving airfield safety and efficiency through the implementation of relocated and extended taxiways. The taxiway system is planned to maintain RDC B-II-5000 and TDG 2 standards for all taxiways, which calls for a runway to taxiway separation of 240 feet and taxiway width of 35 feet. Given that the existing taxiway turn-arounds serving Runway 18-36 are located 155 feet from runway centerline, it is recommended that the existing taxiway turn-arounds be removed. Additionally, it is proposed that the partial parallel taxiway serving Runway 18-36 be extended south to the ultimate Runway 36 threshold, forming a full-length parallel taxiway (including taxiway connectors) with a runway to taxiway centerline separation of 240 feet. It should be noted that this project will require extensive earth and drainage work as the ultimate parallel taxiway will extend across a portion of Sugar Creek.

At present, the taxiway system serving JXI is found to be adequate in meeting current and future air traffic demand. However, the portions of the existing airfield taxiway geometry conflicts with the current FAA taxiway design standards established in AC 150/5300-13A, *Airport Design*. Currently, there is direct access to Runway 18-36 from the taxiway connector serving the apron area and hangar units to the east. Direct access connections such as this have been linked to increased risk of a runway incursion and should be considered for modification. To mitigate this incompatibility, the existing taxiway connector serving the apron area should be removed and relocated approximately 675 feet to the south. As previously discussed, direct access is also provided from the northernmost taxilane to the Runway 18 threshold. However, given the limited apron and movement area surrounding the direct access linkage, the selected development option proposes that the incompatibility be addressed with signage and/or marking, as the taxilane is used infrequently.

LANDSIDE RECOMMENDED DEVELOPMENT CONCEPT

The primary goal of landside facility planning is to provide adequate space to meet reasonably anticipated aviation needs, while also optimizing operational efficiency and land use. Achieving these goals yields a development scheme which segregates functional uses, while maximizing the airport's revenue potential. The Facility Requirements section identified several opportunities to improve the existing landside facilities to better accommodate future aviation demand. This section will specify the recommended improvements pertaining to landside facilities. Landside facilities can include terminal buildings, hangars, aircraft parking aprons, and aviation support services, as well as the utilization of remaining airport property to provide revenue support and to benefit the economic well-being of the regional area. Also important is identifying the overall land use classification of airport property to preserve the aviation purpose of the facility well into the future. **Exhibit V** presents the planned landside development for JXI.

As a local general aviation airport, most of the landside development proposed within the Recommended Development Concept will accommodate the general aviation owners and operators as well as current and future service providers at JXI. At present, general aviation landside facilities are located on the northeast side of the airfield and include 14 separate hangar facilities providing approximately 71,400 sf of hangar capacity, as well as aircraft apron space totaling approximately 11,800 sy of usable aircraft apron area.

Multiple layouts of potential landside facilities were presented in the Landside Development Considerations section that included hangar development, aircraft apron layouts, and the placement of aviation support services. The Recommended Development Concept provides a compilation of proposed landside facilities which attempts to maximize potential aviation development space on the airfield. Primarily, new development is planned near existing facilities to take advantage of existing infrastructure availability and reduce future development costs.

The major landside issues addressed in the Recommended Development Concept include the following:

- Designate areas that can accommodate aviation development potential within the existing bounds of airport property as well as identify areas beyond airport property for landside development should the demand materialize.

- Provide self-service Jet A fuel and increased 100LL fueling capacity.

- Provide a designated site for a future airport maintenance equipment storage facility.

- Construct additional automobile parking and new airport access serving the north and south sides of the landside development area that extend from Aviation Drive.

AIRCRAFT STORAGE HANGARS AND FUTURE AVIATION DEVELOPMENT

Analysis in the Facility Requirements section indicated that an additional 50,800 sf of aircraft storage hangar capacity may be needed through the long-term planning period in order to meet potential aviation demand. Recommended hangar development is proposed in the form of T-hangars, linear box, executive box, and large conventional hangars. Future demands will ultimately dictate the size and type of hangar facilities that could be built.

As presented on **Exhibit V**, the Recommended Development Concept considers the construction of one 50 x 70-foot executive box hangar on the north side of the landside development area, near the threshold of Runway 18. As a result of the proposed location of the 50 x 70-foot box hangar, the existing AWOS would ultimately have to be removed and relocated. It is recommended that the AWOS be relocated to the west side of the runway outside of the ROFA, as presented on **Exhibit V**. Moving south along the flight line, one 65 x 80-foot executive box hangar is proposed immediately south of the five existing T-hangars and five 50 x 50-foot executive box hangars are proposed directly adjacent to the east side of each existing T-hangar. As previously mentioned, nine existing hangars are located within the 25-foot BRL and are considered penetrations to the transitional surface. Ultimately, it is recommended that these hangars be equipped with obstruction lighting. Furthermore, the existing executive box hangar located immediately north of the connecting taxiway linking the apron area to Runway 18-36 obstructs the TOFA of the full-length parallel taxiway. At such, it is recommended that the western wall of the hangar be removed and relocated approximately two feet to the east to adhere to existing and ultimate TDG 2 TOFA requirements.

To maximize the use of existing airport property, a six-unit linear box facility is proposed on the eastern side of the landside development area, located directly north of the terminal building. It should be noted that five of the units are designated for aircraft hangar storage, while the sixth and southernmost unit is designated as an airport maintenance and storage facility as the airport does not currently have a dedicated facility for airport maintenance. To accommodate the proposed linear box hangars, the existing taxilane serving the T-hangars to the west will need to be shifted slightly west toward the existing hangars to the minimum taxilane centerline distance to a fixed or movable object for ADG I, which is 39.5 feet.

Additional hangar development opportunities are presented surrounding the existing aircraft apron area. Directly west of the airport terminal facility, a 60 x 60-foot executive style box hangar is proposed along with additional pavement, linking the facility with the existing apron area. Additionally, four 80 x 80-foot executive style box hangars and supporting pavement are proposed along the eastern and southern edges of the existing apron area.

Prior to the construction of the south and westernmost 80 x 80-foot executive box hangar located on the apron area, it is proposed that the existing self-service fueling facility be relocated north and east to the opposite side of the apron to allow space for the proposed hangar facility. At the same time this project is completed, the airport should consider the addition of a 12,500-gallon Jet A fuel tank and increasing the fuel capacity for 100LL to 12,500 gallons.

Considering the forecast potential for increased hangar demand, it is proposed that approximately 9.2 acres of property be acquired south of the existing landside development area for additional hangar development. **Exhibit V** proposes four six-unit T-hangars, two 80 x 80-foot executive box hangars, one 80 x 150-foot conventional hangar, and approximately 7,700 sy of additional apron area. Landside access and automobile parking supporting the southern development area is provided via a roadway extending south from Aviation Drive.

Should the airport experience continued demand for aircraft hangar storage facilities, it is recommended that the airport acquire approximately 9.6 acres of property from the Gilmer Industrial Foundation, which owns the property adjacent to the northeast side of the existing landside development area. The acquisition of this property would ultimately allow for the construction of four T-hangars of varying sizes, which would total 30 separate hangar units. Automobile access to this development area could be provided through a controlled access gate and an additional access road stemming from the north side of Aviation Drive. Furthermore, the remaining property to be acquired located immediately west of Highway 271 includes the potential for three buildings that could be used for industrial or corporate purposes.

For planning purposes, the remainder of the property owned by the Gilmer Industrial Foundation is also depicted on the development concept. Property owned by the Gilmer Industrial Foundation is located on the east side of the airport and has three existing Industrial Park tenants including Certified Can Machine Company, Texas Forest Service, and Texasta Manufacturing Center. Additionally, future potential exists for the development of a critical care medical facility located in parcels 101 or 102.

It should be noted, the airport does not have the approval to use undeveloped property for non-aviation purposes at this time. Specific approval from TxDOT will be required to utilize airport property for non-aviation uses. This planning document does not gain approval for non-aviation uses, even if these uses are ultimately shown in the ALP Narrative and on the ALP. A separate request justifying the use of airport property for non-aviation uses will be required. However, this study can be a source for developing that justification.

Finally, any significant landside development, particularly in the proposed development areas to the north and south of existing development, could be limited by the existing utility infrastructure, or the lack thereof. Minimum water flow requirements (for sprinkler and firefighting purposes) may vary depending upon the type of hangars and facilities built, requiring water storage and pumping capabilities. All future development should consider enhancements to utility infrastructure that could include increased water storage and pumping capacity, sewer, and improved electrical and natural gas capabilities.

ENVIRONMENTAL OVERVIEW

An analysis of potential environmental impacts associated with proposed airport projects is an essential consideration in the airport planning process. The primary purpose of this discussion is to review the proposed projects at the airport to determine whether the projects identified could, individually or collectively, significantly impact existing environmental resources. The information contained in this section was obtained from previous studies, official internet websites, and analysis by the consultant.

Construction of any and all improvements depicted on the ALP will require compliance with the *National Environmental Policy Act* (NEPA) *of 1969*, as amended. This includes privately funded projects, such as hangars, and those projects receiving federal funding. For projects not categorically excluded under FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, compliance with NEPA is generally satisfied through the preparation of an Environmental Assessment (EA). In instances where significant environmental impacts are expected, as determined by the FAA, an Environmental Impact Statement (EIS) may be required. While this portion of the study is not designed to satisfy the NEPA requirements, it provides a preliminary review of environmental issues that may need to be considered in more detail within the environmental review processes. It is important to note that the FAA is ultimately responsible for determining the level of environmental documentation required for airport actions.

The environmental inventory included in the Inventory section provides baseline information about the airport environs. This section provides an overview of the potential impacts to the existing resources that could result from implementation of the planned improvements outlined in the study. While this portion of the study is not designed to satisfy NEPA requirements for a Documented Categorical Exclusion (CatEx), EA, or EIS, it is intended to provide a preliminary review of environmental issues that might affect implementation of the Recommended Development Concept.

POTENTIAL ENVIRONMENTAL CONCERNS

The following table (**Table MM**) summarizes potential environmental concerns associated with implementation of the ALP recommended development concept plan. Analysis under NEPA includes direct, indirect, and cumulative impacts.

CAPITAL IMPROVEMENT PROGRAM

The analyses completed in previous sections evaluated development needs at JXI over the next 20 years based on forecast activity, facility requirements, safety standards, and operational efficiency. Now that the Recommended Development Concept has been established and specific needs and improvements for the airport have been recognized, the next step is to determine a realistic schedule for project implementation as well as the associated costs for the plan. This section will provide a description and overall cost for each project identified in the capital improvement program (CIP) and development schedule. The program has been evaluated from a variety of perspectives and represents a comparative analysis of basic budget factors, demand, and priority assignments.

The presentation of the capital program has been organized into three sections. First, the airport's capital program needs are identified by various categories ranging from meeting safety and design standards to satisfying demand. Second, the airport development schedule and CIP cost estimates are presented in narrative and graphic form. The CIP has been developed following FAA guidelines for master plans and identifies those projects that are likely eligible for FAA and TxDOT grant funding. Third, capital improvement funding sources on the federal, state, and local levels are identified and discussed.

TABLE MM
Summary of Potential Environmental Concerns
Fox Stephens Field – Gilmer Municipal Airport

Environmental Impact Category	FAA Order 1050.1F, Significance Threshold/Factors to Consider	Potential Concern
Air Quality	**Threshold: The action would cause pollutant concentrations to exceed one or more of the National Ambient Air Quality Standards (NAAQS), as established by the United States (U.S.) Environmental Protection Agency (EPA) under the *Clean Air Act*, for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations.**	**Potential Impact.** Although the projected increase in operations over the planning horizon of the ALP would result in additional emissions, Upshur County currently complies with federal NAAQS standards. Therefore, general conformity review per the *Clean Air Act* is not required. According to the most recent FAA *Aviation Emissions and Air Quality Handbook* (2015), an emissions inventory under NEPA may be necessary for any proposed action that would result in a reasonably foreseeable increase in emissions due to plan implementation. For construction emissions, a qualitative or quantitative emissions inventory under NEPA may be required, depending on the type of environmental review needed for development projects outlined in the ALP.
Biological Resources	**Threshold: The U.S. Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMFS) determines that the action would be likely to jeopardize the continued existence of a federally listed threatened or endangered species or would result in the destruction or adverse modification of federally designated critical habitat.** FAA has not established a significance threshold for non-listed species. However, factors to consider are if an action would have the potential for: • Long-term or permanent loss of unlisted plant or wildlife species; • Adverse impacts to special status species or their habitats;	*For federally listed species:* **Potential Impact.** The FWS Information for Planning and Consultation (IPaC) report identified three avian species: the least tern, the piping plover, and red knot, which could potentially occur around the airport. While these species prefer coastal habitats, the airport is possibly in the migration path for these birds, and consideration during the construction timeframe amid migration periods should be observed. Two of the bird species, the least tern and the piping plover, are also listed as endangered or threatened on the State of Texas Parks and Wildlife Department (TPWD), and further analysis may be necessary to determine impacts. *For designated critical habitat:* **No Impact.** No critical habitat has been identified in the vicinity of the airport. *For non-listed species:* **Potential Impact.** Non-listed

	• Substantial loss, reduction, degradation, disturbance, or fragmentation of native species' habitats or their populations; or • Adverse impacts on a species' reproductive rates, non-natural mortality, or ability to sustain the minimum population levels required for population maintenance.	species of concern include those protected by the *Migratory Bird Treaty Act*. The potential for impacts to migratory birds should be evaluated on a project-specific basis. This may include pre-construction surveys or scheduling construction outside of nesting seasons.
Climate	FAA has not established a significance threshold for Climate; refer to FAA Order 1050.1F's *Desk Reference* for the most up-to-date methodology for examining impacts associated with climate change.	**Potential Impact.** An increase in greenhouse gas (GHG) emissions could occur over the planning horizon of the ALP. Project-specific analysis may be required per the FAA Order 1050.1F, *Desk Reference*, based on the parameters of the individual projects.
Coastal Resources	FAA has not established a significant threshold for Coastal Resources. Factors to consider are if an action would have the potential to: • Be inconsistent with the relevant state coastal zone management plan(s); • Impact a coastal barrier resources system unit; • Pose an impact to coral reef ecosystems; • Cause an unacceptable risk to human safety or property; or • Cause adverse impacts to the coastal environment that cannot be satisfactorily mitigated.	**No Impact.** According to the Texas Coastal Management Program, the airport is not located within a designated Coastal Zone.
Department of Transportation (DOT) *Act*: Section 4(f)	**Threshold: The action involves more than a minimal physical use of a Section 4(f) resource or constitutes a "constructive use" based on an FAA determination that the aviation project would substantially impair the Section 4(f) resource. Resources that are protected by Section 4(f) are publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance; and publicly or privately owned land from an historic site of national, state, or local significance. Substantial impairment occurs when the activities, features, or attributes of the resource that contribute to its significance or enjoyment are substantially diminished.**	**No Impact.** While there are multiple Section 4(f) resources within the City of Gilmer and Upshur County, only one, a historically significant resource, is within one mile of the airport. The Dickson Colored Orphanage Cemetery, a Recorded Texas Landmark, is approximately 0.85 miles north of the airport. No physical or constructive use of the cemetery will result from airport activities. If necessary, the Section 4(f) compliance process can involve the preparation of a Section 4(f) statement, which evaluates other feasible alternatives.
Farmlands	**Threshold: The total combined score on Form AD-1006, *Farmland Conversion Impact Rating*," ranges between 200 and 260.** (Form AD-1006 is used by the U.S. Department of Agriculture, Natural Resources Conservation Service [NRCS] to assess impacts under the *Farmland Protection Policy Act* [FPPA].) Factors to consider are if an action would have the potential to convert important farmlands to non-agricultural uses. Important farmlands include pastureland, cropland, and forest considered to be prime, unique, or statewide or locally important land.	**Potential Impact.** Approximately one-half of airport property is designated as "prime farmland," as identified on **Exhibit F**. According to EPA's *EJScreen*, the airport and proposed property acquisition identified on the ALP are located in a non-urbanized area; therefore, FPPA may apply. The airport coordinates with the NRCS on Form AD-1006.
Hazardous Materials, Solid Waste, and Pollution Prevention	**Threshold: The Texas Council on Environmental Quality (TCEQ) requires all aboveground storage tanks (ASTs) greater than 1,100 gallons are regulated by the state.**	**Potential Impact.** The airport currently provides 100LL fuel only in a single 4,000-gallon AST, located south of the terminal building. The fueling facility is owned and operated by JL Aero, LLC, the airport's FBO. The ALP proposes to relocate the fueling area and include Jet A fuel,

	FAA has not established a significance threshold for Hazardous Materials, Solid Waste, and Pollution Prevention. However, factors to consider are if an action would have the potential to: • Violate applicable federal, state, tribal, or local laws or regulations regarding hazardous materials and/or solid waste management; • Involve a contaminated site; • Produce an appreciably different quantity or type of hazardous waste; • Generate an appreciably different quantity or type of solid waste or use a different method of collection or disposal and/or would exceed local capacity; or • Adversely affect human health and the environment.	increasing fuel capacity at the airport. All fuel will be stored in ASTs. Since the FBO is responsible for providing, maintaining, and selling of fuel at the airport, the FBO is responsible for the reporting of the fuel ASTs to the TCEQ. The airport's FBO also provides an opportunity for aircraft maintenance and repair activities that could involve fossil fuels or other types of hazardous materials or wastes; these operations are regulated and monitored by the appropriate regulatory agencies, such as the U.S. EPA the TCEQ. The recommended ALP development concept does not anticipate land uses that would produce an appreciably different quantity or type of hazardous waste. However, should this type of land use be proposed, further NEPA review and/or permitting would be required. There are no known hazardous materials or waste contamination sites currently on airport property. Since land acquisition for expanded RPZs, expanded ROFZ, and taxiway extension is proposed on the Recommended Development Concept Plan (**Exhibit V**), an Environmental Due Diligence Audit (EDDA) is required as part of the land purchase process.
Historical, Architectural, Archaeological, and Cultural Resources	FAA has not established a significance threshold for Historical, Architectural, Archaeological, and Cultural Resources. Factors to consider are if an action would result in a finding of "adverse effect" through the Section 106 process. However, an adverse effect finding does not automatically trigger preparation of an EIS (i.e., a significant impact).	**No Impact.** No historical, architectural, archaeological, or culturally significant resources are located in the immediate vicinity of the airport. The closest resource is the Dickson Colored Orphanage Cemetery located 0.85 miles north of the airport which will not be impacted by airport activities.
Land Use	FAA has not established a significance threshold for Land Use. There are also no specific independent factors to consider. The determination that significant impacts exist is normally dependent on the significance of other impacts.	**Potential Impact.** The proposed Recommended Development Concept Plan includes land acquisition and avigation easements over the airport runway protection zones to prevent land use compatibility impacts with the airport. **Exhibit V** identifies several uses or structures in new RPZs which are incompatible with the proposed final airfield design. To the north of Runway 18-36, roads, overhead powerlines, and two agricultural structures are identified in the potential RPZ. South of Runway 18-36, an existing east/west road is within the RPZ.
Noise and Noise-Compatible Land Use	**Threshold: The action would increase noise by Day-Night Average Sound Level (DNL) 1.5 decibel (dB) or more for a noise-sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe.** Another factor to consider is that special consideration needs to be given to the evaluation of the significance of noise impacts on noise-sensitive areas within Section 4(f) properties where the land use compatibility guidelines in Title 14 Code of Federal Regulations (CFR) Part 150 are	**Potential Impact.** Residential and livestock farming uses are located in the vicinity of the airport, which are sensitive to increased DNL dB levels. It is important to note that operational growth, unless tied to a specific project, will not result in noise impacts under FAA Order 1050.1F. Impacts to noise-sensitive land uses are only identified through NEPA documentation for specific projects or through the voluntary Part 150 process.

	not relevant to the value, significance, and enjoyment of the area in question.	
Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks		
Socioeconomics	FAA has not established a significance threshold for Socioeconomics. However, factors to consider are if an action would have the potential to: • Induce substantial economic growth in an area, either directly or indirectly (e.g., through establishing projects in an undeveloped area); • Disrupt or divide the physical arrangement of an established community; • Cause extensive relocation when sufficient replacement housing is unavailable; • Cause extensive relocation of community businesses that would cause severe economic hardship for affected communities; • Disrupt local traffic patterns and substantially reduce the levels of service of roads serving the airport and its surrounding communities; or • Produce a substantial change in the community tax base.	**Potential Impact.** Proposed development on airport property could potentially encourage economic growth for the City of Gilmer and surrounding Upshur County. Results include new construction jobs, new jobs for the airport, new housing, and increase the local tax base. The narrative report does not include any recommendations to acquire residences or relocate businesses. The Recommended Development Concept Plan identifies two agricultural structures used to support livestock in the final RPZ.
Environmental Justice	FAA has not established a significance threshold for Environmental Justice. However, factors to consider are if an action would have the potential to lead to a disproportionately high and adverse impact to an environmental justice population (i.e., a low-income or minority population), due to: • Significant impacts in other environmental impact categories; or • Impacts on the physical or natural environment that affect an environmental justice population in a way that FAA determines is unique to the environmental justice population and significant to that population.	**Potential Impact.** Both low-income and minority populations have been identified in the vicinity of the airport. Executive Order (E.O.) 12898, *Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations*, and the accompanying Presidential Memorandum, and Order DOT 5610.2, *Environmental Justice*, require the FAA to provide for meaningful public involvement by minority and low-income populations, as well as analysis that identifies and addresses potential impacts on these populations that may be disproportionately high and adverse. Environmental justice impacts may be avoided or minimized through early and consistent communication with the public and allowing ample time for public consideration. If disproportionately high or adverse impacts are noted, mitigation and enhancement measures and offsetting benefits can be taken into consideration.
Children's Environmental Health and Safety Risks	FAA has not established a significance threshold for Children's Environmental Health and Safety Risks. However, factors to consider are if an action would have the potential to lead to a disproportionate health or safety risk to children.	**Potential Impact.** Per E.O. 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, federal agencies are directed to identify and assess environmental health and safety risks that may disproportionately affect children. These risks include those that are attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products to which they may be exposed. No schools have been identified within the immediate vicinity of the airport; however, there are residential uses nearby which could include small children. Best management practices (BMPs) should be implemented to decrease environmental health risks to children.

		During construction of the projects outlined in the Recommended Development Concept Plan, appropriate measures should be taken to prevent access by unauthorized persons and children to construction project areas.
Visual		
Visual Effects	FAA has not established a significance threshold for Visual Resources/Visual Character. However, a factor to consider is the extent an action would have on the potential to: • Affect the nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources; • Contrast with the visual resources and/ or visual character in the study area; and • Block or obstruct the views of the visual resources, including whether these resources would still be viewable from other locations.	**Potential Impact.** Development planned in the ALP could change the overall rural visual character of the airport with additional roads and structures planned on-site. New development could also change the visual rural character of the area and potentially block views from surrounding property. Potential effects could be minimized by preserving as much natural vegetation as possible and integrating development into existing landscape.
Water Resources (including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)		
Wetlands	**Threshold: The action would:** **1. Adversely affect a wetland's function to protect the quality or quantity of municipal water supplies, including surface waters and sole source and other aquifers;** **2. Substantially alter the hydrology needed to sustain the affected wetland system's values and functions or those of a wetland to which it is connected;** **3. Substantially reduce the affected wetland's ability to retain floodwaters or storm runoff, thereby threatening public health, safety or welfare (the term welfare includes cultural, recreational, and scientific resources or property important to the public);** **4. Adversely affect the maintenance of natural systems supporting wildlife and fish habitat or economically important timber, food, or fiber resources of the affected or surrounding wetlands.** **5. Promote development of secondary activities or services that would cause the circumstances listed above to occur; or** 6. **Be inconsistent with applicable state wetland strategies.**	**Potential Impact.** According to the National Wetlands Inventory, a riverine was identified as a wetland on airport property, although this information is based on aerial imagery interpretation from 1981. Field surveys and wetland delineations may be required to determine the presence or absence of wetlands in project areas. Project areas which could be impacted include the relocation of the taxiways, new hangars, possible land acquisition, and Runway 18-36 expansion. The National Wetland Inventory also identified wetlands on recommended property acquisition for airport improvements. The presence or absence of these wetlands should be documented during a field survey report. Removal or relocation of wetlands may require a Section 404 permit under the *Clean Water Act*, which regulates the discharge of dredged or fill material into waters of the United States, including wetlands.
Floodplains	**Threshold: The action would cause notable adverse impacts on natural and beneficial floodplain values. Natural and beneficial floodplain values are defined in Paragraph 4.k of DOT Order 5650.2, *Floodplain Management and Protection.***	**Potential Impact.** A 100-year floodplain was identified by the Federal Emergency Management Agency (FEMA) on airport property. E.O. 11988, *Floodplain Management*, requires federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of 100-year floodplains and to avoid direct or indirect support of floodplain development where there is a practicable alternative. Since the airport is located in both the City of Gilmer and unincorporated Upshur County, and floodplain was

		identified in both jurisdictions (refer to **Exhibit F**), the following policies apply: • In the City of Gilmer, a floodplain permit is required when any building or structure is planned to be erected, constructed, enlarged, repaired, improved, moved, or demolished, and shall be reviewed by the Floodplain Administrator or designee. • In Upshur County, permits are required to determine impacts to the floodplain. Permits are reviewed by the Floodplain Administrator.
Surface Waters	**Threshold: The action would:** **1. Exceed water quality standards established by federal, state, local, and tribal regulatory agencies; or** **2. Contaminate public drinking water supply such that public health may be adversely affected.**	**Potential Impact.** The airport is located within the Sugar Creek - Little Cypress Creek sub watershed. The City of Gilmer manages airport stormwater discharges with a Texas Pollutant Discharge Elimination System (TPDES) Industrial Stormwater General Permit issued and regulated by TCEQ. Improvements to the airport will require a revised permit to be issued addressing operational and structural source controls, treatment BMPs, and sediment and erosion control. FAA's Advisory Circular (AC) 150/5370-10G, *Standards for Specifying Construction of Airports, Item P-156, Temporary Air and Water Pollution, Soil Erosion and Siltation Control* should also be implemented during construction projects at the airport.
Groundwater	**Threshold: The action would:** **1. Exceed groundwater quality standards established by federal, state, local, and tribal regulatory agencies: or** **2. Contaminate an aquifer used for public water supply such that public health may be adversely affected.** Factors to consider are when a project would have the potential to: • Adversely affect natural and beneficial groundwater values to a degree that substantially diminishes or destroys such values; • Adversely affect groundwater quantities such that the beneficial uses and values of such groundwater are appreciably diminished or can no longer be maintained and such impairment cannot be avoided or satisfactorily mitigated; or • Present difficulties based on water quality impacts when obtaining a permit or authorization.	**No Impact.** Proposed projects on the ALP Recommended Development Concept Plan would not substantially change the amount of water used by the airport. Additionally, the airport property does not serve as a significant source of groundwater recharge and is not located near a sole source aquifer.
Wild and Scenic Rivers	FAA has not established a significance threshold for Wild and Scenic Rivers. Factors to consider are when an action would have an adverse impact on the values for which a river was designated (or considered for designation) through: • Destroying or altering a river's free-flowing nature; • A direct and adverse effect on the values for which a river was designated (or under study for designation);	**No Impact.** The nearest designated Wild and Scenic River, a portion of the Cossatot River, is located over 117 miles north-northeast of the airport. The closest river on the NRI is the Sabine River, which is located approximately 30 miles southeast of the airport. The recommended airport projects would not have adverse effects on these rivers' outstanding remarkable values (i.e., scenery, recreation, geology, fish, wildlife, and history).

	• Introducing a visual, audible, or other type of intrusion that is out of character with the river or would alter outstanding features of the river's setting; • Causing the river's water quality to deteriorate; • Allowing the transfer or sale of property interests without restrictions needed to protect the river or the river corridor; or • Any of the above impacts preventing a river on the Nationwide Rivers Inventory (NRI) or a Section 5(d) river that is not included in the NRI from being included in the Wild and Scenic River System or causing a downgrade in its classification (e.g., from wild to recreational).	
Source: Coffman Associates, Inc. analysis		

AIRPORT DEVELOPMENT NEEDS

In an effort to identify capital needs at the airport, this section provides analysis regarding the associated development needs of those projects included in the CIP. While some projects will be demand-based, others will be dictated by design standards, safety, or rehabilitation needs. Each development need is categorized according to this schedule. The applicable category (or categories) included are presented on **Exhibit W**. The proposed projects can be categorized as follows:

1) **Safety/Security (SS)** – these are capital needs considered necessary for operational safety and protection of aircraft and/or people and property on the ground near the airport.

2) **Environmental (EN)** – these are capital needs which are identified to enable the airport to operate in an environmentally acceptable manner or meet needs identified in the Environmental Overview outlined in the previous section.

3) **Maintenance (MN)** – these are capital needs required to maintain the existing infrastructure at the airport.

4) **Efficiency (EF)** – these are capital needs intended to optimize aircraft ground operations or passengers' use of the terminal building.

5) **Demand (DM)** – these are capital needs required to accommodate levels of aviation demand. The implementation of these projects should only occur when demand for these needs is verified.

6) **Opportunities (OP)** – these are capital needs intended to take advantage of opportunities afforded by the airport setting. Typically, this will involve improvements to property intended for lease to aviation- or non-aviation-related development.

PROJECT NUMBER AND DESCRIPTION		CATEGORY	FAA/TXDOT ELIGIBLE	AIRPORT/ LOCAL SHARE	TOTAL PROJECT COST ESTIMATE
SHORT-TERM PROJECT DESCRIPTION					
Planning Year 2020					
1	Relocate Windcone and Segmented Circle out of the ROFA	SS	$72,000	$8,000	$80,000
2	Relocate AWOS	DM/OP	$54,000	$6,000	$60,000
3	Implement REILs on Runways 18 and 36	SS	$144,000	$16,000	$160,000
2020 Total			***$270,000***	***$30,000***	***$300,000***
Planning Year 2020					
4	Clear Obstructing Vegetation Out of ROFA	SS	$135,000	$15,000	$150,000
5	Bury Power Lines and Remove Trees in the Runway 18 Approach	SS	$315,000	$35,000	$350,000
6	Relocate Roadway/Trail out of ROFA	SS	$90,000	$10,000	$100,000
2021 Total			***$522,000***	***$58,000***	***$580,000***
Planning Year 2022					
7	Construct 60' x 60' Box Hangar	DM/OP	$-	$690,000	$690,000
8	Widen Runway 18-36 to Width of 75 Feet (4,000' x 75')	SS	$1,683,000	$187,000	$1,870,000
2022 Total			***$1,683,000***	***$877,000***	***$2,560,000***
Planning Year 2023					
9	Construct Five-Unit Linear Box Hangar and Airport Maintenance Building	DM/OP	$-	$1,370,000	$1,370,000
2023 Total			***$-***	***$1,370,000***	***$1,370,000***
Planning Year 2024					
10	Fill and Grade Earthen Berm West of Runway 18-36	SS	$1,026,000	$114,000	$1,140,000
2024 Total			***$1,026,000***	***$114,000***	***$1,140,000***
TOTAL SHORT-TERM PROGRAM			**$3,519,000**	**$2,451,000**	**$5,970,000**
INTERMEDIATE-TERM PROJECT DESCRIPTION					
11	Construct Two 50' x 50' Box Hangars and Supporting Pavement	DM/OP	$-	$1,270,000	$1,270,000
12	Construct Full Length Parallel Taxiway	DM/EF/SS	$6,561,000	$729,000	$7,290,000
13	Relocate and Increase Fuel Capacity of 100LL and Jet A Self-Service Fueling Facility to 12,500 Gallons Each	DM/OP	$-	$1,250,000	$1,250,000
14	Construct Three 50' x 50' Box Hangars and Supporting Pavement	DM/OP	$-	$1,880,000	$1,880,000
15	Construct Two 80' x 80' Box Hangars and Automobile Access and Parking	DM/OP	$-	$4,080,000	$4,080,000
16	Construct Two 80' x 80' Box Hangars	DM/OP	$-	$3,400,000	$3,400,000
17	Environmental Assessment for Land Acquisition and Runway Extension	EN	$378,000	$42,000	$420,000
18	Acquire Approximately 14.4 and 9.2 Acres	DM/OP	$297,000	$33,000	$330,000
19	Construct 1,000-Foot Runway Extension (Includes relocation of REILs and Taxiway Extension)	DM/OP/EF	$7,650,000	$850,000	$8,500,000
20	Remove Obstructing Apron and Taxiway Providing Direct Access	SS	$171,000	$19,000	$190,000
21	Implement PAPI-4s on Runways 18 and 36	SS	$171,000	$19,000	$190,000
TOTAL INTERMEDIATE-TERM PROGRAM			**$15,228,000**	**$13,572,000**	**$28,800,000**

PROJECT NUMBER AND DESCRIPTION		CATEGORY	FAA/TXDOT ELIGIBLE	AIRPORT/ LOCAL SHARE	TOTAL PROJECT COST ESTIMATE
LONG-TERM PROJECT DESCRIPTION					
22	Install Ultimate Perimeter Fence	SS/MN	$1,125,000	$125,000	$1,250,000
23	Environmental Assessment for Land Acquisition and Northside Hangar Development	EN	$459,000	$51,000	$510,000
24	Acquire Approximately 9.6 acres	DM/OP	$243,000	$27,000	$270,000
25	Construct T-hangar Buildout and Supporting Pavement (Phase 1) and Access Road	DM/OP	$-	$8,610,000	$8,610,000
26	Construct T-hangar Buildout and Supporting Pavement (Phase 2)	DM/OP	$-	$6,820,000	$6,820,000
27	Remove Approximately Two Feet from Hangar to Comply with TDG 2 TOFA Standards	SS	$69,300	$7,700	$77,000
28	Construct One 50' x 70' Box Hangar	DM/OP	$-	$1,930,000	$1,930,000
29	Construct One 65' x 80' Box Hangar	DM/OP	$-	$2,250,000	$2,250,000
30	Construct Apron Area and Access Road for Southern Landside Development Area	DM/EF	$8,442,000	$938,000	$9,380,000
31	Construct 80' x 150' Conventional Hangar and Automobile Parking and Access	DM/OP	$-	$6,410,000	$6,410,000
32	Construct Two 80' x 80' Box Hangars and Automobile Access	DM/OP	$-	$6,580,000	$6,580,000
33	Construct Four T-Hangars and Supporting Pavement	DM/OP	$-	$19,370,000	$19,370,000
Total Long-Term Program			**$10,338,300**	**$53,118,700**	**$63,457,000**
Capital Improvement Program Total			**$29,085,300**	**$69,141,700**	**$98,227,000**

CATEGORY LEGEND:
SS - Safety/Security
EN - Environmental
MN - Maintenance
EF - Efficiency
DM - Demand
OP - Opportunity

This page intentionally left blank

AIRPORT DEVELOPMENT SCHEDULE AND COST SUMMARIES

Now that the specific needs and improvements for JXI have been established, the next step is to determine a realistic schedule and the associated costs for implementing the recommended Master Plan Development Concept. The capital program considers the interrelationships among the projects in order to determine an appropriate sequence of projects, while remaining within reasonable fiscal constraints.

This section will examine the overall cost of each item in the capital program. The CIP, programmed by years, has been developed to cover the first five years of the plan. The remaining projects are grouped into intermediate (years 6-10) and long-term (years 11-20) planning horizons. More detailed information is provided for the five-year horizon, with less detail provided for the longer planning periods. By utilizing planning horizons instead of specific years for intermediate and long-term development, the City of Gilmer will have greater flexibility to adjust capital needs as demand dictates. **Table NN** summarizes the key milestones for each of the three planning horizons.

TABLE NN
Planning Horizon Activity Levels
Fox Stephens Field – Gilmer Municipal Airport

	Base Year	Short Term	Intermediate Term	Long Term
BASED AIRCRAFT				
Single Engine Piston	37	39	43	49
Multi-Engine Piston	4	3	3	2
Turboprop	1	2	2	4
Jet	0	1	2	3
Helicopter	0	0	0	1
TOTAL BASED AIRCRAFT	**42**	**45**	**50**	**59**
ANNUAL OPERATIONS				
Itinerant				
General Aviation	4,400	5,700	7,400	10,000
Air Taxi	10	50	100	300
Military	-	-	-	-
Total Itinerant	**4,410**	**5,750**	**7,500**	**10,300**
Local				
General Aviation	13,200	13,200	13,700	15,100
Military	-	-	-	-
Total Local	**13,200**	**13,200**	**13,700**	**15,100**
TOTAL OPERATIONS	**17,610**	**18,950**	**21,200**	**25,400**

A key aspect of this planning document is the use of demand-based planning milestones. The short-term planning horizon contains items of highest need and/or priority. As short-term horizon activity levels are reached, it will then be time to program for the intermediate term based upon the next activity milestones. Similarly, when the intermediate-term milestones are reached, it will be time to program for the long-term activity milestones.

Many development items included in the recommended concept will need to follow demand indicators, which essentially establish triggers for key improvements. For example, the Recommended Development Concept includes the development of new aircraft hangars. Growth in based aircraft is the trigger for these projects. If growth slows or does not occur as projected, new hangar development can be delayed. As a result, the capital expenditures will be undertaken as needed, which leads to a responsible use of capital assets. Some development items do not depend on demand. Other projects are necessary to enhance the safety of the airport, maintain existing infrastructure, or meet FAA design standards. These types of projects typically are associated with day-to-day operations and should be monitored and identified by airport management regardless of changes in demand indicators.

Because of economic realities, few airports are constructing hangars on their own and are relying on private developers instead. In some cases, private developers can keep construction costs lower, which, in turn, lowers the monthly lease rates necessary to amortize a loan. The airport sponsor's responsibility related to new hangars can be to provide public access taxiways, typically in conjunction with FAA and/or state development grants. These taxiways are then able to be utilized by hangar tenants for aircraft access to the runway/taxiway system.

Given that an ALP narrative update is a conceptual document, implementation of the capital projects should only be undertaken after further refinement of their design and costs through architectural or engineering analyses. Moreover, some projects may require additional infrastructure improvements (i.e., drainage improvements, extension of utilities, etc.) that may increase the estimated cost of the project or increase the timeline for completion.

Once a list of necessary projects was identified and refined, project-specific cost estimates were prepared. The cost estimates also include design, construction administration, and contingencies that may arise on the project. Capital costs presented here should be viewed only as "order-of-magnitude" estimates subject to further refinement during design. Nevertheless, they are considered sufficient for planning purposes. Some projects, particularly those in the short-term period, have been taken from JXI's Airport Capital Improvement Program (ACIP) currently on file with TxDOT and has also taken into consideration projects with local priority. Cost estimates for projects included in the CIP were provided by H. W. Lochner, Inc. Cost estimates for each of the development projects have been adjusted with a four percent increase per year throughout the long-term CIP to accommodate rising costs of construction and inflation adjustments. As previously stated, each project should only be undertaken after further refinement of their design and costs through detailed architectural or engineering analyses.

Exhibit W presents the proposed 20-year CIP for JXI. Two things must be considered. First, the proposed CIP is a point-in-time analysis which will change annually based on actual demand and changing needs. Second, an estimate of grant (federal and/or TxDOT) funding eligibility has been included, although actual funding is not guaranteed. For projects that are eligible for federal/state funding, Airport Improvement Program (AIP)/TxDOT grants provide up to 90 percent of the total project cost. The remaining 10 percent, or more, of project costs are funded locally by the City of Gilmer. Other projects, such as the implementation of landside facilities associated with maintenance facilities and fuel farm expansion, are typically not eligible for AIP grants (outside of non-primary entitlements) or would rank low on the priority scale. As a result, these projects should be planned for local funding or funding through specific TxDOT programs.

The FAA and TxDOT each utilize a national priority rating system to help objectively evaluate potential airport projects. Projects are weighted toward safety, infrastructure preservation, meeting design standards, and capacity enhancement. These entities will participate in the highest priority projects before considering lower priority projects, even if a lower priority project is considered a more urgent need by the local sponsor. Nonetheless, the project should remain a priority for the airport, and funding support should continue to be requested in subsequent years.

As detailed in the CIP, many of the projects listed are eligible for federal or state funding. Obviously, demand and justification for these projects must be provided prior to a grant being issued by the FAA. **Exhibit X** graphically depicts the development staging by overlaying each project onto the aerial photograph of JXI.

Some projects identified in the CIP will require environmental documentation. The level of documentation necessary for each project must be determined in consultation with the FAA and TxDOT. There are three major levels of environmental review to be considered under NEPA that include CatExs, EAs, and EISs. Each level requires more time to complete and more detailed information. Guidance on what level of documentation is required for a specific project is provided in FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*. The Environmental Overview presented in the previous section addresses NEPA and provides an evaluation of various environmental categories for JXI.

The following sections will describe in greater detail the projects identified for the airport over the next 20 years. The projects are grouped based upon a detailed evaluation of existing and projected demand, safety, rehabilitation needs, and local priority. While the CIP identifies the priority ranking of the projects, the list should be evaluated and revised on a regular basis. It is also important to note that certain projects, while listed separately for purposes of evaluation in this study, could be combined with other projects during time of construction/implementation.

SHORT-TERM PROGRAM

The short-term projects are those anticipated to be needed in years zero through five of the 20-year CIP. The list of projects is further divided into yearly timeframes and are prioritized based on JXI's needs. Projects related to safety and preservation generally have the highest priority. The short-term program considers 10 projects for the planning period as presented on **Exhibit W** and depicted on **Exhibit X**. The following provides a detailed breakdown of each project.

FY 2020 Projects

Project #1: Relocate Windcone and Segmented Circle out of the ROFA
Description: Under existing conditions, the location of the windcone serving Runway 18-36 is an obstruction to the ROFA. Ultimately, the windcone and segmented circle should be relocated approximately 125 feet west out of the existing and ultimate ROFA.
Cost Estimate: $80,000
Funding Eligibility: FAA/TxDOT – 90 percent / Local – 10 percent

Project #2: Relocate AWOS
Description: The current location of the AWOS precludes landside development and is located in close proximity to multiple structures. This project considers relocating the AWOS to the west side of the runway, outside of the ROFA near the relocated windcone and segmented circle.
Cost Estimate: $60,000
Funding Eligibility: FAA/TxDOT – 90 percent / Local – 10 percent

Project #3: Implement REILs on Runways 18 and 36
Description: The FAA indicates that REILs should be considered for any lighted runway end that is not planned for a more sophisticated approach lighting system. As such, this project includes the implementation of REILs serving each end of Runway 18-36.
Cost Estimate: $160,000
Funding Eligibility: FAA/TxDOT – 90 percent / Local – 10 percent

FY 2021 Projects

Project #4: Clear Obstructing Vegetation Out of ROFA
Description: At present, overgrown vegetation and trees obstruct the ROFA along the east and west sides of Runway 18-36. The airport should take measures to clear all obstructing trees and overgrown vegetation out of the ROFA.
Cost Estimate: $150,000
Funding Eligibility: FAA/TxDOT – 90 percent / Local – 10 percent

Project #5: Bury Powerlines and Remove Trees in the Runway 18 Approach
Description: At present, there are multiple trees as well as above-ground powerlines located approximately 1,200 feet from the approach end of Runway 18 that traverse the approach environment. Additionally, the trees and powerlines have been identified as obstructions to the RNAV GPS approach serving Runway 18, causing nighttime approaches to be restricted. Ultimately, the powerlines should be buried and the trees should be removed to increase operational safety and gain nighttime approval during approaches to Runway 18.
Cost Estimate: $350,000
Funding Eligibility: FAA/TxDOT – 90 percent / Local – 10 percent

Project #6: Relocate Roadway/Trail out of ROFA
Description: Currently, a private gravel road is located within the ROFA along the western side of Runway 18-36. As such, the obstructing roadway should be relocated to the west, outside of the ROFA.
Cost Estimate: $100,000
Funding Eligibility: FAA/TxDOT – 90 percent / Local – 10 percent
FY 2022 Projects

Project #7: Construct 60 x 60-Foot Box Hangar
Description: This project is the construction of a 60 x 60-foot box hangar located directly west of the airport terminal building.
Cost Estimate: $690,000
Funding Eligibility: FAA/TxDOT – 0 percent / Local – 100 percent

SHORT-TERM PROJECT DESCRIPTION

Planning Year 2020

1. Relocate Windcone and Segmented Circle out of the ROFA
2. Relocate AWOS
3. Implement REILs on Runways 18 and 36

Planning Year 2021

4. Clear Obstructing Vegetation Out of ROFA
5. Bury Power Lines and Remove Trees in the Runway 18 Approach
6. Relocate Roadway/Trail out of ROFA

Planning Year 2022

7. Construct 60' x 60' Box Hangar
8. Widen Runway 18-36 to Width of 75 Feet (4,000' x 75')

Planning Year 2023

9. Construct Five-Unit Linear Box Hangar and Airport Maintenance Building

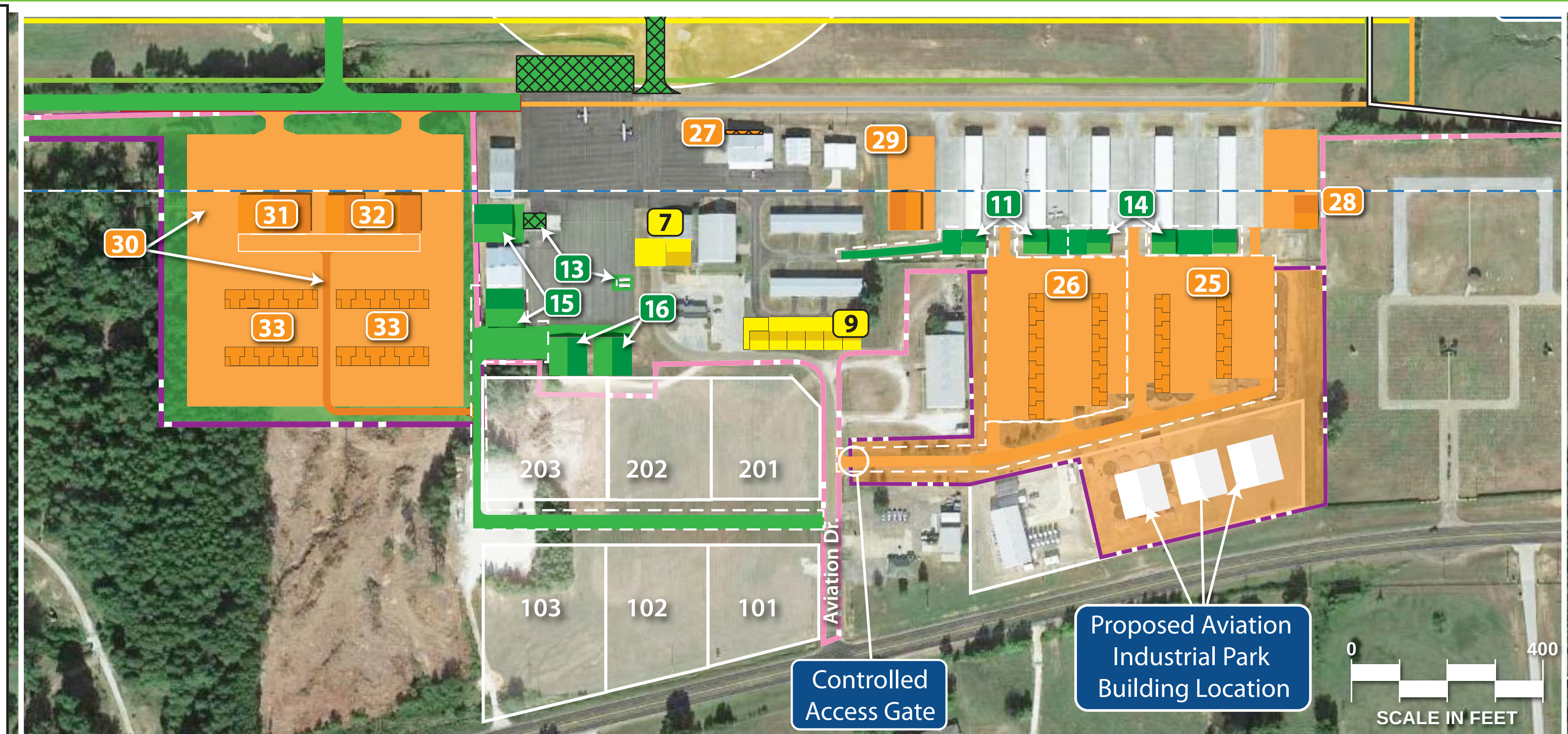
Planning Year 2024

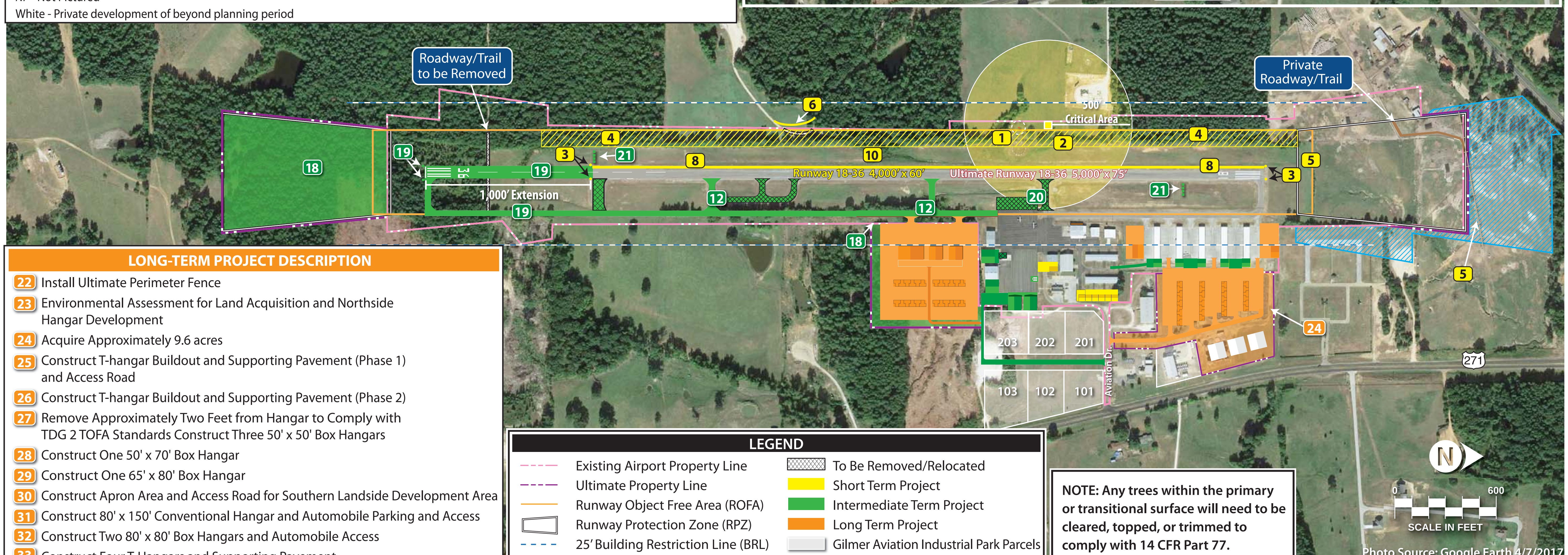
10. Fill and Grade Earthen Berm West of Runway 18-36

NP - Not Pictured
White - Private development of beyond planning period

INTERMEDIATE-TERM PROJECT DESCRIPTION

11. Construct Two 50' x 50' Box Hangars and Supporting Pavement
12. Construct Full Length Parallel Taxiway
13. Relocate and Increase Fuel Capacity of 100LL and Jet A Self-Service Fueling Facility to 12,500 Gallons Each
14. Construct Three 50' x 50' Box Hangars and Supporting Pavement
15. Construct Two 80' x 80' Box Hangars and Automobile Access and Parking
16. Construct Two 80' x 80' Box Hangars
17. Environmental Assessment for Land Acquisition and Runway Extension
18. Acquire Approximately 14.4 and 9.2 Acres
19. Construct 1,000-Foot Runway Extension (Includes relocation of REILs and Taxiway Extension)
20. Remove Obstructing Apron and Taxiway Providing Direct Access
21. Implement PAPI-4s on Runways 18 and 36





LONG-TERM PROJECT DESCRIPTION

22. Install Ultimate Perimeter Fence
23. Environmental Assessment for Land Acquisition and Northside Hangar Development
24. Acquire Approximately 9.6 acres
25. Construct T-hangar Buildout and Supporting Pavement (Phase 1) and Access Road
26. Construct T-hangar Buildout and Supporting Pavement (Phase 2)
27. Remove Approximately Two Feet from Hangar to Comply with TDG 2 TOFA Standards Construct Three 50' x 50' Box Hangars
28. Construct One 50' x 70' Box Hangar
29. Construct One 65' x 80' Box Hangar
30. Construct Apron Area and Access Road for Southern Landside Development Area
31. Construct 80' x 150' Conventional Hangar and Automobile Parking and Access
32. Construct Two 80' x 80' Box Hangars and Automobile Access
33. Construct Four T-Hangars and Supporting Pavement

LEGEND

Existing Airport Property Line	To Be Removed/Relocated
Ultimate Property Line	Short Term Project
Runway Object Free Area (ROFA)	Intermediate Term Project
Runway Protection Zone (RPZ)	Long Term Project
25' Building Restriction Line (BRL)	Gilmer Aviation Industrial Park Parcels

NOTE: Any trees within the primary or transitional surface will need to be cleared, topped, or trimmed to comply with 14 CFR Part 77.

Project #8: Widen Runway 18-36 to Width of 75 Feet (4,000' x 75')
Description: Currently, Runway 18-36 is 60 feet wide. Under existing and ultimate RDC B-II-5000 conditions, FAA standards mandate that the runway be 75 feet wide. As such, this project is for the widening of Runway 18-36 by 15 feet along the western side of the runway.
Cost Estimate: $1,870,000
Funding Eligibility: FAA/TxDOT – 90 percent / Local – 10 percent

FY 2023 Projects

Project #9: Construct Five-Unit Linear Box Hangar and Airport Maintenance Building
Description: In an effort to maximize existing developable airport property, a five-unit linear box hangar and airport maintenance building is proposed immediately north of the airport terminal building. The facility will consist of six units when factoring in the airport maintenance building.
Cost Estimate: $1,370,000
Funding Eligibility: FAA/TxDOT – 0 percent / Local – 100 percent

FY 2024 Projects

Project #10: Fill and Grade Earthen Berm West of Runway 18-36
Description: As previously presented on **Exhibit F** and on the Recommended Development Concept, Runway 18-36 is traversed by Sugar Creek. The drainage outlet on the western side of the runway has caused a depression due to erosion. This project is to fill and grade the depression on the west side of Runway 18-36.
Cost Estimate: $1,140,000
Funding Eligibility: FAA/TxDOT – 90 percent / Local – 10 percent

Short-Term Program Summary

The short-term CIP, detailed on **Exhibit W**, includes projects that enhance the overall safety, efficiency, and maintenance of the airfield, while also implementing landside improvements. The total investment necessary for the short-term CIP is approximately $6.0 million. Of the total short-term program, approximately $3.5 million is eligible for state or federal funding assistance. The remaining $2.5 is to be provided through airport or local funding outlets.

INTERMEDIATE-TERM PROGRAM

The intermediate-term projects are those that are anticipated to be necessary in years six through 10 of the CIP. These projects are not tied to specific years for implementation; instead, they have been prioritized so that airport management has the flexibility to determine when they need to be pursued based on current conditions. It is not unusual for certain projects to be delayed or advanced based on changing conditions, such as funding availability or changes in the aviation industry. This planning horizon includes 11 projects for the five-year timeframe as listed on **Exhibit W** and depicted on **Exhibit X**. The following section includes a description of each project.

Project #11: Construct Two 50' x 50' Box Hangars and Supporting Pavement
Description: This project is the construction of two 50 x 50-foot box hangars and supporting pavements located on the east end of the T-hangars located along the flight line on the north side of the landside development area.
Cost Estimate: $1,270,000
Funding Eligibility: FAA/TxDOT – 0 percent / Local – 100 percent

Project #12: Construct Full-Length Parallel Taxiway
Description: At present, Runway 18-36 is served by a partial parallel taxiway. As a result, aircraft are forced to back-taxi on the runway when landing to the south or taking off to the north. To increase the safety and efficiency of aircraft movements on the airfield, this project considers the construction of a full-length parallel taxiway maintaining 240-foot separation from runway to taxiway centerline.
Cost Estimate: $7,290,000
Funding Eligibility: FAA/TxDOT – 90 percent / Local – 10 percent

Project #13: Relocate and Increase Fuel Capacity of 100LL and Jet A Self-Service Fueling Facility to 12,500 Gallons Each
Description: Under current conditions, fuel available at JXI is limited to 100LL. In addition, the existing fuel farm location precludes hangar development on existing airport property. This project considered relocating the fuel farm to the northern side of the apron area, opening a potential site for hangar development. At the time of construction, it is also recommended that the airport increase the 100LL fueling capacity to 12,500 gallons and include an additional 12,500-gallon tank designated for Jet A fuel.
Cost Estimate: $1,250,000
Funding Eligibility: FAA/TxDOT – 0 percent / Local – 100 percent

Project #14: Construct Three 50' x 50' Box Hangars and Supporting Pavement
Description: This project is the construction of three 50 x 50-foot box hangars and supporting pavements located on the east end of the T-hangars located along the flight line on the north side of the landside development area.
Cost Estimate: $1,880,000
Funding Eligibility: FAA/TxDOT – 0 percent / Local – 100 percent

Project #15: Construct Two 80' x 80' Box Hangars and Automobile Access and Parking
Description: If demand warrants, this project includes the construction of two separate 80 x 80-foot box hangars located on the south side of the existing aircraft apron area. This project also includes the construction of a secondary access road and automobile parking area consisting of approximately 24,000 sf.
Cost Estimate: $4,080,000
Funding Eligibility: FAA/TxDOT – 0 percent / Local – 100 percent

Project #16: Construct Two 80' x 80' Box Hangars
Description: If the airport experiences continued demand for executive style box hangars, two more 80 x 80-foot box hangars are proposed on the eastern side of the existing aircraft apron area.
Cost Estimate: $3,400,000
Funding Eligibility: FAA/TxDOT – 0 percent / Local – 100 percent

Project #17: Environmental Assessment for Land Acquisition and Runway Extension
Description: Under ultimate conditions, the safety areas serving the extended Runway 18-36 extend beyond the existing airport property boundary and encompass varying acreage amounts of uncontrolled property. Given the potential environmental impacts associated with the extension of ultimate Runway 18-36, this project provides the environmental documentation required for the land acquisition that must occur as well as the construction of the runway extension.
Cost Estimate: $420,000
Funding Eligibility: FAA/TxDOT – 0 percent / Local – 100 percent

Project #18: Acquire Approximately 14.4 and 9.2 Acres
Description: This project is for the acquisition of approximately 14.4 and 9.2 acres of property to complete the ultimate extension of Runway 18-36 and construct the full-length parallel taxiway. The acquisition of the property will also establish direct control over all currently uncontrolled property within the ultimate safety areas.
Cost Estimate: $330,000
Funding Eligibility: FAA/TxDOT – 90 percent / Local – 10 percent

Project #19: Construct 1,000-Foot Runway Extension (Includes relocation of REILs)
Description: Pending further justification, the ultimate Runway 18-36 is planned to be extended to an ultimate length of 5,000 feet. This project is the construction of a 1,000-foot runway extension to the south for an ultimate runway length of 5,000 feet. It should be noted that this project includes the relocation of the REILs and all lighting systems serving the Runway 36 end.
Cost Estimate: $8,500,000
Funding Eligibility: FAA/TxDOT – 90 percent / Local – 10 percent

Project #20: Remove Obstructing Apron and Taxiway Providing Direct Access
Description: In its existing location, the taxiway connector linking Runway 18-36 to the apron area provides a direct access connection to the Runway. Furthermore, a portion of the apron area is located within the existing and ultimate ROFA. To comply with current FAA taxiway geometry and safety area design standards, it is recommended that the taxiway connector and obstructing portion of the apron area be removed.
Cost Estimate: $190,000
Funding Eligibility: FAA/TxDOT – 90 percent / Local – 10 percent

Project #21: Implement PAPI-4s on Runways 18 and 36
Description: Upon extending Runway 18-36, the existing PAPI-2s serving Runway 18-36 should be upgraded to PAPI-4s, as these systems are recommended for runways that serve jet operations.
Cost Estimate: $190,000
Funding Eligibility: FAA/TxDOT – 90 percent / Local – 10 percent

Intermediate-Term Program Summary

The total costs associated with the intermediate-term program are estimated at $28.8 million. Of this total, approximately $15.2 million could be eligible for state or federal funding, and the airport or local share is projected at $13.6 million.

LONG-TERM PROGRAM

The long-term planning horizon considers 12 projects for the 10-year period. The improvements are presented on **Exhibit W** and depicted on **Exhibit X**.

Project #22: Install Ultimate Perimeter Fence
Description: The airport currently has chain-link fencing partially surrounding the perimeter, which serves both operational security and as a deterrent to prevent wildlife and unauthorized persons entering the airfield environment. However, the existing fencing is primarily limited to the east side of the airfield. This project is for the construction of an ultimate six-foot security fence topped with three strand barbed wire surrounding the entire perimeter of the airfield.
Cost Estimate: $1,250,000
Funding Eligibility: FAA/TxDOT – 90 percent / Local – 10 percent

Project #23: Environmental Assessment for Land Acquisition and Northside Hangar Development
Description: This project serves as the environmental documentation for the land acquisition and construction of the north side hangar development area.
Cost Estimate: $510,000
Funding Eligibility: FAA/TxDOT – 90 percent / Local – 10 percent

Project #24: Acquire Approximately 9.6 acres
Description: Future landside development considers the acquisition of approximately 9.6 acres located on the northeast side of the existing airport property east of the existing T-hangars along the flight line. Landside development of this area will likely be phased as demand warrants.
Cost Estimate: $270,000
Funding Eligibility: FAA/TxDOT – 90 percent / Local – 10 percent

Project #25: Construct T-hangar Buildout and Supporting Pavement (Phase 1) and Access Road
Description: If the airport experiences additional demand for landside development, this project considers the construction of two T-hangars and supporting pavements, including taxilanes providing access to the runway system. In addition, automobile access could be provided from Aviation Drive through a controlled access gate.
Cost Estimate: $8,610,000
Funding Eligibility: FAA/TxDOT – 0 percent / Local – 100 percent

Project #26: Construct T-hangar Buildout and Supporting Pavement (Phase 2)
Description: This project is the continued development of the northern development area and includes the construction of two T-hangars and supporting pavements, including taxilanes providing access to the runway system.
Cost Estimate: $6,820,000
Funding Eligibility: FAA/TxDOT – 0 percent / Local – 100 percent

Project #27: Remove Approximately Two Feet from Hangar to Comply with TDG 2 TOFA Standards
Description: At present, the existing executive box hangar located immediately north of the connecting taxiway linking the apron area to Runway 18-36 obstructs the TOFA of the full-length parallel taxiway. This project is the removal and relocation of the western wall of the hangar approximately two feet to the east to comply with existing and ultimate TDG 2 TOFA requirements.
Cost Estimate: $77,000
Funding Eligibility: FAA/TxDOT – 10 percent / Local – 90 percent

Project #28: Construct One 50' x 70' Box Hangar
Description: If demand warrants, this project includes the construction of one 50 x 70-foot hangar located on the northernmost side of the landside development area along the flight line.
Cost Estimate: $1,930,000
Funding Eligibility: FAA/TxDOT – 0 percent / Local – 100 percent

Project #29: Construct One 65' x 80' Box Hangar
Description: If the airport experiences continued demand for executive box hangars, a 65 x 80-foot box hangar is proposed immediately south of the five existing T-hangars located along the flight line.
Cost Estimate: $2,250,000
Funding Eligibility: FAA/TxDOT – 0 percent / Local – 100 percent

Project #30: Construct Apron Area and Access Road for Southern Landside Development Area
Description: This project considers an apron expansion on the south side of the existing landside development area and includes approximately 7,700 sy of apron area. Airfield access could be provided via the full-length parallel taxiway. Additionally, an automobile access road could be extended to the eastern side of the apron area to provide access to future potential hangar development. It should be noted that this project will include extensive drainage and earthwork prior to completion given the location of Sugar Creek.
Cost Estimate: $9,380,000
Funding Eligibility: FAA/TxDOT – 90 percent / Local – 10 percent

Project #31: Construct 80' x 150' Conventional Hangar and Automobile Parking and Access
Description: Should demands for additional landside development continue, this project is for the construction of an 80 x 150-foot conventional hangar which could provide space for an FBO or specialty operator located on the proposed apron area along the flight line. This project also considers the construction of automobile parking to serve the hangar facility.
Cost Estimate: $6,410,000
Funding Eligibility: FAA/TxDOT – 0 percent / Local – 100 percent

Project #32: Construct Two 80' x 80' Box Hangars and Automobile Access
Description: This project includes the construction of two 80 x 80-foot box hangars next to the proposed conventional hangar located along the flight line. Automobile parking serving the proposed facilities is also considered in the project.
Cost Estimate: $6,580,000
Funding Eligibility: FAA/TxDOT – 0 percent / Local – 100 percent

Project #33: Construct Four T-Hangars and Supporting Pavement
Description: If demand for T-hangars persists, this project considers the construction of four six-unit T-hangar facilities and supporting pavements located on the easternmost side of the proposed apron area. It should be noted that this development will likely be broken into phases to satisfy demand as it dictates; however, for purposes of the CIP, the T-hangar development has been included as a single project.
Cost Estimate: $19,370,000
Funding Eligibility: FAA/TxDOT – 0 percent / Local – 100 percent

Long-Term Program Summary

The total costs associated with the long-term program are estimated at $63.4 million. Of this total, approximately $10.3 million could be eligible for state or federal funding. The airport or local matching share is projected at $53.1 million.

CAPITAL IMPROVEMENT PROGRAM SUMMARY

The list of projects needed to accomplish the vision for JXI has been prioritized and cost estimates developed. Projects considered for the short-term planning horizon (years 0-5) have been divided into yearly increments. Projects considered for the intermediate (years 6-10) and long term (years 11-20) have been prioritized and grouped together. The grouping of projects is necessary to provide the needed flexibility for the airport to make adjustments as necessary. Therefore, the list of projects and the prioritization of the projects can and likely will change in the future due to the availability of funds and changing priorities.

The total CIP proposes approximately $98.2 million in airport development needs. It is important to note that this total has been inflated at four percent per year throughout the short-, intermediate, and long-term planning horizons to account for inflation and the rising costs of construction. Of this total, approximately $29.1 million could be eligible for state or federal funding assistance. The airport or local funding estimate for the proposed CIP is approximately $69.1 million. The airport and/or local funding estimate is largely driven by the construction costs of T-hangars, large box, and conventional hangar types. It should be clearly stated that costs associated with hangar development will likely be offset by the airport in pursuing private developers for hangar construction. Nonetheless, the CIP can serve as a road map of airport improvements to help guide the City of Gilmer, TxDOT, and the FAA.

CAPITAL IMPROVEMENT FUNDING SOURCES

There are generally four sources of funds used to finance airport capital development projects: airport revenues, revenue/general obligation bonds, federal/state/local grants, and passenger facility charges (PFCs), which are reserved for commercial service airports. Access to these sources of financing varies widely among airports, with some large airports maintaining substantial cash reserves and most small commercial service and general aviation airports often requiring subsidies from their sponsors (local and state governments) to fund operating expenses and to finance modest improvements.

Financing capital improvements at JXI will not rely solely on the financial resources of the City of Gilmer. Capital improvement funding is available through various grant-in-aid programs on the federal and state levels. While more federal funding could be available during some years, the CIP for this study was developed with project phasing to appropriately space projects. The following discussion outlines key sources of funding potentially available for capital improvements at the airport.

FEDERAL GRANTS

Through federal legislation over the years, various grant-in-aid programs have been established to develop and maintain a system of public-use airports across the United States. The purpose of this system and its federally based funding is to maintain national defense and to promote interstate commerce. Recent legislation affecting federal funding was enacted on February 17, 2012 and was titled, the *FAA Modernization and Reform Act of 2012*. The law authorized FAA appropriations (AIP) at $3.35 billion for fiscal years 2012 through 2015. In 2016, Congress passed legislation (H.R. 636, *FAA Extension, Safety, and Security Act of 2016*) amending the law to expire on September 30, 2017. Subsequently, Congress passed a bill (H.R. 3823, *Disaster Tax Relief and Airport and Airway Extension Act of 2017*) authorizing appropriations to the FAA through March 31, 2018, and the *Consolidated Appropriations Act, 2018*, extended FAA's funding and authority through September 30, 2018. In October 2018, Congress passed legislation entitled, *FAA Reauthorization Act of 2018*, which will fund the FAA's AIP at $3.35 billion annually until 2023.

Several projects identified in the CIP are eligible for FAA funding through the AIP, which provides entitlement funds to airports based, in part, on their annual enplaned passengers and pounds of landed cargo weight. Additional AIP funds, designated as discretionary, may also be used for eligible projects based on the FAA's national priority system. Although the AIP has been reauthorized several times and the funding formulas have been periodically revised to reflect changing national priorities, the program has remained essentially the same. Public-use airports that serve civil aviation, like JXI, may receive AIP funding for eligible projects, as described in FAA's *Airport Improvement Program Handbook.* The airport must fund the remaining project costs using a combination of other funding sources, as discussed further below.

Eligible airports, which include those in the *National Plan of Integrated Airport Systems* (NPIAS), such as JXI, can apply for airport improvement grants. **Table PP** presents the approximate distribution of the AIP funds as described in FAA Order 5100.38D, Change 1, *Airport Improvement Program Handbook*, issued February 26, 2019. Currently, the airport is eligible to apply for grants which may be funded through several categories.

Funding for AIP-eligible projects is undertaken through a cost-sharing arrangement in which the FAA share varies by airport size and is generally 75 percent for large and medium hub airports and 90 percent for all other airports. As a Local General Aviation Airport, JXI is eligible for AIP funding for up to 90 percent of AIP-eligible projects. In exchange for this level of funding, the airport sponsor is required to meet various grant assurances, including maintaining the improvement for its useful life, usually 20 years.

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

TABLE PP
Federal AIP Funding Distribution

Funding Category	Percent of Total	Funds*
Apportionment/Entitlement		
Passenger Entitlements	27.01%	$904,840,000
Cargo Entitlements	3.50%	$117,250,000
Alaska Supplemental	0.67%	$22,450,000
Nonprimary Entitlements	12.01%	$402,340,000
State Apportionment	7.99%	$267,670,000
Carryover	22.85%	$765,480,000
Small Airport Fund		
Small Hubs	2.33%	$78,060,000
Nonhubs	4.67%	$156,450,000
Nonprimary (GA and Reliever)	9.33%	$312,560,000
Discretionary		
Capacity/Safety/Security/Noise	4.36%	$146,060,000
Pure Discretionary	1.45%	$48,580,000
Set Asides		
Noise and Environmental	3.37%	$112,900,000
Military Airports Program	0.39%	$13,070,000
Reliever	0.06%	$2,010,000
Totals	100.00%	$3,350,000,000

* FAA *Modernization and Reform Act of 2018*
AIP: Airport Improvement Program
Source: FAA Order 5100.38D, Change 1, Airport Improvement Program Handbook

Apportionment (Entitlement) Funds

AIP provides funding for eligible projects at airports through an apportionment (entitlement) program. Primary commercial service airports receive a guaranteed minimum level of federal assistance each year, based on their enplaned passenger levels and Congressional appropriation levels. A primary airport is defined as any commercial service airport enplaning at least 10,000 passengers annually. If the threshold is met, the airport receives $1 million annually in entitlement funds. Other entitlement funds are distributed to cargo service airports, states and insular areas (state apportionment), and Alaska airports.

Non-primary airports included in the NPIAS, such as JXI, can receive up to $150,000 each year in non-primary entitlement (NPE) funds. These funds can be carried over and combined for up to four years, thereby allowing for completion of a more expensive project.

States also receive a direct apportionment based on a federal formula that takes into account area and population. For the State of Texas, TxDOT distributes these funds for projects at various airports throughout the state.

Small Airport Fund

If a large or medium hub commercial service airport chooses to institute a passenger facility charge (PFC), which is a fee of up to $4.50 on each airline ticket for funding of capital improvement projects, then their apportionment is reduced. A portion of the reduced apportionment goes to the small airport fund. The small airport fund is reserved for small-hub primary commercial service airports, nonhub commercial service airports, reliever, and general aviation airports. As a Local General Aviation Airport, JXI is eligible for funds from this source.

Discretionary Funds

In a number of cases, airports face major projects that will require funds in excess of the airports' annual entitlements. Thus, additional funds from discretionary apportionments under AIP become desirable. The primary feature about discretionary funds is that they are distributed on a priority basis. The priorities are established by the FAA, utilizing a priority code system. Under this system, projects are ranked by their purpose. Projects ensuring airport safety and security are ranked as the most important priorities, followed by maintaining current infrastructure development, mitigating noise and other environmental impacts, meeting standards, and increasing system capacity.

It is important to note that competition for discretionary funding is not limited to airports in the State of Texas or those within the FAA Southwest Region. The funds are distributed to all airports in the country and, as such, are more difficult to obtain. High priority projects will often fare favorably, while lower priority projects often times will not receive discretionary grants.

Set-Aside Funds

Portions of AIP funds are set-asides designed to achieve specific funding minimums for noise compatibility planning and implementation, select former military airfields (Military Airports Program), and select reliever airports. As a Local General Aviation Airport, JXI is not eligible for this funding category.

FAA Facilities and Equipment (F&E) Program

The Airway Facilities Division of the FAA administers the Facilities and Equipment (F&E) Program. This program provides funding for the installation and maintenance of various navigational aids and equipment of the national airspace system. Under the F&E program, funding is provided for FAA airport traffic control towers (ATCTs), en route navigational aids, on-airport navigational aids, and approach lighting systems.

While F&E still installs and maintains some navigational aids, on-airport facilities at general aviation airports have not been a priority. Therefore, airports often request funding assistance for navigational aids through AIP and then maintain the equipment on their own[17].

[17] Guidance on the eligibility of a project for federal AIP grant funding can be found in FAA Order 5100.38D, *Airport Improvement Program Handbook*, which can be accessed at: http://www.faa.gov/airports/aip/aip_handbook/media/AIP-Handbook-Order-5100-38D

STATE FUNDING PROGRAMS

The State of Texas participates in the federal State Block Grant Program. Under this program, the FAA annually distributes general aviation state apportionment and discretionary funds to TxDOT, which, in turn, distributes grants to airports within the state. In compliance with TxDOT's legislative mandate that it "apply for, receive, and disburse" federal funds for general aviation airports, TxDOT acts as the agent of the local airport sponsor. Although these grants are distributed by TxDOT, they contain all federal obligations.

The State of Texas also distributes funding to general aviation airports from the Highway Trust Fund as the Texas Aviation Facilities Development Program. These funds are appropriated each year by the state legislature. Once distributed, these grants contain state obligations only.

The establishment of a CIP for the state entails first identifying the need, then establishing a ranking or priority system. Identifying all state airport project needs allows TxDOT to establish a biennial program and budget for development costs. The most currently approved TxDOT CIP, *Aviation Capital Improvement Program 2020-2022*, assumed that approximately $19 million in annual federal AIP grants, plus $24 million earmarked for non-primary entitlements, $10 million in annual federal discretionary funding, and $16 million in state funds, would be available.

The TxDOT biennial program sets a project priority system established by the Texas Transportation Commission in order to make the best use of limited state and federal airport development funds. **Table QQ** presents the priority objectives and their associated description in order of importance.

TABLE QQ
TxDOT Project Priorities

Priority Objective	Description
Safety	Projects needed to make the facility safe for aircraft operations.
Preservation	Projects to preserve the functional or structural integrity of the airport.
Standards	Improvements required to bring the airport up to design standards for current user aircraft.
Upgrade	Improvements required to allow the airport to accommodate larger aircraft or longer stage lengths.
Capacity	Expansion required to accommodate more aircraft or higher activity levels.
New Access	A new airport providing new air access to a previously unserved area.
New Capacity	A new airport needed to add capacity or relieve congestion at other area airports.

Source: TxDOT *Capital Improvement Program 2020-2022*

Each project for the airport must be identified and programmed into the state CIP and compete with other airport projects in the state for federal and state funds. In Texas, airport development projects that meet TxDOT's discretionary funds' eligibility requirements can receive 90 percent funding from the AIP State Block Grant Program. Eligible projects include airfield and apron facilities. Historically, revenue-generating improvements, such as fuel facilities, utilities, and hangars, have not been eligible for AIP funding. However, FAA funding legislation has historically provided an allowance of NPE funds to be utilized for hangar or fuel farm construction if all other airfield needs have been addressed.

The availability of grant funds can fluctuate from year to year. Typically, an airport can expect a grant to cover several projects in one grant-cycle. The next grant opportunity may not arise for a couple of years thereafter. This cycle occurs as TxDOT must administer grants for more than 300 airports and has relatively limited resources. As a result, local budgeting for future capital improvements should consider sporadic grant availabilities.

Routine Airport Maintenance Program (RAMP)

TxDOT has established the RAMP to help general aviation airports maintain and, in some instances, construct new facilities. The program was initially designed to help airports maintain airside and landside pavements but has since been expanded to include construction of new facilities. RAMP is an annual funding source in which TxDOT will provide a 50 percent funding match for projects up to $100,000. **Table RR** outlines the projects that are eligible under RAMP. It should be noted that several of the projects listed in the airport's proposed CIP are also eligible for RAMP funding.

TABLE RR Eligible Work Items Routine Airport Maintenance Program
AIRSIDE MAINTENANCE
Pavement crack seal
Pavement slurry seal/Fog seal/Rejuvenator
Pavement markings
Pavement failure repairs
Drainage maintenance
Sweeping
Herbicide application
Replacement bulbs/lamps for airside lights and approach aids
Repair/maintenance of beacon, lighting, and approach aids
AWOS part replacement
LANDSIDE MAINTENANCE (after airside has been addressed)
Repair/maintenance of vehicle parking
Hangar/terminal painting and repairs - airport-owned facilities only
Security camera systems
Game-proof or security fencing and gates
Access roads for AWOS installations
Navigational aids purchase and installation
AWOS NADIN Interface charges
Airport entrance signs and landscaping
Repair of fuel systems - airport-owned
Storm Water Pollution Prevention Plans and Spill Prevention Control & Countermeasure Plans
CAPITAL IMPROVEMENT PROJECTS
New public vehicle parking areas
New entrance roads and hangar access roads
Aircraft wash racks
Aircraft parking aprons
Small general aviation terminal buildings
Drainage improvements
Extension of runway lighting systems
Beacon/tower replacements
Water wells, sewer lines, and septic systems
Preparation of FAA Form 7460-1 for RAMP projects
Source: TxDOT

Other State Airport Programs

TxDOT also provides a funding mechanism for terminal building and ATCT improvements. TxDOT has funded terminal building construction on a 50/50 basis, up to a $1.0 million total project cost. It should be noted that TxDOT has recently considered upgrading the total cost allowance on a case-by-case basis.

TxDOT also funds the construction of up to two ATCTs statewide each year. TxDOT has improved the program so that ATCT funding could be provided on a 90/10 basis, up to a total construction cost of $1.67 million.

LOCAL FUNDING

The balance of project costs, after consideration has been given to grants, must be funded through local resources. A goal for any airport is to generate enough revenue to cover all operating and capital expenditures, if possible. There are several local financing options to consider when funding future development at airports, including airport revenues, issuance of a variety of bond types, leasehold financing, implementing a customer facility charge (CFC), pursuing non-aviation development potential, and collecting from special events. These strategies could be used to fund the local matching share or complete a project if grant funding cannot be arranged. Below is a brief description of the most common local funding options.

Airport Revenues

An airport's daily operations are conducted through the collection of various rates and charges. These airport revenues are generated specifically by airport operations. There are restrictions on the use of revenues collected by the airport. All receipts, excluding bond proceeds or related grants and interest, are irrevocably pledged to the punctual payment of operating and maintenance expenses, payment of debt service for as long as bonds remain outstanding, or for additions or improvements to airport facilities.

All airports should establish standard basis rates for various leases. All lease rates should be set to adjust to a standard index, such as the consumer price index (CPI), to assure that fair and equitable rates continue to be charged into the future. Many factors will impact what the standard lease rate should be for a particular facility or ground parcel. For example, ground leases for aviation-related facilities should have a different lease rate than for non-aviation leases. When airports own hangars, a separate facility lease rate should be charged. The lease rate for any individual parcel or hangar can vary due to availability of utilities, condition, location, and other factors. Nonetheless, standard lease rates should fall within an acceptable range.

Bonding

Bonding is a common method to finance large capital projects at airports. A bond is an instrument of indebtedness of the bond issuer to the bond holders, thus a bond is a form of loan or IOU. While bond terms are negotiable, typically the bond issuer is obligated to pay the bond holder interest at regular intervals and/or repay the principal at a later date.

Leasehold/Third Party Financing

Leasehold or third-party financing refers to a developer or tenant financing improvements under a long-term ground lease. The advantage of this arrangement is that it relieves the airport of the responsibility of having to raise capital funds for the improvement. As an example, an FBO might consider constructing hangars and charging fair market lease rates, while paying the airport for a ground lease. A fuel farm can be undertaken in the same manner with the developer of the facility paying the airport a fuel flowage fee.

Many airports use third party funding when the planned improvements will primarily be used by a private business or other organization. Such projects are not ordinarily eligible for federal funding. Projects of this kind typically include hangars, fixed based operator facilities, fuel storage, exclusive aircraft parking aprons, industrial aviation use facilities, non-aviation office/commercial/industrial developments, and other similar projects. Private development proposals are considered on a case-by-case basis. Often, airport funds for infrastructure, preliminary site work, and site access are required to facilitate privately developed projects on airport property. The CIP anticipates third party funding of approximately $65.9 million for several hangar construction projects. In addition, lease revenue generated from third party funded options is a potential revenue source.

Customer Facility Charge (CFC)

A CFC is the imposition of an additional fee charged to customers for the use of certain facilities. The most common example is when an airport constructs a consolidated rental car facility and imposes a fee for each rental car contract. That fee is then used by the airport to pay down the debt incurred from building the facility.

Non-Aviation Development

In addition to generating revenue from traditional aviation sources, airports with excess land can permit compatible non-aviation development. Generally, an airport will extend a long-term lease for land not anticipated to be needed for aviation purposes in the future. The developer then pays the monthly lease rate and constructs and uses the compatible facility. Certain areas at JXI are available for non-aviation or mixed-use development. It should be noted that each individual proposed non-aviation development must be reviewed and approved by the FAA and TxDOT.

Special Events

Another common revenue-generating option is permitted use of airport property for temporary or single events. Airports can also permit portions of their facility to be utilized for non-aviation special events, such as car shows or video production of commercials. This type of revenue generation must be approved by the FAA.

FUNDING AIRPORT OPERATIONS

The airport is operated by the City of Gilmer through the collection of various rates and charges from general aviation revenue sources. These revenues are generated specifically by airport operations. There are, however, restrictions on the use of revenues collected by the airport. All receipts, excluding bond proceeds or related grants and interest, are irrevocably pledged to the punctual payment of operating and maintenance expenses, payment of debt service for as long as bonds remain outstanding, or to additions or improvements to airport facilities.

Table SS presents historical operating revenues and expenses for the airport from fiscal year (FY) 2014 to FY 2018. T-Hangar Rent and Land Leases are the largest revenue centers for the airport aside from grant revenue.

In general, operations expenses constitute the largest expense for the airport, which consists primarily of utilities, building and grounds, contractual services, insurance, and runways and aprons.

The operation of the airport generates revenues, which are secured by federal grant assurances, to be utilized only on the airport. While these revenues generated are significant, they are oftentimes not enough to fund both airport operating expenditures and capital improvement requirements. Most general aviation airports in the U.S. do not generate enough revenues to cover operating expenses. According to records, JXI has been fortunate enough to cover its expenses with operating revenues in recent years. An operating profit, however, should not be taken for granted. All potential revenue sources, including community tax or bonding, should be considered to support future capital expenditures, if necessary.

To ensure the airport maximizes revenue potential in the future, JXI should periodically review aviation services rates and charges (i.e., ground lease rates, rental rates, etc.) at other airports to be sure that rates and charges at JXI are competitive and similar to aviation services at other airports. This can generate more opportunities for the City to establish other means of revenue collection or future rates and charges. Additionally, all new leases at the airport should have inflation clauses allowing for periodic rate increases in line with inflationary factors.

TABLE SS
Financial Information
Fox Stephens Field – Gilmer Municipal Airport

	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Revenues					
T-Hangar Rents	$64,115	$61,480	$70,850	$68,930	$64,770
Land Lease Rents	$3,320	$3,461	$3,461	$3,461	$3,711
Fuel Lease	$500	-	-	-	-
Aviation Grants	$249	$141,668	$595,602	$67,500	-
RAMP Grants	$5,898	$6,420	$4,901	$8,563	$11,000
Interest Income	$88	$249	$74	$226	$564
Other Income	$25	-	$148	$450	$6,033
Total Revenues	**$74,195**	**$213,279**	**$675,036**	**$149,130**	**$86,078**
Expenses					
Supplies and Materials	$187	$143	$116	$21	$22
Telephone	$1,323	$1,334	$1,060	$1,075	$1,078
Training and Travel	$710	$963	$482	$209	$1,023
Advertising and Printing	$76	-	-	-	-
Liability Insurance	$2,655	$3,317	$3,317	$3,317	$3,317
Utilities	$9,241	$9,757	$9,041	$9,180	$9,900
Contractual Services	$3,962	$6,080	$6,334	$5,669	$3,360
Building and Grounds	$2,562	$463	$816	$2,785	$5,020
Runways and Aprons	$3,370	$268	-	$5,923	$108
Other Maintenance	$2,167	$2,167	$2,167	$2,250	$2,167
Signal and Signs	-	-	$1,017	$58	$4,804
Master Plan	-	-	-	-	$19,650
Land Acquisition	-	-	-	$122	-
Total Expenses	**$26,253**	**$24,492**	**$24,350**	**$30,609**	**$50,449**
Net Revenue	**$47,942**	**$188,786**	**$650,686**	**$118,521**	**$35,630**

Source: City of Gilmer Financial Records

AIRPORT RATES AND CHARGES

The FAA places several stipulations on rates and charges establishment and collection; however, two primary considerations need to be addressed. First, the rates and charges must be fair, equally applied, and resemble fair market value. Second, the rates and charges collected must be returned to and used only by and/or for the airport. In other words, the revenues generated by airport operations cannot be diverted to the general use of the City of Gilmer. The FAA requires funds to be used at airports, as these funds are many times needed to either support the day-to-day operational costs or offset capital improvement costs.

The following provides several activities that enhance revenue production for an airport, some of which are currently being practiced at JXI.

Comparable Airport Rates and Charges

As a point of comparison, **Table TT** presents published rates and charges imposed by other Texas airports offering general aviation services. This information can serve as a barometer to which the City of Gilmer can measure JXI's rates and fees to ensure market rates are being charged.

TABLE TT
Comparable Airport Statistics – General Aviation

			Hangars		Fuel Price/Gallon		
Airport	2018 Operations	Tie-Down	Size	Monthly Rent	Type	100LL	Jet A
Waco Regional Airport Waco, TX	43,295	$10.00 $20.00 $50.00	T-hangar #1 T-hangar #11 Executive T-hangars all others Executive T-hangars #7, 13, 16	$125.00 $135.00 $160.00 $200.00	Texo Aero FS Jet Center FS	$4.65 $4.25	$3.85 $3.25
Terrell Municipal Airport Terrell, TX	33,650	$5.00 NC with Fuel	T-hangars 1,000 sq. ft. 44' door opening with bi-fold doors City Hangar @ 6,000 sq. ft.	 $150.00 $290-$420 $1,000.00	FS	$3.99	$3.95
Granbury Regional Airport	33,200	$5.00 $10.00 $25.00	T-hangars New enclosed hangars New enclosed end hangars Older city hangars Open T-hangars	 $285.00 $325.00 $225.00 $215.00	SS FS	$3.99 N/A	N/A $3.50
Cleburne Regional Airport Cleburne, TX	33,427	NC	T-hangars – small T-hangars – large	$200.00 $250.00	SS FS	$3.65 N/A	$3.50 $3.70
Mid-way Regional Airport Midlothian, TX	49,700	$50.00	T-hangar 39 x 33 47 x 33 45 x 39 Box hangar – 3,111 sq. ft. Box hangar – 4,620 sq. ft. powered doors Box hangar – 4,225 sq. ft. power doors & sprinkler	 $255.00 $300.00 $388.00 $774.00 $900.00 $1,545.00	SS FS	$4.59 $4.99	N/A $4.66
Scholes International Airport Galveston, TX	29,839	NC	T-hangars Unit 18 40.5 x 32.5 Unit 28 42 x 34	 $330.00 $355.00	SS FS	$5.59 $5.89	$5.49 $5.79
La Porte Municipal Airport La Porte, TX	29,728	$40.00	T-hangar	$300.00	Harvey & Rhin Aviation SS FS Tri-Star Aviation FS	 $4.35 $4.85 $4.90	 N/A N/A $3.90
Midland Airpark Midland, TX	41,010	NC	T-hangar 1,127 sq. ft. 1,312 sq. ft.	 $300.00 $350.00	FS	$4.98	$5.50
Curtis Field Brady, TX	13,000	$50.00	Single Engine Multi-Engine Above Cabin Class Twins	$70.00 $150.00 $400.00	FS	$4.25	$3.87
Brownwood Regional Airport Brownwood, TX	10,100	$25.00	Hangar G (executive) Hangar G (large) Hangar D Hangar A, F, G (small) Hangar C – Twin Plane Hangar C – Single Engine Plane Hangar E T-shed	$300.00 $200.00 $180.00 $140.00 $140.00 $120.00 $110.00 $70.00	SS FS	$3.75 $4.25	$3.76 $3.96
Burnet Municipal Airport Burnet, TX	21,000	$35.00	T-hangar Large T-hangar Sun Shelters	$250.00 $350.00 $100.00	FS	$4.20	$4.63
Smithville Crawford Municipal Airport Smithville, TX	16,800	$25.00	Single hangar Twin hangar	$140.00 $160.00	SS	$4.30	N/A
Gillespie County Airport Fredericksburg, TX	14,808	NC	T-hangar	$200.00	SS FS	$4.65 N/A	$4.51 $4.75
Lockhart Municipal Airport Lockhart, TX	15,600	NC	T-hangar Clear 45 x 41 Corner Tee 42 x 30	$250.00 $350.00 $275.00	SS	$4.54	N/A
Llano Municipal Airport Llano, TX	10,024	$5.00	T-hangar Units 2-9, 11-12 Unit 13 Units 1, 15-22 Units 14 and 23 (single occupancy) Units 14 and 23 (double occupancy) Box Hangar 42 x 34 Hangar 50 x 34 Hangar 75 x 75	 $95.00 $110.00 $160.00 $215.00 $300.00 $250.00 $550.00 $1,000.00	SS FS	$3.40 N/A	N/A $3.70

Sources: FAA *Terminal Area Forecast* January 2019, www.airnav.com, and airport websites
Legend: SS = self-serve, FS = full serve, NC = no charge, N/A = not available, sq. ft. = square feet

Aircraft Parking/Tiedowns

Aircraft parking fees, also referred to as tiedown fees, are typically assessed to those aircraft utilizing a portion of an aircraft parking area that is owned by the airport. These fees are most generally assessed on a daily or monthly basis, depending upon the specific activity of a particular aircraft.

Aircraft parking fees can be established in several different ways. Typically, airports assess aircraft parking fees in accordance with an established schedule in which an aircraft within a designated weight and/or size pays a similar fee (i.e., small aircraft, single engine aircraft). Aircraft parking fees may also be charged according to a “cents per 1,000 pounds” basis in which larger aircraft with increased weights would obviously pay more for utilizing the aircraft parking apron. There are also instances in which aircraft parking fees are not assessed on an airport.

An airport sponsor may also include in a lease agreement with an aviation-related commercial operator at the airport to collect aircraft parking fees on portions of an aircraft parking apron in which the airport does not own or is leasing to a commercial operator, such as a SASO. As a result, the airport could directly collect parking fees from an aircraft utilizing this space or allow the commercial operator to collect the parking fee, in which the agreement may allow the commercial operator to retain a portion of the parking fee as an administrative or service fee.

As previously discussed, aircraft parking fees can be assessed on a daily or monthly basis. Daily aircraft parking fees are typically assessed to transient aircraft utilizing the airport on a short-term basis, while monthly fees are charged to aircraft that utilize a particular parking area for the permanent storage of their aircraft. Monthly aircraft parking fees are often assessed at airports that contain a waiting list for aircraft hangar storage space. It is also common practice at many airports to waive a daily aircraft parking fee in the event the aircraft purchases fuel prior to departing the airport.

Previous rates and charges analysis conducted by the consultant outside this study, as well as information provided in **Table TT**, indicate that daily aircraft parking fees can vary from $0 to $50 depending on the type of aircraft, and monthly aircraft parking fees can range between $20 to $230 per month depending on the type and size of the aircraft. At present, JXI does not charge a daily tiedown fee or have the demand for aircraft to tiedown on a monthly basis. The airport should consider establishing daily and monthly tiedown fees for single engine aircraft of $10 and $50, respectively, and $15 and $75 for multi-engine aircraft, at a minimum.

Aircraft Storage Hangars

There are several types of aircraft storage hangars that can accommodate aircraft on an airport. In order to establish hangar fees, an airport typically factors in such qualities as hangar size, location, and utilities. Aircraft hangar fees are most often charged on a monthly basis.

Common aircraft storage hangars are typically categorized as shade hangars, T-hangars, and conventional hangars. Shade hangars consist of tiedown spaces with a protective roof covering. T-hangars provide for separate, single-aircraft storage areas. Conventional hangars provide a larger enclosed space that can accommodate larger multi-engine piston or turbine aircraft and/or multiple aircraft storage. Conventional hangars can also be utilized by aviation-related commercial operators for their business activities on an airport.

Location can also play a role in determining hangar rates. Aircraft storage hangars with direct access to improved taxiways/taxilanes and adjacent to aviation services being offered at an airport can oftentimes be more expensive to rent. In addition, the type of utility infrastructure being offered to the hangar can also help determine storage fees. Smaller aircraft storage hangars, such as a T-hangar or small box hangar, can either be granted access through a manual sliding door or electric door. It is common for hangars that provide electric doors to have higher rental fees, as the cost associated with constructing these hangars would exceed the cost associated with simpler structures.

At some airports, hangar facilities are constructed by the airport sponsor, while at other airports, hangars are built by private entities. In some cases, airports have both public and private hangar facilities available. Hangars can be expensive to construct and offer minimal return on investment in the short-term. In order to amortize the cost of constructing hangars, lease rates should be developed at a minimum to recover development and finance costs.

T-hangars often range from approximately $100 to $400 per month depending on several factors previously listed. Larger conventional-style hangars can be leased per aircraft space or for the entire hangar. Monthly rates similar to those for individual T-hangar units often apply to leased aircraft space in a conventional hangar.

At JXI, the City charges a lease/rental rate of $135 per month or $1,500 annually on all airport-owned hangars. On average, the T-hangar rental rate presented in **Table TT** is approximately $220 per month. Based upon this analysis, the City of Gilmer should consider increasing the hangar rental rate to approximately $150 - $220 per month depending upon the size of the hangar facility and amenities offered. However, a rate change such as this should be well thought out and carefully orchestrated as local market conditions will prevail. The airport could potentially lose tenants if hangar rental rates are increased too drastically. Thus, a balance must be struck between what is profitable for the airport and what the local market can support.

Ground Rental/Lease

Ground rentals can be applied to aviation and non-aviation development on an airport. Also known as a land lease, a ground lease can be structured to meet the particular needs of an airport operator in terms of location, terrain features, amount of land needed, and type of facility infrastructure included.

One of the single most valuable assets available to an airport is the leasable land with access to the runway/taxiway system. For aviation-related businesses, it is critical that they be located on an airport. Airport property is available for long-term lease but, in most cases, it cannot be sold. At the expiration of the lease and any extensions, the improvements on the leased land revert back to the airport sponsor. In order for this arrangement to make financial sense, most ground leases are at least 20 years in length and include extension opportunities. Those who lease land on an airport are typically interested in constructing a hangar for their own private use, for sub-lease, or for operation of an airport business. Therefore, the long-term lease arrangement is important in order to obtain capital funding for the construction of a hangar or other type of facility. It should also be noted that ground leases should include the opportunity to periodically review the lease and adjust the rate according to the CPI. Typical lease agreements range from 20 to 30 years with options for extensions.

Ground leases are typically established on a yearly fee schedule based upon the amount of square feet leased. The amount charged can vary greatly depending on the level of improvements to the land. For example, undeveloped land with readily accessible utilities and taxiway access can generate more revenue than unimproved property. Previous surveys at other airports across the country conducted by the consultant have determined ground lease rates to range from $0.08 per square foot per year to approximately $1.00 per square foot per year. Typically, airports in larger metropolitan areas set land lease rates at approximately $0.25 cents per square foot per year. The current land lease rate at JXI is set at $0.09 cents per square foot per year. At present, the City only maintains ground leases and does not provide leases for developed property. Based upon results from surveys outside of this study, the airport should consider increasing lease rates to approximately $0.12-$0.15 cents per square foot per year.

Some airports will have other leasable space available. For example, airports with a terminal building may have office or counter space available for aviation and non-aviation related businesses. Some example businesses could include SASOs, aircraft sales, flight instruction, aircraft insurance, and a restaurant.

Under certain circumstances, an airport sponsor may utilize portions of the airport for non-aeronautical purposes, such as commercial and/or industrial development if certain areas are not needed to satisfy aviation demand or are not accessible to aviation activity. Prior to an airport pursuing a ground lease with a commercial operator for non-aeronautical purposes, the sponsor must formally request TxDOT and the FAA release the land in question from its federal obligations.

Fuel Sales and Flowage

Fuel sales are typically managed at an airport in one of two ways: the airport sponsor acts as the fuel distributor or fueling operations are sub-contracted to an FBO. If the airport sponsor acts as the fuel distributor, then the airport would receive revenues equal to the difference between wholesale and retail prices. Of course, there are added expenses, such as employing people to fuel the aircraft.

When these services are undertaken by an FBO, which is the case at JXI, the airport sponsor typically receives a fuel flowage fee per gallon of fuel. By way of agreement with the airport sponsor, FBOs would be required to pay a fuel flowage fee for each gallon of fuel sold or received into inventory. In the case of self-fueling entities, a fuel flowage fee could apply for each gallon of fuel dispensed. Fuel flowage fees are typically paid on a "cents per gallon" basis. In some instances, fuel flowage fees will be established based upon the type of aviation activity. For example, commercial airline service operators may be assessed a higher fuel flowage fee than general aviation aircraft, or no fuel flowage fee at all if being assessed a landing fee (to be discussed in the next section). Fuel flowage fees can also be distinguished by type of fuel (100LL or Jet A). At JXI, the City does not currently collect a fuel flowage fee. Previous surveys conducted by the consultant have determined fuel flowage rates to range from $0.10 per gallon to approximately $0.20 per gallon. As such, JXI should consider imposing a fuel flowage fee of $0.10 per gallon at minimum to begin capitalizing on fuel flowage revenue.

The owner of the fuel farm can also be the airport sponsor or an FBO operator. If the airport sponsor owns the fuel farm and the FBO operator undertakes the fueling activities, then a separate fuel storage fee can be charged, or a higher fuel flowage fee may be assessed.

Landing Fees

Landing fees typically only apply to larger aircraft, such as those over 60,000 pounds, for example, and only those involved in commercial airline or air taxi operations. Landing fees are not common on general aviation airports and are generally discouraged due to collection difficulty. Moreover, landing fees are somewhat discouraging to aircraft operators, who will many times elect to utilize a nearby airport that does not collect a landing fee.

When landing fees are assessed, they are most commonly based upon aircraft weight and a "cents per 1,000 pounds" approach. In addition, some airport sponsors may use a flat fee approach wherein aircraft within a specified weight range are charged the same fee.

Landing fees may be collected directly by the airport sponsor, or an airport may have an agreement with a commercial operator to collect landing fees. Similar to what was discussed with aircraft parking fees, under this scenario, the agreement may allow the commercial operator, such as an FBO, to retain a portion of the landing fee as an administrative or service fee.

Similar to most general aviation airports, a landing fee has not been imposed at JXI. It is likely not in the best interest of the City to do so as it could act as deterrent for some operators.

IMPLEMENTATION OF THE PLAN

To implement the findings of this study, it is key to recognize that planning is a continuous process and does not end with approval of this document. The airport should implement measures that allow them to track various demand indicators, such as based aircraft, hangar demand, and operations. The issues that this study is based on will remain valid for a number of years. The primary goal is for JXI to best serve the air transportation needs of the region, while striving toward greater economic self-sufficiency.

The actual need for facilities is best established by activity levels rather than a specified date. For example, projections have been made as to when additional hangars and apron space may be needed at the airport. In reality, the timeframe in which the development is needed may be substantially different. Actual demand may be slower to develop than expected. On the other hand, high levels of demand may establish the need to accelerate development. Although every effort has been made in this planning process to conservatively estimate when facility development may be needed, aviation demand will dictate timing of facility improvements.

In addition, numerous projects have been identified that will not depend on increased demand. These include enhancing airfield geometry and addressing existing safety area incompatibilities.

The value of this study is keeping the issues and objectives at the forefront of the minds of managers and decision-makers. In addition to adjustments in aviation demand, when to undertake the improvements recommended in this study will impact how long the plan remains valid. The format of this plan reduces the need for formal and costly updates by simply adjusting the timing of project implementation. Updating can be done by the City of Gilmer, thereby improving the plan's effectiveness.

In summary, the planning process requires the City to consistently monitor the progress of the airport in terms of aircraft operations, based aircraft, and peaking characteristics. Analysis of aircraft demand is critical to the timing and need for new airport facilities. The information obtained from continually monitoring airport activity will provide the data necessary to determine if the development schedule should be accelerated or decelerated.

GILMER MUNICIPAL AIRPORT
Fox Stephens Field

APPENDIX A

Glossary of Terms

Glossary of Terms

A

ABOVE GROUND LEVEL: The elevation of a point or surface above the ground.

ACCELERATE-STOP DISTANCE AVAILABLE (ASDA): See declared distances.

ADVISORY CIRCULAR: External publications issued by the FAA consisting of nonregulatory material providing for the recommendations relative to a policy, guidance and information relative to a specific aviation subject.

AIR CARRIER: An operator which: (1) performs at least five round trips per week between two or more points and publishes flight schedules which specify the times, days of the week, and places between which such flights are performed; or (2) transports mail by air pursuant to a current contract with the U.S. Postal Service. Certified in accordance with Federal Aviation Regulation (FAR) Parts 121 and 127.

AIRCRAFT: A transportation vehicle that is used or intended for use for flight.

AIRCRAFT APPROACH CATEGORY: A grouping of aircraft based on 1.3 times the stall speed in their landing configuration at their maximum certificated landing weight. The categories are as follows:

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

AIRCRAFT OPERATION: The landing, takeoff, or touch-and-go procedure by an aircraft on a runway at an airport.

AIRCRAFT OPERATIONS AREA (AOA): A restricted and secure area on the airport property designed to protect all aspects related to aircraft operations.

AIRCRAFT OWNERS AND PILOTS ASSOCIATION: A private organization serving the interests and needs of general aviation pilots and aircraft owners.

AIRCRAFT RESCUE AND FIRE FIGHTING: A facility located at an airport that provides emergency vehicles, extinguishing agents, and personnel responsible for minimizing the impacts of an aircraft accident or incident.

AIRFIELD: The portion of an airport which contains the facilities necessary for the operation of aircraft.

AIRLINE HUB: An airport at which an airline concentrates a significant portion of its activity and which often has a significant amount of connecting traffic.

AIRPLANE DESIGN GROUP (ADG): A grouping of aircraft based upon wingspan. The groups are as follows:

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

AIRPORT AUTHORITY: A quasi-governmental public organization responsible for setting the policies governing the management and operation of an airport or system of airports under its jurisdiction.

AIRPORT BEACON: A navigational aid located at an airport which displays a rotating light beam to identify whether an airport is lighted.

AIRPORT CAPITAL IMPROVEMENT PLAN: The planning program used by the Federal Aviation Administration to identify, prioritize, and distribute funds for airport development and the needs of the National Airspace System to meet specified national goals and objectives.

AIRPORT ELEVATION: The highest point on the runway system at an airport expressed in feet above mean sea level (MSL).

AIRPORT IMPROVEMENT PROGRAM: A program authorized by the Airport and Airway Improvement Act of 1982 that provides funding for airport planning and development.

AIRPORT LAYOUT DRAWING (ALD): The drawing of the airport showing the layout of existing and proposed airport facilities.

AIRPORT LAYOUT PLAN (ALP): A scaled drawing of the existing and planned land and facilities necessary for the operation and development of the airport.

AIRPORT LAYOUT PLAN DRAWING SET: A set of technical drawings depicting the current and future airport conditions. The individual sheets comprising the set can vary with the complexities of the airport, but the FAA-required drawings include the Airport Layout Plan (sometimes referred to as the Airport Layout Drawing (ALD), the Airport Airspace Drawing, and the Inner Portion of the Approach Surface Drawing, On-Airport Land Use Drawing, and Property Map.

AIRPORT MASTER PLAN: The planner's concept of the long-term development of an airport.

AIRPORT MOVEMENT AREA SAFETY SYSTEM: A system that provides automated alerts and warnings of potential runway incursions or other hazardous aircraft movement events.

AIRPORT OBSTRUCTION CHART: A scaled drawing depicting the Federal Aviation Regulation (FAR) Part 77 surfaces, a representation of objects that penetrate these surfaces, runway, taxiway, and ramp areas, navigational aids, buildings, roads and other detail in the vicinity of an airport.

AIRPORT REFERENCE CODE (ARC): A coding system used to relate airport design criteria to the operational (Aircraft Approach Category) to the physical characteristics (Airplane Design Group) of the airplanes intended to operate at the airport.

AIRPORT REFERENCE POINT (ARP): The latitude and longitude of the approximate center of the airport.

AIRPORT SPONSOR: The entity that is legally responsible for the management and operation of an airport, including the fulfillment of the requirements of laws and regulations related thereto.

AIRPORT SURFACE DETECTION EQUIPMENT: A radar system that provides air traffic controllers with a visual representation of the movement of aircraft and other vehicles on the ground on the airfield at an airport.

AIRPORT SURVEILLANCE RADAR: The primary radar located at an airport or in an air traffic control terminal area that receives a signal at an antenna and transmits the signal to air traffic control display equipment defining the location of aircraft in the air. The signal provides only the azimuth and range of aircraft from the location of the antenna.

AIRPORT TRAFFIC CONTROL TOWER (ATCT): A central operations facility in the terminal air traffic control system, consisting of a tower, including an associated instrument flight rule (IFR) room if radar equipped, using air/ground communications and/or radar, visual signaling and other devices to provide safe and expeditious movement of terminal air traffic.

AIR ROUTE TRAFFIC CONTROL CENTER: A facility which provides en route air traffic control service to aircraft operating on an IFR flight plan within controlled airspace over a large, multi-state region.

AIRSIDE: The portion of an airport that contains the facilities necessary for the operation of aircraft.

AIRSPACE: The volume of space above the surface of the ground that is provided for the operation of aircraft.

AIR TAXI: An air carrier certificated in accordance with FAR Part 121 and FAR Part 135 and authorized to provide, on demand, public transportation of persons and property by aircraft. Generally operates small aircraft "for hire" for specific trips.

AIR TRAFFIC CONTROL: A service operated by an appropriate organization for the purpose of providing for the safe, orderly, and expeditious flow of air traffic.

AIR ROUTE TRAFFIC CONTROL CENTER (ARTCC): A facility established to provide air traffic control service to aircraft operating on an IFR flight plan within controlled airspace and principally during the en route phase of flight.

AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER: A facility operated by the FAA which is responsible for the central flow control, the central altitude reservation system, the airport reservation position system, and the air traffic service contingency command for the air traffic control system.

AIR TRAFFIC HUB: A categorization of commercial service airports or group of commercial service airports in a metropolitan or urban area based upon the proportion of annual national enplanements existing at the airport or airports. The categories are large hub, medium hub, small hub, or non-hub. It forms the basis for the apportionment of entitlement funds.

AIR TRANSPORT ASSOCIATION OF AMERICA: An organization consisting of the principal U.S. airlines that represents the interests of the airline industry on major aviation issues before federal, state, and local government bodies. It promotes air transportation safety by coordinating industry and governmental safety programs and it serves as a focal point for industry efforts to standardize practices and enhance the efficiency of the air transportation system.

ALERT AREA: See special-use airspace.

ALTITUDE: The vertical distance measured in feet above mean sea level.

ANNUAL INSTRUMENT APPROACH (AIA): An approach to an airport with the intent to land by an aircraft in accordance with an IFR flight plan when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude.

APPROACH LIGHTING SYSTEM (ALS): An airport lighting facility which provides visual guidance to landing aircraft by radiating light beams by which the pilot aligns the aircraft with the extended centerline of the runway on his final approach and landing.

APPROACH MINIMUMS: The altitude below which an aircraft may not descend while on an IFR approach unless the pilot has the runway in sight.

APPROACH SURFACE: An imaginary obstruction limiting surface defined in FAR Part 77 which is longitudinally centered on an extended runway centerline and extends outward and upward from the primary surface at each end of a runway at a designated slope and distance based upon the type of available or planned approach by aircraft to a runway.

APRON: A specified portion of the airfield used for passenger, cargo or freight loading and unloading, aircraft parking, and the refueling, maintenance and servicing of aircraft.

AREA NAVIGATION: The air navigation procedure that provides the capability to establish and maintain a flight path on an arbitrary course that remains within the coverage area of navigational sources being used.

AUTOMATED TERMINAL INFORMATION SERVICE (ATIS): The continuous broadcast of recorded non-control information at towered airports. Information typically includes wind speed, direction, and runway in use.

AUTOMATED SURFACE OBSERVATION SYSTEM (ASOS): A reporting system that provides frequent airport ground surface weather observation data through digitized voice broadcasts and printed reports.

AUTOMATIC WEATHER OBSERVATION STATION (AWOS): Equipment used to automatically record weather conditions (i.e. cloud height, visibility, wind speed and direction, temperature, dew point, etc.)

AUTOMATIC DIRECTION FINDER (ADF): An aircraft radio navigation system which senses and indicates the direction to a non-directional radio beacon (NDB) ground transmitter.

AVIGATION EASEMENT: A contractual right or a property interest in land over which a right of unobstructed flight in the airspace is established.

AZIMUTH: Horizontal direction expressed as the angular distance between true north and the direction of a fixed point (as the observer's heading).

B

BASE LEG: A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline. See "traffic pattern."

BASED AIRCRAFT: The general aviation aircraft that use a specific airport as a home base.

BEARING: The horizontal direction to or from any point, usually measured clockwise from true north or magnetic north.

BLAST FENCE: A barrier used to divert or dissipate jet blast or propeller wash.

BLAST PAD: A prepared surface adjacent to the end of a runway for the purpose of eliminating the erosion of the ground surface by the wind forces produced by airplanes at the initiation of takeoff operations.

BUILDING RESTRICTION LINE (BRL): A line which identifies suitable building area locations on the airport.

C

CAPITAL IMPROVEMENT PLAN: The planning program used by the Federal Aviation Administration to identify, prioritize, and distribute Airport Improvement Program funds for airport development and the needs of the National Airspace System to meet specified national goals and objectives.

CARGO SERVICE AIRPORT: An airport served by aircraft providing air transportation of property only, including mail, with an annual aggregate landed weight of at least 100,000,000 pounds.

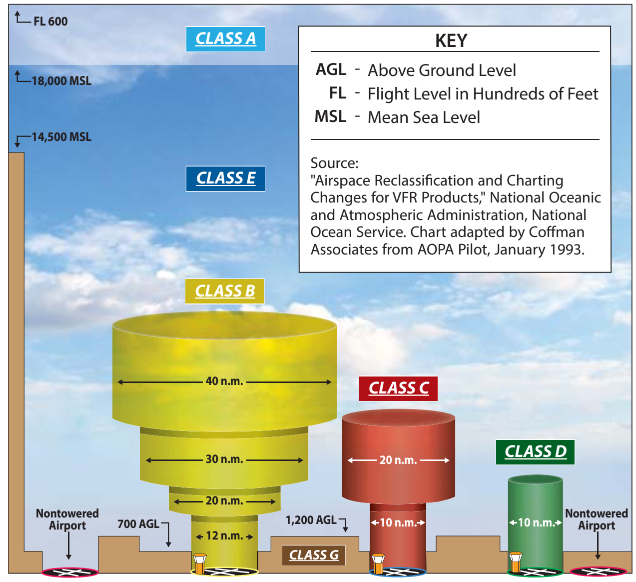
CATEGORY I: An Instrument Landing System (ILS) that provides acceptable guidance information to an aircraft from the coverage limits of the ILS to the point at which the localizer course line intersects the glide path at a decision height of 200 feet above the horizontal plane containing the runway threshold.

CATEGORY II: An ILS that provides acceptable guidance information to an aircraft from the coverage limits of the ILS to the point at which the localizer course line intersects the glide path at a decision height of 100 feet above the horizontal plane containing the runway threshold.

CATEGORY III: An ILS that provides acceptable guidance information to a pilot from the coverage limits of the ILS with no decision height specified above the horizontal plane containing the runway threshold.

CEILING: The height above the ground surface to the location of the lowest layer of clouds which is reported as either broken or overcast.

CIRCLING APPROACH: A maneuver initiated by the pilot to align the aircraft with the runway for landing when flying a predetermined circling instrument approach under IFR.



CLASS A AIRSPACE: See Controlled Airspace.

CLASS B AIRSPACE: See Controlled Airspace.

CLASS C AIRSPACE: See Controlled Airspace.

CLASS D AIRSPACE: See Controlled Airspace.

CLASS E AIRSPACE: See Controlled Airspace.

CLASS G AIRSPACE: See Controlled Airspace.

CLEAR ZONE: See Runway Protection Zone.

COMMERCIAL SERVICE AIRPORT: A public airport providing scheduled passenger service that enplanes at least 2,500 annual passengers.

COMMON TRAFFIC ADVISORY FREQUENCY: A radio frequency identified in the appropriate aeronautical chart which is designated for the purpose of transmitting airport advisory information and procedures while operating to or from an uncontrolled airport.

COMPASS LOCATOR (LOM): A low power, low/medium frequency radio-beacon installed in conjunction with the instrument landing system at one or two of the marker sites.

CONICAL SURFACE: An imaginary obstruction-limiting surface defined in FAR Part 77 that extends from the edge of the horizontal surface outward and upward at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

CONTROLLED AIRPORT: An airport that has an operating airport traffic control tower.

CONTROLLED AIRSPACE: Airspace of defined dimensions within which air traffic control services are provided to instrument flight rules (IFR) and visual flight rules (VFR) flights in accordance with the airspace classification. Controlled airspace in the United States is designated as follows:

- **CLASS A**: Generally, the airspace from 18,000 feet mean sea level (MSL) up to but not including flight level FL600. All persons must operate their aircraft under IFR.

- **CLASS B**: Generally, the airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports. The configuration of Class B airspace is unique to each airport, but typically consists of two or more layers of air space and is designed to contain all published instrument approach procedures to the airport. An air traffic control clearance is required for all aircraft to operate in the area.

- **CLASS C**: Generally, the airspace from the surface to 4,000 feet above the airport elevation (charted as MSL) surrounding those airports that have an operational control tower and radar approach control and are served by a qualifying number of IFR operations or passenger enplanements. Although individually tailored for each airport, Class C airspace typically consists of a surface area with a five nautical mile (nm) radius and an outer area with a 10 nautical mile radius that extends from 1,200 feet to 4,000 feet above the airport elevation. Two-way radio communication is required for all aircraft.

- **CLASS D**: Generally, that airspace from the surface to 2,500 feet above the air port elevation (charted as MSL) surrounding those airports that have an operational control tower. Class D airspace is individually tailored and configured to encompass published instrument approach procedure. Unless otherwise authorized, all persons must establish two-way radio communication.

- **CLASS E**: Generally, controlled airspace that is not classified as Class A, B, C, or D. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. When designated as a surface area, the airspace will be configured to contain all instrument procedures. Class E airspace encompasses all Victor Airways. Only aircraft following instrument flight rules are required to establish two-way radio communication with air traffic control.

- **CLASS G**: Generally, that airspace not classified as Class A, B, C, D, or E. Class G airspace is uncontrolled for all aircraft. Class G airspace extends from the surface to the overlying Class E airspace.

CONTROLLED FIRING AREA: See special-use airspace.

CROSSWIND: A wind that is not parallel to a runway centerline or to the intended flight path of an aircraft.

CROSSWIND COMPONENT: The component of wind that is at a right angle to the runway centerline or the intended flight path of an aircraft.

CROSSWIND LEG: A flight path at right angles to the landing runway off its upwind end. See "traffic pattern."

D

DECIBEL: A unit of noise representing a level relative to a reference of a sound pressure 20 micro newtons per square meter.

DECISION HEIGHT/DECISION ALTITUDE: The height above the end of the runway surface at which a decision must be made by a pilot during the ILS or Precision Approach Radar approach to either continue the approach or to execute a missed approach.

DECLARED DISTANCES: The distances declared available for the airplane's takeoff runway, takeoff distance, accelerate-stop distance, and landing distance requirements. The distances are:

- **TAKEOFF RUNWAY AVAILABLE (TORA):** The runway length declared available and suitable for the ground run of an airplane taking off.

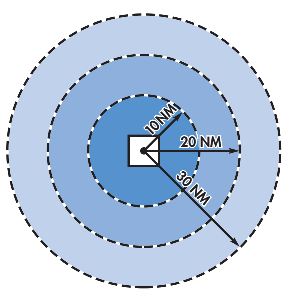
- **TAKEOFF DISTANCE AVAILABLE (TODA):** The TORA plus the length of any remaining runway and/or clear way beyond the far end of the TORA.
- **ACCELERATE-STOP DISTANCE AVAILABLE (ASDA):** The runway plus stopway length declared available for the acceleration and deceleration of an aircraft aborting a takeoff.
- **LANDING DISTANCE AVAILABLE (LDA):** The runway length declared available and suitable for landing.

DEPARTMENT OF TRANSPORTATION: The cabinet level federal government organization consisting of modal operating agencies, such as the Federal Aviation Administration, which was established to promote the coordination of federal transportation programs and to act as a focal point for research and development efforts in transportation.

DISCRETIONARY FUNDS: Federal grant funds that may be appropriated to an airport based upon designation by the Secretary of Transportation or Congress to meet a specified national priority such as enhancing capacity, safety, and security, or mitigating noise.

DISPLACED THRESHOLD: A threshold that is located at a point on the runway other than the designated beginning of the runway.

DISTANCE MEASURING EQUIPMENT (DME): Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid.



DNL: The 24-hour average sound level, in Aweighted decibels, obtained after the addition of ten decibels to sound levels for the periods between 10 p.m. and 7 a.m. as averaged over a span of one year. It is the FAA standard metric for determining the cumulative exposure of individuals to noise.

DOWNWIND LEG: A flight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg. Also see "traffic pattern."

E

EASEMENT: The legal right of one party to use a portion of the total rights in real estate owned by another party. This may include the right of passage over, on, or below the property; certain air rights above the property, including view rights; and the rights to any specified form of development or activity, as well as any other legal rights in the property that may be specified in the easement document.

ELEVATION: The vertical distance measured in feet above mean sea level.

ENPLANED PASSENGERS: The total number of revenue passengers boarding aircraft, including originating, stop-over, and transfer passengers, in scheduled and nonscheduled services.

ENPLANEMENT: The boarding of a passenger, cargo, freight, or mail on an aircraft at an airport.

ENTITLEMENT: Federal funds for which a commercial service airport may be eligible based upon its annual passenger enplanements.

ENVIRONMENTAL ASSESSMENT (EA): An environmental analysis performed pursuant to the National Environmental Policy Act to determine whether an action would significantly affect the environment and thus require a more detailed environmental impact statement.

ENVIRONMENTAL AUDIT: An assessment of the current status of a party's compliance with applicable environmental requirements of a party's environmental compliance policies, practices, and controls.

ENVIRONMENTAL IMPACT STATEMENT (EIS): A document required of federal agencies by the National Environmental Policy Act for major projects are legislative proposals affecting the environment. It is a tool for decision-making describing the positive and negative effects of a proposed action and citing alternative actions.

ESSENTIAL AIR SERVICE: A federal program which guarantees air carrier service to selected small cities by providing subsidies as needed to prevent these cities from such service.

F

FEDERAL AVIATION REGULATIONS: The general and permanent rules established by the executive departments and agencies of the Federal Government for aviation, which are published in the Federal Register. These are the aviation subset of the Code of Federal Regulations.

FEDERAL INSPECTION SERVICES: The provision of customs and immigration services including passport inspection, inspection of baggage, the collection of duties on certain imported items, and the inspections for agricultural products, illegal drugs, or other restricted items.

FINAL APPROACH: A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway. See "traffic pattern."

FINAL APPROACH AND TAKEOFF AREA (FATO). A defined area over which the final phase of the helicopter approach to a hover, or a landing is completed and from which the takeoff is initiated.

FINAL APPROACH FIX: The designated point at which the final approach segment for an aircraft landing on a runway begins for a non-precision approach.

FINDING OF NO SIGNIFICANT IMPACT (FONSI): A public document prepared by a Federal agency that presents the rationale why a proposed action will not have a significant effect on the environment and for which an environmental impact statement will not be prepared.

FIXED BASE OPERATOR (FBO): A provider of services to users of an airport. Such services include, but are not limited to, hangaring, fueling, flight training, repair, and maintenance.

FLIGHT LEVEL: A measure of altitude used by aircraft flying above 18,000 feet. Flight levels are indicated by three digits representing the pressure altitude in hundreds of feet. An airplane flying at flight level 360 is flying at a pressure altitude of 36,000 feet. This is expressed as FL 360.

FLIGHT SERVICE STATION: An operations facility in the national flight advisory system which utilizes data interchange facilities for the collection and dissemination of Notices to Airmen, weather, and administrative data and which provides pre-flight and in-flight advisory services to pilots through air and ground based communication facilities.

FRANGIBLE NAVAID: A navigational aid which retains its structural integrity and stiffness up to a designated maximum load, but on impact from a greater load, breaks, distorts, or yields in such a manner as to present the minimum hazard to aircraft.

G

GENERAL AVIATION: That portion of civil aviation which encompasses all facets of aviation except air carriers holding a certificate of convenience and necessity, and large aircraft commercial operators.

GENERAL AVIATION AIRPORT: An airport that provides air service to only general aviation.

GLIDESLOPE (GS): Provides vertical guidance for aircraft during approach and landing. The glideslope consists of the following:

1. Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS; or

2. Visual ground aids, such as VASI, which provide vertical guidance for VFR approach or for the visual portion of an instrument approach and landing.

GLOBAL POSITIONING SYSTEM (GPS): A system of 48 satellites used as reference points to enable navigators equipped with GPS receivers to determine their latitude, longitude, and altitude.

GROUND ACCESS: The transportation system on and around the airport that provides access to and from the airport by ground transportation vehicles for passengers, employees, cargo, freight, and airport services.

H

HELIPAD: A designated area for the takeoff, landing, and parking of helicopters.

HIGH INTENSITY RUNWAY LIGHTS: The highest classification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

HIGH-SPEED EXIT TAXIWAY: A long radius taxiway designed to expedite aircraft turning off the runway after landing (at speeds to 60 knots), thus reducing runway occupancy time.

HORIZONTAL SURFACE: An imaginary obstruction-limiting surface defined in FAR Part 77 that is specified as a portion of a horizontal plane surrounding a runway located 150 feet above the established airport elevation. The specific horizontal dimensions of this surface are a function of the types of approaches existing or planned for the runway.

I

INITIAL APPROACH FIX: The designated point at which the initial approach segment begins for an instrument approach to a runway.

INSTRUMENT APPROACH PROCEDURE: A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually.

INSTRUMENT FLIGHT RULES (IFR): Procedures for the conduct of flight in weather conditions below Visual Flight Rules weather minimums. The term IFR is often also used to define weather conditions and the type of flight plan under which an aircraft is operating.

INSTRUMENT LANDING SYSTEM (ILS): A precision instrument approach system which normally consists of the following electronic components and visual aids:

1. Localizer.
2. Glide Slope.
3. Outer Marker.
4. Middle Marker.
5. Approach Lights.

INSTRUMENT METEOROLOGICAL CONDITIONS: Meteorological conditions expressed in terms of specific visibility and ceiling conditions that are less than the minimums specified for visual meteorological conditions.

ITINERANT OPERATIONS: Operations by aircraft that are not based at a specified airport.

K

KNOTS: A unit of speed length used in navigation that is equivalent to the number of nautical miles traveled in one hour.

L

LANDSIDE: The portion of an airport that provides the facilities necessary for the processing of passengers, cargo, freight, and ground transportation vehicles.

LANDING DISTANCE AVAILABLE (LDA): See declared distances.

LARGE AIRPLANE: An airplane that has a maximum certified takeoff weight in excess of 12,500 pounds.

LOCAL AREA AUGMENTATION SYSTEM: A differential GPS system that provides localized measurement correction signals to the basic GPS signals to improve navigational accuracy integrity, continuity, and availability.

LOCAL OPERATIONS: Aircraft operations performed by aircraft that are based at the airport and that operate in the local traffic pattern or within sight of the airport, that are known to be departing for or arriving from flights in local practice areas within a prescribed distance from the airport, or that execute simulated instrument approaches at the airport.

LOCAL TRAFFIC: Aircraft operating in the traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from the local practice areas, or aircraft executing practice instrument approach procedures. Typically, this includes touch and-go training operations.

LOCALIZER: The component of an ILS which provides course guidance to the runway.

LOCALIZER TYPE DIRECTIONAL AID (LDA): A facility of comparable utility and accuracy to a localizer, but is not part of a complete ILS and is not aligned with the runway.

LONG RANGE NAVIGATION SYSTEM (LORAN): Long range navigation is an electronic navigational aid which determines aircraft position and speed by measuring the difference in the time of reception of synchronized pulse signals from two fixed transmitters. Loran is used for en route navigation.

LOW INTENSITY RUNWAY LIGHTS: The lowest classification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

M

MEDIUM INTENSITY RUNWAY LIGHTS: The middle classification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

MICROWAVE LANDING SYSTEM (MLS): An instrument approach and landing system that provides precision guidance in azimuth, elevation, and distance measurement.

MILITARY OPERATIONS: Aircraft operations that are performed in military aircraft.

MILITARY OPERATIONS AREA (MOA): See special-use airspace

MILITARY TRAINING ROUTE: An air route depicted on aeronautical charts for the conduct of military flight training at speeds above 250 knots.

MISSED APPROACH COURSE (MAC): The flight route to be followed if, after an instrument approach, a landing is not affected, and occurring normally:

1. When the aircraft has descended to the decision height and has not established visual contact; or
2. When directed by air traffic control to pull up or to go around again.

MOVEMENT AREA: The runways, taxiways, and other areas of an airport which are utilized for taxiing/hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At those airports with a tower, air traffic control clearance is required for entry onto the movement area.

N

NATIONAL AIRSPACE SYSTEM: The network of air traffic control facilities, air traffic control areas, and navigational facilities through the U.S.

NATIONAL PLAN OF INTEGRATED AIRPORT SYSTEMS: The national airport system plan developed by the Secretary of Transportation on a biannual basis for the development of public use airports to meet national air transportation needs.

NATIONAL TRANSPORTATION SAFETY BOARD: A federal government organization established to investigate and determine the probable cause of transportation accidents, to recommend equipment and procedures to enhance transportation safety, and to review on appeal the suspension or revocation of any certificates or licenses issued by the Secretary of Transportation.

NAUTICAL MILE: A unit of length used in navigation which is equivalent to the distance spanned by one minute of arc in latitude, that is, 1,852 meters or 6,076 feet. It is equivalent to approximately 1.15 statute mile.

NAVAID: A term used to describe any electrical or visual air navigational aids, lights, signs, and associated supporting equipment (i.e. PAPI, VASI, ILS, etc.)

NAVIGATIONAL AID: A facility used as, available for use as, or designed for use as an aid to air navigation.

NOISE CONTOUR: A continuous line on a map of the airport vicinity connecting all points of the same noise exposure level.

NON-DIRECTIONAL BEACON (NDB): A beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine his or her bearing to and from the radio beacon and home on, or track to, the station. When the radio beacon is installed in conjunction with the Instrument Landing System marker, it is normally called a Compass Locator.

NON-PRECISION APPROACH PROCEDURE: A standard instrument approach procedure in which no electronic glide slope is provided, such as VOR, TACAN, NDB, or LOC.

NOTICE TO AIRMEN: A notice containing information concerning the establishment, condition, or change in any component of or hazard in the National Airspace System, the timely knowledge of which is considered essential to personnel concerned with flight operations.

O

OBJECT FREE AREA (OFA): An area on the ground centered on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by having the area free of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes.

OBSTACLE FREE ZONE (OFZ): The airspace below 150 feet above the established airport elevation and along the runway and extended runway centerline that is required to be kept clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance for aircraft landing or taking off from the runway, and for missed approaches.

ONE-ENGINE INOPERABLE SURFACE: A surface emanating from the runway end at a slope ratio of 62.5:1. Air carrier airports are required to maintain a technical drawing of this surface depicting any object penetrations by January 1, 2010.

OPERATION: The take-off, landing, or touch-and-go procedure by an aircraft on a runway at an airport.

OUTER MARKER (OM): An ILS navigation facility in the terminal area navigation system located four to seven miles from the runway edge on the extended centerline, indicating to the pilot that he/she is passing over the facility and can begin final approach.

P

PILOT CONTROLLED LIGHTING: Runway lighting systems at an airport that are controlled by activating the microphone of a pilot on a specified radio frequency.

PRECISION APPROACH: A standard instrument approach procedure which provides runway alignment and glide slope (descent) information. It is categorized as follows:

- **CATEGORY I (CAT I)**: A precision approach which provides for approaches with a decision height of not less than 200 feet and visibility not less than 1/2 mile or Runway Visual Range (RVR) 2400 (RVR 1800) with operative touchdown zone and runway centerline lights.
- **CATEGORY II (CAT II)**: A precision approach which provides for approaches with a decision height of not less than 100 feet and visibility not less than 1200 feet RVR.
- **CATEGORY III (CAT III)**: A precision approach which provides for approaches with minima less than Category II.

PRECISION APPROACH PATH INDICATOR (PAPI): A lighting system providing visual approach slope guidance to aircraft during a landing approach. It is similar to a VASI but provides a sharper transition between the colored indicator lights.

PRECISION APPROACH RADAR: A radar facility in the terminal air traffic control system used to detect and display with a high degree of accuracy the direction, range, and elevation of an aircraft on the final approach to a runway.

PRECISION OBJECT FREE AREA (POFA): An area centered on the extended runway centerline, beginning at the runway threshold and extending behind the runway threshold that is 200 feet long by 800 feet wide. The POFA is a clearing standard which requires the POFA to be kept clear of above ground objects protruding above the runway safety area edge elevation (except for frangible NAVAIDS). The POFA applies to all new authorized instrument approach procedures with less than 3/4 mile visibility.

PRIMARY AIRPORT: A commercial service airport that enplanes at least 10,000 annual passengers.

PRIMARY SURFACE: An imaginary obstruction limiting surface defined in FAR Part 77 that is specified as a rectangular surface longitudinally centered about a runway. The specific dimensions of this surface are a function of the types of approaches existing or planned for the runway.

PROHIBITED AREA: See special-use airspace.

PVC: Poor visibility and ceiling. Used in determining Annual Service Volume. PVC conditions exist when the cloud ceiling is less than 500 feet and visibility is less than one mile.

R

RADIAL: A navigational signal generated by a Very High Frequency Omni-directional Range or VORTAC station that is measured as an azimuth from the station.

REGRESSION ANALYSIS: A statistical technique that seeks to identify and quantify the relationships between factors associated with a forecast.

REMOTE COMMUNICATIONS OUTLET (RCO): An unstaffed transmitter receiver/facility remotely controlled by air traffic personnel. RCOs serve flight service stations (FSSs). RCOs were established to provide ground-to-ground communications between air traffic control specialists and pilots at satellite airports for delivering en route clearances, issuing departure authorizations, and acknowledging instrument flight rules cancellations or departure/ landing times.

REMOTE TRANSMITTER/RECEIVER (RTR): See remote communications outlet. RTRs serve ARTCCs.

RELIEVER AIRPORT: An airport to serve general aviation aircraft which might otherwise use a congested air-carrier served airport.

RESTRICTED AREA: See special-use airspace.

RNAV: Area navigation - airborne equipment which permits flights over determined tracks within prescribed accuracy tolerances without the need to overfly ground-based navigation facilities. Used en route and for approaches to an airport.

RUNWAY: A defined rectangular area on an airport prepared for aircraft landing and takeoff. Runways are normally numbered in relation to their magnetic direction, rounded off to the nearest 10 degrees. For example, a runway with a magnetic heading of 180 would be designated Runway 18. The runway heading on the opposite end of the runway is 180 degrees from that runway end. For example, the opposite runway heading for Runway 18 would be Runway 36 (magnetic heading of 360). Aircraft can takeoff or land from either end of a runway, depending upon wind direction.

RUNWAY ALIGNMENT INDICATOR LIGHT: A series of high intensity sequentially flashing lights installed on the extended centerline of the runway usually in conjunction with an approach lighting system.

RUNWAY DESIGN CODE: A code signifiying the design standards to which the runway is to be built.

RUNWAY END IDENTIFICATION LIGHTING (REIL): Two synchronized flashing lights, one on each side of the runway threshold, which provide rapid and positive identification of the approach end of a particular runway.

RUNWAY GRADIENT: The average slope, measured in percent, between the two ends of a runway.

RUNWAY PROTECTION ZONE (RPZ): An area off the runway end to enhance the protection of people and property on the ground. The RPZ is trapezoidal in shape. Its dimensions are determined by the aircraft approach speed and runway approach type and minima.

RUNWAY REFERENCE CODE: A code signifying the current operational capabilities of a runway and associated taxiway.

RUNWAY SAFETY AREA (RSA): A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

RUNWAY VISIBILITY ZONE (RVZ): An area on the airport to be kept clear of permanent objects so that there is an unobstructed line of- site from any point five feet above the runway centerline to any point five feet above an intersecting runway centerline.

RUNWAY VISUAL RANGE (RVR): An instrumentally derived value, in feet, representing the horizontal distance a pilot can see down the runway from the runway end.

S

SCOPE: The document that identifies and defines the tasks, emphasis, and level of effort associated with a project or study.

SEGMENTED CIRCLE: A system of visual indicators designed to provide traffic pattern information at airports without operating control towers.

SHOULDER: An area adjacent to the edge of paved runways, taxiways, or aprons providing a transition between the pavement and the adjacent surface; support for aircraft running off the pavement; enhanced drainage; and blast protection. The shoulder does not necessarily need to be paved.

SLANT-RANGE DISTANCE: The straight line distance between an aircraft and a point on the ground.

SMALL AIRCRAFT: An aircraft that has a maximum certified takeoff weight of up to 12,500 pounds.

SPECIAL-USE AIRSPACE: Airspace of defined dimensions identified by a surface area wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities. Special-use airspace classifications include:

- **ALERT AREA**: Airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft.
- **CONTROLLED FIRING AREA**: Airspace wherein activities are conducted under conditions so controlled as to eliminate hazards to nonparticipating aircraft and to ensure the safety of persons or property on the ground.
- **MILITARY OPERATIONS AREA (MOA)**: Designated airspace with defined vertical and lateral dimensions established outside Class A airspace to separate/segregate certain military activities from instrument flight rule (IFR) traffic and to identify for visual flight rule (VFR) traffic where these activities are conducted.
- **PROHIBITED AREA**: Designated airspace within which the flight of aircraft is prohibited.
- **RESTRICTED AREA**: Airspace designated under Federal Aviation Regulation (FAR) 73, within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Most restricted areas are designated joint use. When not in use by the using agency, IFR/VFR operations can be authorized by the controlling air traffic control facility.
- **WARNING AREA:** Airspace which may contain hazards to nonparticipating aircraft.

STANDARD INSTRUMENT DEPARTURE (SID): A preplanned coded air traffic control IFR departure routing, preprinted for pilot use in graphic and textual form only.

STANDARD INSTRUMENT DEPARTURE PROCEDURES: A published standard flight procedure to be utilized following takeoff to provide a transition between the airport and the terminal area or en route airspace.

STANDARD TERMINAL ARRIVAL ROUTE (STAR): A preplanned coded air traffic control IFR arrival routing, preprinted for pilot use in graphic and textual or textual form only.

STOP-AND-GO: A procedure wherein an aircraft will land, make a complete stop on the runway, and then commence a takeoff from that point. A stop-and-go is recorded as two operations: one operation for the landing and one operation for the takeoff.

STOPWAY: An area beyond the end of a takeoff runway that is designed to support an aircraft during an aborted takeoff without causing structural damage to the aircraft. It is not to be used for takeoff, landing, or taxiing by aircraft.

STRAIGHT-IN LANDING/APPROACH: A landing made on a runway aligned within 30 degrees of the final approach course following completion of an instrument approach.

T

TACTICAL AIR NAVIGATION (TACAN): An ultrahigh frequency electronic air navigation system which provides suitably-equipped aircraft a continuous indication of bearing and distance to the TACAN station.

TAKEOFF RUNWAY AVAILABLE (TORA): See declared distances.

TAKEOFF DISTANCE AVAILABLE (TODA): See declared distances.

TAXILANE: The portion of the aircraft parking area used for access between taxiways and aircraft parking positions.

TAXIWAY: A defined path established for the taxiing of aircraft from one part of an airport to another.

TAXIWAY DESIGN GROUP: A classification of airplanes based on outer to outer Main Gear Width (MGW) and Cockpit to Main Gear (CMG) distance.

TAXIWAY SAFETY AREA (TSA): A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway.

TERMINAL INSTRUMENT PROCEDURES: Published flight procedures for conducting instrument approaches to runways under instrument meteorological conditions.

TERMINAL RADAR APPROACH CONTROL: An element of the air traffic control system responsible for monitoring the en-route and terminal segment of air traffic in the airspace surrounding airports with moderate to high levels of air traffic.

TETRAHEDRON: A device used as a landing direction indicator. The small end of the tetrahedron points in the direction of landing.

THRESHOLD: The beginning of that portion of the runway available for landing. In some instances the landing threshold may be displaced.

TOUCH-AND-GO: An operation by an aircraft that lands and departs on a runway without stopping or exiting the runway. A touch-and go is recorded as two operations: one operation for the landing and one operation for the takeoff.

TOUCHDOWN: The point at which a landing aircraft makes contact with the runway surface.

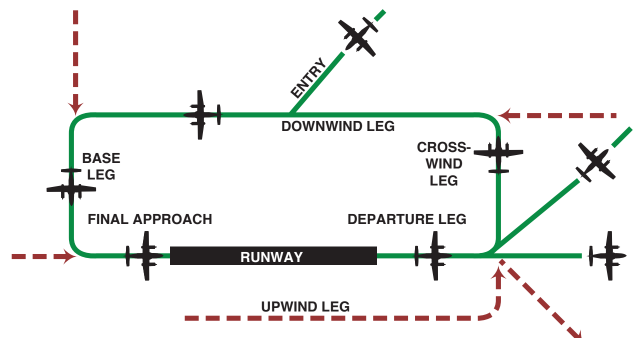
TOUCHDOWN AND LIFT-OFF AREA (TLOF): A load bearing, generally paved area, normally centered in the FATO, on which the helicopter lands or takes off.

TOUCHDOWN ZONE (TDZ): The first 3,000 feet of the runway beginning at the threshold.

TOUCHDOWN ZONE ELEVATION (TDZE): The highest elevation in the touchdown zone.

TOUCHDOWN ZONE (TDZ) LIGHTING: Two rows of transverse light bars located symmetrically about the runway centerline normally at 100- foot intervals. The basic system extends 3,000 feet along the runway.

TRAFFIC PATTERN: The traffic flow that is prescribed for aircraft landing at or taking off from an airport. The components of a typical traffic pattern are the upwind leg, crosswind leg, downwind leg, base leg, and final approach.



U

UNCONTROLLED AIRPORT: An airport without an air traffic control tower at which the control of Visual Flight Rules traffic is not exercised.

UNCONTROLLED AIRSPACE: Airspace within which aircraft are not subject to air traffic control.

UNIVERSAL COMMUNICATION (UNICOM): A nongovernment communication facility which may provide airport information at certain airports. Locations and frequencies of UNICOM's are shown on aeronautical charts and publications.

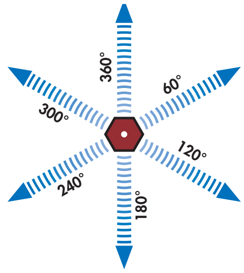
UPWIND LEG: A flight path parallel to the landing runway in the direction of landing. See "traffic pattern."

V

VECTOR: A heading issued to an aircraft to provide navigational guidance by radar.

VERY HIGH FREQUENCY/ OMNIDIRECTIONAL RANGE (VOR): A ground-based electronic navigation aid transmitting very high frequency navigation signals, 360 degrees in azimuth, oriented from magnetic north. Used as the basis for navigation in the national airspace system. The VOR periodically identifies itself by Morse Code and may have an additional voice identification feature.

VERY HIGH FREQUENCY OMNI-DIRECTIONAL RANGE/ TACTICAL AIR NAVIGATION (VORTAC): A navigation aid providing VOR azimuth, TACAN azimuth, and TACAN distance-measuring equipment (DME) at one site.



VICTOR AIRWAY: A control area or portion thereof established in the form of a corridor, the centerline of which is defined by radio navigational aids.

VISUAL APPROACH: An approach wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of an air traffic control facility and having an air traffic control authorization, may proceed to the airport of destination in VFR conditions.

VISUAL APPROACH SLOPE INDICATOR (VASI): An airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing by radiating a directional pattern of high intensity red and white focused light beams which indicate to the pilot that he is on path if he sees red/ white, above path if white/white, and below path if red/red. Some airports serving large aircraft have three-bar VASI's which provide two visual guide paths to the same runway.

VISUAL FLIGHT RULES (VFR): Rules that govern the procedures for conducting flight under visual conditions. The term VFR is also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan.

VISUAL METEOROLOGICAL CONDITIONS: Meteorological conditions expressed in terms of specific visibility and ceiling conditions which are equal to or greater than the threshold values for instrument meteorological conditions.

VOR: See "Very High Frequency Omnidirectional Range Station."

VORTAC: See "Very High Frequency Omnidirectional Range Station/Tactical Air Navigation."

W

WARNING AREA: See special-use airspace.

WIDE AREA AUGMENTATION SYSTEM: An enhancement of the Global Positioning System that includes integrity broadcasts, differential corrections, and additional ranging signals for the purpose of providing the accuracy, integrity, availability, and continuity required to support all phases of flight.

Abbreviations

AC: advisory circular

ADF: automatic direction finder

ADG: airplane design group

AFSS: automated flight service station

AGL: above ground level

AIA: annual instrument approach

AIP: Airport Improvement Program

AIR-21: Wendell H. Ford Aviation Investment and Reform Act for the 21st Century

ALS: approach lighting system

ALSF-1: standard 2,400-foot high intensity approach lighting system with sequenced flashers (CAT I configuration)

ALSF-2: standard 2,400-foot high intensity approach lighting system with sequenced flashers (CAT II configuration)

AOA: Aircraft Operation Area

APV: instrument approach procedure with vertical guidance

ARC: airport reference code

ARFF: aircraft rescue and fire fighting

ARP: airport reference point

ARTCC: air route traffic control center

ASDA: accelerate-stop distance available

ASR: airport surveillance radar

ASOS: automated surface observation station

ATCT: airport traffic control tower

ATIS: automated terminal information service

AVGAS: aviation gasoline - typically 100 low lead (100LL)

AWOS: automatic weather observation station

BRL: building restriction line

CFR: Code of Federal Regulation

CIP: capital improvement program

DME: distance measuring equipment

DNL: day-night noise level

DWL: runway weight bearing capacity of aircraft with dual-wheel type landing gear

DTWL: runway weight bearing capacity of aircraft with dual-tandem type landing gear

FAA: Federal Aviation Administration

FAR: Federal Aviation Regulation

FBO: fixed base operator

FY: fiscal year

GPS: global positioning system

GS: glide slope

HIRL: high intensity runway edge lighting

IFR: instrument flight rules (FAR Part 91)

ILS: instrument landing system

IM: inner marker

LDA: localizer type directional aid

LDA: landing distance available

LIRL: low intensity runway edge lighting

LMM: compass locator at middle marker

LOM: compass locator at outer marker

LORAN: long range navigation

MALS: medium intensity approach lighting system with indicator lights

MIRL: medium intensity runway edge lighting

MITL: medium intensity taxiway edge lighting

MLS: microwave landing system

MM: middle marker

MOA: military operations area

MSL: mean sea level

NAVAID: navigational aid

NDB: nondirectional radio beacon

NM: nautical mile (6,076.1 feet)

NPES: National Pollutant Discharge Elimination System

NPIAS: National Plan of Integrated Airport Systems

NPRM: notice of proposed rule making

ODALS: omnidirectional approach lighting system

OFA: object free area

OFZ: obstacle free zone

OM: outer marker

PAC: planning advisory committee

PAPI: precision approach path indicator

PFC: porous friction course

PFC: passenger facility charge

PCL: pilot-controlled lighting

PIW public information workshop

PLASI: pulsating visual approach slope indicator

POFA: precision object free area

PVASI: pulsating/steady visual approach slope indicator

PVC: poor visibility and ceiling

RCO: remote communications outlet

RRC: Runway Reference Code

RDC: Runway Design Code

REIL: runway end identification lighting

RNAV: area navigation

RPZ: runway protection zone

RSA: runway safety area

RTR: remote transmitter/receiver

RVR: runway visibility range

RVZ: runway visibility zone

SALS: short approach lighting system

SASP: state aviation system plan

SEL: sound exposure level

SID: standard instrument departure

SM: statute mile (5,280 feet)

SRE: snow removal equipment

SSALF: simplified short approach lighting system with runway alignment indicator lights

STAR: standard terminal arrival route

SWL: runway weight bearing capacity for aircraft with single-wheel tandem type landing gear

TACAN: tactical air navigational aid

TAF: Federal Aviation Administration (FAA) Terminal Area Forecast

TDG: Taxiway Design Group

TLOF: Touchdown and lift-off

TDZ: touchdown zone

TDZE: touchdown zone elevation

TODA: takeoff distance available

TORA: takeoff runway available

TRACON: terminal radar approach control

VASI: visual approach slope indicator

VFR: visual flight rules (FAR Part 91)

VHF: very high frequency

VOR: very high frequency omni-directional range

VORTAC: VOR and TACAN collocated

GILMER MUNICIPAL AIRPORT
Fox Stephens Field

APPENDIX B

Airport Layout Plans

DocuSign Envelope ID: FE562D4D-D8F2-41F0-AE77-38625E654EC6

AIRPORT LAYOUT PLANS

Prepared for the City of Gilmer, Texas

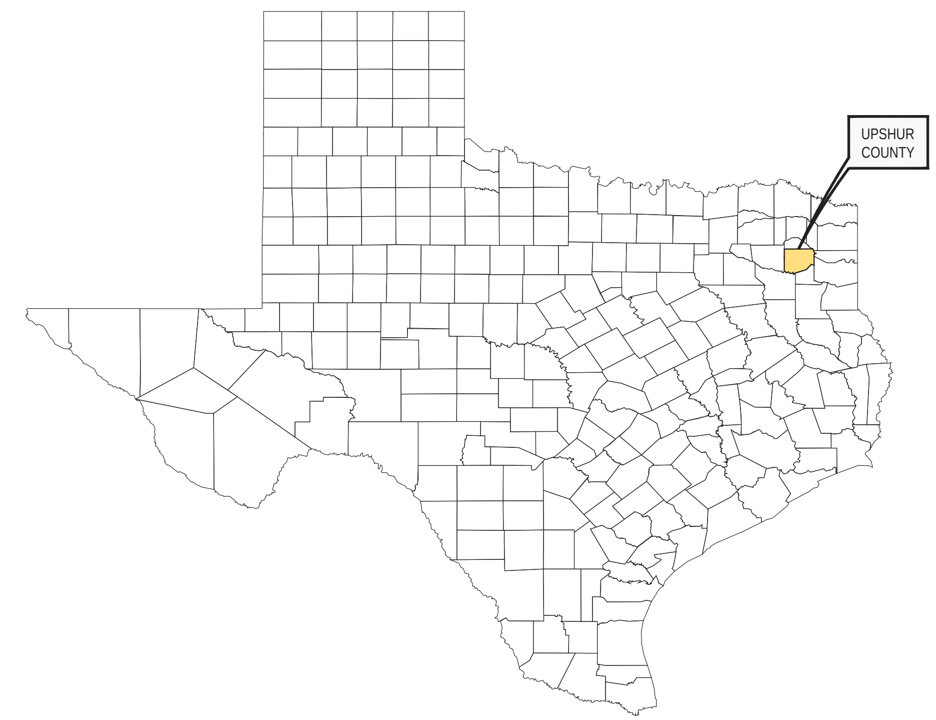
FOX STEPHENS FIELD/GILMER MUNICIPAL AIRPORT

LOCATION MAP

VICINITY MAP

DRAWING INDEX

1. TITLE SHEET
2. AIRPORT DATA SHEET
3. AIRPORT LAYOUT DRAWING
4. AIRPORT PT 77 AIRSPACE DRAWING
5. AIRPORT PT 77 AIRSPACE PROFILE
6. INNER PORTION OF THE APPROACH SURFACE DRAWING (IPASD) RUNWAY 18
7. INNER PORTION OF THE APPROACH SURFACE DRAWING (IPASD) RUNWAY 36
8. DEPARTURE SURFACE DRAWING RUNWAY 18-36
9. TERMINAL AREA DRAWING
10. LAND USE DRAWING
11. AIRPORT PROPERTY MAP



TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

ALP APPROVED ACCORDING TO FAA AC 150/5300-13A PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING AND FAA NRA STUDY PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION ON AIRPORT PROPERTY.

DocuSigned by: 2/4/2021
Dan Harmon, DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR

SPONSOR ACKNOWLEDGES APPROVAL OF ALP BY TXDOT DOES NOT CONSTITUTE A COMMITMENT TO FUNDING.

DocuSigned by: Greg Hutson, City Manager 2/4/2021
SIGNATURE — DATE

Greg Hutson, City Manager
TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

PREPARED BY:
237 N.W. Blue Parkway
Suite 100
Lee's Summit, Mo. 64063
(816) 524-3500, Fax (2575)
Coffman Phoenix Office:
4835 E. Cactus Road
Suite 235
Scottsdale, Az. 85254
(602) 993-6999, Fax (7196)

Coffman Associates Airport Consultants www.coffmanassociates.com

T. STUBER — MAY 2020
DESIGNED BY — DATE

D. PRZYBYCIEN — MAY 2020
DRAWN BY — DATE

NO.	REVISIONS	BY	CHK'D	DATE

TITLE SHEET
FOX STEPHENS FIELD/
GILMER MUNICIPAL AIRPORT (JXI)
GILMER, TEXAS

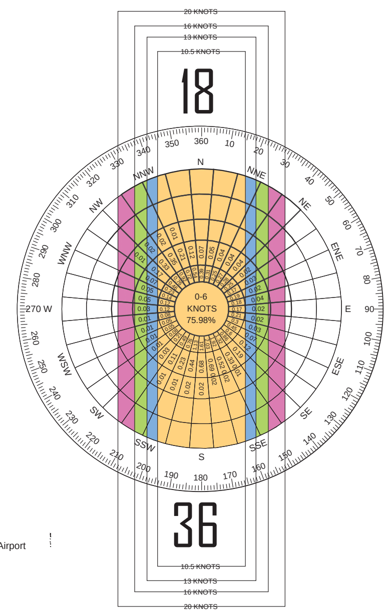
Texas Department of Transportation
Aviation Division

SHEET 1 OF 11

Coffman Associates C:\Users\Diana Przybycien\Coffman Associates Inc\Coffman - sp_CAD\Diana\mp\Gilmer(JXI)\ALP\01 JXI COVER.dwg Printed Date: 5-06-20 10:48:33 AM Diana Przybycien

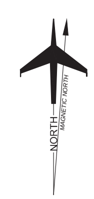
ALL WEATHER WIND COVERAGE

Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 18-36	99.34%	99.76%	99.97%	100.00%



SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
Fox Stephens Field - Gilmer Muni. Airport
Gilmer, TX

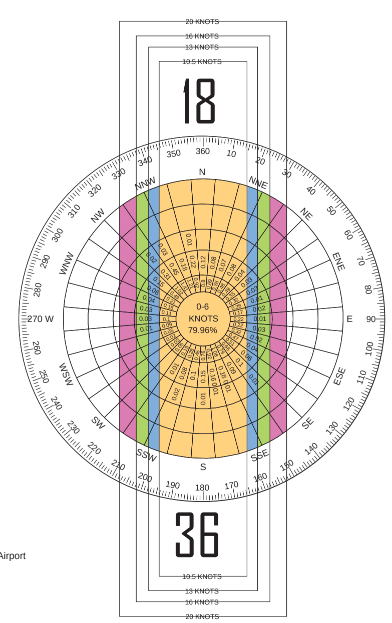
OBSERVATIONS:
233,152 All Weather Observations
Jan. 1, 2009 - Dec, 31 2018



Magnetic Declination
02° 02' East ±0°20'
Annual Rate of Change
00° 07' West
(Source: NOAA, NCEI, November 2018)

IFR WIND COVERAGE

Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 18-36	99.47%	99.80%	99.98%	100.00%



SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
Fox Stephens Field - Gilmer Muni. Airport
Gilmer, TX

OBSERVATIONS:
25,924 IFR Observations
Jan. 1, 2009 - Dec, 31 2018

RUNWAY DATA TABLE		RUNWAY 18 - 36			
		EXISITNG		ULTIMATE	
RUNWAY IDENTIFICATION		18	36	18	36
RUNWAY DESIGN CODE (RDC)		B/II/5000		SAME	
APPROACH REFERENCE CODE (APRC)		B-II-5000		SAME	
DEPARTURE REFERENCE CODE (DPRC)		B/II		SAME	
RUNWAY SURFACE MATERIAL		ASPHALT		ASPHALT	
RUNWAY PAVEMENT STRENGTH WHEEL LOADING (IN THOUSAND LBS.) #1		12 (S)		30 (S), 60 (D)	
RUNWAY PAVEMENT STRENGTH PCN		NOT AVAILABLE		NOT AVAILABLE	
RUNWAY PAVEMENT SURFACE TREATMENT		N/A		N/A	
RUNWAY EFFECTIVE GRADIENT		0.06%		0.00%	
RUNWAY WIND COVERAGE (KNOTS)		99.76% @13 KNOTS (AW)		SAME	
		99.80% @13 KNOTS (IFR)		SAME	
RUNWAY DIMENSIONS (L X W)		3997' x 60'		5000' x 75'	
RUNWAY DISPLACED THRESHOLD ELEVATION (NAVD88)		N/A	N/A	SAME	SAME
RUNWAY SAFETY AREA DIMENSION DESIGN STANDARD (W x LENGTH BEYOND END)		150 ' X 300'	150' X 300'	SAME	SAME
RUNWAY SAFETY AREA DIMENSION ACTUAL (W x LENGTH BEYOND END)		150' X 300'	150' X 300'	SAME	SAME
RUNWAY END COORDINATES	LAT	32°42'12.70" N	32°41'33.14" N	SAME	32°41'23.22" N
	LONG	94°56'55.81" W	94°56'56.02" W	SAME	94°56'56.16" W
RUNWAY LIGHTING TYPE		MIRL		MIRL	
RUNWAY PROTECTION ZONE DIMENSIONS		1000' X 500' X 700' (18)		SAME	
		1000' X 500' X 700' (36)		SAME	
RUNWAY MARKING TYPE		NONPRECISION	NONPRECISION	SAME	SAME
14 CFR PART 77 APPROACH CATEGORY		34:1	34:1	SAME	SAME
APPROACH TYPE		NONPRECISION	NONPRECISION	SAME	SAME
VISIBILITY MINIMUMS		1 Mile	1 Mile	SAME	SAME
TYPE OF AERONAUTICAL SURVEY REQUIRED FOR APPROACH		NVGS	NVGS	SAME	SAME
DEPARTURE SURFACE (YES/NO)		YES	YES	SAME	SAME
RUNWAY OBJECT FREE AREA DIMENSION (W x LENGTH BEYOND END)		500' X 300'	500' X 300'	SAME	SAME
RUNWAY OBSTACLE FREE ZONE DIMENSION (W x LENGTH BEYOND END)		400' X 200'	400' X 200'	SAME	SAME
OBSTACLE CLEARANCE SURFACE (OCS)		20:1	20:1	SAME	SAME
RUNWAY VISUAL AND INSTRUMENT NAVAIDS		PAPI-2, Lighted Wind Cone, Segmented Circle, RNAV		PAPI-4, REILS, Lighted Wind Cone, Segmented Circle, RNAV	
TOUCHDOWN ZONE ELEVATION (TDZE)		415.4'	412.6'	SAME	415.0
TAXIWAY WIDTH		30', 35'	30', 35'	35'	35'
TAXIWAY SAFETY AREA DIMENSIONS		79'	79'	SAME	SAME
TAXIWAY OBJECT FREE AREA DIMENSIONS		131'	131'	SAME	SAME
TAXIWAY CENTERLINE TO FIXED OR MOVABLE OBJECT		65.5'	65.5'	SAME	SAME
TAXIWAY LIGHTING		MITL	MITL	SAME	SAME
HORIZONTAL DATUM		NAD83			
VERTICAL DATUM		NAVD88			

1 PAVEMENT STRENGTHS ARE EXPRESSED IN SINGLE (S), DUAL (D), DUAL TANDEM (2D) WHEEL LOAD CAPACITIES

AIRPORT DATA			
GILMER MUNICIPAL AIRPORT (JXI)		COUNTY: UPSHUR	CITY: GILMER
OWNER: CITY OF GILMER		**EXISITNG**	**ULTIMATE**
AIRPORT REFERENCE CODE (ARC)		B-II	B-II
MEAN MAXIMUM TEMPERATURE OF HOTTEST MONTH		94.1° (August)	SAME
AIRPORT ELEVATION (NAVD 88)		415.4	SAME
AIRPORT NAVIGATIONAL AIDS		ROTATING BEACON, PAPI-2	ROTATING BEACON, PAPI-4, REILS
AIRPORT REFERENCE POINT (ARP) COORDINATES (NAD 83)	LATITUDE	32° 41' 52.92" N	32° 41' 47.96" N
	LONGITUDE	94° 56' 55.92" W	94° 56' 56.03" W
MISCELLANEOUS FACILITIES		AWOS-3, Lighted Windcone/Segmented Circle, MIRL, MITL	AWOS-3, Lighted Windcone/Segmented Circle, MIRL, MITL
DESIGN CRITICAL AIRCRAFT		King Air 200	Cessna CJ3+
WINGSPAN OF DESIGN AIRCRAFT (FEET)		54.5	53.33
APPROACH SPEED OF DESIGN AIRCRAFT (KNOTS)		98.0	107.0
UNDERCARRIAGE WIDTH OF DESIGN AIRCRAFT (FEET)		19.74	16.0
MAGNETIC DECLINATION (DEGREES)		02° 03' East ±0°20'	SAME
DECLINATION DATE		April /4/2019	SAME
DECLINATION SOURCE		NOAA, NCEI	SAME
NPIAS CODE		GA	GA
TEXAS AIRPORT SYSTEM PLAN ROLE		CS	CS

ELECTRONIC AIRPORT NAVAID OWNERSHIP	
NAVAID	**OWNER**
BEACON	CITY OF GILMER
AWOS-3	CITY OF GILMER
SEGMENTED CIRCLE/LIGHTED WIND CONE	CITY OF GILMER
PAPI-2	CITY OF GILMER
MIRL	CITY OF GILMER
MITL	CITY OF GILMER

DECLARED DISTANCE	EXISTING		ULTIMATE	
	18	36	18	36
TAKE OFF RUN AVAILABLE (TORA)	3997'	3997'	5000'	5000'
TAKEOFF DISTANCE AVAILABLE (TODA)	3997'	3997'	5000'	5000'
ACCELERATE-STOP DISTANCE AVAILABLE (ASDA)	3997'	3997'	5000'	5000'
LANDING DISTANCE AVAILABLE (LDA)	3997'	3997'	5000'	5000'

OFZ PENETRATION TABLE			
NO.	**OBJECT**	**PENETRATION**	**REMEDIATION**
A	TREES	7.7'-103.8'	REMOVE ALL TREES
B	WINDSOCK	25.9'	RELOCATE OUTSIDE OF OFZ

SEE AIRPORT LAYOUT DRAWING FOR OFZ PENETRATION LOCATIONS

MODIFICATIONS TO STANDARDS APPROVAL TABLE			
APPROVAL DATE	AIRSPACE CASE NUMBER	STANDARD MODIFIED	DESCRIPTION
NONE REQUIRED			

TEXAS DEPARTMENT OF TRANSPORTATION AVIATION DIVISION

ALP APPROVED ACCORDING TO FAA AC 150/5300-13A PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING AND FAA NRA STUDY PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION ON AIRPORT PROPERTY.

DocuSigned by: [signature] 2/4/2021

Dan Harmon, DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR

SPONSOR ACKNOWLEDGES APPROVAL OF ALP BY TXDOT DOES NOT CONSTITUTE A COMMITMENT TO FUNDING.

DocuSigned by: Greg Hutson, City Manager 2/4/2021

SIGNATURE — DATE

Greg Hutson, City Manager

TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

PREPARED BY:
237 N.W. Blue Parkway
Suite 100
Lee's Summit, Mo. 64063
(816) 524-3500, Fax (2575)
Coffman Phoenix Office:
4835 E. Cactus Road
Suite 235
Scottsdale, Az. 85254
(602) 993-6999, Fax (7196)

Coffman Associates Airport Consultants
www.coffmanassociates.com

T. STUBER — MAY 2020
DESIGNED BY — DATE

D. PRZYBYCIEN — MAY 2020
DRAWN BY — DATE

NO.	REVISIONS	BY	CHK'D	DATE

AIRPORT DATA SHEET
FOX STEPHENS FIELD/ GILMER MUNICIPAL AIRPORT (JXI)
GILMER, TEXAS

Texas Department of Transportation
Aviation Division

LEGEND

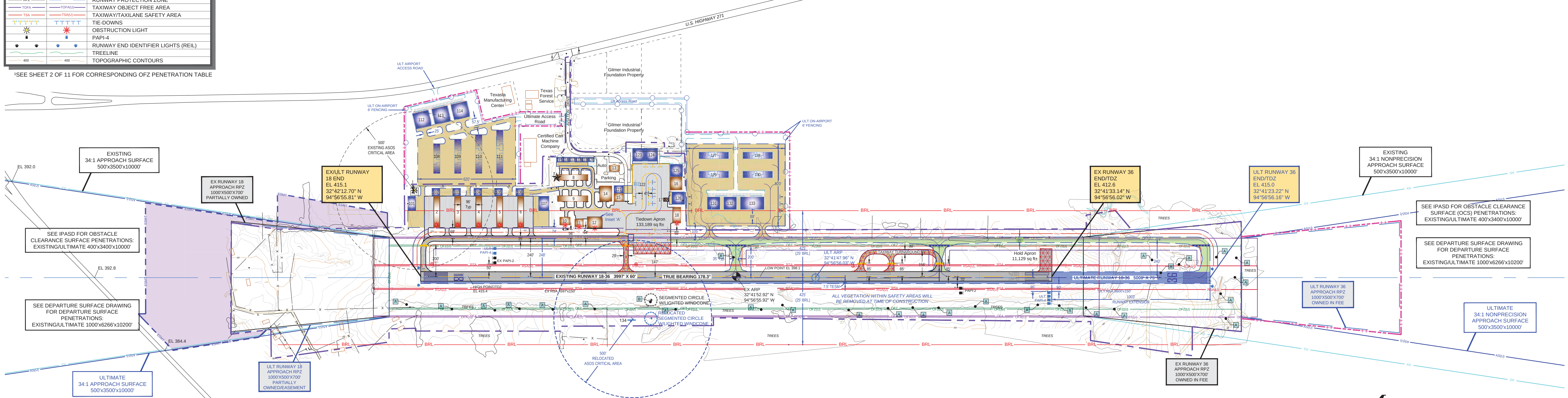
EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
	N/A	AVIGATION EASEMENT
		SECTION CORNERS
		AIRPORT REFERENCE POINT (ARP)
	N/A	AIRPORT BEACON
		AWOS-3
BRL	BRL	BUILDING RESTRICTION LINE (25')
		NAVAID CRITICAL AREA
		STRUCTURES ON AIRPORT
		STRUCTURE OFF AIRPORT
N/A		ABANDON/REMOVE
		FENCE LINE
		HOLD MARKING
		RUNWAY PAVEMENT
		TAXIWAY PAVEMENT
		APRON PAVEMENT
		SURVEY MONUMENT WITH IDENTIFIER
OFA	OFA(U)	OBJECT FREE AREA
RSA	RSA(U)	RUNWAY SAFETY AREA
OFZ	OFZ(U)	OBSTACLE FREE ZONE
	N/A	OBSTACLE FREE ZONE PENETRATION[1]
RPZ		RUNWAY PROTECTION ZONE
TOFA	TOFA(U)	TAXIWAY OBJECT FREE AREA
TSA	TSA(U)	TAXIWAY/TAXILANE SAFETY AREA
		TIE-DOWNS
		OBSTRUCTION LIGHT
		PAPI-4
		RUNWAY END IDENTIFIER LIGHTS (REIL)
		TREELINE
400	400	TOPOGRAPHIC CONTOURS

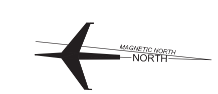
[1]SEE SHEET 2 OF 11 FOR CORRESPONDING OFZ PENETRATION TABLE

PACS SACS STATIONS

DESIGNATION	PERMANENT IDENTIFIER	LATITUDE	LONGITUDE
4F4 A 1994	AB2783	32° 42' 11.99" N	094° 56' 54.90" W
GILPORT	CR1361	32° 41' 59.20" N	094° 56' 54.98" W
GILPORT AZ MK	CR1362	32° 41' 45.60" N	094° 56' 55.19" W

4F4 A 1994: STAINLESS STEEL ROD IN SLEEVE (10 FT +)
GILPORT SETTING: STAINLESS STEEL ROD IN SLEEVE (10 FT +)
GILPORT AZ MK SETTING: STAINLESS STEEL ROD IN SLEEVE (10 FT +)





Magnetic Declination
02° 03' East ±0°20'
Annual Rate of Change
00° 06' West
(Source: NOAA, NCEI, April 2019)

0 300 600
SCALE IN FEET

FOR APPROVAL BY CITY OF GILMER, TEXAS

Greg Hutson
City Manager
DATE:

ULTIMATE AIRPORT FACILITIES

NO.	DESCRIPTION	ELEV. (AGL)*
101	Box Hangar	22.0'
102	Box Hangar	22.0'
103	Box Hangar	22.0'
104	Box Hangar	22.0'
105	Box Hangar	22.0'
106	Box Hangar	22.0'
107	Box Hangar	28.0'
108	T-Hangars	17.0'
109	T-Hangars	17.0'
110	T-Hangars	17.0'
111	T-Hangars	17.0'
112	Aviation Industrial Park Facility	32.0'
113	Aviation Industrial Park Facility	32.0'
114	Aviation Industrial Park Facility	32.0'
115	Linear Box Hangar	22.0'
116	Linear Box Hangar	22.0'
117	Linear Box Hangar	22.0'
118	Linear Box Hangar	22.0'
119	Linear Box Hangar	22.0'
120	Maintenance Building	22.0'
121	Box Hangar	24.0'
122	Self-Service 100LL and Jet A Fuel	12.0'
123	Box Hangar	28.0'
124	Box Hangar	28.0'
125	Box Hangar	28.0'
126	Box Hangar	28.0'
127	T-Hangars	17.0'
128	T-Hangars	17.0'
129	T-Hangars	17.0'
130	T-Hangars	17.0'
131	Box Hangar	28.0'
132	Box Hangar	28.0'
133	Box Hangar	30.0'
134	AWOS-3	35.0'

* Structure heights are estimates based on typical heights for proposed building type.

EXISTING AIRPORT FACILITIES

NO.	DESCRIPTION	ELEV. (MSL)
1	AWOS-3	447.2'
2	T-Hangars	427.6'
3	T-Hangars	427.5'
4	T-Hangars	427.5'
5	T-Hangars	426.8'
6	T-Hangars	426.7'
7	Airport Beacon	470.7'
8	T-Hangars	417.7'
9	T-Hangars	418.0'
10	Executive Box Hangar	422.8'
11	Executive Box Hangar	423.9'
12	Executive Box Hangar	426.0'
13	Terminal Building	417.8'
14	Flight of the Phoenix Aviation Museum	430.6'
15	Executive Box Hangar	422.4'
16	Executive Box Hangar	433.2'
17	Self-Service 100LL Fuel	415.0'
18	Executive Box Hangar	428.1'
19	Electrical Vault	421.7'

GENERAL NOTES:

1. UNLESS NOTED OTHERWISE ALL EXISTING COORDINATES, ELEVATIONS, AND BEARINGS FROM DATA RECEIVED FROM THE TEXAS DEPARTMENT OF TRANSPORTATION (TxDOT).
2. OTHER DATA SOURCES CONSULTED INCLUDE FAA AIRPORT MASTER RECORD FORM 5010, AND THE FAA AIRPORT FACILITY DIRECTORY http://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dafd/, AND http://webdatasheet.faa.gov/
3. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83;
   VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88.
4. SEE INNER PORTION OF THE APPROACH SURFACE DRAWINGS FOR OBSTACLE CLEARANCE SURFACES AND PART 77 APPROACH SURFACE PENETRATIONS.
5. SEE TERMINAL AREA DRAWING, SHEET 9 OF 11 FOR CLOSE-IN DIMENSIONAL DETAILS.
6. MAGNETIC DECLINATION FROM NOAA NATIONAL GEOPHYSICAL DATA CENTER.
7. GROUND ELEVATION LISTED FOR ROAD/APPROACH SURFACE INTERSECTIONS.
8. OBSTRUCTION LIGHTING TO BE ADDED TO THE FOLLOWING BUILDINGS WITHIN THE BRL, BUILDING NUMBERS, 2, 3, 4, 5, 6, 10, 11, 12, AND 18.
9. EXISTING ON-AIRPORT FENCING ELEVATION = 4'.
10. SEE TERMINAL AREA DRAWING SHEET 9 OF 11 FOR LANDSIDE DIMENSIONAL DETAILS.
11. ALL TREES THAT PENETRATE THE OBSTACLE FREE ZONE TO BE REMOVED. THE EXISTING SEGMENTED CIRCLE THAT PENETRATES TO BE RELOCATED. SEE OBSTACLE FREE ZONE PENETRATION TABLE ON THE DATA SHEET.

FAA APPROVAL STAMP

NO.	REVISIONS	BY	CHK'D	DATE

TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

ALP APPROVED ACCORDING TO FAA AC 150/5300-13A PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING AND FAA NRA STUDY PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION ON AIRPORT PROPERTY.

DocuSigned by: 2/4/2021
Dan Harmon, DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR

SPONSOR ACKNOWLEDGES APPROVAL OF ALP BY TXDOT DOES NOT CONSTITUTE A COMMITMENT TO FUNDING.

DocuSigned by: Greg Hutson, City Manager 2/4/2021
SIGNATURE — DATE
Greg Hutson, City Manager
TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

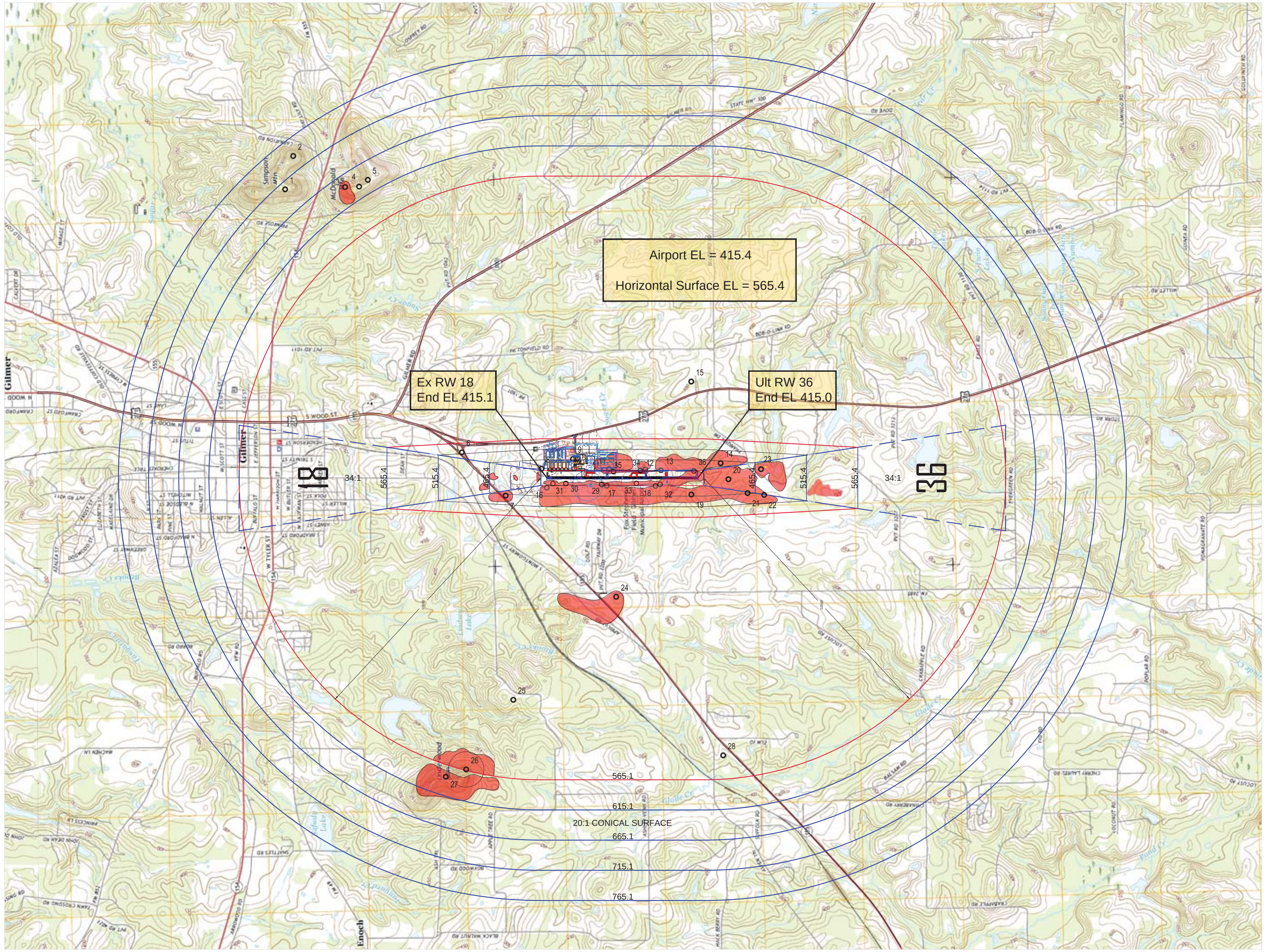
PREPARED BY:
237 N.W. Blue Parkway
Suite 100
Lee's Summit, Mo. 64063
(816) 524-3500, Fax (2575)
Coffman Phoenix Office:
4835 E. Cactus Road
Suite 235
Scottsdale, Az. 85254
(602) 993-6999, Fax (7196)

Coffman Associates
Airport Consultants
www.coffmanassociates.com

T. STUBER — MAY 2020
DESIGNED BY — DATE
D. PRZYBYCIEN — MAY 2020
DRAWN BY — DATE

AIRPORT LAYOUT DRAWING
FOX STEPHENS FIELD/ GILMER MUNICIPAL AIRPORT (JXI)
GILMER, TEXAS

Texas Department of Transportation
Aviation Division



No.	Description	Top Elevation (msl)	Obstructed Surface	Penetration	Proposed Dispostion
1	ANTENNA	856.8	CONICAL	152.6	TO REMAIN
2	COMMUNICATION TOWER	863.8	CONICAL	125.6	TO REMAIN
3	TREE	673.7	CONICAL	27.6	TO REMAIN
4	ANTENNA	705.9	CONICAL	71.8	TO REMAIN
5	TREE	657.1	CONICAL	20.9	TO REMAIN
6	LIGHT POLE	543.2	TRANSITIONAL	21.6	TO REMAIN
7	TREE	476.6	TRANSITIONAL	2.4	REMOVE ALL TREES
8	TREE	475.1	TRANSITIONAL	51.7	REMOVE ALL TREES
9	AIRPORT BEACON	470.0	TRANSITIONAL	0.005	TO REMAIN LIGHTED
10	LIGHT POLE	448.5	TRANSITIONAL	25.4	TO REMAIN
11	TREES	483.1	TRANSITIONAL	60.1	REMOVE ALL TREES
12	TREES	470.8	TRANSITIONAL	51.2	REMOVE ALL TREES
13	FENCE	419.8	TRANSITIONAL	4.4	TO REMAIN
14	TREES	494.8	TRANSITIONAL	40.8	REMOVE ALL TREES
15	WATER TOWER	579.5	HORIZONTAL	14.4	MAINTAIN OR ADD OBSTRUCTION LIGHT
16	TREES	511.4	TRANSITIONAL	85.6	REMOVE ALL TREES
17	TREES	496.8	TRANSITIONAL	81.0	REMOVE ALL TREES
18	TREES	490.5	TRANSITIONAL	73.1	REMOVE ALL TREES
19	TREES	490.1	TRANSITIONAL	32.6	REMOVE ALL TREES
20	TREES	505.9	APPROACH	39.8	REMOVE ALL TREES
21	TREES	494.8	TRANSITIONAL	32.8	REMOVE ALL TREES
22	TREES	507.1	TRANSITIONAL	32.0	REMOVE ALL TREES
23	TREES	498.7	APPROACH	27.9	CLEAR ALL TREES FROM RPZ
24	TREES	498.3	HORIZONTAL	27.2	REMOVE ALL TREES
25	COMMUNICATION TOWER	683.7	HORIZONTAL	118.5	MAINTAIN OR ADD OBSTRUCTION LIGHT
26	TREES	673.2	HORIZONTAL	108.1	REMOVE ALL TREES
27	TREES	739.9	CONICAL	155.1	REMOVE ALL TREES
28	WATER TOWER	589.8	HORIZONTAL	24.6	MAINTAIN OR ADD OBSTRUCTION LIGHT
29	TREES	503.8	PRIMARY	103.8	REMOVE ALL TREES
30	TREES	503.8	PRIMARY	89.8	REMOVE ALL TREES
31	TREES	501.1	PRIMARY	87.1	REMOVE ALL TREES
32	TREES	496.6	PRIMARY	86.6	REMOVE ALL TREES
33	TREES	485.6	PRIMARY	83.6	REMOVE ALL TREES
34	TREES	463.2	PRIMARY	59.2	REMOVE ALL TREES
35	TREES	454.8	PRIMARY	56.8	REMOVE ALL TREES
36	TREES	462.4	PRIMARY	50.4	REMOVE ALL TREES

OBSTRUCTION TABLE

Triggering Event: ALP Update

MAGNETIC NORTH
NORTH

Magnetic Declination
02° 03' East ±0°20'
Annual Rate of Change
00° 06' West
(Source: NOAA, NCEI, April 2019)

0 2000 4000
SCALE IN FEET

OBSTRUCTION ANALYSIS WAS DETERMINED USING BASEMAPPING PROVIDED BY TXDOT. A NEW OBSTRUCTION SURVEY WAS NOT CONDUCTED FOR THIS PROJECT. THERE MAY BE OBSTACLES NOT ACCOUNTED FOR DUE TO THE AGE OF THE SURVEY. BEST AVAILABLE INFORMATION WAS USED ACCORDING TO THE CONTRACT SCOPE.

LEGEND

OBSTRUCTION AREA - SAMPLED POINTS REPRESENT THE HIGHEST POINTS WITHIN THE VICINTIY OF OBJECTS.

OBSTRUCTION IDENTIFIER

GENERAL NOTES:

1. OSTRUCTIONS IDENTIFIED BY COFFMAN ASSOCIATES FROM DATA PROVIDED BY TEXAS DEPARTMENT OF TRANSPORTATION (TxDOT).
2. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83;
   VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88
3. SUPPLEMENTAL DATA EXAMINED INCLUDE FAA DIGITAL OBSTACLE FILE (DOF), RELEASE DATE SEPTEMBER 5,2017.
4. CITY OF GILMER, TEXAS CODE OF ORDINANCES, ARTICLE IV INDICATES A HEIGHT HAZARD ZONING ORDINANCE FOR GILMER MUNICIPAL AIRPORT-FOX STEPHENS FIELD WAS ADOPTED NOVEMBER 17, 2005. RUNWAY 18-36, 4,000' X 60' NPI, ZONED 5,500' NPI.
5. THE FOLLOWING USGS 7.5 QUAD MAPS OF THE STATE OF TEXAS WERE APPLIED AS BACKGROUND: BETTIE, GILMER, GLADEWATER..
6. SEE INNER PORTION OF THE APPROACH SURFACE DRAWINGS FOR CLOSE-IN APPROACH DETAILS.
7. ALL ELEVATIONS IN MSL FEET.

TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

ALP APPROVED ACCORDING TO FAA AC 150/5300-13A PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING AND FAA NRA STUDY PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION ON AIRPORT PROPERTY.

DocuSigned by:
2/4/2021
Dan Harmon, DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR

SPONSOR ACKNOWLEDGES APPROVAL OF ALP BY TXDOT DOES NOT CONSTITUTE A COMMITMENT TO FUNDING.

DocuSigned by:
Greg Hutson, City Manager
2/4/2021
SIGNATURE — DATE

Greg Hutson, City Manager
TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

PREPARED BY:
237 N.W. Blue Parkway
Suite 100
Lee's Summit, Mo. 64063
(816) 524-3500, Fax (2575)
Coffman Phoenix Office:
4835 E. Cactus Road
Suite 235
Scottsdale, Az. 85254
(602) 993-6999, Fax (7196)

Coffman Associates
Airport Consultants
www.coffmanassociates.com

T. STUBER — MAY 2020
DESIGNED BY — DATE

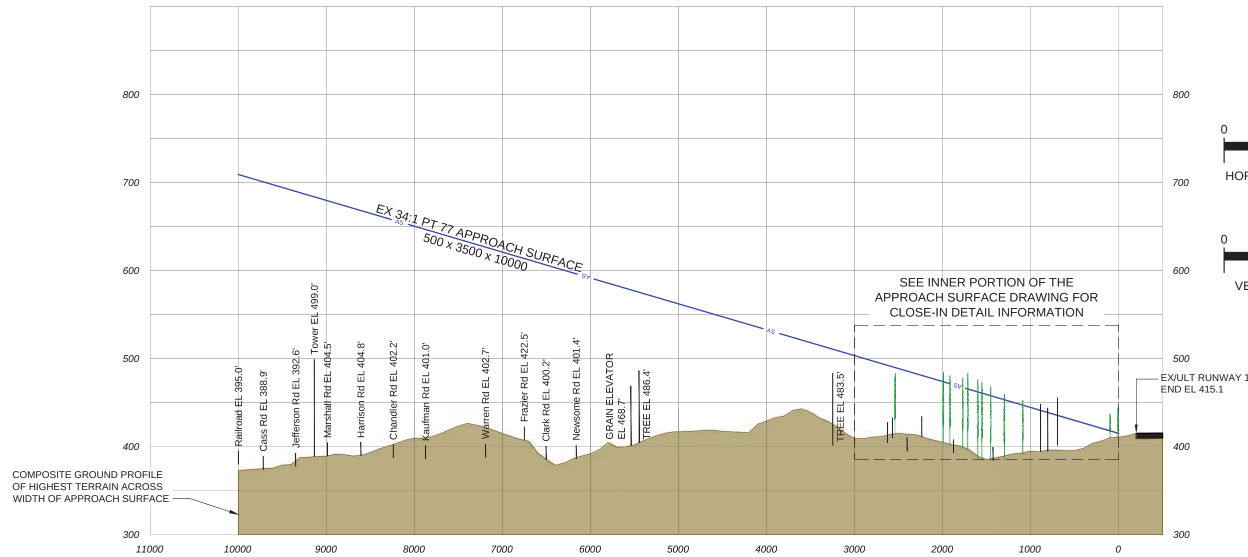
D. PRZYBYCIEN — MAY 2020
DRAWN BY — DATE

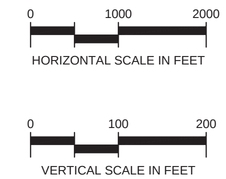
NO.	REVISIONS	BY	CHK'D	DATE

AIRPORT PT 77 AIRSPACE DRAWING
FOX STEPHENS FIELD/
GILMER MUNICIPAL AIRPORT (JXI)
GILMER, TEXAS

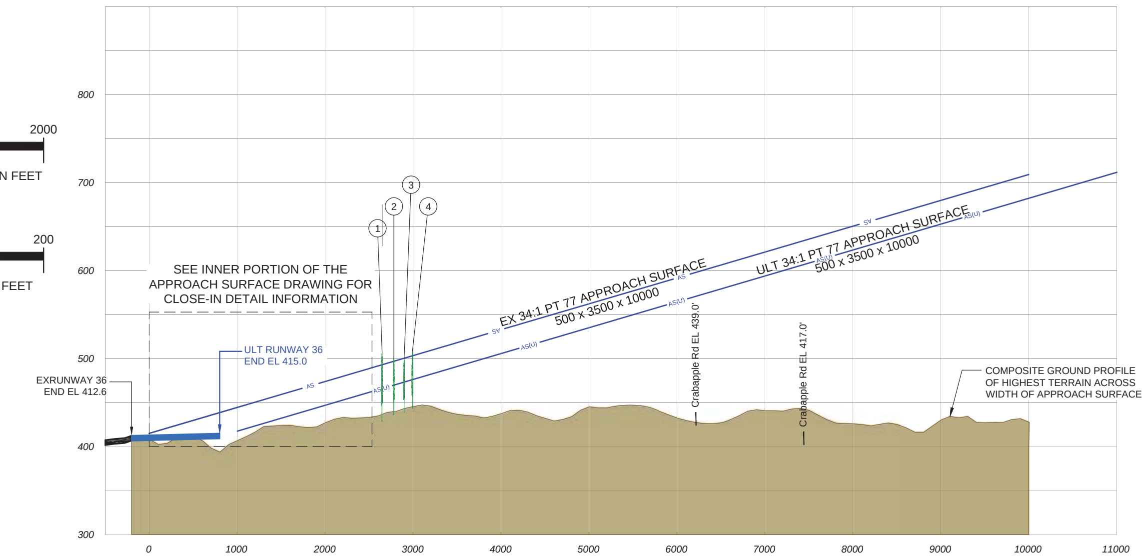
Texas Department of Transportation
Aviation Division

SHEET 4 OF 11





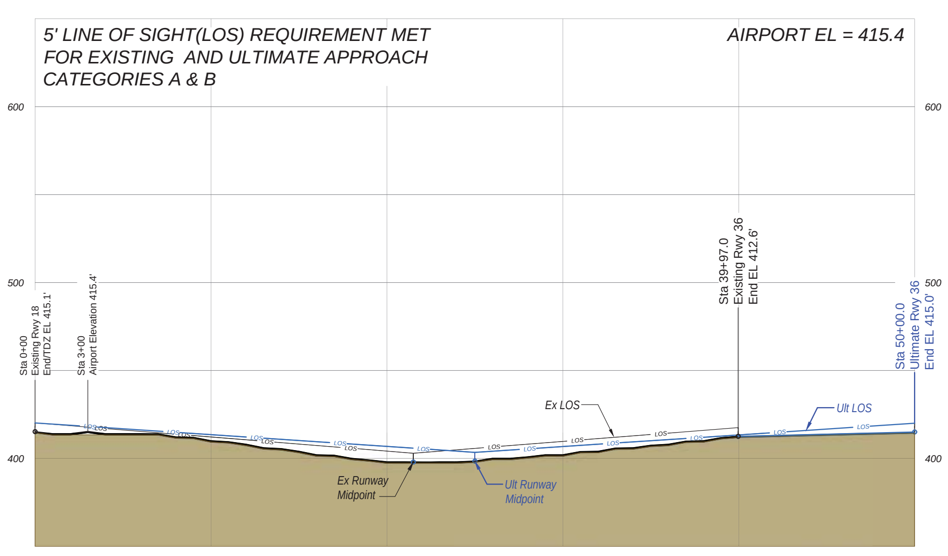
RUNWAY 18 PT 77 APPROACH PROFILE



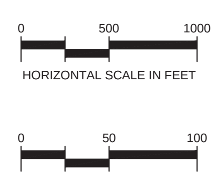
RUNWAY 36 PT 77 APPROACH PROFILE

RUNWAY 18 PT 77 APPROACH OBSTRUCTION TABLE					
No.	Description	Top Elevation (msl)	Existing PT 77 34:1 Approach Penetration	Ultimate PT 77 34:1 Approach Penetration	Proposed Dispostion
	SEE INNER PORTION OF THE APPROACH SURFACE DRAWING FOR CLOSE-IN OBSTRUCTIONS				
Triggering Event: ALP Update					
NAR: No Action Required					

RUNWAY 36 PT 77 APPROACH OBSTRUCTION TABLE					
No.	Description	Top Elevation (msl)	Existing PT 77 34:1 Approach Penetration	Ultimate PT 77 34:1 Approach Penetration	Proposed Dispostion
1	TREE	506.7	16.2	N/A	TRIM OR REMOVE
2	TREE	499.9	5.5	N/A	TRIM OR REMOVE
3	TREE	498.7	0.8	53.3	TRIM OR REMOVE
4	TREE	507.1	6.5	N/A	TRIM OR REMOVE
Triggering Event: ALP Update					
NAR: No Action Required					

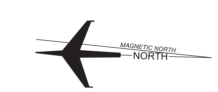


RUNWAY 18-36 PROFILE



GENERAL NOTES:

3. OSTRUCTIONS IDENTIFIED BY COFFMAN ASSOCIATES FROM DATA PROVIDED BY TEXAS DEPARTMENT OF TRANSPORTATION. DATE OF DATA IS UNKNOWN.
4. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83; VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88
5. SUPPLEMENTAL DATA EXAMINED INCLUDE FAA DIGITAL OBSTACLE FILE (DOF), RELEASE DATE SEPTEMBER 5, 2017.
6. ALL ELEVATIONS IN MSL FEET.



Magnetic Declination
02° 03' East ±0°20'
Annual Rate of Change
00° 06' West
(Source: NOAA, NCEI, April 2019)

TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

ALP APPROVED ACCORDING TO FAA AC 150/5300-13A PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING AND FAA NRA STUDY PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION ON AIRPORT PROPERTY.

DocuSigned by: 2/4/2021
Dan Harmon, DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR

SPONSOR ACKNOWLEDGES APPROVAL OF ALP BY TXDOT DOES NOT CONSTITUTE A COMMITMENT TO FUNDING.

DocuSigned by: Greg Hutson, City Manager — 2/4/2021
SIGNATURE — DATE
Greg Hutson, City Manager
TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

PREPARED BY:
237 N.W. Blue Parkway
Suite 100
Lee's Summit, Mo. 64063
(816) 524-3500, Fax (2575)
Coffman Phoenix Office:
4835 E. Cactus Road
Suite 235
Scottsdale, Az. 85254
(602) 993-6999, Fax (7196)

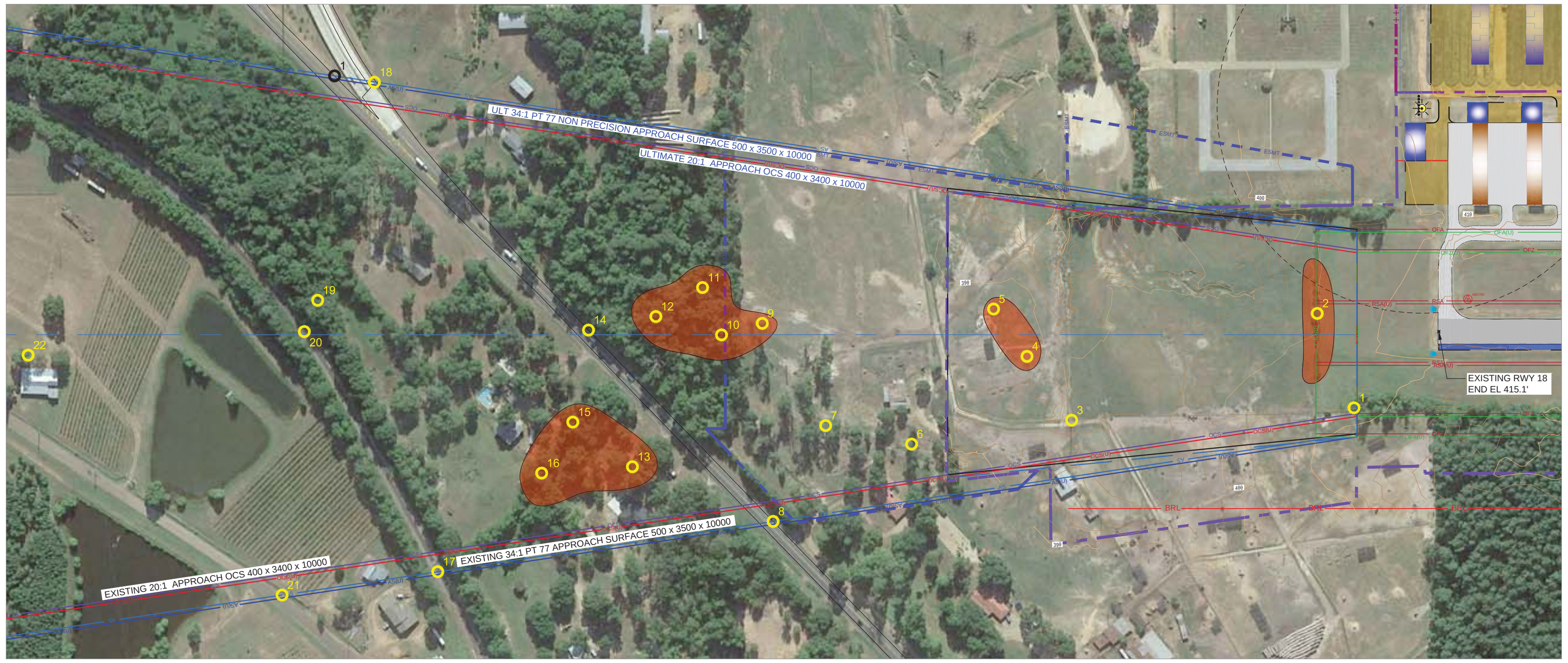
Coffman Associates Airport Consultants www.coffmanassociates.com

T. STUBER — MAY 2020
DESIGNED BY — DATE
D. PRZYBYCIEN — MAY 2020
DRAWN BY — DATE

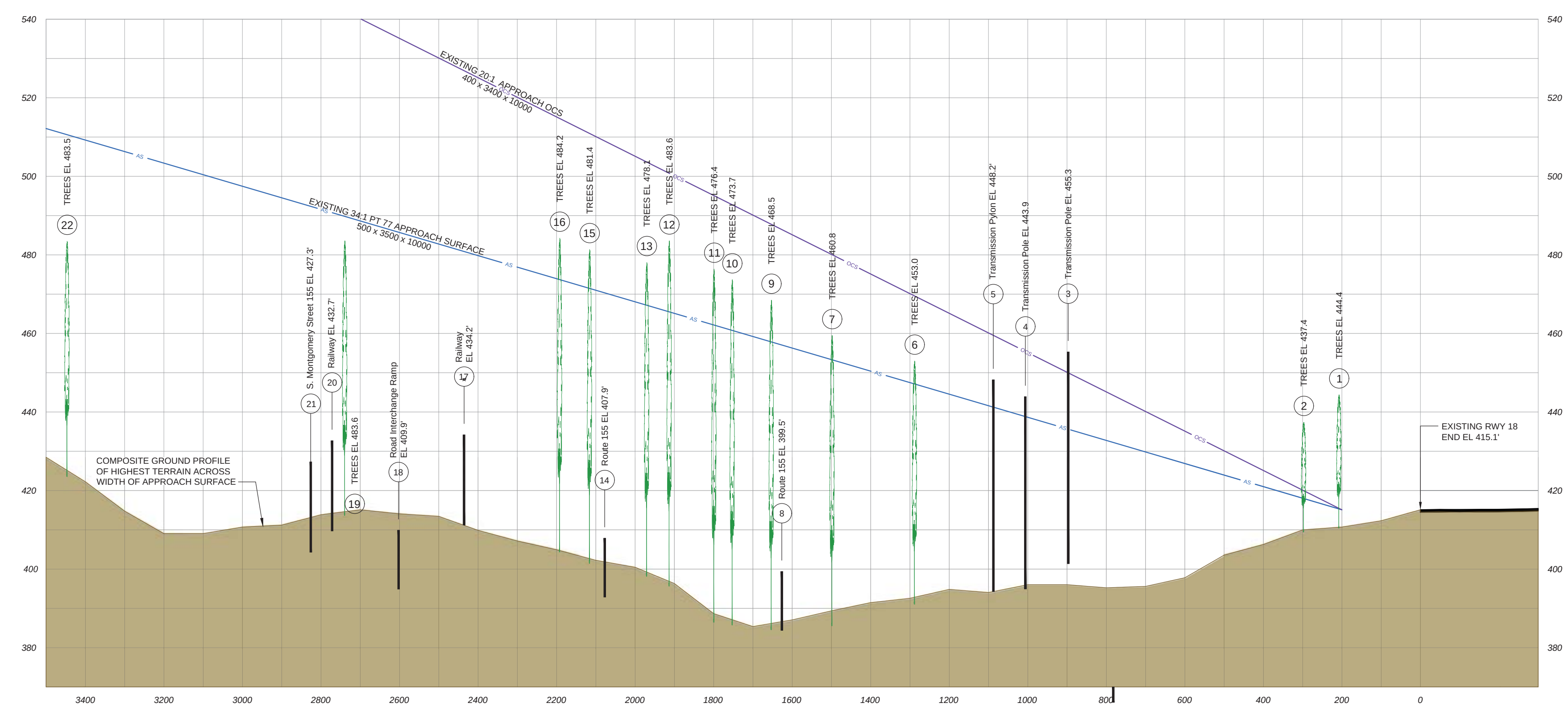
NO.	REVISIONS	BY	CHK'D	DATE

AIRPORT PT 77 AIRSPACE PROFILE
FOX STEPHENS FIELD/ GILMER MUNICIPAL AIRPORT (JXI) GILMER, TEXAS

Texas Department of Transportation
Aviation Division



OBSTRUCTION ANALYSIS WAS DETERMINED USING BASEMAPPING PROVIDED BY TXDOT. A NEW OBSTRUCTION SURVEY WAS NOT CONDUCTED FOR THIS PROJECT. THERE MAY BE OBSTACLES NOT ACCOUNTED FOR DUE TO THE AGE OF THE SURVEY. BEST AVAILABLE INFORMATION WAS USED ACCORDING TO THE CONTRACT SCOPE.



RUNWAY 18 PROFILE

EXISTING/ULTIMATE OBSTRUCTION TABLE					
No.	Description	Top Elevation (msl)	PT77 Approach Penetration	OCS Approach Penetration	Proposed Disposition
1	TREES	444.4	29.1	29.1	TRIM OR REMOVE
2	TREES	427.4	19.4	17.4	TRIM OR REMOVE
3	TRANSMISSION TOWER	455.3	19.7	5.4	BURY POWER LINES
4	TRANSMISSION TOWER	443.9	5.1	None	BURY POWER LINES
5	POWER TRANSMISSION PYLON	448.2	3.9	None	BURY POWER LINES
6	TREES	453.0	5.9	None	CLEARS 20:1 OCS; NAR
7	TREES	459.5	6.2	None	CLEARS 20:1 OCS; NAR
9	TREES	468.5	10.6	None	CLEARS 20:1 OCS; NAR
10	TREES	473.7	13.0	None	CLEARS 20:1 OCS; NAR
11	TREES	476.4	14.2	None	CLEARS 20:1 OCS; NAR
12	TREES	483.6	18.1	None	CLEARS 20:1 OCS; NAR
13	TREES	478.1	10.9	None	CLEARS 20:1 OCS; NAR
15	TREES	481.4	10.0	None	CLEARS 20:1 OCS; NAR
16	TREES	484.2	10.6	None	CLEARS 20:1 OCS; NAR
Triggering Event: ALP Update					
NAR: No Action Required					

GENERAL NOTES:

3. OSTRUCTIONS IDENTIFIED BY COFFMAN ASSOCIATES FROM DATA PROVIDED BY TEXAS DEPARTMENT OF TRANSPORTATION. DATE OF DATA IS UNKNOWN.
4. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83; VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88
5. SUPPLEMENTAL DATA EXAMINED INCLUDE FAA DIGITAL OBSTACLE FILE (DOF), RELEASE DATE SEPTEMBER 5, 2017.
6. ALL ELEVATIONS IN MSL FEET.

MAGNETIC NORTH
NORTH

Magnetic Declination
02° 03' East ±0°20'
Annual Rate of Change
00° 06' West
(Source: NOAA, NCEI, April 2019)

0 200 400
HORIZONTAL SCALE IN FEET

0 20 40
VERTICAL SCALE IN FEET

NO.	REVISIONS	BY	CHK'D	DATE

TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

ALP APPROVED ACCORDING TO FAA AC 150/5300-13A PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING AND FAA NRA STUDY PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION ON AIRPORT PROPERTY.

DocuSigned by:
2/4/2021
Dan Harmon, DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR

SPONSOR ACKNOWLEDGES APPROVAL OF ALP BY TXDOT DOES NOT CONSTITUTE A COMMITMENT TO FUNDING.

DocuSigned by:
Greg Hutson, City Manager — 2/4/2021
SIGNATURE — DATE
Greg Hutson, City Manager
TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

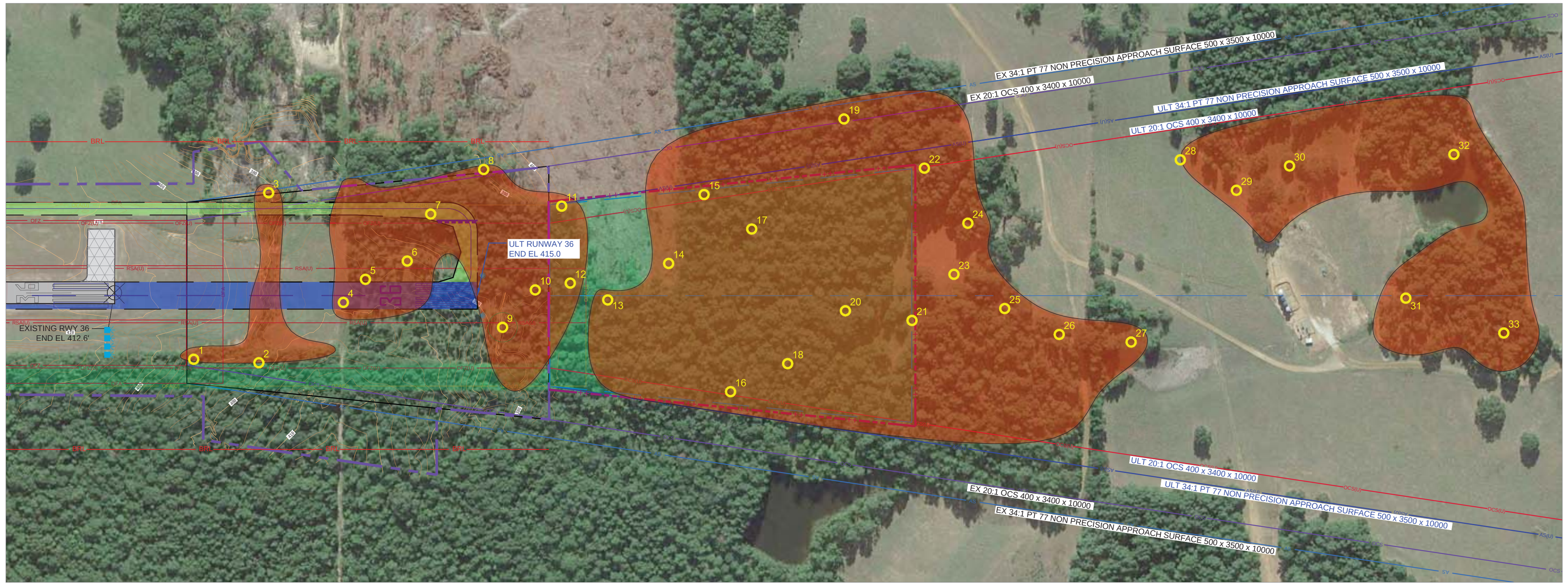
PREPARED BY:
237 N.W. Blue Parkway
Suite 100
Lee's Summit, Mo. 64063
(816) 524-3500, Fax (2575)
Coffman Phoenix Office:
4835 E. Cactus Road
Suite 235
Scottsdale, Az. 85254
(602) 993-6999, Fax (7196)

Coffman Associates
Airport Consultants
www.coffmanassociates.com

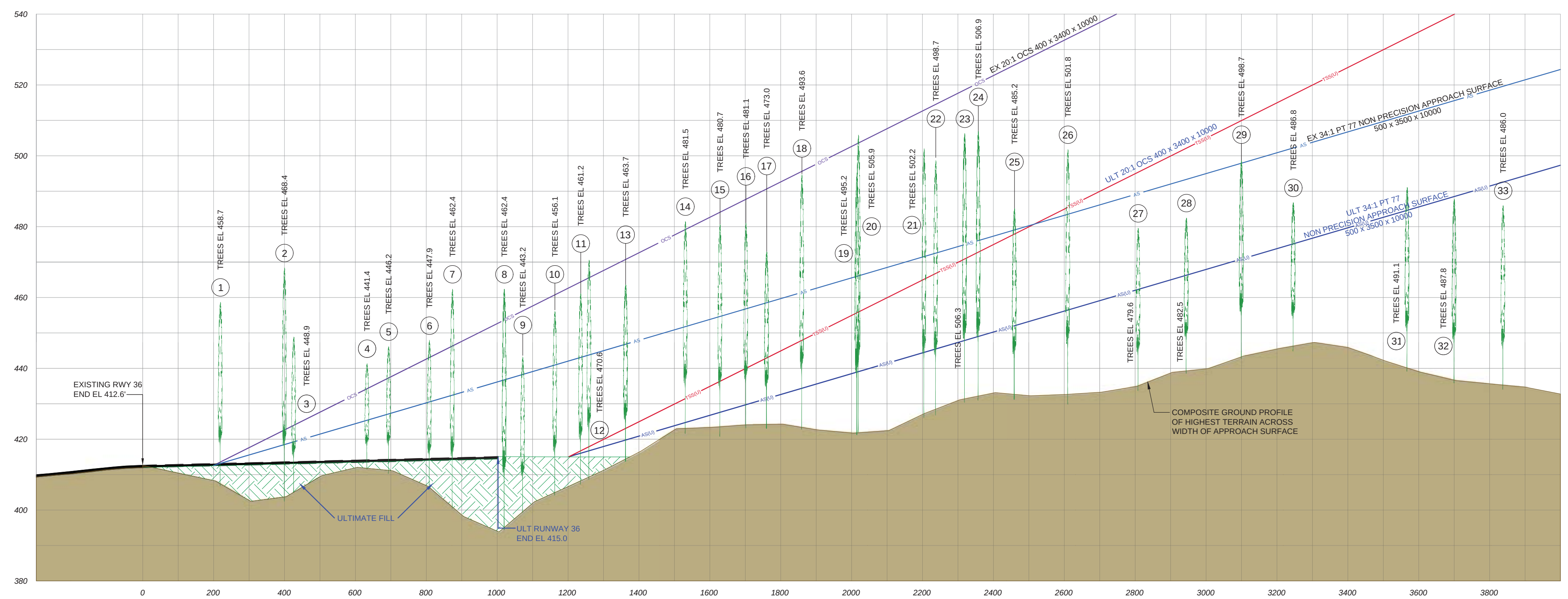
T. STUBER — MAY 2020
DESIGNED BY — DATE
D. PRZYBYCIEN — MAY 2020
DRAWN BY — DATE

IPASD RUNWAY 18
FOX STEPHENS FIELD/ GILMER MUNICIPAL AIRPORT (JXI)
GILMER, TEXAS

Texas Department of Transportation
Aviation Division



OBSTRUCTION ANALYSIS WAS DETERMINED USING BASEMAPPING PROVIDED BY TXDOT. A NEW OBSTRUCTION SURVEY WAS NOT CONDUCTED FOR THIS PROJECT. THERE MAY BE OBSTACLES NOT ACCOUNTED FOR DUE TO THE AGE OF THE SURVEY. BEST AVAILABLE INFORMATION WAS USED ACCORDING TO THE CONTRACT SCOPE.



RUNWAY 36 PROFILE

EXISTING OBSTRUCTION TABLE					
No.	Description	Top Elevation (msl)	PT77 Approach Penetration	OCS Approach Penetration	Proposed Disposition
1	TREES	458.7	45.6	45.2	TRIM OR REMOVE
2	TREES	468.4	49.9	45.8	TRIM OR REMOVE
3	TREES	448.9	29.6	N/A	TRIM OR REMOVE
4	TREES	441.4	16.0	7.1	TRIM OR REMOVE
5	TREES	446.2	19.1	8.9	TRIM OR REMOVE
6	TREE	447.9	17.4	4.8	TRIM OR REMOVE
7	TREES	462.4	30.0	16.1	TRIM OR REMOVE
8	TREES	462.4	25.7	NA	TRIM OR REMOVE
9	TREES	443.2	4.9	NONE	CLEARS 20:1 OCS; NAR
10	TREES	456.1	15.2	NONE	CLEARS 20:1 OCS; NAR
11	TREES	461.2	18.1	NONE	CLEARS 20:1 OCS; NAR
12	TREES	470.6	26.9	5.1	TRIM OR REMOVE
13	TREES	481.5	29.7	2.3	TRIM OR REMOVE
14	TREES	480.7	26.0	NONE	CLEARS 20:1 OCS; NAR
15	TREES	481.1	24.3	NONE	CLEARS 20:1 OCS; NAR
16	TREES	493.6	32.2	NONE	CLEARS 20:1 OCS; NAR
17	TREES	495.2	29.2	N/A	TRIM OR REMOVE
18	TREES	505.9	39.8	2.3	TRIM OR REMOVE
19	TREES	502.2	30.7	NONE	CLEARS 20:1 OCS; NAR
20	TREES	498.7	26.2	NONE	CLEARS 20:1 OCS; NAR
21	TREES	506.3	31.4	NONE	CLEARS 20:1 OCS; NAR
22	TREES	506.9	30.8	NONE	CLEARS 20:1 OCS; NAR
23	TREES	485.2	6.1	NONE	CLEARS 20:1 OCS; NAR
24	TREES	501.8	18.3	NONE	CLEARS 20:1 OCS; NAR
27	TREES	498.7	0.8	NONE	CLEARS 20:1 OCS; NAR
Triggering Event: ALP Update					
NAR: No Action Required					

ULTIMATE OBSTRUCTION TABLE					
No.	Description	Top Elevation (msl)	PT77 Approach Penetration	OCS Approach Penetration	Proposed Dispostion
11	TREES	461.2	45.3	N/A	TRIM OR REMOVE
12	TREES	470.6	54.0	52.8	TRIM OR REMOVE
13	TREES	463.7	43.9	40.6	TRIM OR REMOVE
14	TREES	481.5	56.8	50.1	TRIM OR REMOVE
15	TREES	480.7	53.1	N/A	TRIM OR REMOVE
16	TREES	481.1	51.4	41.1	TRIM OR REMOVE
17	TREES	473.0	41.6	30.1	TRIM OR REMOVE
18	TREES	493.6	59.3	45.7	TRIM OR REMOVE
20	TREES	505.9	66.9	50.0	TRIM OR REMOVE
21	TREES	502.2	57.8	37.1	TRIM OR REMOVE
22	TREES	498.7	27.9	32.0	TRIM OR REMOVE
23	TREES	506.3	58.5	35.5	TRIM OR REMOVE
24	TREES	506.9	57.9	34.2	TRIM OR REMOVE
25	TREES	485.2	33.2	7.3	TRIM OR REMOVE
26	TREES	501.8	45.4	16.4	TRIM OR REMOVE
27	TREES	479.6	17.4	NONE	CLEARS 20:1 OCS; NAR
28	TREES	482.5	16.3	NONE	CLEARS 20:1 OCS; NAR
29	TREES	498.7	27.9	NONE	CLEARS 20:1 OCS; NAR
30	TREES	486.8	11.7	NONE	CLEARS 20:1 OCS; NAR
31	TREES	491.1	6.6	NONE	CLEARS 20:1 OCS; NAR
Triggering Event: ALP Update					
NAR: No Action Required					

MAGNETIC NORTH
NORTH

Magnetic Declination
02° 03' East ±0°20'
Annual Rate of Change
00° 06' West
(Source: NOAA, NCEI, April 2019)

0 200 400
HORIZONTAL SCALE IN FEET

0 20 40
VERTICAL SCALE IN FEET

GENERAL NOTES:

3. OBSTRUCTIONS IDENTIFIED BY COFFMAN ASSOCIATES FROM DATA PROVIDED BY TEXAS DEPARTMENT OF TRANSPORTATION. DATE OF DATA IS UNKNOWN.
4. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83; VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88
5. SUPPLEMENTAL DATA EXAMINED INCLUDE FAA DIGITAL OBSTACLE FILE (DOF), RELEASE DATE SEPTEMBER 5, 2017.
6. ALL ELEVATIONS IN MSL FEET.

NO.	REVISIONS	BY	CHK'D	DATE

TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

ALP APPROVED ACCORDING TO FAA AC 150/5300-13A PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING AND FAA NRA STUDY PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION ON AIRPORT PROPERTY.

DocuSigned by: 2/4/2021
Dan Harmon, DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR

SPONSOR ACKNOWLEDGES APPROVAL OF ALP BY TXDOT DOES NOT CONSTITUTE A COMMITMENT TO FUNDING.

DocuSigned by: Greg Hutson, City Manager 2/4/2021
SIGNATURE — DATE
Greg Hutson, City Manager
TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

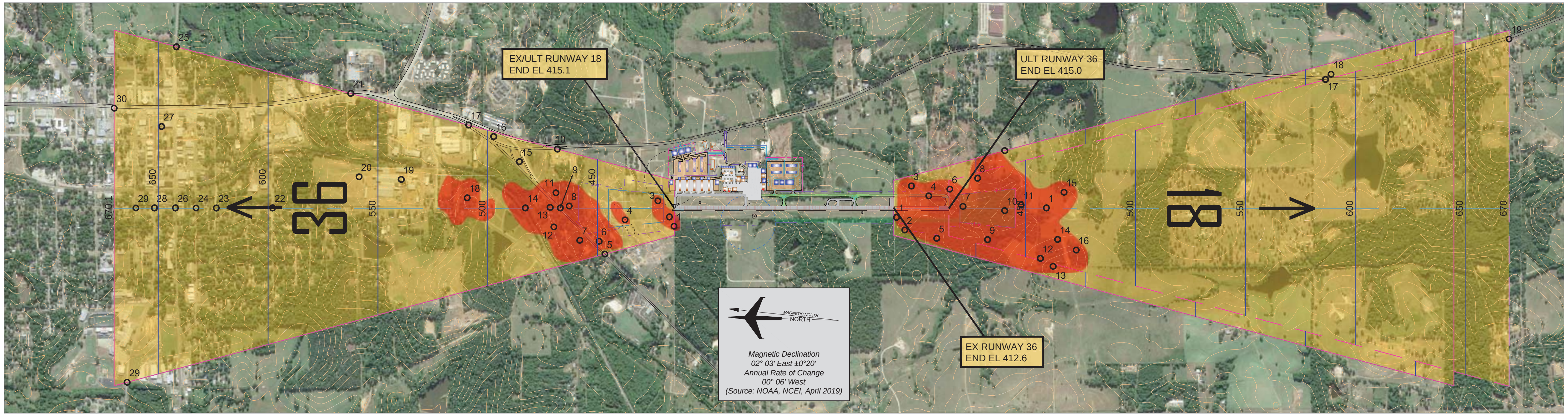
PREPARED BY:
237 N.W. Blue Parkway
Suite 100
Lee's Summit, Mo. 64063
(816) 524-3500, Fax (2575)
Coffman Phoenix Office:
4835 E. Cactus Road
Suite 235
Scottsdale, Az. 85254
(602) 993-6999, Fax (7196)

Coffman Associates
Airport Consultants
www.coffmanassociates.com

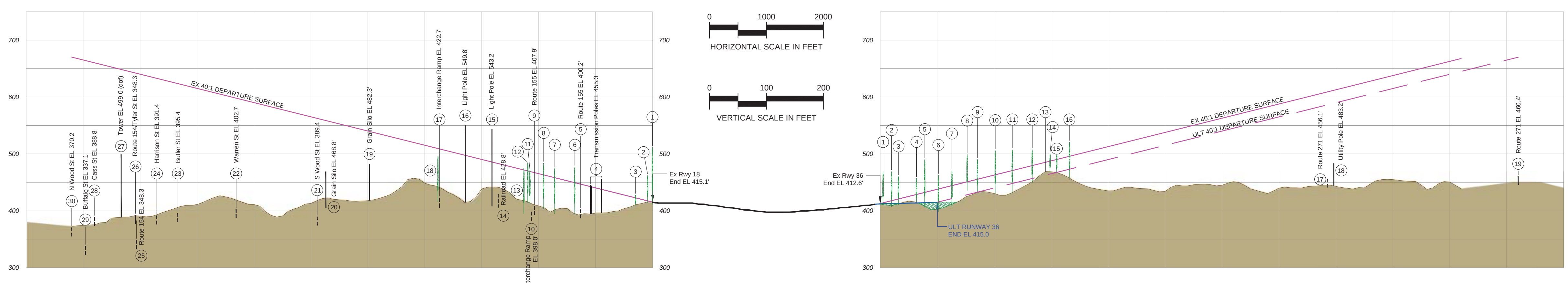
T. STUBER — MAY 2020
DESIGNED BY — DATE
D. PRZYBYCIEN — MAY 2020
DRAWN BY — DATE

IPASD RUNWAY 36
FOX STEPHENS FIELD/
GILMER MUNICIPAL AIRPORT (JXI)
GILMER, TEXAS

Texas Department of Transportation
Aviation Division



OBSTRUCTION ANALYSIS WAS DETERMINED USING BASEMAPPING PROVIDED BY TXDOT. A NEW OBSTRUCTION SURVEY WAS NOT CONDUCTED FOR THIS PROJECT. THERE MAY BE OBSTACLES NOT ACCOUNTED FOR DUE TO THE AGE OF THE SURVEY. BEST AVAILABLE INFORMATION WAS USED ACCORDING TO THE CONTRACT SCOPE.



RUNWAY 36 DEPARTURE OBSTRUCTION TABLE					
No.	Description	Top Elevation (msl)	Departure Penetrations		Proposed Disposition
			Existing	Ultimate	
1	TREES	511.4	96.2	SAME	REMOVE ALL TREES
2	TREES	461.8	44.5	SAME	REMOVE ALL TREES
3	TREES	427.5	4.9	SAME	REMOVE ALL TREES
4	TRANSMISSION POLES	455.3	17.8	SAME	ASSESS DEPARTURE AREA; MAINTAIN/UPDATE OBSTACLE DEPARTURE PROCEDURE
6	TREES	476.6	27.3	SAME	ASSESS DEPARTURE AREA; UPDATE OBSTACLE DEPARTURE PROCEDURE
7	TREES	474.7	16.7	SAME	ASSESS DEPARTURE AREA; UPDATE OBSTACLE DEPARTURE PROCEDURE
8	TREES	483.4	20.7	SAME	ASSESS DEPARTURE AREA; UPDATE OBSTACLE DEPARTURE PROCEDURE
11	TREES	471.9	3.0	SAME	ASSESS DEPARTURE AREA; UPDATE OBSTACLE DEPARTURE PROCEDURE
12	TREES	484.2	14.3	SAME	ASSESS DEPARTURE AREA; MAINTAIN/UPDATE OBSTACLE DEPARTURE PROCEDURE
13	TREES	474.1	2.5	SAME	ASSESS DEPARTURE AREA; UPDATE OBSTACLE DEPARTURE PROCEDURE
15	LIGHT POLE	543.2	57.6	SAME	ASSESS DEPARTURE AREA; MAINTAIN/UPDATE OBSTACLE DEPARTURE PROCEDURE
16	LIGHT POLE	549.8	52.5	SAME	ASSESS DEPARTURE AREA; MAINTAIN/UPDATE OBSTACLE DEPARTURE PROCEDURE
Triggering Event: ALP Update					
Survey mapping provided by TxDOT					

RUNWAY 18 DEPARTURE OBSTRUCTION TABLE					
No.	Description	Top Elevation (msl)	Departure Penetrations		Proposed Disposition
			Existing	Ultimate	
1	TREES	467.7	53.9	N/A	ASSESS DEPARTURE AREA; MAINTAIN/UPDATE OBSTACLE DEPARTURE PROCEDURE
2	TREES	469.0	51.4	N/A	REMOVE ALL TREES
3	TREES	460.0	39.2	N/A	REMOVE ALL TREES
4	TREES	456.9	57.9	N/A	REMOVE ALL TREES
5	TREES	490.1	57.9	N/A	ASSESS DEPARTURE AREA; UPDATE OBSTACLE DEPARTURE PROCEDURE
6	TREES	462.4	24.3	47.0	ASSESS DEPARTURE AREA; UPDATE OBSTACLE DEPARTURE PROCEDURE
7	TREES	470.6	26.5	49.2	ASSESS DEPARTURE AREA; UPDATE OBSTACLE DEPARTURE PROCEDURE
8	TREES	493.3	43.0	62.3	ASSESS DEPARTURE AREA; UPDATE OBSTACLE DEPARTURE PROCEDURE
9	TREES	490.9	35.6	58.3	ASSESS DEPARTURE AREA; UPDATE OBSTACLE DEPARTURE PROCEDURE
10	TREES	505.9	42.8	65.5	ASSESS DEPARTURE AREA; UPDATE OBSTACLE DEPARTURE PROCEDURE
11	TREES	506.3	35.7	58.4	ASSESS DEPARTURE AREA; UPDATE OBSTACLE DEPARTURE PROCEDURE
12	TREES	507.3	28.0	50.6	ASSESS DEPARTURE AREA; UPDATE OBSTACLE DEPARTURE PROCEDURE
13	TERRAIN	460.0	(18.5)	6.5	ASSESS DEPARTURE AREA; UPDATE OBSTACLE DEPARTURE PROCEDURE
14	TREES	499.9	12.7	35.4	ASSESS DEPARTURE AREA; UPDATE OBSTACLE DEPARTURE PROCEDURE
15	TREES	498.7	8.6	31.3	ASSESS DEPARTURE AREA; UPDATE OBSTACLE DEPARTURE PROCEDURE
16	TREES	520.6	25.0	47.6	ASSESS DEPARTURE AREA; UPDATE OBSTACLE DEPARTURE PROCEDURE
Triggering Event: ALP Update					
Survey mapping provided by TxDOT					

TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

ALP APPROVED ACCORDING TO FAA AC 150/5300-13A PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING AND FAA NRA STUDY PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION ON AIRPORT PROPERTY.

DocuSigned by: 2/4/2021
Dan Harmon, DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR

SPONSOR ACKNOWLEDGES APPROVAL OF ALP BY TXDOT DOES NOT CONSTITUTE A COMMITMENT TO FUNDING.

DocuSigned by: Greg Hutson, City Manager 2/4/2021
SIGNATURE — DATE
Greg Hutson, City Manager
TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

PREPARED BY:
237 N.W. Blue Parkway
Suite 100
Lee's Summit, Mo. 64063
(816) 524-3500, Fax (2575)
Coffman Phoenix Office:
4835 E. Cactus Road
Suite 235
Scottsdale, Az. 85254
(602) 993-6999, Fax (7196)
Coffman Associates Airport Consultants
www.coffmanassociates.com

T. STUBER — MAY 2020
DESIGNED BY — DATE
D. PRZYBYCIEN — MAY 2020
DRAWN BY — DATE

NO.	REVISIONS	BY	CHK'D	DATE

DEPARTURE SURFACE DRAWING RUNWAY 18-36
FOX STEPHENS FIELD/ GILMER MUNICIPAL AIRPORT (JXI)
GILMER, TEXAS

Texas Department of Transportation
Aviation Division

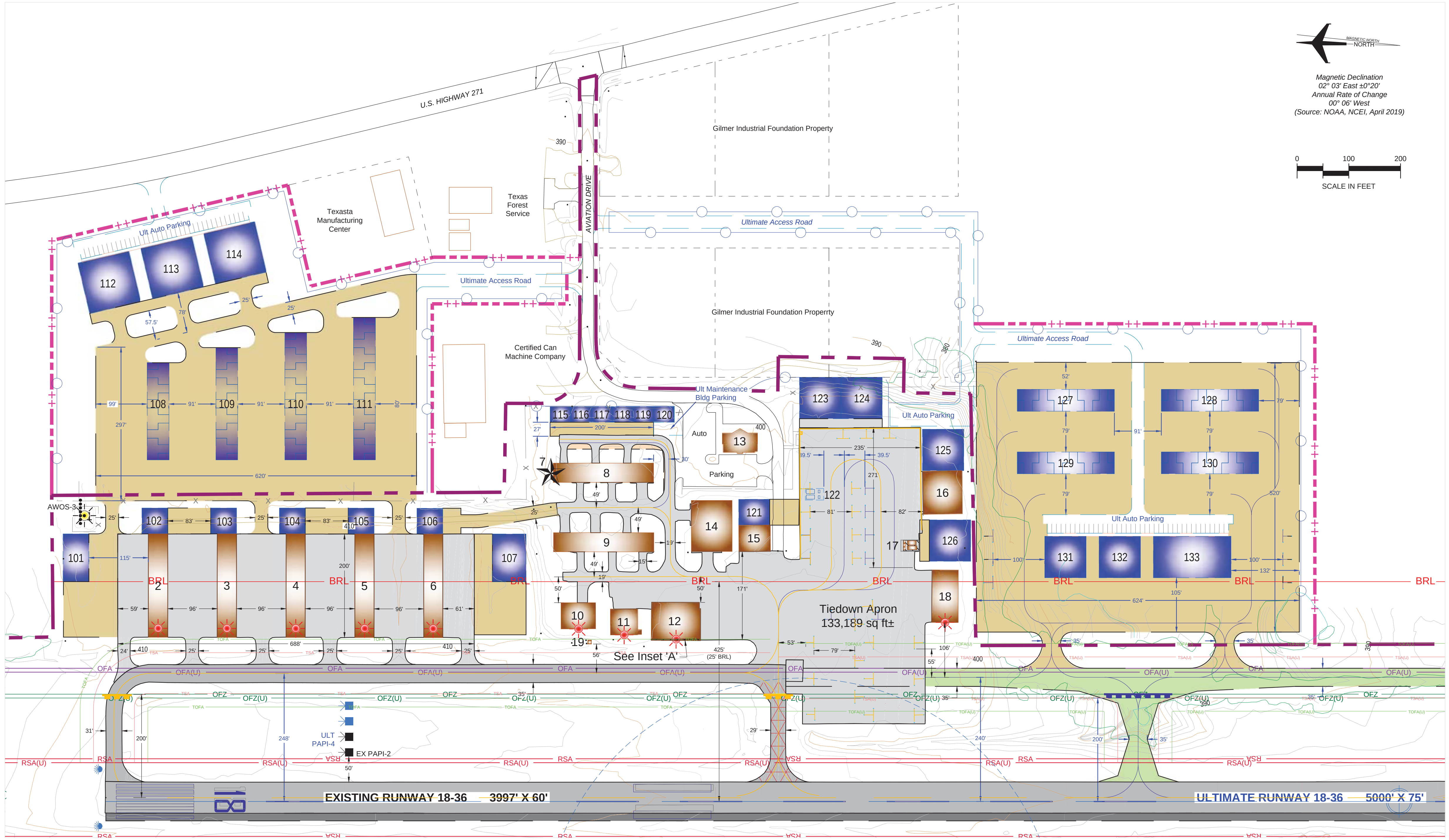
EXISTING AIRPORT FACILITIES

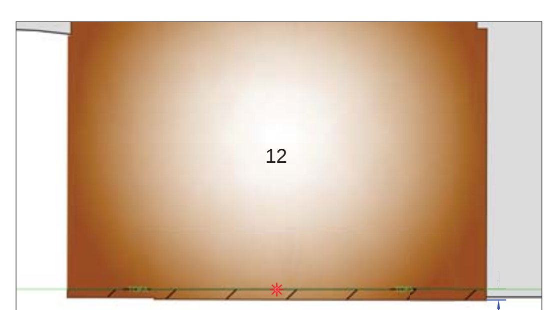
NO.	DESCRIPTION	ELEV. (MSL)
1	AWOS-3	447.2'
2	T-Hangars	427.6'
3	T-Hangars	427.5'
4	T-Hangars	427.5'
5	T-Hangars	426.8'
6	T-Hangars	426.7'
7	Airport Beacon	470.7'
8	T-Hangars	417.7'
9	T-Hangars	418.0'
10	Executive Box Hangar	422.8'
11	Executive Box Hangar	423.9'
12	Executive Box Hangar	426.0'
13	Terminal Building	417.8'
14	Flight of the Phoenix Aviation Museum	430.6'
15	Executive Box Hangar	422.4'
16	Executive Box Hangar	433.2'
17	Self-Service 100LL Fuel	415.0'
18	Executive Box Hangar	428.1'
19	Electrical Vault	421.7'

ULTIMATE AIRPORT FACILITIES

NO.	DESCRIPTION	ELEV. (AGL)*
101	Box Hangar	22.0'
102	Box Hangar	22.0'
103	Box Hangar	22.0'
104	Box Hangar	22.0'
105	Box Hangar	22.0'
106	Box Hangar	22.0'
107	Box Hangar	28.0'
108	T-Hangars	17.0'
109	T-Hangars	17.0'
110	T-Hangars	17.0'
111	T-Hangars	17.0'
112	Aviation Industrial Park Facility	32.0'
113	Aviation Industrial Park Facility	32.0'
114	Aviation Industrial Park Facility	32.0'
115	Linear Box Hangar	22.0'
116	Linear Box Hangar	22.0'
117	Linear Box Hangar	22.0'
118	Linear Box Hangar	22.0'
119	Linear Box Hangar	22.0'
120	Maintenance Building	22.0'
121	Box Hangar	24.0'
122	Self-Service 100LL and Jet A Fuel	12.0'
123	Box Hangar	28.0'
124	Box Hangar	28.0'
125	Box Hangar	28.0'
126	Box Hangar	28.0'
127	T-Hangars	17.0'
128	T-Hangars	17.0'
129	T-Hangars	17.0'
130	T-Hangars	17.0'
131	Box Hangar	28.0'
132	Box Hangar	28.0'
133	Box Hangar	30.0'
134	AWOS-3	35.0'

* Structure heights are estimates based on typical heights for proposed building type.





INSET 'A'
Not to Scale

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		AVIGATION EASEMENT
		SECTION CORNERS
		AIRPORT REFERENCE POINT (ARP)
	N/A	AIRPORT BEACON
		AWOS-3
BRL	BRL	BUILDING RESTRICTION LINE (25')
		NAVAID CRITICAL AREA
		STRUCTURES ON AIRPORT
		STRUCTURE OFF AIRPORT
N/A		ABANDON/REMOVE
		FENCE LINE
		HOLD MARKING
		RUNWAY PAVEMENT
		TAXIWAY PAVEMENT
		APRON PAVEMENT
DESIGNATION		SURVEY MONUMENT WITH IDENTIFIER
OFA	OFA(U)	OBJECT FREE AREA
RSA	RSA(U)	RUNWAY SAFETY AREA
OFZ	OFZ(U)	OBSTACLE FREE ZONE
RPZ		RUNWAY PROTECTION ZONE
TOFA	TOFA	TAXIWAY OBJECT FREE AREA
TSA	TSA	TAXIWAY/TAXILANE SAFETY AREA
		OBSTRUCTION LIGHT
		TIE-DOWNS
		PAPI-4
		RUNWAY END IDENTIFIER LIGHTS (REIL)
		TREELINE
400	400	TOPOGRAPHIC CONTOURS

GENERAL NOTES:

1. UNLESS NOTED OTHERWISE ALL EXISTING COORDINATES, ELEVATIONS, AND BEARINGS FROM DATA RECEIVED FROM THE TEXAS DEPARTMENT OF TRANSPORTATION (TxDOT).
2. OTHER DATA SOURCES CONSULTED INCLUDE FAA AIRPORT MASTER RECORD FORM 5010, AND THE FAA AIRPORT FACILITY DIRECTORY http://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dafd/, AND http://webdatasheet.faa.gov/
3. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83;
VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88.
4. SEE INNER PORTION OF THE APPROACH SURFACE DRAWINGS FOR OBSTACLE CLEARANCE SURFACES AND PART 77 APPROACH SURFACE PENETRATIONS.
5. MAGNETIC DECLINATION FROM NOAA NATIONAL GEOPHYSICAL DATA CENTER.
6. OBSTRUCTION LIGHTING TO BE ADDED TO THE FOLLOWING BUILDINGS WITHIN THE BRL, BUILDING NUMBERS, 2, 3, 4, 5, 6, 10, 11, 12, AND 18.

NO.	REVISIONS	BY	CHK'D	DATE

TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

ALP APPROVED ACCORDING TO FAA AC 150/5300-13A PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING AND FAA NRA STUDY PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION ON AIRPORT PROPERTY.

DocuSigned by: 2/4/2021
Dan Harmon, DIRECTOR, AVIATION DIVISION DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR

SPONSOR ACKNOWLEDGES APPROVAL OF ALP BY TXDOT DOES NOT CONSTITUTE A COMMITMENT TO FUNDING.

DocuSigned by: Greg Hutson, City Manager 2/4/2021
SIGNATURE DATE
Greg Hutson, City Manager
TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

PREPARED BY:
237 N.W. Blue Parkway
Suite 100
Lee's Summit, Mo. 64063
(816) 524-3500, Fax (2575)
Coffman Phoenix Office:
4835 E. Cactus Road
Suite 235
Scottsdale, Az. 85254
(602) 993-6999, Fax (7196)
Coffman Associates
Airport Consultants
www.coffmanassociates.com

T. STUBER MAY 2020
DESIGNED BY DATE
D. PRZYBYCIEN MAY 2020
DRAWN BY DATE

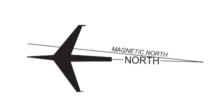
TERMINAL AREA DRAWING
FOX STEPHENS FIELD/ GILMER MUNICIPAL AIRPORT (JXI)
GILMER, TEXAS

Texas Department of Transportation
Aviation Division

SHEET 9 OF 11

LEGEND

Airfield Operations	Existing Property Line
General Aviation	Existing Avigation Easement
Mixed Use	Ultimate Property Line



Magnetic Declination
02° 03' East ±0°20'
Annual Rate of Change
00° 06' West
(Source: NOAA, NCEI, April 2019)

0 300 600
SCALE IN FEET

NO.	REVISIONS	BY	CHK'D	DATE

TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

ALP APPROVED ACCORDING TO FAA AC 150/5300-13A PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING AND FAA NRA STUDY PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION ON AIRPORT PROPERTY.

DocuSigned by:
2/4/2021
Dan Harmon, DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR

SPONSOR ACKNOWLEDGES APPROVAL OF ALP BY TXDOT DOES NOT CONSTITUTE A COMMITMENT TO FUNDING.

DocuSigned by:
Greg Hutson, City Manager 2/4/2021
SIGNATURE — DATE

Greg Hutson, City Manager
TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

PREPARED BY:
237 N.W. Blue Parkway
Suite 100
Lee's Summit, Mo. 64063
(816) 524-3500, Fax (2575)
Coffman Phoenix Office:
4835 E. Cactus Road
Suite 235
Scottsdale, Az. 85254
(602) 993-6999, Fax (7196)

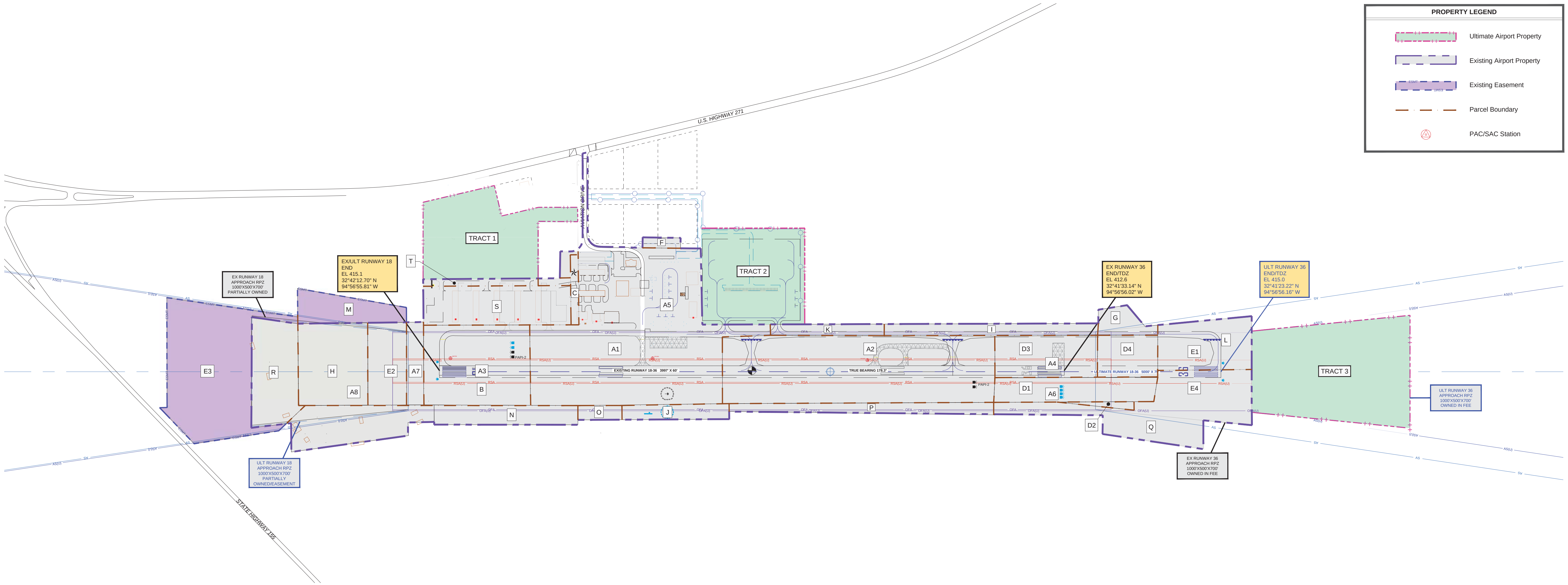
Coffman Associates
Airport Consultants
www.coffmanassociates.com

T. STUBER — MAY 2020
DESIGNED BY — DATE

D. PRZYBYCIEN — MAY 2020
DRAWN BY — DATE

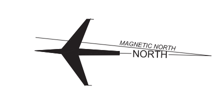
LAND USE DRAWING
FOX STEPHENS FIELD/ GILMER MUNICIPAL AIRPORT (JXI)
GILMER, TEXAS

Texas Department of Transportation
Aviation Division



EXISTING PROPERTY TABLE										
Lot ID	Grantor	Grantee	Acreage	Interest	Conveyance Instrument	Book - Page	Deed No.	Date	FAA Grant Number	Remarks
A1	Gilmer Industrial Fnd	City of Gilmer	24.70	Fee Simple	Warranty Deed	Book 311, Page 95		6/30/1967	FAAP 9-41-202-C801	
A2	Glynn P. & Ferris Arrington	City of Gilmer	17.20	Fee Simple	Warranty Deed	Book 315, Page 543		4/17/1968	FAAP 9-41-202-C801	
A3	Uphur County	City of Gilmer	8.01	Fee Simple	Lease	Book 315, Page 545		4/17/1968	FAAP 9-41-202-C801	
A4	Futrell Jones	City of Gilmer	2.21	Fee Simple	Easement	Book 315, Page 548		4/17/1968	FAAP 9-41-202-C801	Track A4 Easement (2.41 Acres) in part of Tract D3 (4.05 Acres)
A5	Gilmer Industrial Fnd	City of Gilmer	24.70	Fee Simple	Warranty Deed	Book 315, Page 552		4/17/1968	FAAP 9-41-202-C801	
A6	Ana Beth Jones Holmes & Don Holmes	City of Gilmer	1.03	Fee Simple	Easement	Book 315, Page 556		4/17/1968	FAAP 9-41-202-C801	Tract A6 Easement (1.03 Acres) is part of Tract D1 (3.71 Acres)
A7	Ray D. & Johnnie Lou Sorrells	City of Gilmer	1.32	Fee Simple	Warranty Deed	Book 315, Page 574		4/18/1968	FAAP 9-41-202-C801	
A8	Ray D. & Johnnie Lou Sorrells	City of Gilmer	3.94	Fee Simple	Easement	Book 315, Page 575		4/18/1968	FAAP 9-41-202-C801	Tract A8 Easement (3.94 Acres) is part of Tract E3 (20.78 Acres)
B	City of Gilmer and Upshur County	City of Gilmer	0.77	Fee Simple	Right of Way	Book 331, Page 359		6/9/1970		Includes 30' Construction Easement Along East Side of Right of Way
C	Gilmer Industrial Fnd	City of Gilmer	0.52	Fee Simple	Warranty Deed	Book 448, Page 895		10/27/1983		
D1	Ana Beth Holmes	City of Gilmer	3.71	Fee Simple	Warranty Deed	Book 478, Page 149		7/17/1986	TAC 852-22	
D2	Ana Beth Holmes	City of Gilmer	0.31	Fee Simple	Warranty Deed	Book 478, Page 149		7/17/1986	TAC 852-22	
D3	William D. & Billie M. Hadley	City of Gilmer	4.05	Fee Simple	Judgement	File No. 297-86		8/28/1986	TAC 852-22	
D4	Gilmer Industrial Fnd	City of Gilmer	2.37	Fee Simple	Warranty Deed	Book 487, Page 93		4/17/1987	TAC 852-22	
D5	William D. & Billie M. Hadley	City of Gilmer	4.05	Fee Simple	Judgement	Book 158, Page 486		5/2/1994	TAC 852-22	
E1	Thomas Coy Sisson	City of Gilmer	2.71	Fee Simple	Avigation Easement	Book 194, Page 152		6/9/1995	TX# 94-11-031	Tract E1 Avigation Easement (2.71 Acres) is part of Tract L (4.36 Acres)
E2	Gilmer Industrial Fnd	City of Gilmer	3.01	Fee Simple	Warranty Deed	Book 207, Page 331		12/13/1995	TX# 94-11-031	
E3	Gilmer Industrial Fnd	City of Gilmer	20.78	Fee Simple	Avigation Easement	Book 210, Page 951		12/19/1995	TX# 94-11-031	
E4	Ana Beth Holmes	City of Gilmer	2.49	Fee Simple	Avigation Easement	Book 218, Page 998		8/12/1996	TX# 94-11-031	Tract E4 Avigation Easement (2.49 Acres) is part of Tract Q (8.55 Acres)
F	Gilmer Industrial Fnd	City of Gilmer	0.37	Fee Simple	Warranty Deed	Book 1258, Page 790	201604840	6/30/2016		
G	Gilmer Industrial Fnd	City of Gilmer	1.20	Fee Simple	Warranty Deed	Book 1312, Page 7	201704009	6/26/2017	1319GLMER	
H	Gilmer Industrial Fnd	City of Gilmer	5.37	Fee Simple	Warranty Deed	Book 1312, Page 12	201704010	6/26/2017	1319GLMER	
I	William D. & Billie M. Hadley	City of Gilmer	2.43	Fee Simple	Warranty Deed	Book 1313, Page 311	201704210	7/5/2017	1319GLMER	
J	Robby L. Wright	City of Gilmer	1.52	Fee Simple	Warranty Deed		201706314	9/26/2017	1319GLMER	
K	David Edward Pickitt	City of Gilmer	1.21	Fee Simple	Warranty Deed		201706316	9/26/2017	1319GLMER	
L	Coye Sisson	City of Gilmer	4.36	Fee Simple	Warranty Deed		201706401	9/29/2017	1319GLMER	
M	Sunset Memorial Park	City of Gilmer	2.56	Fee Simple	Avigation Easement		201800392	1/16/2018	1319GLMER	
N	John W. Farrell	City of Gilmer	2.63	Fee Simple	Warranty Deed		201800368	1/18/2018	1319GLMER	
O	Sulphur River Gilmer LP	City of Gilmer	0.60	Fee Simple	Warranty Deed		201802717	4/24/2018	1319GLMER	
P	Jared K. Harty	City of Gilmer	2.53	Fee Simple	Warranty Deed		201802718	4/24/2018	1319GLMER	
Q	Ana Beth Jones Holmes	City of Gilmer	8.55	Fee Simple	Warranty Deed		201803409	5/23/2018	1319GLMER	
R	Henry & Judi Wilson	City of Gilmer	9.12	Fee Simple	Warranty Deed		201905689	8/29/2019	1319GLMER	
S	Gilmer Industrial Fnd	City of Gilmer	5.468	Fee Simple	Warranty Deed	Vol 446,Page 311	2791	2/15/2002		
T	Gilmer Industrial Fnd	City of Gilmer	0.34	Fee Simple	Warranty Deed	Vol 815,Page 573	200806177	7/18/2008		

ULTIMATE PROPERTY TABLE		
TRACT ID	Acreage	Remarks
1	9.20	Fee Simple
2	9.20	Fee Simple
3	14.40	Acquire in Fee for Runway Protection Zone Control



Magnetic Declination
02° 03' East ±0°20'
Annual Rate of Change
00° 06' West
(Source: NOAA, NCEI, April 2019)

0 300 600
SCALE IN FEET

FOR APPROVAL BY
CITY OF GILMER, TEXAS

Greg Hutson
City Manager
DATE:

FAA APPROVAL STAMP

NO.	REVISIONS	BY	CHK'D	DATE

TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

ALP APPROVED ACCORDING TO FAA AC 150/5300-13A PLUS THE REQUIREMENTS OF A FAVORABLE ENVIRONMENTAL FINDING AND FAA NRA STUDY PRIOR TO THE START OF ANY LAND ACQUISITION OR CONSTRUCTION ON AIRPORT PROPERTY.

DocuSigned by:
2/4/2021
Dan Harmon, DIRECTOR, AVIATION DIVISION — DATE

AIRPORT SPONSOR

CURRENT AND FUTURE DEVELOPMENT DEPICTED ON THIS ALP IS APPROVED AND SUPPORTED BY AIRPORT SPONSOR

SPONSOR ACKNOWLEDGES APPROVAL OF ALP BY TXDOT DOES NOT CONSTITUTE A COMMITMENT TO FUNDING.

DocuSigned by:
Greg Hutson, City Manager — 2/4/2021
SIGNATURE — DATE
Greg Hutson, City Manager
TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

PREPARED BY:
237 N.W. Blue Parkway
Suite 100
Lee's Summit, Mo. 64063
(816) 524-3500, Fax (2575)
Coffman Phoenix Office:
4835 E. Cactus Road
Suite 235
Scottsdale, Az. 85254
(602) 993-6999, Fax (7196)

Coffman Associates
Airport Consultants
www.coffmanassociates.com

T. STUBER — MAY 2020
DESIGNED BY — DATE

D. PRZYBYCIEN — MAY 2020
DRAWN BY — DATE

AIRPORT PROPERTY MAP
FOX STEPHENS FIELD/
GILMER MUNICIPAL AIRPORT (JXI)
GILMER, TEXAS

Texas Department of Transportation
Aviation Division

Texas Department of Transportation

125 EAST 11TH STREET, AUSTIN, TEXAS 78701-2483 | 512.463.8588 | WWW.TXDOT.GOV

February 4, 2021

Mr. Greg Hutson
City Manager
City of Gilmer, Texas
ghutson@etex.net

VIA E-MAIL

RE: Fox Stephens Field/Gilmer Municipal Airport (KJXI) Airport Layout Plan (ALP)

Dear Mr. Hutson,

The Fox Stephens Field/Gilmer Municipal Airport (KJXI) Airport Layout Plan (ALP), prepared by Coffman Associates, and bearing your signature, is approved and the master plan is accepted. A signed copy of the approved ALP is enclosed.

An aeronautical study (no. 2020-ASW-6166-NRA) was conducted on the proposed development. This determination does not constitute FAA approval or disapproval of the physical development involved in the proposal. It is a determination with respect to the safe and efficient use of navigable airspace by aircraft and with respect to the safety of persons and property on the ground.

In making this determination, the FAA has considered matters such as the effects the proposal would have on existing or planned traffic patterns of neighboring airports, the effects it would have on the existing airspace structure and projected programs of the FAA, the effects it would have on the safety of persons and property on the ground, and the effects that existing or proposed manmade objects (on file with the FAA), and known natural objects within the affected area would have on the airport proposal.

The FAA has only limited means to prevent the construction of structures near an airport. The airport sponsor has the primary responsibility to protect the airport environs through such means as local zoning ordinances, property acquisition, avigation easements, letters of agreement or other means.

This ALP approval is conditioned on acknowledgement that any development on airport property requiring Federal environmental approval must receive such written approval from FAA prior to commencement of the subject development. This ALP approval is also conditioned on acceptance of the plan under local land use laws. We encourage appropriate agencies to adopt land use and height restrictive zoning based on the plan.

Approval of the plan does not indicate that the United States will participate in the cost of any development proposed. AIP funding requires evidence of eligibility and justification at the time a funding request is ripe for consideration. When construction of any proposed structure or development indicated on the plan is undertaken, such construction requires normal 45-day advance notification to FAA for review in accordance with applicable Federal Aviation Regulations (i.e., Parts 77, 157, 152, etc.). More notice is generally beneficial to ensure that all statutory, regulatory, technical and operational issues can be addressed in a timely manner.

Please attach this letter to the Airport Layout Plan and retain it in the airport. We wish you great success in your plans for the development of the airport.

Sincerely,

DocuSigned by:
Kathryn Cromwell
0465E34E582241B...

Kaity Cromwell, AICP
Planner, TxDOT Aviation
512-416-4572
kaity.cromwell@txdot.gov

CC: Jim Halley, TxDOT AVN
Jessica Bryan, Texas ADO
Sarah Conner, Texas ADO
Mike Dmyterko, Coffman Associates

Certificate Of Completion

Envelope Id: FE562D4DD8F241F0AE7738625E654EC6		Status: Completed
Subject: Please DocuSign: Gilmer Municipal Airport (KJXI) ALP Approval		
Source Envelope:		
Document Pages: 13	Signatures: 23	Envelope Originator:
Certificate Pages: 5	Initials: 0	Katheryn Cromwell
AutoNav: Enabled		125 E. 11th Street
EnvelopeId Stamping: Enabled		Austin, TX 78701
Time Zone: (UTC-06:00) Central Time (US & Canada)		Kaity.Cromwell@txdot.gov
		IP Address: 204.64.21.250

Record Tracking

Status: Original 2/4/2021 10:32:59 AM	Holder: Katheryn Cromwell Kaity.Cromwell@txdot.gov	Location: DocuSign

Signer Events	Signature	Timestamp
Greg Hutson, City Manager ghutson@etex.net City Manager Security Level: Email, Account Authentication (None)	DocuSigned by: Greg Hutson, City Manager B729E3EE62AE419... Signature Adoption: Pre-selected Style Using IP Address: 67.216.96.28	Sent: 2/4/2021 10:33:41 AM Viewed: 2/4/2021 11:22:41 AM Signed: 2/4/2021 11:23:26 AM

Electronic Record and Signature Disclosure:
Accepted: 2/4/2021 11:22:41 AM
ID: b6a13ac1-5e87-46c4-8d57-52695bdb718d

Dan Harmon dan.harmon@txdot.gov Director, Aviation Division TXDOT Security Level: Email, Account Authentication (None)	DocuSigned by: EA0A4EF01FA5423... Signature Adoption: Uploaded Signature Image Using IP Address: 204.64.21.251	Sent: 2/4/2021 11:23:33 AM Viewed: 2/4/2021 11:24:15 AM Signed: 2/4/2021 11:25:03 AM

Electronic Record and Signature Disclosure:
Accepted: 2/7/2017 11:28:24 AM
ID: 26db7597-49b9-4513-aae9-87b1dcbe1f1e

Katheryn Cromwell kaity.cromwell@txdot.gov Texas Department of Transportation Security Level: Email, Account Authentication (None)	DocuSigned by: katheryn Cromwell 0465E34E582241B... Signature Adoption: Pre-selected Style Using IP Address: 204.64.21.251	Sent: 2/4/2021 11:25:09 AM Viewed: 2/4/2021 12:24:54 PM Signed: 2/4/2021 12:25:01 PM

Electronic Record and Signature Disclosure:
Not Offered via DocuSign

In Person Signer Events	Signature	Timestamp

Editor Delivery Events	Status	Timestamp

Agent Delivery Events	Status	Timestamp

Intermediary Delivery Events	Status	Timestamp

Certified Delivery Events	Status	Timestamp

Carbon Copy Events	Status	Timestamp
Jim Halley james.halley@txdot.gov Texas Department of Transportation Security Level: Email, Account Authentication (None) **Electronic Record and Signature Disclosure:** Not Offered via DocuSign	COPIED	Sent: 2/4/2021 12:25:07 PM
Sarah Conner Sarah.Conner@faa.gov Security Level: Email, Account Authentication (None) **Electronic Record and Signature Disclosure:** Not Offered via DocuSign	COPIED	Sent: 2/4/2021 12:25:08 PM
Sarah Conner Sarah.Conner@faa.gov Security Level: Email, Account Authentication (None) **Electronic Record and Signature Disclosure:** Not Offered via DocuSign	COPIED	Sent: 2/4/2021 12:25:09 PM
Mike Dmyterko miked@coffmanassociates.com Security Level: Email, Account Authentication (None) **Electronic Record and Signature Disclosure:** Not Offered via DocuSign	COPIED	Sent: 2/4/2021 12:25:09 PM Viewed: 2/4/2021 1:13:52 PM
Mike Dmyterko miked@coffmanassociates.com Security Level: Email, Account Authentication (None) **Electronic Record and Signature Disclosure:** Not Offered via DocuSign	COPIED	Sent: 2/4/2021 12:25:11 PM

Witness Events	Signature	Timestamp

Notary Events	Signature	Timestamp

Envelope Summary Events	Status	Timestamps
Envelope Sent	Hashed/Encrypted	2/4/2021 10:33:41 AM
Certified Delivered	Security Checked	2/4/2021 12:24:54 PM
Signing Complete	Security Checked	2/4/2021 12:25:01 PM
Completed	Security Checked	2/4/2021 12:25:11 PM

Payment Events	Status	Timestamps

Electronic Record and Signature Disclosure

ELECTRONIC RECORD AND SIGNATURE DISCLOSURE

From time to time, Texas Department of Transportation (we, us or Company) may be required by law to provide to you certain written notices or disclosures. Described below are the terms and conditions for providing to you such notices and disclosures electronically through your DocuSign, Inc. (DocuSign) Express user account. Please read the information below carefully and thoroughly, and if you can access this information electronically to your satisfaction and agree to these terms and conditions, please confirm your agreement by clicking the 'I agree' button at the bottom of this document.

Getting paper copies

At any time, you may request from us a paper copy of any record provided or made available electronically to you by us. For such copies, as long as you are an authorized user of the DocuSign system you will have the ability to download and print any documents we send to you through your DocuSign user account for a limited period of time (usually 30 days) after such documents are first sent to you. After such time, if you wish for us to send you paper copies of any such documents from our office to you, you will be charged a $0.00 per-page fee. You may request delivery of such paper copies from us by following the procedure described below.

Withdrawing your consent

If you decide to receive notices and disclosures from us electronically, you may at any time change your mind and tell us that thereafter you want to receive required notices and disclosures only in paper format. How you must inform us of your decision to receive future notices and disclosure in paper format and withdraw your consent to receive notices and disclosures electronically is described below.

Consequences of changing your mind

If you elect to receive required notices and disclosures only in paper format, it will slow the speed at which we can complete certain steps in transactions with you and delivering services to you because we will need first to send the required notices or disclosures to you in paper format, and then wait until we receive back from you your acknowledgment of your receipt of such paper notices or disclosures. To indicate to us that you are changing your mind, you must withdraw your consent using the DocuSign 'Withdraw Consent' form on the signing page of your DocuSign account. This will indicate to us that you have withdrawn your consent to receive required notices and disclosures electronically from us and you will no longer be able to use your DocuSign Express user account to receive required notices and consents electronically from us or to sign electronically documents from us.

All notices and disclosures will be sent to you electronically

Unless you tell us otherwise in accordance with the procedures described herein, we will provide electronically to you through your DocuSign user account all required notices, disclosures, authorizations, acknowledgements, and other documents that are required to be provided or made available to you during the course of our relationship with you. To reduce the chance of you inadvertently not receiving any notice or disclosure, we prefer to provide all of the required notices and disclosures to you by the same method and to the same address that you have given us. Thus, you can receive all the disclosures and notices electronically or in paper format through the paper mail delivery system. If you do not agree with this process, please let us know as described below. Please also see the paragraph immediately above that describes the consequences of your electing not to receive delivery of the notices and disclosures electronically from us.

How to contact Texas Department of Transportation:
You may contact us to let us know of your changes as to how we may contact you electronically, to request paper copies of certain information from us, and to withdraw your prior consent to receive notices and disclosures electronically as follows:
To contact us by email send messages to: kevin.setoda@txdot.gov

To advise Texas Department of Transportation of your new e-mail address
To let us know of a change in your e-mail address where we should send notices and disclosures electronically to you, you must send an email message to us at kevin.setoda@txdot.gov and in the body of such request you must state: your previous e-mail address, your new e-mail address. We do not require any other information from you to change your email address..
In addition, you must notify DocuSign, Inc to arrange for your new email address to be reflected in your DocuSign account by following the process for changing e-mail in DocuSign.
To request paper copies from Texas Department of Transportation
To request delivery from us of paper copies of the notices and disclosures previously provided by us to you electronically, you must send us an e-mail to kevin.setoda@txdot.gov and in the body of such request you must state your e-mail address, full name, US Postal address, and telephone number. We will bill you for any fees at that time, if any.
To withdraw your consent with Texas Department of Transportation
To inform us that you no longer want to receive future notices and disclosures in electronic format you may:

i. decline to sign a document from within your DocuSign account, and on the subsequent page, select the check-box indicating you wish to withdraw your consent, or you may;
ii. send us an e-mail to kevin.setoda@txdot.gov and in the body of such request you must state your e-mail, full name, IS Postal Address, telephone number, and account number. We do not need any other information from you to withdraw consent.. The consequences of your withdrawing consent for online documents will be that transactions may take a longer time to process..

Required hardware and software

Operating Systems:	Windows2000? or WindowsXP?
Browsers (for SENDERS):	Internet Explorer 6.0? or above
Browsers (for SIGNERS):	Internet Explorer 6.0?, Mozilla FireFox 1.0, NetScape 7.2 (or above)
Email:	Access to a valid email account
Screen Resolution:	800 x 600 minimum
Enabled Security Settings:	•Allow per session cookies •Users accessing the internet behind a Proxy Server must enable HTTP 1.1 settings via proxy connection

** These minimum requirements are subject to change. If these requirements change, we will provide you with an email message at the email address we have on file for you at that time providing you with the revised hardware and software requirements, at which time you will have the right to withdraw your consent.

Acknowledging your access and consent to receive materials electronically
To confirm to us that you can access this information electronically, which will be similar to other electronic notices and disclosures that we will provide to you, please verify that you were able to read this electronic disclosure and that you also were able to print on paper or electronically save this page for your future reference and access or that you were able to e-mail this disclosure and consent to an address where you will be able to print on paper or save it for your future reference and access. Further, if you consent to receiving notices and disclosures exclusively in electronic format on the terms and conditions described above, please let us know by clicking the 'I agree' button below.
By checking the 'I Agree' box, I confirm that:

- I can access and read this Electronic CONSENT TO ELECTRONIC RECEIPT OF ELECTRONIC RECORD AND SIGNATURE DISCLOSURES document; and

- I can print on paper the disclosure or save or send the disclosure to a place where I can print it, for future reference and access; and

- Until or unless I notify Texas Department of Transportation as described above, I consent to receive from exclusively through electronic means all notices, disclosures, authorizations, acknowledgements, and other documents that are required to be provided or made available to me by Texas Department of Transportation during the course of my relationship with you.

Coffman Associates
Airport Consultants

www.coffmanassociates.com

KANSAS CITY
(816) 524-3500

12920 Metcalf Avenue
Suite 200
Overland Park, KS 66213

PHOENIX
(602) 993-6999

4835 E. Cactus Road
Suite 235
Scottsdale, AZ 85254