CHAPTER FOUR

ALTERNATIVES

In the previous chapter, airside and landside facilities required to satisfy aviation demand through the long range planning period were identified. In addition, the various FAA design standards, were discussed. The next step in the planning process is to evaluate reasonable ways these facilities can be provided and the design standards can be met. There can be numerous combinations of design alternatives, but the alternatives presented here are those with the perceived greatest potential for implementation.

Any development proposed for a master plan is evolved from an analysis of projected needs for a set period of time. Though the needs were determined by utilizing industry-accepted statistical methodologies, unforeseen future events could impact the timing of the needs identified. The master planning process attempts to develop a viable concept for meeting the needs caused by projected demands for the next 20 years. However, no plan of action should be developed which may be inconsistent with the future goals and objectives of the City of Georgetown and its citizens, as represented through elected officials, who have a vested interest in the development and operation of the airport.

PLANNING OBJECTIVES

A set of basic planning objectives has been established to guide the alternatives development process. It is the goal of this master planning effort to produce a development plan for the Airport that addresses forecast aviation demand and to meet FAA design standards to the greatest degree possible. As owner and operator, the City of Georgetown provides the overall guidance for the operation and development of the Airport. It is of primary concern that the Airport is marketed, developed, and operated for the betterment of the community and its users. The following basic planning objectives have been defined for this planning effort:

- To develop a safe, attractive, and efficient aviation facility in accordance with applicable federal, state, and local regulations.
- To develop a facility that is responsive to the current and long term needs of all aviation users.
- To be reflective and supportive of the long term planning efforts currently applicable to the region.
- To develop a facility with a focus on self-sufficiency in both operational and developmental cost recovery.
- To ensure that future development is environmentally compatible.
- To preserve and protect public and private investments in existing airport facilities.

Exhibit 4A presents a summary of the primary planning considerations for the alternatives analysis. These include non-development options, airside considerations, and landside considerations. The non-development alternatives include a no-build option, a replacement airport option, and a transfer services option. All three would ultimately lead to the closure of the airport; however, the last two are specifically designed for closure of the existing facility.

The airside considerations relate to those airfield/airspace elements that contribute to the safe and efficient transition of aircraft and passengers from air transportation to the landside facilities at an airport. This includes consideration of the established design standard for the airport, the instrument approach capability, the capacity of the airfield, the length and strength of the runways, navigational aids, and the layout of the taxiways and aprons. Each of these elements was introduced in previous chapters and various needs established.

The landside considerations relate to those facilities providing support to the aviation function of an airport. This includes terminal services, hangars, and fueling. The previous chapter introduced these elements and identified specific needs based on the forecast future aviation demand. The goal now is to identify alternatives for locating these facilities.

Each functional area (airside and landside) interrelates and affects the development potential of the others. Therefore, all areas are examined individually and then coordinated to ensure the final plan is functional, efficient, and cost-effective. The total impact of all these factors on the existing airport must be evaluated to determine if the investment in Georgetown Municipal Airport will meet the needs of the community, both during and beyond the 20-year planning period.

The alternatives considered are compared using environmental, economic, and aviation factors to determine which of the alternatives will best fulfill the local aviation needs. With this information, as well as input from various airport stakeholders, a final airport concept can evolve into a realistic development plan.

Not all airside or landside elements will require a detailed alternatives' analysis. The alternatives analysis is reserved for presenting viable solutions to specific problems or challenges. For those airside or landside elements where only one solution is reasonable or where no alternative is necessary, an explanatory narrative is provided.

NON-DEVELOPMENT CONSIDERATIONS

- No-Build
- Replacement Airport
- Transfer Services

AIRSIDE CONSIDERATIONS

- Potential to extend Runway 18-36 to 5,500 feet in length
- Potential to reduce Runway Design Code from C-II to B-II
- Examine RPZ design standards
- Runway object free area for Runway 18-36
- Consider impact of new taxiway geometry design standards
- Consider raising visibility minimums to 1-mile *(completed June 2018)*
- Consider additional aircraft holding bays

LANDSIDE CONSIDERATIONS

- Identify locations for additional hangars
- Maximize aircraft apron space
- Provide fire station access directly to the airport
- Redevelopment of dilapidated hangars

NON-DEVELOPMENT ALTERNATIVES

Prior to the presentation of development alternatives for the existing Georgetown Municipal Airport, the following non-development options are considered:

- No-Build: This alternative considers stopping all new investments at the Airport except for routine maintenance and safety-related projects.
- Relocate Airport: This alternative considers constructing a new airport and closing the existing facility.
- Transfer Services: This alternative considers transferring all services to another existing airport and closing the existing facility.

While the non-development alternatives are being introduced in this master plan, TxDOT, the airport sponsor (City of Georgetown), and the consulting team, are all contractually obligated to complete this master plan for the existing airport. If the airport sponsor desired to pursue one of the non-development alternatives, then additional and separate planning studies would need to be undertaken after completion of this master plan.

AIRPORT CLOSURE HISTORY

In October 2002, the Airport Advisory Board (AAB) at that time issued a report that focused on the impacts of closing the existing airport and possibly replacing it with another airport in the immediate area. The report focused on providing answers to the following three basic questions:

1. What would closing the Georgetown Municipal Airport cost the city and citizens of Georgetown from an economic standpoint?
2. Given the current FAA grant assurance obligations, can the Georgetown Municipal Airport be closed or moved?
3. What would the cost be to move and/or build another airport to serve the Georgetown area?

Question No. 1: The cost to the city included elements, such as repayment of certificates of obligation, repayment of government grants, buyout of current ground leases, potential and expected lawsuits from existing tenants, businesses, and state and federal governments. The cost to citizens included issuing new bonds (including the "hidden cost" of impacting the city credit rating) and increasing property taxes. Other costs included loss of property taxes associated with on-airport property, potential impact to businesses (on-and off-airport) that use the airport, and potential loss of new businesses to the region. Finally, the overall loss of the economic benefits directly attributable to the presence of the airport, was a negative.

Question No. 2: When accepting a grant offer from TxDOT and/or the FAA, the city agrees to certain grant assurances which are legally binding contractual obligations. These include maintaining the useful life of the facilities developed, operating the airport as an airport unless a change is approved by the

Secretary of Transportation, and making the airport available for public use without discrimination or artificial limitations. The report states, "…the city could replace the current airport, but federal funds would only be available for costs in excess of the value of the current airport. Further, however, the order states that AIP funds are not assured for the development of a new airport when the community willfully disposes of an adequate functioning public airport upon the termination of its legal obligation to maintain it. Therefore, even though certain grant assurances may be satisfied, there is the distinct possibility that federal funds would not be available for a new airport." This statement remains true more than a decade later where the FAA's grant funding priority ranking system generally values new airport construction lower than the threshold used to fund projects.

Question No. 3: This section considered many costs associated with constructing a new airport. These included the physical construction of runways, taxiways, apron, and property acquisition. Other costs, such as roads, utilities, hangars, and relocation fees for existing tenants, were not included in the cost estimate presented. A separate line item for the cost of buying out existing leases was included.

Summary

The AAB reached out to TxDOT and FAA officials regarding the possibility of closing the existing Georgetown Municipal Airport. Both replied in writing in opposition to releasing the airport of their grant obligations. In a letter received from TxDOT – Aviation Director, David Fulton, dated July 16, 2002, they state, "It is extremely unlikely that either FAA or TxDOT would agree to closure of the existing airport." In a letter from the FAA relating to the question of repaying a prorated amount of grant funds in order to be released from grant assurances, the FAA said, "federal legislation does not specifically provide for the release of a sponsor's obligations upon simply repayment of those grants. The city is obligated to operate the airport throughout the term of the city's obligation."

The report speculated that "perhaps the best solution to building a new airport to serve Georgetown would be to encourage the proposed Central Texas Regional Airport being located near Georgetown. This proposed airport never came to fruition.

The report concluded that closing the existing Georgetown Municipal Airport and replacing it with a new airport could probably be done, but it would be an expensive and lengthy process. The report indicates that most of the tax burden for closing or moving the airport would be borne by Georgetown citizens who are not impacted directly by the airport for the benefit of a relatively small city population which reside near the airport. The last question the report leaves the reader with is, "Will all the citizens of Georgetown agree to the city spending the time, money, and effort it will take in order to pay for closing and replacing an existing airport that currently costs them little to support?"

FACTORS AND PROCEDURAL REQUIREMENTS RELATED TO AIRPORT CLOSURE

Federal and state airport aid grant obligations have done more to preserve public-use airports in the United States than any other single factor. There are over 4,000 publicly owned public-use

airports in the United States, and most are subject to one or more federal and/or state aid grant obligations that either temporarily (or permanently) protect the public-use airports from potential closure. It is FAA policy to fully enforce its airport aid grant obligations and the FAA will go to court if necessary to do so.

Pursuant to FAA grant assurances for airport sponsors, the airport sponsor may not "sell, lease, encumber, or otherwise transfer or dispose of any part of its title or other interests in the property shown on Exhibit A... for the duration of the terms, conditions, and assurances in this grant agreement without approval of the Secretary. For land purchased under a grant for airport development purposes (other than noise compatibility), it will, when the land is no longer needed for airport purposes, dispose of such land at fair market value or make available to the Secretary an amount equal to the United States' proportionate share of the fair market value of the land." Land shall be considered to be needed for airport purposes under the assurances if it may be needed for aeronautical purposes (including runway protection zones) or serve as noise buffer land.

The FAA regulations distinguish between the treatment of grants for the purchase of real property and those for airport development or improvement purposes. With respect to facilities developed or equipment obtained with federal funds, the assurances remain in effect only for the useful life of the facilities developed or equipment acquired, although the period may not exceed 20 years from the date the grant offer was accepted. Therefore, airport closure would require 1) approval of the Secretary of Transportation, 2) establishing that the land is no longer needed for aviation purposes, 3) payment of the FAA's proportionate share of the fair market value of all real property acquired with federal funds, and 4) coordination with the FAA with respect to the disposition of grants made for airport development or improvement.

According to Exhibit A (property map) for Georgetown Municipal Airport, dated 2004, federal funds were used to purchase approximately 32.4 acres of land. Since 2004, an additional 23.8 acres of land have been purchased with federal funds. All the land purchases are subject to the grant assurances and conditions outlined in the preceding paragraphs. Since 2001, approximately $17 million in federal funds have been expended for airport improvements, including more than $10 million in the last few years (see Table 1A). These funds, as well as various state grants, remain grant- encumbered.

The procedural requirements involved in a request of release from federal obligations include: 1) written request by the sponsor, and 2) facts and circumstances justifying the request. The FAA will take into consideration factors such as: 1) the past and present owner's compliance record under all its airport agreements and its actions to make available a safe and usable airport for maximum aeronautical use by the public, 2) evidence that the owner has taken or agreed to take all actions possible to correct non-compliance situations at the airport, 3) the reasonableness and practicality of the owner's request in terms of aeronautical facilities which are needed and the priority of need, 4) the net benefit to be derived by civil aviation and the compatibility of the proposal with the needs of civil aviation, and 5) consistency with the guidelines for specific types of releases. Environmental documentation may also be required.

Moreover, the FAA must also make at least one of several policy determinations, including 1) that the public purpose which a term, condition, or covenant of an agreement, or the agreement itself, was intended to serve is no longer applicable, or 2) that the release, modification, reformation, or amendment of an applicable agreement will not prevent accomplishment of the public purposes for which the airport or its facilities were obligated, and such action is necessary to protect or advance the interest of the United States in civil aviation, or 3) the release, modification, reformation or amendment will conform the rights and obligation of the owner to the statutes of the United States and the intent of Congress consistent with applicable law. For facilities, other than land, the FAA must find that 1) the grant agreement involved has expired, 2) the facility in question is no longer needed for the purpose for which it was developed, or 3) the useful life of the facility in question has expired. A successful argument must be made with the FAA that closure will benefit the national air transportation system, and that the funds derived from the sale and closure of the facility will be a benefit for the development of other airports in the system.

One of the most recent examples in which a sizable general aviation airport was deactivated and closed, and FAA granted the sponsor a release from federal obligations, was Richards-Gebaur Airport in Kansas City, Missouri. Richards-Gebaur Airport was built in 1941 on land owned by the City of Kansas City. In 1955, the City deeded the property to the United States Air Force for use as a permanent military base. The Air Force deactivated the base in 1976, at which time it returned to civilian general aviation use, and was conveyed back to Kansas City in 1985. Between 1986 and 1994, the City accepted $12.2 million in federal grant funds for airport development, and each grant required the normal grant obligations.

For many years, the City subsidized the airport operation. In 1997, in an effort to pursue redevelopment of the property for a new intermodal rail-truck freight distribution center, the City submitted an application to the FAA requesting permission to close the airport, seeking to be released from its federal obligations and assurances to maintain the property for public aeronautical use. The FAA and City of Kansas City negotiated a memorandum agreement in 1998, in which the FAA concluded that the terms it attached to the release and closure would result in a net benefit to aviation. The FAA found that the airport was only able to serve general aviation needs with subsidies from the City, which were draining funds from the other airports operated by the City. The FAA found that this financial burden was not necessary in a metropolitan area served by several other airports that remained open to general aviation. The memorandum agreement required the City of Kansas City to deposit $5 million into an escrow account to be dispersed by the FAA for federally eligible projects at other airports in the Kansas City area. The City also agreed that for 20 years, it would deposit all net proceeds from the projected lease of the property into its aviation account for use solely on general aviation projects. It agreed to notify the FAA of each disbursement from the net proceeds account and to permit the FAA to audit the account.

In early 1999, the Kansas City Council approved a 50-year lease for development of the facility by the Kansas City Southern Railway Company. In late 1999, the FAA released Kansas City from its federal obligations to maintain the property as an airport, allowing the City to close the airport and maintain the property as non-aeronautical, revenue-producing property for the Kansas City Aviation Department. The FAA issued an environmental categorical exclusion (Cat Ex) document on the same date as the letter releasing the airport property.

The FAA decision was challenged in court by several groups, including the Aircraft Owners and Pilots Association (AOPA). In 2001, the United States Court of Appeals, Eighth Circuit, affirmed the order of the FAA releasing the City of Kansas City from its federal obligations to maintain the property for aeronautical use. All pending motions to supplement the record were denied.

The AOPA's office of airport advocacy works aggressively to keep general aviation airports open and has been successful in keeping many airports across the country open to the public. Airport advocacy groups spend much of their time educating interested parties, recruiting allies, and finding cooperative solutions to closure issues. In a recent case in the Midwest, the AOPA assisted with the organization of a local group to purchase a municipally-owned general aviation airport (with 40 based aircraft), at the appraised value, keeping the facility operational as a privately owned, public-use airport. However, without public sponsorship, the airport will have added difficulty in maintaining or improving airport infrastructure.

There is a definite relationship between the magnitude and condition of an airport's infrastructure and its probable future vitality, and perhaps its survival. Airports with better facilities (e.g., longer runways, newer hangars, better instrument approaches, etc.) and a very active demand base (such as that at GTU) have somewhat less chance of closure. Airports without deficiencies can serve a broader segment of the general aviation market and generate revenues by selling more products or services. Federal and state grant funding, which are essential to airport development projects, also provide the greatest long-term protection from airport closure.

1. NO-BUILD ALTERNATIVE

The no-build alternative essentially considers making no new capital investments in the Airport. Limited maintenance and upkeep would continue so that the Airport remains safe for aviation activity. No new hangars or apron area would be planned to be built by the City; however, this would not and could not include the prohibition of same by a private entity. The obvious result of the no-build alternative is that the Airport would be unable to meet the current and forecast demand for aviation services in the area. There is currently a substantial aircraft owner wait list (approximately 180) whose need for hangar space would never be satisfied at this Airport.

The City of Georgetown and the surrounding region has experienced strong growth in all socioeconomic categories over the past several decades. Forecasts indicate this trend will continue throughout and beyond the long term planning horizon. The City of Georgetown has a vested interest in maintaining and improving airport facilities for both recreational and business users. Without a commitment to ongoing improvement of the Airport, users of the airport will be constrained from taking full advantage of the airport's air transportation capabilities.

The unavoidable consequence of the no-build alternative would involve the airport’s inability to accommodate potential airport users. Corporate aviation plays a major role in the transportation of business leaders and key employees. Thus, airports are often the first impression many corporate and business leaders will have of the community. If the airport does not have the capability to meet hangar, apron,

or airfield needs of potential users, the region's ability to attract the businesses will be diminished. This is especially true for businesses that utilize private aviation as a means to increase productivity.

The long term consequences of the no-build alternative would be to reduce the quality of the existing airport facilities over time, producing undesirable results. This scenario would result in overcrowded conditions and unnecessary delays and an overall unpleasant experience for regular users and visitors.

Georgetown Municipal Airport is part of a system of airports in the region. Each airport provides a certain level of service and economic stimuli. To pursue the no-build alternative would place a burden on other airports in the region. Over time, many users of the airport may relocate to other airports and businesses, both on the airport and in the region, would experience negative economic impacts and new businesses may look elsewhere. The no-build alternative is also inconsistent with the development objectives outlined previously.

As outlined in Table 1A previously, the Airport has received more than $17 million in development grants since 2001. These grants represent a direct economic stimulus that has lasting positive economic impacts. The no-build alternative means that the City of Georgetown would forgo future grants for airport development, which would have a negative economic impact which, over time, would become more noticeable.

The primary reason a community might choose a no-build alternative is to ultimately not be bound by the grant assurances (See Appendix C) associated with the acceptance of airport development grants. Grant assurances are part of the grant package contract that the airport sponsor commits to when accepting a development grant from TxDOT. As such, airport sponsors are bound to maintain the useful life of the facilities developed or equipment acquired for an airport development project. Useful life is a term not to exceed twenty (20) years from the date of acceptance of a grant offer of federal (TxDOT) funds for a project. There is no limit on the duration of the terms, conditions, and assurances with respect to real property acquired with federal (TxDOT) funds.

2. RELOCATE AIRPORT ALTERNATIVE

This option considers constructing a new airport to replace the existing Georgetown Municipal Airport. The new airport would have to be completed prior to closure of the existing airport. Additional study beyond the scope of this master plan would be required. These would include a feasibility study, a site selection study, a master plan for the replacement site, and appropriate environmental documentation of the new site (typically an environmental assessment (EA) or environmental impact statement (EIS)).

In the late 1990s, Robert Mueller Municipal Airport and Austin Executive Airpark were closed, leaving over 420 aircraft owners with a challenge to find a new location for their aircraft. Commercial service was transferred from Robert Mueller to Austin-Bergstrom International Airport. In 2003, TxDOT – Aviation undertook the *Central Texas Airport Phase I Feasibility Study* with the intent to identify a location for a new general aviation airport to serve the existing and growing demand in the region. A location in Bastrop County was considered; however, this project never came to fruition. In 2006, a group of private

investors considered developing an airport to fill the void. Austin Executive Airport was opened in 2009 at the site of the former Bird's Nest Airport. This is a privately owned, public use airport that caters to higher end business aviation users.

An important consideration is the potential cost associated with both constructing a new airport and closing the existing airport. **Table 4A** presents broad estimates of associated costs based on knowledge of current construction costs in central Texas and on costs associated with various federal regulations, such as the *Uniform Act*, which provides minimum standards for federally funded projects that require property acquisition or displacing persons from their homes, businesses, or farms. It is estimated that it would cost up to $321 million to construct a new airport with similar capabilities as the existing airport.

TABLE 4A
Replacement Airport Initial Cost Estimate

Project Element	Quantity	Unit	Unit Cost	Estimate
Land	500	ac	$50,000	**$25,000,000**
Earthworks/Drainage	2,000,000	cy	$5	**$10,000,000**
Runway Pavement (6,000 ft. x 100 ft.)	66,700	sy	$150	**$10,005,000**
Taxiway Pavement	211,111	sy	$150	**$31,666,667**
Taxilane Pavement	80,000	sy	$130	**$10,400,000**
Apron	50,000	sy	$150	**$7,500,000**
Runway Edge Lighting	60	Unit	$2,500	**$150,000**
Taxiway Edge Lighting	140	Unit	$2,500	**$350,000**
Signage	40	Unit	$7,000	**$280,000**
Marking	30,000	lf	$15	**$450,000**
MALSR	1	Unit	$1,500,000	**$1,500,000**
PAPI, REIL	3	Unit	$120,000	**$360,000**
AWOS	1	Unit	$200,000	**$200,000**
Terminal Building	1	Unit	$5,000,000	**$5,000,000**
Roads/Utilities (On Airport)	1	Unit	$6,000,000	**$6,000,000**
Hangars/Relocation Costs	500,000	sf	$200	**$100,000,000**
Subtotal				**$208,861,667**
Engineering, Design (12%)				$25,063,400
Construction Inspection, Admin. (13%)				$27,152,017
Contingency (15%)				$31,329,250
Roads/Utilities (Off-Airport) [1]	1	Unit	$25,000,000	$25,000,000
Planning Studies	1	Unit	$2,000,000	$2,000,000
Environmental – EA/EIS	1	Unit	$1,500,000	$1,500,000
TOTAL				**$320,906,000**

[1] Not eligible for federal funding.

A more detailed analysis would need to be undertaken to identify an acceptable site and to refine the project cost estimates. A large portion of the development costs would be eligible for TxDOT/FAA grant funding. Typically, non-revenue producing facilities to be located within the airport property line are eligible for funding. Elements outside the property line, such as utility extension and surface roads, are not eligible for funding.

Disposal of Existing Land

Most of the existing Airport land was purchased by the City of Georgetown from the Hausenfluck estate in 1942. The City of Georgetown then entered into an agreement with the federal government to allow them (the U.S. Government) to construct the airport and to utilize it for WWII pilot training. In exchange for the improvements (i.e., construction of the original airport), the city agreed to operate the facility as an airport, and for no other purpose, and for the benefit of the public, for the useful life of the improvements. Presumably, after 72 years, the useful life of the original improvements has expired.

Airport land that is acquired with federal funds is obligated for airport purposes in perpetuity. If the federally acquired land is no longer necessary for airport purposes, it may be released from obligation and used for other non-aviation purposes, if agreed to by the federal government (FAA). All future revenue generated on the land goes to the airport fund. In some cases, airport land may be sold, with the revenue returning to the airport or the federal government. Approximately 56 of the 533 acres of the existing airport was acquired with federal funds for purposes of an airport. If an airport no longer exists, and the land is sold, the proceeds for the 56 acres must be returned to the federal government.

3. TRANSFER OF SERVICE ALTERNATIVE

This alternative considers the feasibility of transferring aviation services and activity to other existing airports in the region. This would involve closing the existing airport, thus leaving hundreds of aircraft owners, and multiple businesses, to find other locations from which to base and operate. A significant challenge to this approach is the fact that other airports are already capacity-constrained, lacking the facilities, hangars, and services to accommodate an influx of new aircraft. Other airports already have aviation businesses and an FBO, thus those at the existing airport may simply go out of business.

Most aircraft owners will choose an airport at which to base their aircraft or business based on proximity to their home or business. Transferring services to another airport would place an undesirable burden on those aircraft owners and businesses.

The capability of other airports is also a limiting factor to transferring services from Georgetown Municipal Airport. The proximate airports were previously identified on Table 1L and all of them are more than 20 miles away. Taylor Municipal is a smaller general aviation airport with a 4,000-foot long runway. Austin Executive has adequate runway length; however, it is privately owned and caters to operators of larger business jets. Skylark Field in Killeen is a general aviation airport with a 5,495-foot runway. The runway at Lago Vista Airport is only 3,808 feet long and is strength-rated for small general aviation aircraft only. Austin-Bergstrom is a commercial service airport and is not intended for increased general aviation traffic to the degree of accommodating all the GTU demand. Lakeway Airpark, also privately owned, has a runway length of less than 4,000 feet and is for smaller general aviation aircraft. Some of these airports may be able to absorb some aircraft from Georgetown; however, proper planning and development of hangars and other facilities would be required at a significant cost.

An important consideration is the impact to the overall aviation system in the region and state. If Georgetown Municipal Airport were to close, there would be a void in the continuity of the aviation system. One of the fastest growing regions of the country would be without one of its most important aviation facilities.

As discussed in the previous alternative of constructing a replacement airport, if Georgetown Municipal Airport were to close and transfer services and activity, the city would be responsible for a significant reimbursement for development grants already received. Any grant received in the previous 20 years for facility development would be subject to a prorated reimbursement. Land acquired for airport purposes with grant funds, approximately 56 acres, would have to be sold with the proceeds going back to the grant agency.

Closing the airport would mean the loss of a substantial investment in a sizable transportation facility. In a situation where public funds are limited, the replacement of a functional airport facility would represent an unjustifiable loss of significant public investment. Many private investments have also been made at the airport. To abandon these investments and transfer aviation services to another airport would result in an investment with little or no return.

NON-DEVELOPMENT ALTERNATIVES SUMMARY

The purpose of this master plan is to examine aviation needs at the Georgetown Municipal Airport over the course of the next 20 years. Therefore, this master plan will examine the needs of the existing airport and will present a program of needed capital improvement projects to cover the scope of the plan. Nonetheless, various non-development alternatives may be considered by the airport sponsor.

Information pertaining to the three most common non-development alternatives has been presented. These are the no-build, replacement, and transfer of services alternatives. This section is not intended as a recommendation to pursue one of these alternatives; instead, it is for informational purposes only. If the airport sponsor were to pursue one of these alternatives, additional study beyond the scope of this master plan would be required.

Two of the three non-development alternatives would lead to the closure of the existing airport. There is a lengthy process to obtain approval for this course of action. An example of such a process was given for an airport in the Kansas City region that was closed in 1999. Certainly, the circumstances were different, but the example shows that airport closure is feasible under appropriate conditions.

Often the primary hindrance to considering airport closure is the fact that airports that have accepted federal development grants agree to certain grant assurances, one of which is to maintain the improvement for its useful life (20 years). If an airport is closed in the interim, then the sponsor must refund to the federal government a prorated amount. For Georgetown Municipal Airport, which has accepted $17 million since 2001, including more than $10 million in recent years, this would be a significant cost.

REVIEW OF THE PREVIOUS AIRPORT PLAN

The last master plan was completed in 2005. A variety of projects were identified as part of that master plan. The following summarizes those projects.

- Construct Airport Traffic Control Tower (completed).
- Construct new Taxiway A parallel to Runway 18-36 (partially completed).
- Expand aircraft parking apron (partially completed).
- Construct taxilane pavement in terminal area for new hangars (completed).
- Relocate fuel farm (completed).
- Construct taxiway from south apron to Taxiway J.
- Relocate AWOS, segmented circle, windcone.
- Construct emergency access road from fire station to airfield.
- Construct taxilanes in north area for new hangar development.
- Acquire land (6.9 acres) and homes (seven) in Runway Object Free Area (Rwy 18-36).

The Airport Layout Plan for the Airport, which is largely based on the previous master plan, has been updated with minor changes over the years. **Exhibit 4B** presents the Airport Layout Plan as of 2014 as a point of reference. The major improvements planned are highlighted with color and labels. The analysis to follow in this alternatives chapter will consider the recommendations presented in the previous master plan, in addition to presenting new alternatives based on current standards. Some elements from the previous master plan may be carried over to this master plan and others may be removed from future consideration.

AIRPORT LAND USE

The objective of airport land use planning is to coordinate future uses of the airport property in a manner that is both functional with the design of the airport and compatible with the airport environs. There are two primary considerations for on-airport land use planning. The first is to secure those areas essential to the safe and efficient operation of the airport. The second is to determine compatible land uses for the balance of the property which would be most economically advantageous to the airport and the community.

Prior to presenting development alternatives, it is important to have a basic understanding of the land use guidelines. With this understanding, facilities can be located to ensure the highest and best use of airport property. There are also certain design standards that affect facility location options. For example, future structures should be planned so that they don't compromise safe and efficient aircraft operations.

The FAA requires that all federally obligated airports utilize property for aviation purposes first and foremost. If an airport has land that is unlikely to be utilized for aviation purposes because it exceeds that which is forecast to be needed or is inaccessible by aircraft, then these lands may be considered for

compatible, non-aviation revenue support development. The revenue from these activities would provide supplemental funds to the airport with the goal of improving an airport's overall financial position.

By categorizing the entirety of airport property, Airport management can plan and direct any development proposals to the appropriate locations. There are three major land use categories on an airport: airfield operations, aviation development, and non-aviation revenue support. The non-aviation revenue support category is only available to those airports with property that is unlikely to be needed for airfield operations or aviation development, or cannot be utilized for those purposes. Often these categories are further subdivided to provide a better understanding of current or intended uses of airport property. **Exhibit 4C** presents the land use classification for the Airport. This classification is intended only to guide the alternatives analysis. Once a long term plan for the airport is established in subsequent chapters, a formal land use plan will be developed and included in the Airport Layout Plan set.

AIRFIELD OPERATIONS

Airfield operations is that portion of airport property that encompasses the major airside elements, such as the runways, taxiways, runway safety area, runway object free area, runway obstacle free zone, runway protection zone (on airport property), taxiway safety area, taxiway object free area, navigational aid critical areas, and the runway visibility zone. Airfield operations are intended for the safe and efficient movement of aircraft to and from the airfield. This land use designation includes the various object clearing areas and only elements necessary for aircraft navigation can be located here.

AVIATION DEVELOPMENT

The Aviation Development land use category includes those areas that should be reserved for development that requires access to the airfield operations area. This might include aircraft hangars and transportation terminals. Any aviation business needing access to the runway and taxiway system could locate in these areas. A rule of thumb is that all land immediately adjacent to the runway and taxiway system should be reserved for aviation development. For undeveloped areas in this classification, a depth of approximately 1,200 feet from the runway centerline is ideal as it allows for future taxiways, taxilanes, aprons, hangars, and access roads. This land use category has been further subdivided as follows:

High Activity: This category designates space that should be reserved for high activity aviation businesses, such as FBOs, maintenance and repair stations, bulk aircraft storage, etc.

Low Activity: This area is generally set back from the flight line and the high activity area. Typical uses in this area is hangar development, such as T-hangars and box hangars.

AIRPORT DATA TABLE		
	EXISTING	ULTIMATE
AIRPORT ELEVATION (MSL)	789.7	789.7
AIRPORT NAVIGATION AIDS	NDB, GPS	LPV GPS
MEAN MAX TEMP (Hottest Month °F)	97°F	97°F
AIRPORT REFERENCE CODE (ARC)	C-II	C-II
TAXIWAY MARKING	STD	STD
TAXIWAY LIGHTING	NONE	MITL
AIRPORT REFERENCE POINT COORDINATES	30°40'43.712" N 97°40'45.782" W	30°40'43.713" N 97°40'45.778" W

NOTES

DATUM COORDINATE SYSTEMS – HORIZONTAL DATUM NAD_1983_StatePlane_Texas_Central_FIPS_4203_Feet, VERTICAL DATUM NAVD88.

NO OFZ OBJECT PENETRATIONS

CAUTION ZONE LIGHTS PRESENT FOR BOTH RUNWAYS

AIRFIELD MONUMENTS				
NO.	TYPE	DESIGNATION	LAT.	LONG.
1	PACS	GEORGEPORT	30°40'46.10" N	97°40'49.69" W
2	SACS	T04 A	30°40'53.48" N	97°41'07.17" W
ALL COORDINATES AND ELEVATIONS HORIZONTAL NAD 83, VERTICAL NAVD 88.				

ALD LEGEND		
FEATURE	EXISTING	ULTIMATE
RUNWAY/TAXIWAY OUTLINE		
RUNWAY/TAXIWAY TO BE REMOVED		
BUILDINGS/FACILITIES		
AIRPORT PROPERTY LINE		
AIRPORT PROPERTY LINE w/FENCE		
FENCE LINE		
BUILDING RESTRICTION LINE (BRL)		
AIRPORT REFERENCE POINT		
WIND CONE & SEGMENTED CIRCLE		
THRESHOLD LIGHTS		
RW END IDENTIFIER LIGHTS (REILS)		
C&G BEACON		
VGSI		
HOLD POSITION AND SIGN		
ASOS/AWOS		
PACS AND SACS MARKERS		
GROUND CONTOURS		
SIGNIFICANT OBJECT LOCATION		
TREES/BRUSH		
NONDIRECTIONAL BEACON (NDB)		

TEXAS DEPARTMENT OF TRANSPORTATION
AVIATION DIVISION

ALP APPROVED ACCORDING TO FAA AC 150/5300-13A CHANGE 1 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.

DAVID FULTON, 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.

SIGNATURE — DATE

TITLE, AIRPORT SPONSOR'S REPRESENTATIVE

PREPARED BY:

GARVER
3010 GAYLORD PKWY, SUITE 190
FRISCO, TEXAS 75034

PLH — DESIGNED BY — MAR 2014 — DATE
JAH — DRAWN BY — MAR 2014 — DATE

AIRPORT LAYOUT DRAWING
GEORGETOWN MUNICIPAL AIRPORT
GEORGETOWN, TEXAS (GTU)

Texas Department of Transportation
Aviation Division

SHEET 1 OF 4

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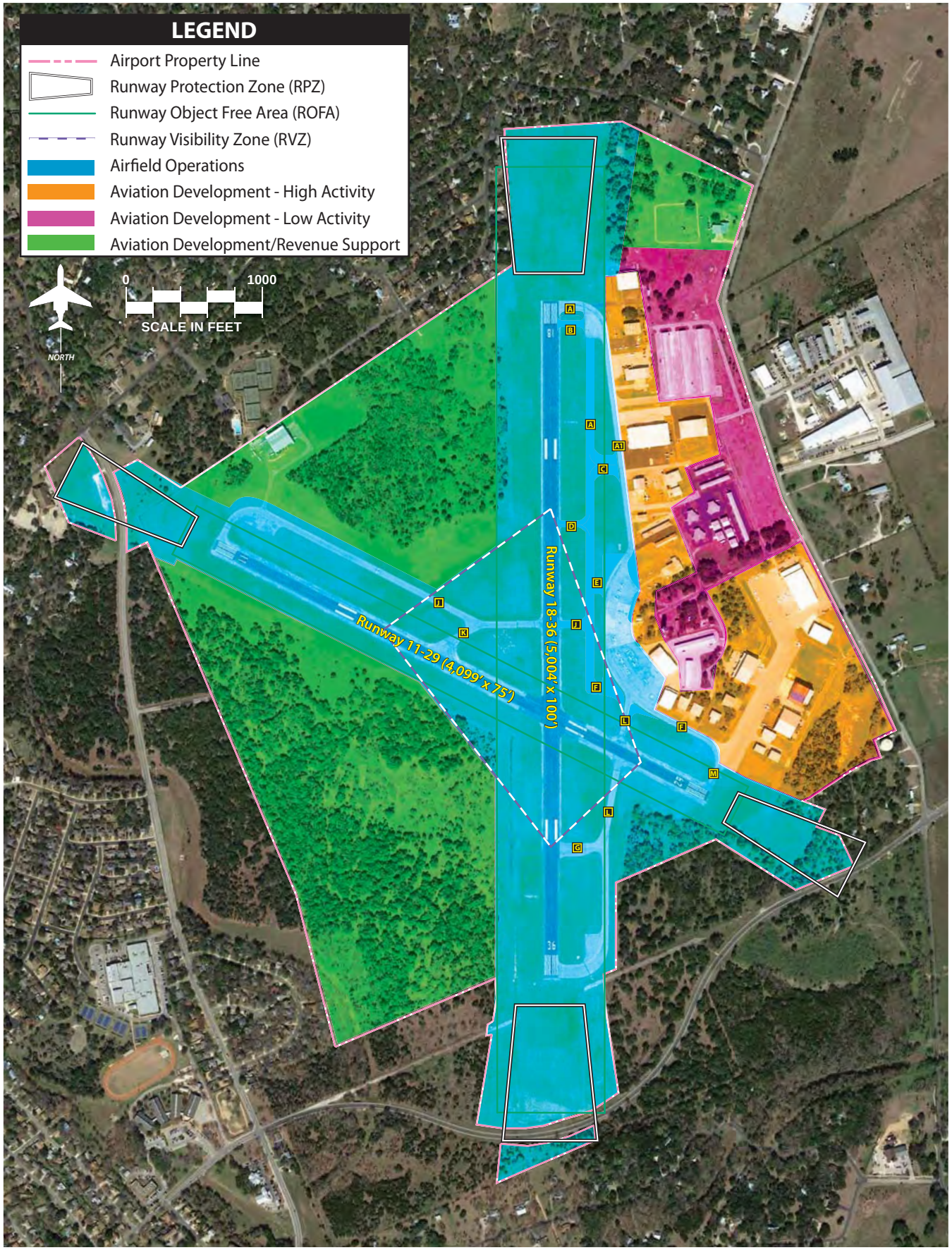

LEGEND
Airport Property Line
Runway Protection Zone (RPZ)
Runway Object Free Area (ROFA)
Runway Visibility Zone (RVZ)
Airfield Operations
Aviation Development - High Activity
Aviation Development - Low Activity
Aviation Development/Revenue Support
0
1000
SCALE IN FEET
NORTH
Runway 11-29 (4,099' x 75')
Runway 18-36 (5,004' x 100')

NON-AVIATION REVENUE SUPPORT

This land use classification includes development that is compatible with aviation activities but is unlikely to require access to the runway and taxiway system. Typically, it is preferable that activities in these areas will complement airport activities to some degree, but that is not required. Examples of potential uses include research facilities, laboratories, manufacturing and processing facilities, warehouses, and other facilities compatible with an airport environment.

AIRSIDE ALTERNATIVES

Generally, airside issues relate to those airport elements that contribute to the safe and efficient transition of aircraft and passengers from air transportation to the landside facilities at an airport. This includes runways, taxiways, aprons, hold bays, instrument approaches, and navigational aids. Each of these elements was introduced in previous chapters. This chapter will examine several airside issues specific to the Airport and present several alternatives. **Exhibit 4A** presents a summary of the major airside considerations.

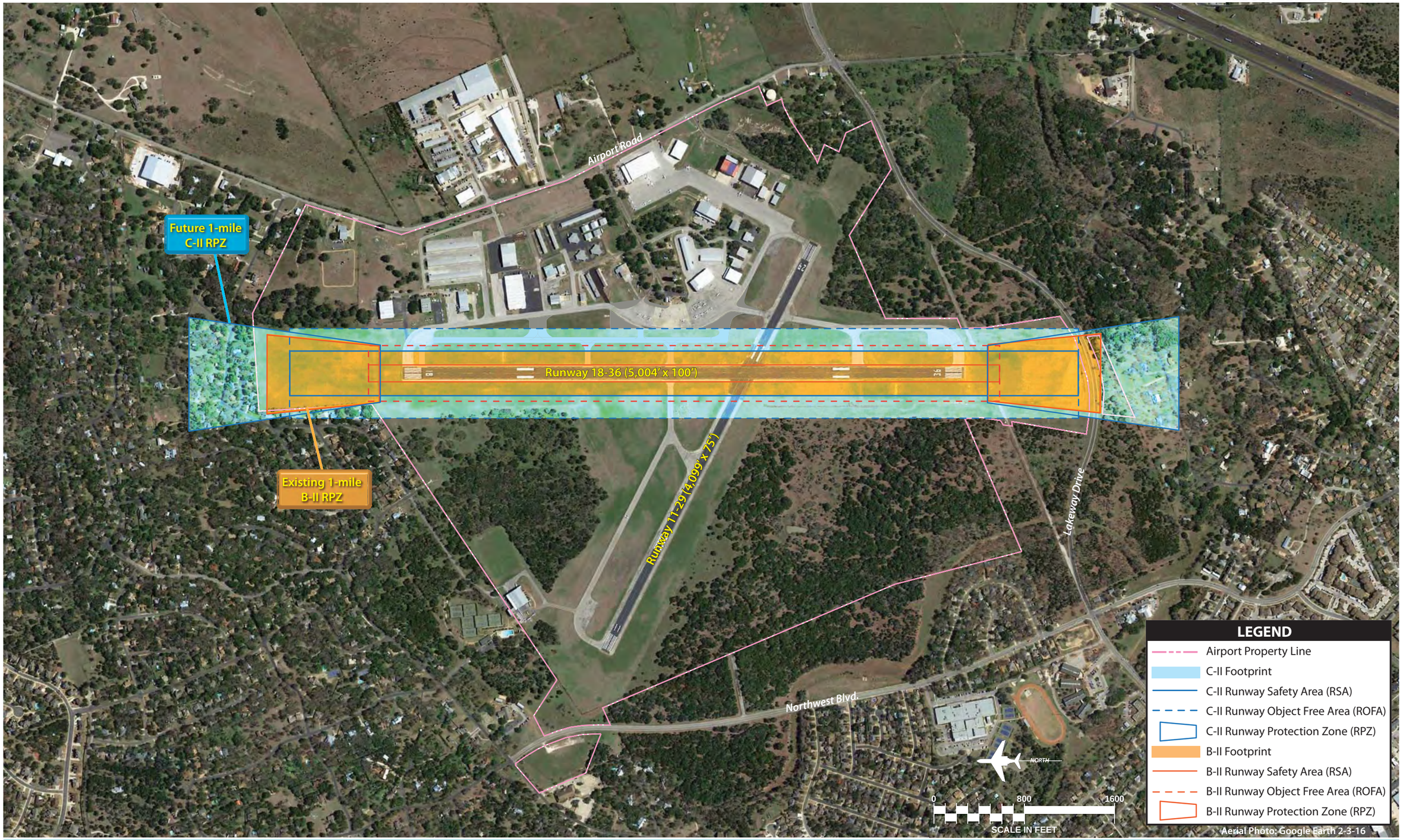
DESIGN STANDARDS CONSIDERATION

The applicable design standards for each runway was previously determined in Chapter Two – Forecasts. Runway 18-36 has a current Runway Design Code (RDC) of B-II-5000 and a planned future RDC of C-II-5000. Runway 11-29 has a current and future RDC of B-I-5000.

The determination of the applicable RDC is a function of actual activity at an airport. As stated in Chapter Two – Forecasts, the design aircraft is defined as the most demanding aircraft type, or grouping of aircraft with similar characteristics, that make regular use of the airport. Regular use is 500 annual operations, excluding touch-and-go operations. Exhibit 2J, presented previously, documented operations by aircraft type as sourced from the Traffic Flow Management System Count (TFMSC), an FAA database. Aircraft classified as C-II accounted for more than 500 operations in six of the last 10 years; however, the airport has fallen below this threshold in each of the last four years (2013-2016). The TFMSC database does not capture all operations, but it has a high degree of reliability for capturing instrument flight rules (IFR) traffic, and larger business jets operators file IFR nearly all the time.

Airports across the country experienced a decline in activity, especially by larger corporate type aircraft (C-II), during and after the recession of 2008-2009. Operations by these types of aircraft are beginning to return to normal growth patterns now that the economy is more stable. Activity by larger corporate aircraft is projected to increase and once again exceed the 500 operations threshold at the Airport in the long-term.

Table 4B shows the applicable design standards for Runway 18-36 for both the current B-II condition and the planned future C-II condition. **Exhibit 4D** graphically depicts both the B-II and the C-II standards overlaid onto an aerial image of the airport. The B-II condition shows the RPZ associated with an increase


Future 1-mile
C-II RPZ
Existing 1-mile
B-II RPZ
Runway 18-36 (5,004' x 100')
Runway 11-29 (4,099' x 75')
Airport Road
Northwest Blvd.
Lakeway Drive
LEGEND
Airport Property Line
C-II Footprint
C-II Runway Safety Area (RSA)
C-II Runway Object Free Area (ROFA)
C-II Runway Protection Zone (RPZ)
B-II Footprint
B-II Runway Safety Area (RSA)
B-II Runway Object Free Area (ROFA)
B-II Runway Protection Zone (RPZ)
NORTH
0
800
1600
SCALE IN FEET
Aerial Photo: Google Earth 2-3-16

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in the visibility minimums from ⅞-mile to 1-mile. The RPZs become much smaller. On the Runway 18 end, the 1-mile RPZ is fully contained on airport property. On the Runway 36 end, only a small portion of the far end of the RPZ crosses Lakeway Drive. Neither of these B-II (1-mile) RPZs contain homes.

It is not the usual practice of TxDOT or the FAA to change the existing design standards for an airport unless there is a clear indication of a trend. The FAA has indicated that B-II standards should apply to the current condition at Georgetown.

TABLE 4B
C-II to B-II Impacts
Georgetown Municipal Airport

Parameters	Future Standards	Current Standards
Design Aircraft	**C-II-2**	**B-II-2**
Runway Design Code	**C-II-5000**	**B-II-5000**
Visibility Minimums	**1-mile**	**1-mile**
RUNWAYS		
Runway Width	100	75
Runway Shoulder Width	10	10
Runway Safety Area (RSA)		
Width	500	150
Length Beyond Departure End	1,000	300
Length Prior to Threshold	600	300
Runway Object Free Area (ROFA)		
Width	800	500
Length Beyond Departure End	1,000	300
Length Prior to Threshold	600	300
Runway Obstacle Free Zone (ROFZ)		
Width	400	400
Length Beyond End	200	200
Approach Runway Protection Zone (RPZ)		
Length	1,700	1,000
Inner Width	500	500
Outer Width	1,010	700
Departure Runway Protection Zone (RPZ)		
Length	1,700	1,000
Inner Width	500	500
Outer Width	1,010	700
Runway Centerline to:		
Holding Position	250	200
Parallel Taxiway	300	240
Aircraft Parking Area	400	250
TAXIWAYS		
Taxiway Design Group	2	2
Width	35	35

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

RUNWAY OBJECT FREE AREA (ROFA)

The ROFA clearing standard requires clearing the ROFA of objects protruding above the nearest elevation point of the RSA. Only frangible navigational aids, such as edge lights and airfield signs, may protrude into the ROFA. The ROFA dimensions are based on the Runway Design Code (RDC) of the runway. For Runway 18-36, the current RDC is B-II-5000, which translates to an ROFA width of 500 feet and a length beyond the runway end of 300 feet. The future RDC is C-II-5000, which has an ROFA width of 800 feet and a length beyond the runway end of 1,000 feet. The current ROFA meets standard. The future ROFA would have object penetrations that are addressed in the following sections.

Runway 18-36 ROFA - North End

The northwest corner of the future ROFA surrounding Runway 18-36 extends beyond the airport property line, crossing the perimeter fence and encompassing all or part of seven private residential properties. A total of 1.9 acres of the ROFA is outside the airport property line in this location. Three alternatives are presented on the top half of **Exhibit 4E** to mitigate this future non-standard ROFA.

Existing Condition: As a B-II runway, the ROFA does not currently extend beyond airport property. This condition meets the current ROFA standard. The three options below only apply if the airport were to revert to a C-II designation, which means the ROFA widens from 500 feet to 800 feet.

ROFA North Alternative 1: The first option that should always be considered is to examine simply improving the situation to meet standard. In this case, that would involve acquiring seven residential properties, razing all structures, and reinstalling the perimeter fence to be outside the ROFA. This is the solution depicted on the current ALP.

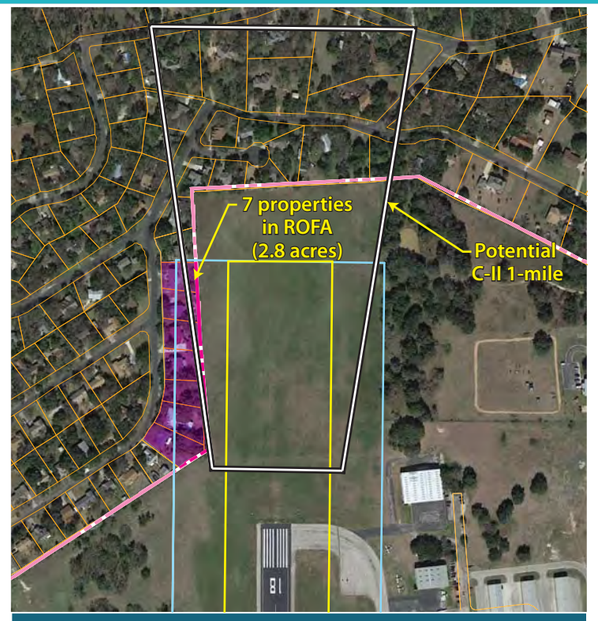
ROFA North Alternative 2: The next option would be to obtain FAA approval of a Modification of Standard (MOS) for the non-standard ROFA. To obtain such approval, the airport sponsor would have to submit a formal request to TxDOT in which the following must be addressed in detail:

1. Explain why the standard cannot be met;
2. Discuss viable alternatives; and
3. State why modification would provide acceptable level of safety, economy, durability, and workmanship.

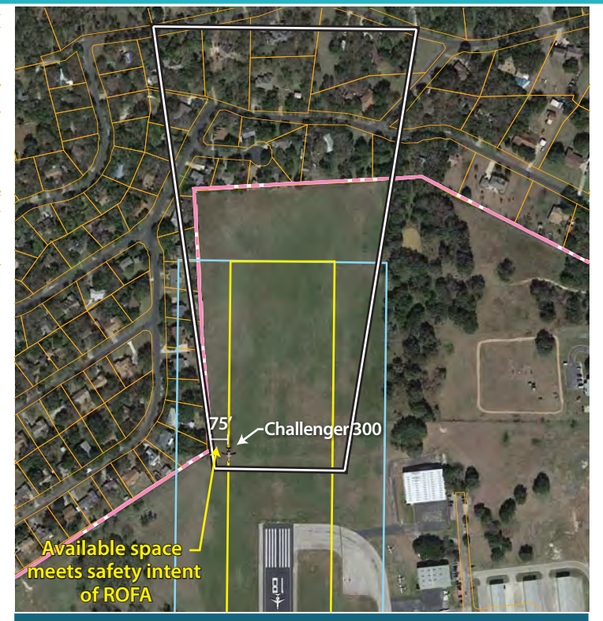
FAA guidance suggests that the airport sponsor should keep the narrative simple and stick to the facts. Personal opinions and justification without substance should be avoided. Example wording to avoid includes: it's cheaper; it's local; it's green; it's easier, etc. When granted, MOS are not permanent and are to be reviewed periodically. The FAA suggests MOS review at least every five years or when there is a project under consideration that may impact the MOS, or when ongoing planning efforts may address the MOS (such as in a master plan update).

NORTH END

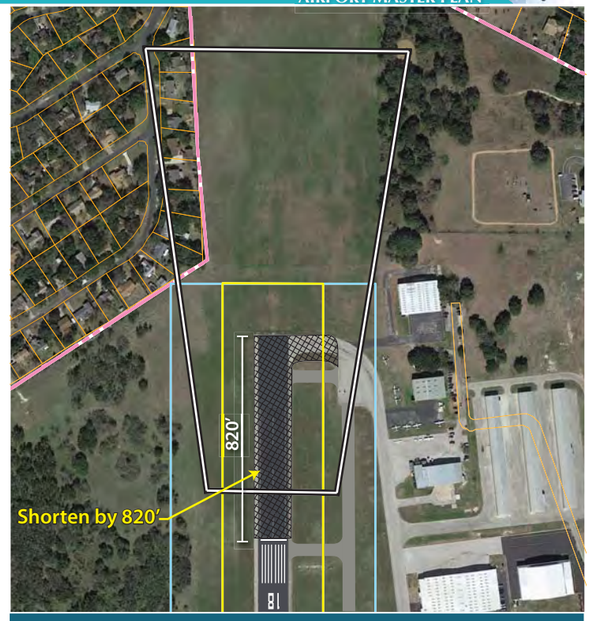
EXISTING CONDITION



ALTERNATIVE 1:
Meet standard by acquiring property

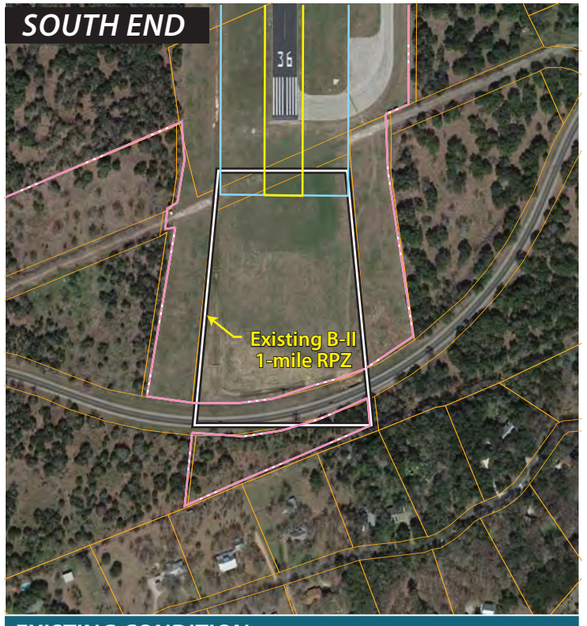


ALTERNATIVE 2:
Modification of standard

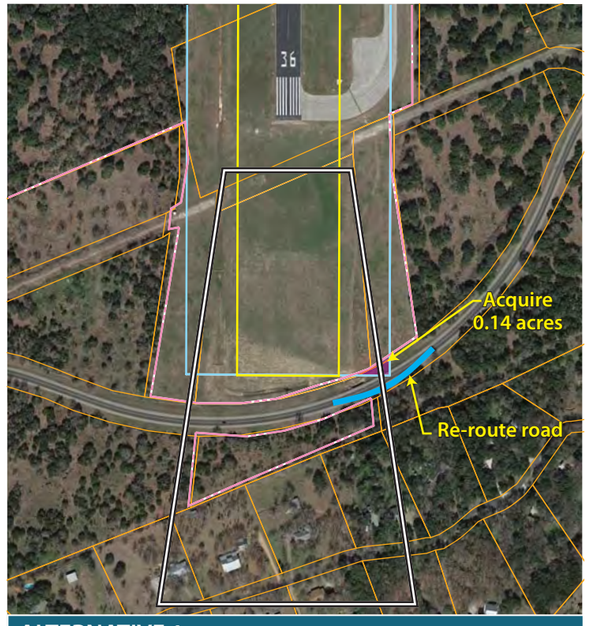


ALTERNATIVE 3:
Shorten runway or Declared Distances

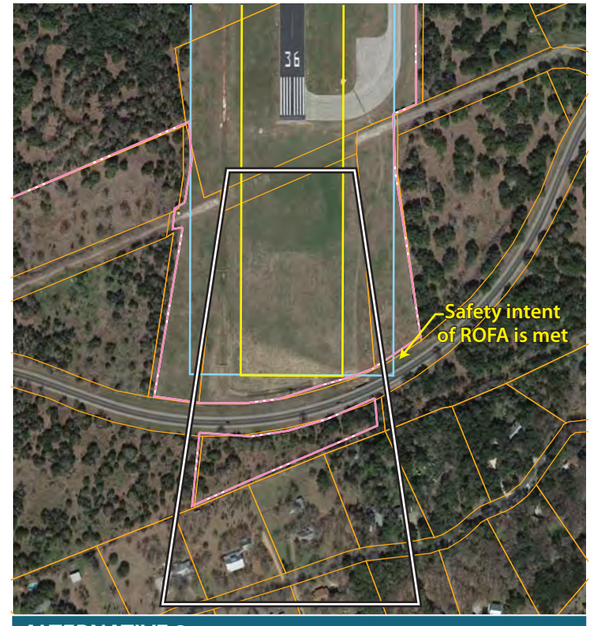
SOUTH END



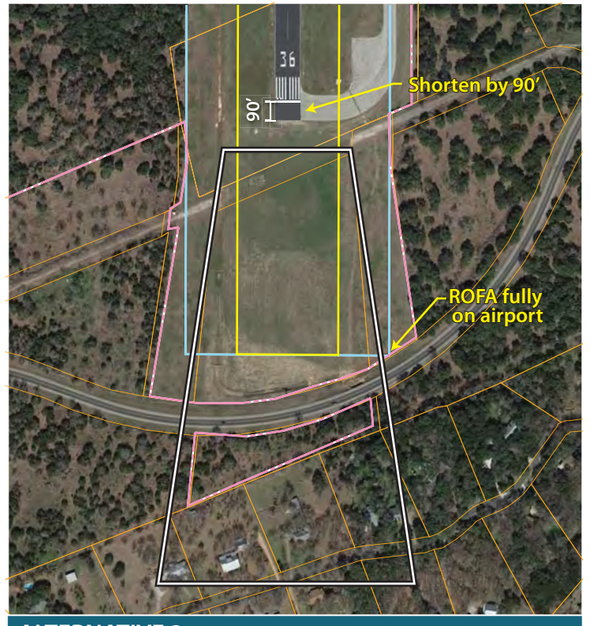
EXISTING CONDITION



ALTERNATIVE 1:
Meet standard by acquiring property



ALTERNATIVE 2:
Modification of standard



ALTERNATIVE 3:
Shorten runway or Declared Distances

Airport Property Line
Runway Protection Zone (RPZ)
Runway Object Free Area (ROFA)
Runway Safety Area (RSA)
Property to be Acquired
To be Removed

NORTH

0 600
SCALE IN FEET

Aerial photo: Google Earth 2-3-16

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The reason the C-II ROFA standard cannot be met is that the airport does not own the land. The safety intent of the ROFA is to protect any part of an aircraft (e.g., wing, nose, tail) within the runway safety area (RSA), from colliding with a penetration in the ROFA. The future RDC is C-II-5000, which includes aircraft with wingspans up to 118 feet (total length of C-II aircraft is under 100 feet). Therefore, the ROFA must, at a minimum, be clear for a distance of 59 feet from the edge of the RSA. The closest point from the edge of the RSA to the perimeter fence is 75 feet. Therefore, the existing condition would meet the safety intent of the C-II ROFA.

ROFA North Alternative 3: The third option is to shorten the runway so that the ROFA no longer extends beyond the airport property line and the perimeter fence. This would require that Runway 18-36 be shortened by 820 feet, leaving a total runway length of 4,184 feet. As discussed in the previous chapter, the recommended minimum runway length for the airport is 5,500 feet. Clearly, shortening the runway would have a substantial negative impact to current airport operators. It is not the goal of the FAA design standards to hinder operations at an airport; therefore, other alternatives should be considered.

Runway 18-36 ROFA - South End

The future C-II ROFA on the south end of the runway is would be non-standard in that it would extend through the perimeter fence and over Lakeway Drive. The degree of penetration of the ROFA is a factor when considering alternatives. The ROFA beyond the perimeter fence is 0.14 acres. The distance from the lateral edge of the RSA is 40 feet. Therefore, if an aircraft were to stop at the very end of the RSA, it would be closer than 59 feet (half the width of the maximum wingspan of aircraft in Airplane Design Group II). The bottom half of **Exhibit 4E** shows three alternatives for mitigating a future non-standard C-II ROFA on the Runway 36 end.

ROFA South Alternative 1: The first option that should always be considered is to examine simply improving the situation to meet standard. In this case, that would involve acquiring the 0.14 acres of ROFA land outside the airport property line and re-routing the perimeter fence. Since the ROFA encroaches upon Lakeway Drive, the road would have to be shifted outside the ROFA as well. When Lakeway Drive was originally shifted to accommodate extension of the runway to the south, this condition was presumably acceptable to the agency engineer in charge (TxDOT); otherwise, it would not have been constructed. Therefore, it is not considered reasonable to reroute the road again.

ROFA South Alternative 2: The next option would be to petition TxDOT for a MOS for the ROFA penetration. The procedures outlined in ROFA North Alternative 2 would be applicable in this case. A case would have to be made that the ROFA standard cannot be met. Essentially, the benefit gained from moving the road would have to outweigh other alternatives.

ROFA South Alternative 3: The third alternative is to shorten the runway so that the ROFA does not extend beyond the airport property line and the perimeter fence. This would require that Runway 18-36 be shortened by 90 feet, leaving a total runway length of 4,914 feet. As discussed in the previous chapter, the recommended minimum runway length for the airport is 5,500 feet. Shortening the runway

would place further constraints on current airport operators. It is not the goal of the FAA design standards to hinder operations at an airport; therefore, other alternatives should be considered.

An alternative to shortening the runway is implementing declared distances, which is described in FAA AC 150/5300-13A, *Airport Design*. With FAA approval, the runway length can be declared (published) shorter for certain operations to provide the necessary safety areas and/or RPZ land use compatibility. The AC describes declared distances as follows: "Declared distances represent the maximum length available and suitable for meeting takeoff, rejected takeoff, and landing distance performance requirements for turbine-powered aircraft." The declared distances are defined by the FAA as:

- *Takeoff run available (TORA)* - The distance to accelerate from brake release to lift-off, plus safety factors.
- *Takeoff distance available (TODA)* - The distance from brake release past lift-off to start of takeoff climb, plus safety factors.
- *Accelerate-stop distance available (ASDA)* - The distance to accelerate from brake release to takeoff decision speed (V_1), and then decelerate to a stop, plus safety factors.
- *Landing distance available (LDA)* - The distance from the threshold to complete the approach, touchdown, and decelerate to a stop, plus safety factors.

Implementation of declared distances, in order to provide full ROFA south of Runway 36, does not require any changes to the physical runway pavement. Instead, operational runway length available to pilots for calculation of available runway length are published. All operations to/from Runway 36 would be unaffected. The full 5,004 feet would be available. Landings and take-offs to/from Runway 18 would be reduced by 90 feet, leaving 4,914 feet available for those operations. **Table 4C** presents the declared distances that would be required.

When declared distances are implemented, the departure RPZ may not be entirely contained within the approach RPZ, which is the case when the runway end and pavement end are the same.

TABLE 4C
Declared Distances Alternative
Georgetown Municipal Airport

Parameters	Runway 18	Runway 36
Takeoff Run Available (TORA)[1]	5,004'	5,004'
Takeoff Distance Available (TODA)[2]	5,004'	5,004'
Accelerate Stop Distance Available (ASDA)[3]	4,914'	5,004'
Landing Distance Available (LDA)[3]	4,914'	5,004'

[1] Departure RPZ begins 200 feet from the end of the TORA.
[2] TORA cannot be longer than TODA. Departure surface is set on TODA. TODA can be shortened to mitigate departure surface penetrations; if so, TORA is shortened, too.
[3] Available runway length plus RSA. Approach RPZ set 200 feet from the landing threshold.

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

RUNWAY PROTECTION ZONES

Runway protection zones are trapezoidal areas beginning 200 feet from the runway end. The standard for RPZs is that they be clear of height obstructions and incompatible land uses, in order to enhance the protection of people and property on the ground. Essentially any place where people can gather is considered an incompatible land use, such as homes. A detailed description of the RPZ standards was previously presented in Chapter Three – Facility Requirements. RPZs frequently have incompatible land uses and it is the responsibility of the local airport sponsor to consider options for meeting the standards. This is complicated by the fact that RPZ lands are often privately owned, so airports may have limited options with regard to land uses in RPZ.

In 2012, FAA issued *Interim Guidance on Land Uses within a Runway Protection Zone*. Since 2012, the FAA (and TxDOT) has referenced the *Interim Guidance* when analyzing potential new incompatible land uses within an RPZ. New incompatible land uses may be introduced as a result of:

- 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, and/or
- A local development proposal in the RPZ (either new or reconfigured).

While the airport sponsor may have control over an airfield project or a development proposal, they often do not have control over a change in the critical design aircraft (which is the result of actual activity that the airport cannot limit), or an instrument approach change (which the FAA frequently updates independent of other FAA lines of business or the airport sponsor). Therefore, there are limits to what airports can do to meet RPZ design standards.

Runway 18-36 RPZs

The FAA lowered the visibility minimums to both ends of Runway 18-36 from 1-mile to ⅞-mile within the last few years. This had the effect of increasing the size of the RPZs from 29.5 acres to 48.9 acres. The larger RPZ introduced 40 residential properties to the RPZ where there were previously 17 residential properties. Following recommendations in this Master Plan, the Airport administration requested that the FAA raise the visibility minimums back to 1-mile to reduce the number of residential properties in the RPZ. This is the RPZ size shown on the current ALP. Further guidance from FAA Headquarters (reference FAA chapter review dated 2.8.18) directed the Airport to change the current airport reference code (ARC) to B-II from C-II. When applying this change, the RPZ for Runway 18 becomes shorter and smaller (13,77 acres) and is contained entirely on Airport property. Thus, there are now no incompatible land uses in the Runway 18 RPZ.

The forecast chapter, previously presented, indicates that the Airport may, once again, experience more than 500 operations by aircraft in ARC C-II. This would necessarily require the larger C-II RPZ, which would encompass 17 residential properties. **Exhibit 4F** shows RPZ alternatives for the Runway 18 end.

Alternative 1 – B-II RPZ with 1-Mile Visibility Minimums: The left pane of the exhibit shows the existing condition with the current RPZ contained entirely on Airport property. As noted, this is a significant change from the previous ALP, where the longer C-II RPZ (1-mile visibility minimums) contained 17 residential properties.

Alternative 2 – C-II RPZ with ⅞-Mile Visibility Minimums: This condition existed prior to this Master Plan and, if the visibility minimums were ever lowered to below 1-mile, would exist again. Visibility minimums lower than 1-mile introduce 40 residential properties in this RPZ (applies to both B-II and C-II). The residential properties are an incompatible land use which would likely require acquisition if the Airport were to transition back to lower than 1-mile visibility minimums. Because of the introduction of numerous incompatible land uses, this option is not considered feasible and should not be pursued. All future visibility minimums are recommended to be at 1-mile or above.

Alternative 3 – C-II RPZ with 1-Mile Visibility Minimums: If the Airport were to transition back to C-II and maintain 1-mile visibility minimums, then 17 residential properties would be introduced to the RPZ. Following the 2012 *Interim Guidance on RPZs*, the Airport would likely have to acquire the residential property to fully meet C-II RPZ standards.

Exhibit 4G shows the RPZ alternatives on the Runway 36 end.

Alternative 1 – B-II RPZ with 1-Mile Visibility Minimums: The left pane of the exhibit shows the existing condition with the current RPZ. A portion of Lakeway Drive traverses the south end of the RPZ and is considered an incompatible land use.

Alternative 2 – C-II RPZ with ⅞-Mile Visibility Minimums: This condition existed prior to this Master Plan and, if the visibility minimums were ever lowered to below 1-mile, would exist again. Visibility minimums lower than 1-mile introduce seven residential properties in this RPZ (applies to both B-II and C-II). The residential properties are an incompatible land use which would likely require acquisition if the Airport were to transition back to lower than 1-mile visibility minimums. Because of the introduction of numerous incompatible land uses, this option is not considered feasible and should not be pursued. All future visibility minimums are recommended to be at 1-mile or above.

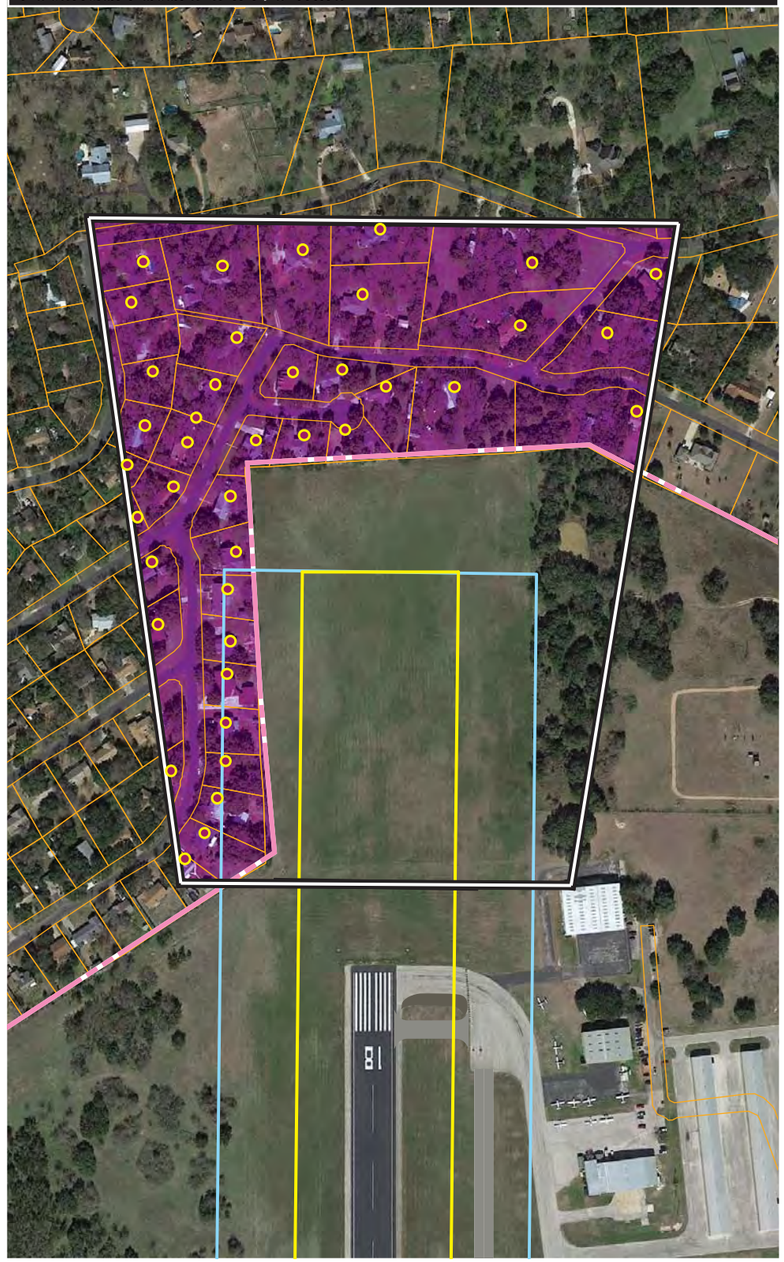
Alternative 3 – C-II RPZ with 1-Mile Visibility Minimums: If the Airport were to transition back to C-II and maintain 1-mile visibility minimums, then five residential properties would be introduced to the RPZ. Following the 2012 *Interim Guidance on RPZs*, the Airport would likely have to acquire the residential property to fully meet C-II RPZ standards.

Runway 11-29 RPZs

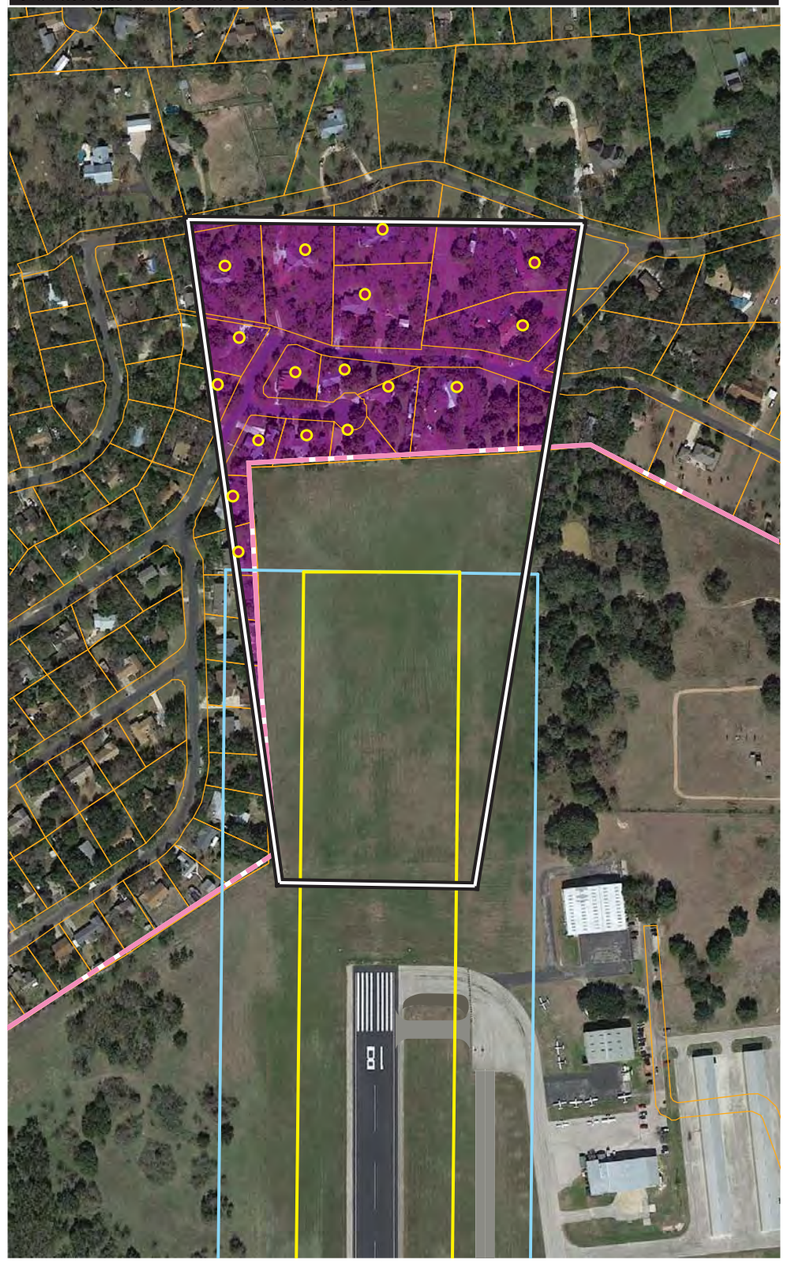
The RPZ for Runway 11 has compatible land uses except for the existing presence of Northwest Boulevard. No immediate action is necessary to remove the road from the RPZ as this condition existed prior to publication of the *2012 Interim Guidance on RPZs*. Airport management should monitor any plans for development in the portions of the RPZ that are not owned by the airport. The City of Georgetown

ALTERNATIVE 1:
Existing B-II RPZ[1] (1-mile)

ALTERNATIVE 2:
Potential Future C-II 7/8-mile



ALTERNATIVE 3:
Potential Future C-II 1-mile RPZ



LEGEND:

- Airport Property Line
- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Runway Protection Zone (RPZ)
- Home inside RPZ
- Property to be Acquired

N

0 400
SCALE IN FEET

[1]**RPZ** - Runway Protection Zone

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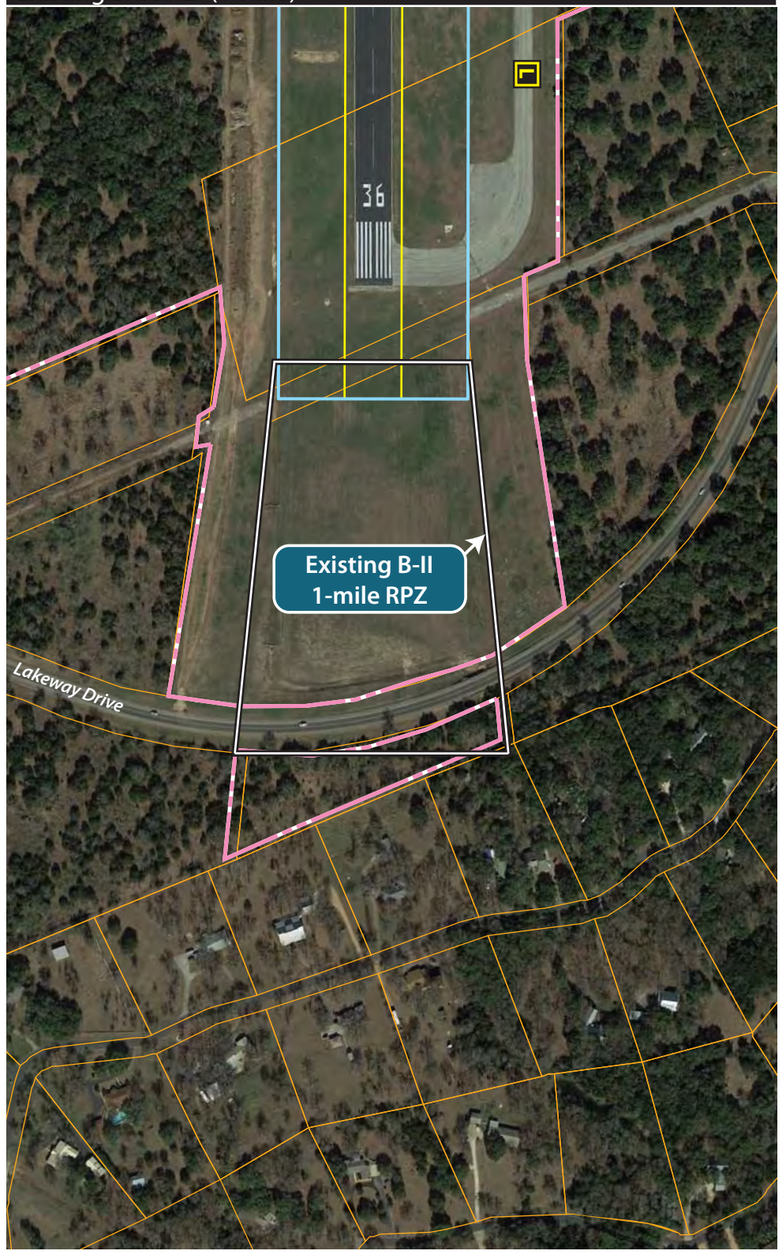
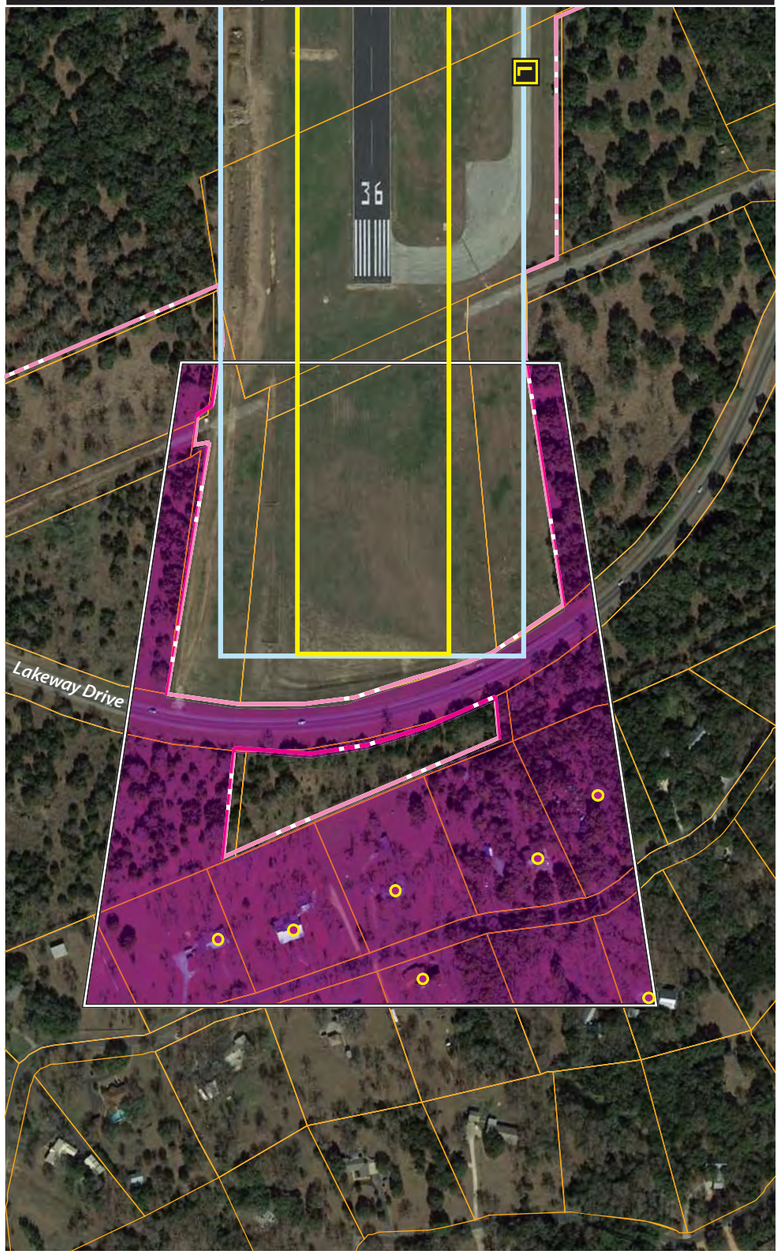
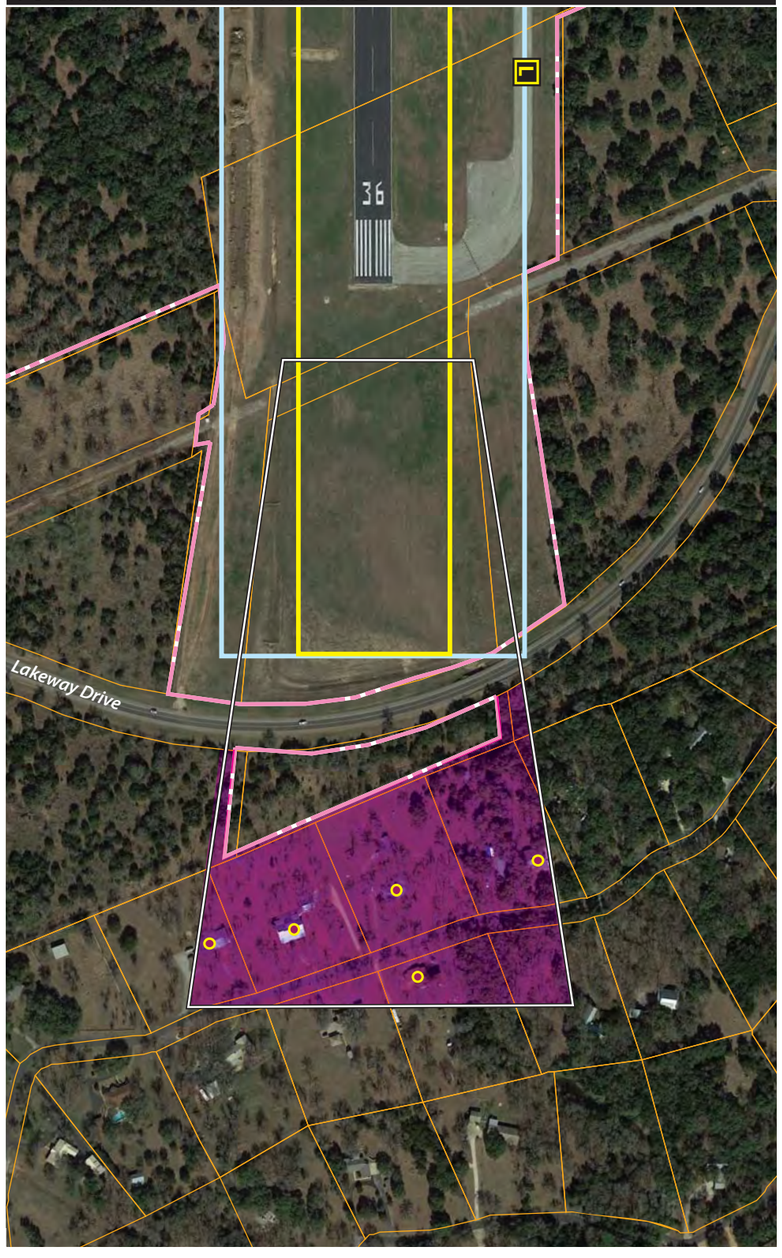
ALTERNATIVE 1:
Existing B-II RPZ[1] (1-mile)



ALTERNATIVE 2:
Potential Future C-II 7/8-mile RPZ



ALTERNATIVE 3:
Potential Future C-II 1-mile RPZ



LEGEND:

- Airport Property Line
- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Runway Protection Zone (RPZ)
- Home inside RPZ
- Property to be Acquired

N

0 400
SCALE IN FEET

[1]**RPZ** - Runway Protection Zone

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should consider opportunities to acquire RPZ land not currently owned. If feasible, future considerations should be given to removing the road from the RPZ.

The RPZ on the Runway 29 end encompasses one home and Lakeway Drive. If the home and other private property in the RPZ becomes available, the airport should consider buying the property if financially feasible. Purchase of real property within RPZs is eligible for reimbursement from TxDOT. No immediate action is necessary to remove the road from the RPZ. If future plans by the city include relocating the road outside the RPZ, the airport should be supportive of that effort.

APPROACH SURFACE ANALYSIS

The Approach Surface is designed to protect the use of the runway in both visual and instrument conditions near the airport. The Approach Surface typically has a trapezoidal shape that extends away from the runway along the centerline and at a specific slope, expressed in horizontal feet by vertical feet. The specific size, slope, and starting point of the approach slope is a function of the visibility minimums and the approach category of the critical design aircraft (currently category B). The Approach Surface is commonly referred to as the Threshold Siting Surface (TSS) in order to distinguish it from the Part 77 Approach Surface (see Appendix C - Airport Layout Plan).

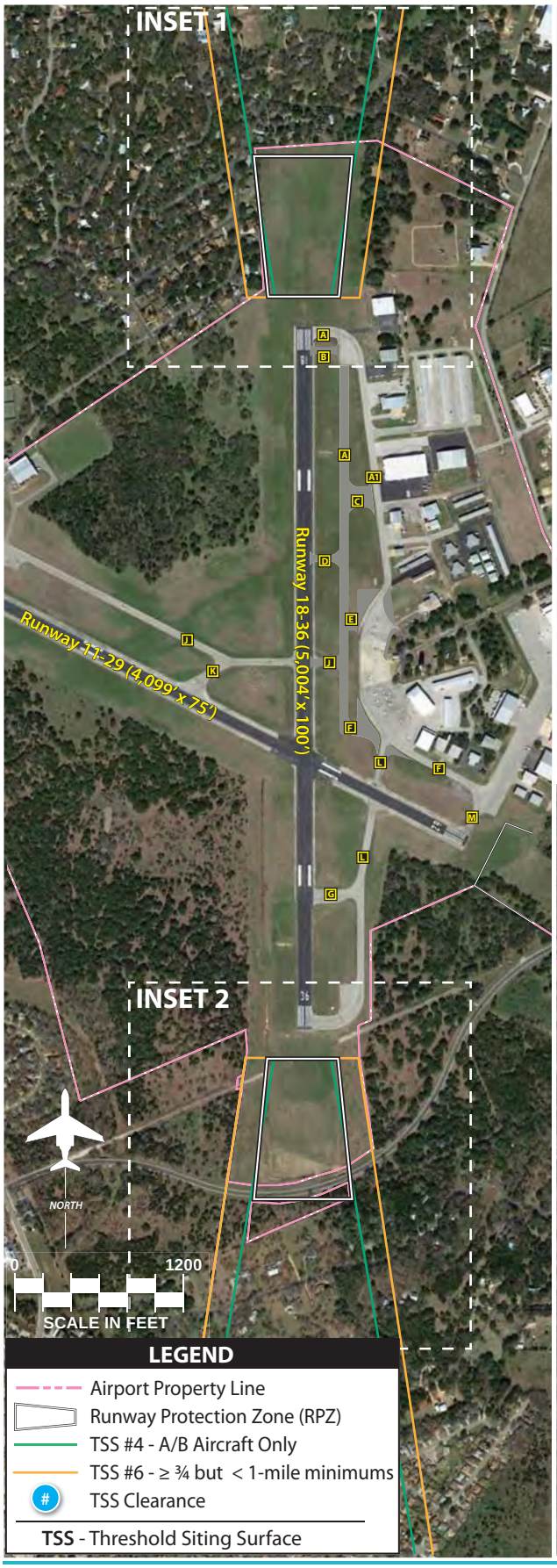
Penetrations to the TSS can have a significant impact on the capability of a runway. When penetrations exist, there are four primary courses of action that the FAA may take:

1. Threshold displacement;
2. Increased visibility minimums;
3. Loss of instrument approach procedure; or
4. Lighting of the obstacle.

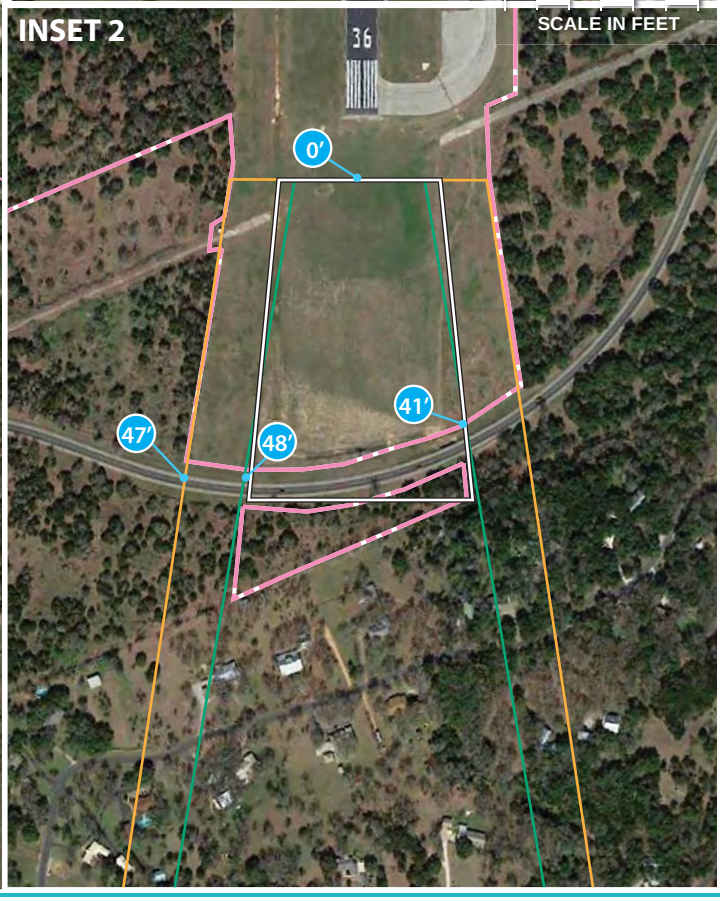
Exhibit 4H shows the TSS on both ends of Runway 18-36 and the elevation clearance available at certain locations in the TSS. An existing TSS associated with an AAC B critical aircraft and one for AAC C is shown.

The existing TSS surface is based on category A and B aircraft regardless of the instrument approach capability. This is the TSS that applies today. This TSS has a 400-foot inner width, 3,800-foot outer width, a 10,000-foot length, and a 20:1 slope. The point at which the existing TSS reaches the property line, the highest allowable object or natural growth is 33 feet.

The potential future AAC C TSS on the Runway 18 end begins 200 feet from the landing threshold. The inner width is 800 feet, the outer width is 3,800 feet, the length is 10,000 feet, and it slopes up and away from the runway at a 20:1 ratio. The inner width of the TSS crosses the airport property line. The allowable elevation at this point is zero; therefore, there would be a penetration to the TSS on the Runway 18 end if the airport transitions back to AAC C. Several other elevation points are noted on the exhibit indicating there may be other future penetrations to the TSS. The TSS on the Runway 36 end is clear of obstructions.


INSET 1
Runway 18-36 (5,004' x 100')
Runway 11-29 (4,099' x 75')
INSET 2
NORTH
0
1200
SCALE IN FEET
LEGEND
Airport Property Line
Runway Protection Zone (RPZ)
TSS #4 - A/B Aircraft Only
TSS #6 - ≥ ¾ but < 1-mile minimums
TSS Clearance
TSS - Threshold Siting Surface


INSET 1
54'
56'
33'
16'
0'
0
600
SCALE IN FEET


INSET 2
0'
41'
47'
48'

TAXIWAY GEOMETRY

The FAA has placed a greater emphasis on taxiway geometry in recent years. As noted in the Facility Requirements chapter, there are several locations on the airfield where the taxiway geometry does not meet current design standards. The non-standard taxiway geometries are as follows:

- Taxiway J crosses the high-energy portion of Runway 18-36.
- Taxiway L is at an acute angle to Runway 11-29.
- Taxiway G is wider than the 50-foot standard.
- Taxiway L at the Runway 36 threshold is wider than the 50-foot standard.
- Taxiway K is at an acute angle to Runway 11-29.
- The south portion of Taxiway L is 400 feet from Runway 18-36, which exceeds the current standard of 300 feet.
- Taxiway A is not a true parallel taxiway in that it ends at Taxiway F, which connects to Taxiway L to provide access to the Runway 36 threshold.
- Taxiway J is 375 feet from Runway 11-29 where the standard is 240 feet.
- Intersection of Taxiways A, A1, and B is a wide expanse of pavement.

Each of these non-standard taxiway geometries are planned to be redesigned to current design standards. The alternatives include the application of the new taxiway geometries.

HOLD BAYS

Hold bays are pavement features on an airfield where pilots can pull their aircraft off an active taxiway to allow other pilots to safely pass them. This is a very common practice, especially for pilots of smaller piston-powered aircraft. These pilots routinely perform various pre-flight checks, including engine run-ups, which can take several minutes. Pilots of jet-powered aircraft typically don't need to do engine run-ups and will perform preflight checks prior to entering the taxiway system. Therefore, it is beneficial for capacity purposes to provide hold bays.

There are designated hold bays on the airfield currently located near the threshold of Runways 36, 11, and 29. These hold bays are located between the parallel taxiways and the runway. During construction of the Taxiway A/Apron project, the hold bay near the Runway 18 threshold was replaced with a bypass taxiway, which allows for one holding aircraft. The ability to accommodate multiple holding aircraft was reduced, causing congestion during peak times. To address the reduction in aircraft holding capacity, Taxiway C, which connects Taxiways A and A1, was subsequently widened from 50 feet to 150 feet in order to serve as an additional hold bay.

Hold bays should be in proximity to the runway end, thus allowing for immediate departure when the pilot has completed their preflight checks and when cleared by the control tower. Current design standards discourage locating hold bays between runways and taxiways because holding aircraft can obstruct the views of other aircraft. **Exhibit 4J** presents two alternatives that address taxiways and hold bays.

Alternative 1 – Hold Bays and Taxiways

The grassy area between Taxiways A1, A, C, and the terminal apron, is planned to be paved to serve a dual purpose as a hold bay and as additional aircraft tie down positions. The AWOS weather sensor located in this area is planned to be relocated to the west of Runway 18-36.

Near the Runway 36 end, a new hold bay is planned. This hold bay meets the current design standards by segmenting the entry access point and the individual hold bays. As shown, the hold bay can accommodate four aircraft, two at the hold lines and two behind those holding aircraft. If more hold bays are needed, this design can be replicated.

A new hold bay near the Runway 11 threshold is planned to replace the existing interior hold bay. As this is the lower utility crosswind runway, a hold bay to accommodate a single aircraft is considered. The location of this hold bay is not quite at the runway threshold in order to preserve the existing taxiways that serve the existing west side hangar.

On the Runway 29 end, the interior hold bay is planned to be removed. Aircraft would then utilize a portion of existing adjacent pavement for holding purposes.

Two taxiway adjustments are also considered in this alternative. First Taxiways A and A1 converge to form a wide-expanse-of-pavement, which is not the optimal geometry. They are planned to be separated to provide a distinction between the two taxiways. A new connecting taxiway is planned between Taxiways A and A1 so that access is maintained.

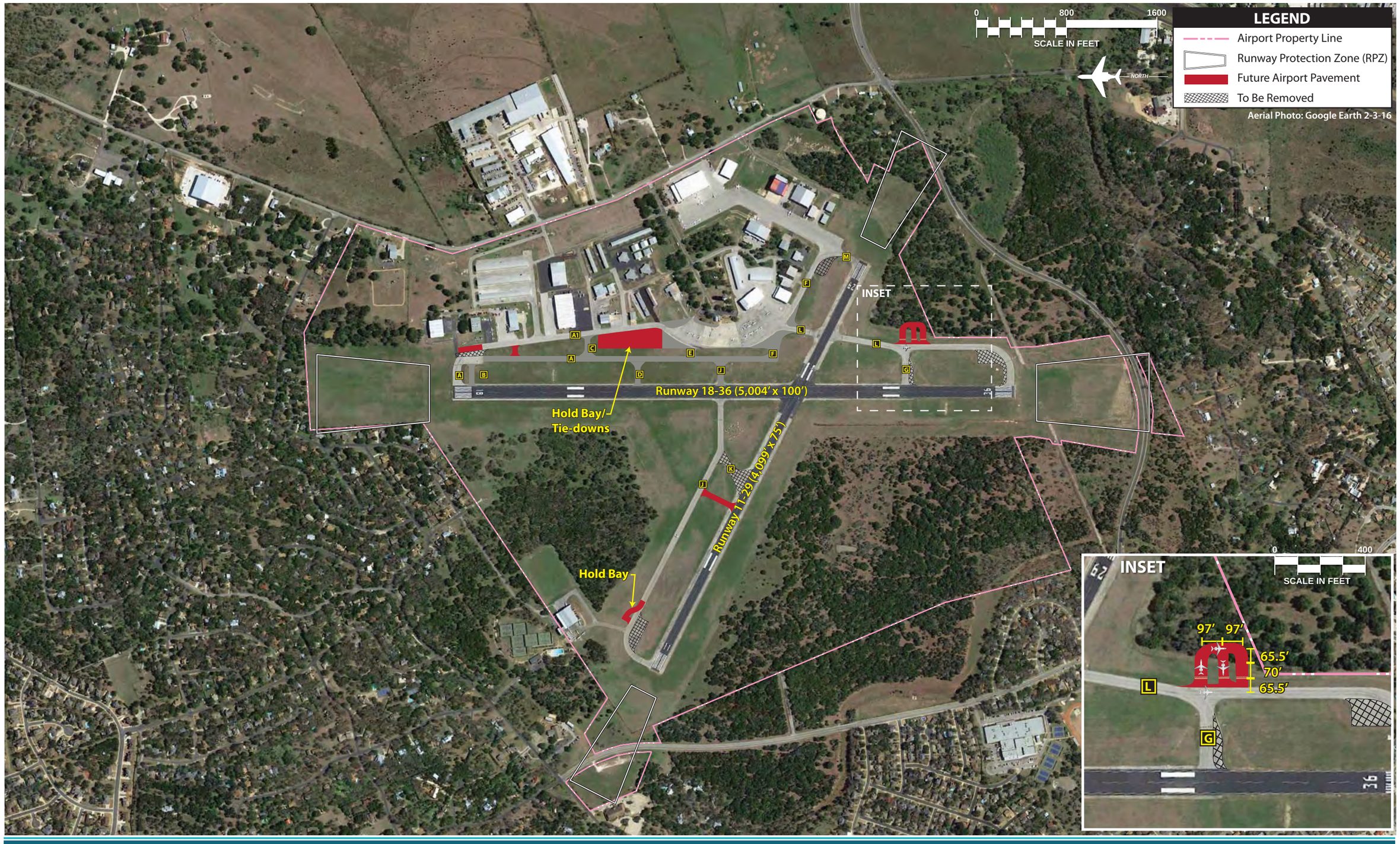
Taxiway K enters Runway 11-29 at a non-standard angle. Current design standards call for exit/entrance taxiways to be at 90 degrees, unless high speed exits are needed (they are not needed at Georgetown). Therefore, Taxiway K is planned to be replaced with a standard 90-degree taxiway.

Alternative 2 – Hold Bays and Taxiways

The next alternative for hold bays and taxiways presents some adjustments to the first alternative. On the Runway 18 end, the revised geometry is the same as Alternative 1. Taxiways A and A1 are planned to be separated to provide a distinction between the two. A new connecting taxiway is planned between Taxiways A and A1 so that access is maintained.

The location of the planned hold bay on the Runway 36 end is shifted to the end of Taxiway L. In this alternative, the hold bay would extend slightly beyond airport property. This property, to a distance of at least 80 feet, would have to be acquired by the Airport. Again, additional hold bays can be added following this design standard.

On the Runway 11 end, a hold bay located outside the taxiway is planned to replace the existing interior hold bay. The location of this hold bay would require an adjustment to the hangar access taxilane as taxilanes should not terminate at a hold apron. The landside development alternatives for this location will consider further how to maintain the taxilane access.


0
800
1600
SCALE IN FEET
NORTH
LEGEND
Airport Property Line
Runway Protection Zone (RPZ)
Future Airport Pavement
To Be Removed
Aerial Photo: Google Earth 2-3-16
INSET
Runway 18-36 (5,004' x 100')
Hold Bay/
Tie-downs
Runway 11-29 (4,099' x 75')
Hold Bay
A1
A
B
C
D
E
F
J
K
L
M
G
18
36
11
29
0
400
SCALE IN FEET
97'
97'
65.5'
70'
65.5'

0 800 1600
SCALE IN FEET

NORTH

LEGEND
- Airport Property Line
- Runway Protection Zone (RPZ)
- Future Airport Pavement
- To Be Removed

Aerial Photo: Google Earth 2-3-16

Hold Bay

Potential Land Acquisition

INSET

Runway 18-36 (5,004' x 100')

Hold Bay/
Tie-downs

Relocate Windsock/
Segmented Circle

Runway 11-29 (4,099' x 75')

Hold Bay

INSET

0 400
SCALE IN FEET

Potential Land Acquisition

97' 97'

65.5'
70'
65.5'

36

Exhibit 4J (continued)
TAXIWAY/HOLD APRON ALTERNATIVE 2

On the Runway 29 end, the interior hold bay is planned to be removed. A portion of the adjacent existing pavement, as well as an extension of this pavement, is planned to be the new hold bay serving Runway 29.

The primary taxiway geometry consideration in Alternative 2 is to plan for the parallel taxiways serving both runways to be a uniform distance from the runways. This is the more traditional and familiar geometry and will help reduce potential pilot confusion when traversing the taxiways.

RUNWAY EXTENSION ALTERNATIVES

Analysis in the previous chapter indicated that a recommended minimum runway length for this airport is 5,500 feet; therefore, it is necessary to examine if that is feasible. A runway extension can be situated on either runway end or it can be split between both ends to achieve the desired length. The runway extension alternatives to follow only consider design standards associated with a runway design code of C-II-5000 because it is the larger business jets in C-II that would need the additional length. When TxDOT and FAA consider major runway projects, their default position is that all design standards must be met. Therefore, airport ownership of the RSA, ROFA, and RPZ is considered a minimum requirement.

Runway Extension Alternative 1: The first alternative considers extending the runway to the north by 496 feet, bringing the total runway length to 5,500 feet. A total of 24 properties and 21 acres would need to be acquired. Numerous residential streets would also have to be closed or rerouted.

Runway Extension Alternative 2: This alternative considers extending the runway to the south by 496 feet for a total runway length of 5,500 feet. Included within the object clearing surfaces (RSA, ROFA, and RPZ) is nine homes and a total of 20 acres of land. Lakeway Drive would have to be closed or tunneled and several other residential streets would be impacted.

Runway Extension Alternative 3: A third alternative is considered that would extend the runway 260 feet to the north and 236 feet to the south. This alternative takes advantage of the 260 feet north of the end of the C-II RSA that is on airport property. Therefore, property would not have to be acquired for RSA, but would for ROFA and RPZ.

Runway Extension Alternative 4: This alternative considers adding 496 feet of runway pavement to both ends of the runway to provide additional take-off length however, the pavement would not be available for landing calculations. This alternative would require implementation of declared distances as shown in **Table 4D**. There would be no changes to the current location of the landing thresholds. Essentially, this alternative considers additional runway length that can only be used for takeoff calculations in one direction. **Exhibit 4K** shows this alternative.

TABLE 4D
Declared Distances Runway Extension Alternative 4
Georgetown Municipal Airport

Parameters	Runway 18	Runway 36
Takeoff Run Available (TORA)[1]	5,500'	5,500'
Takeoff Distance Available (TODA)[2]	5,500'	5,500'
Accelerate Stop Distance Available (ASDA)[3]	5,500'	5,500'
Landing Distance Available (LDA)[3]	5,004'	5,004'

[1] Departure RPZ begins 200 feet from the end of the TORA.

[2] TORA cannot be longer than TODA. Departure surface is set on TODA. TODA can be shortened to mitigate departure surface penetrations; if so, TORA is shortened, too.

[3] Available runway length plus RSA. Approach RPZ set 200 feet from the landing threshold.

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

Under this alternative, none of the applicable design standards would change. The RSA, ROFA, OFZ, and RPZ size and location would remain fixed. The far ends of the runway, used for pilot takeoff calculations, would remain the same as they are today. The additional 496 feet of pavement could only be used by pilots to begin their takeoff run. It cannot be used to calculate additional length on approach, departure beyond the far end of the runway or on landing roll-out.

Extension Summary: The current length of 5,004 feet is less than the minimum recommendation of 5,500 feet. Alternative 4, presented above, provides a solution that would allow for an additional 496 feet to be made available for takeoff calculations in both directions. This alternative considers adding 496 feet of pavement to each end of Runway 18-36; however, the new pavement would only be available for takeoff and declared distances would be implemented. The use of declared distances, as documented in **Table 4D**, would limit the extent of the C-II RPZs to the location they occupied on the current ALP, prior to the visibility minimums being lowered to ⅞-mile (raised to 1-mile in June 2018). Under this scenario, 14 homes would fall in the Runway 18 RPZ and would be recommended for acquisition. The land to be acquired is approximately 13 acres of RPZ land and 3 acres of land to accommodate the ROFA. Landing length would remain at the current length of 5,004 feet.

Runway extension alternatives 1-3 considered adding runway length that would be available for use on both takeoff and landing. This would also change the location of the various protection surfaces including the RSA, ROFA, and RPZ. This could trigger a need to acquire the lands under which any of these protection surfaces fall. To accomplish this, homes and property would have to be acquired and roads closed (or tunneled), including Lakeway Drive, which is a major arterial street. The cost to purchase the homes and land would likely run into the tens of millions.

There are local factors that make extending the runway challenging. As discussed in the previous chapter, 1996 City Council Resolution 960123-JJ indicates that the last extension of the runway to 5,000 feet was to be interpreted as setting a maximum length that the City Council would support. A future council would have to rescind this resolution prior to moving forward on an extension. It is likely there would be public opposition to any further extension of the runway.

DECLARED DISTANCES		
	RUNWAY 18	RUNWAY 36
TORA	5,500′	5,500′
TODA	5,500′	5,500′
ASDA	5,500′	5,500′
LDA	5,004′	5,004′

TODA - Takeoff Distance Available
TORA - Takeoff Run Available
ASDA - Accelerate/Stop Distance Available
LDA - Landing Distance Available

Airport Road
Runway 11-29 (4,099′ x 75′)
Ultimate Property Line
Runway 18-36 (6,000′ x 100′)
496′ Extension
496′ Extension
Lakeway Drive
RUNWAY 18-36 LDA 5,004′
RUNWAY 18 TORA/TODA/ASDA 5,500′
RUNWAY 36 TORA/TODA/ASDA 5,500′
Northwest Blvd.

LEGEND
- Airport Property Line
- Runway Safety Area (RSA)
- Runway Obstacle Free Zone (ROFZ)
- Runway Object Free Area (ROFA)
- Runway Protection Zone (RPZ)

NORTH
0 800 1600
SCALE IN FEET

Aerial Photo: Google Earth 2-3-16

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LANDSIDE ALTERNATIVES

Generally, landside issues relate to those airport facilities necessary, or desired, for the safe and efficient parking and storage of aircraft, movement of passengers and pilots to and from aircraft, and overall revenue support functions. In addition, elements, such as fueling capability, availability of services, and emergency response, are also considered in the landside functions.

Landside planning issues, summarized on **Exhibit 4A**, will focus on facility locating strategies following a strategy of separating activity levels. To maximize airport efficiency, it is important to locate facilities intended to serve similar functions close together. For example, larger hangars supporting airport businesses should be centrally located, while smaller box and T-hangars should be set farther to the sides. Allowing new facilities to be constructed haphazardly on the next available spot at the airport may preclude the highest and best use of limited and valuable airport land. It is also important to plan for facilities that airport users desire and to group those facilities together, whether they are T-hangars, box hangars, or larger conventional hangars.

The orderly development of the airport terminal area (those areas parallel to the runway and along the flight line) 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 along the flight line.

Activity in development areas should be divided into three categories at an airport. The high activity area should be planned and developed as the areas providing aviation services on the airport. An example of a high activity area is the aircraft parking apron, which provides outside storage and circulation of aircraft. Large conventional hangars housing fixed base operators (FBOs), other airport businesses, or those used for bulk aircraft storage would be considered high activity uses. A conventional hangar structure in the high activity area should be a minimum of 6,400 square feet (80 feet by 80 feet). If space is available, it is more common to plan these hangars for up to 200 feet by 200 feet. The best location for high activity areas is along the flight line near midfield, for ease of access to all areas of the airfield.

The medium activity category defines the next level of airport use and primarily includes corporate aircraft operators that may desire their own box or conventional hangar storage on the airport. A hangar in the medium activity use area should be at least 50 feet by 50 feet, or a minimum of 2,500 square feet. The best location for medium activity use is off the immediate flight line, but still with ready access to the runway/taxiway system. Typically, these areas will be adjacent to the high activity areas. Parking and utilities, such as water and sewer, should also be provided in this area.

The low activity use category defines the area for storage of smaller single and twin-engine aircraft. Low activity users are personal or small business aircraft owners who prefer individual space in T-hangars or small box hangars. Low activity areas should be in less conspicuous areas or to the ends of the flight line. This use category will require electricity, but may not require water or sewer utilities.

In addition to the functional compatibility of the terminal area, the proposed development concept should provide a first-class appearance for Georgetown Municipal Airport. Consideration to aesthetics should be given high priority in all public areas, as many times the airport can serve as the first impression a visitor may have of the community.

Generally, the existing development at the Airport has followed the strategy of separating activity levels. Larger conventional hangars are located centrally to the main apron areas. Somewhat smaller hangars are located farther from the center. Future development along the active aprons should be restricted to larger hangars intended to support aviation-related businesses.

The number of potential landside alternatives can be infinite. The following alternatives are those that best meet design standards, while maximizing the efficiency of aircraft storage and movement. The landside element of the recommended master plan concept, to be presented in the next chapter, may be one of these alternatives or, more likely, is a combination of elements from each of them. Input from the planning advisory committee (PAC) and the public is integral to determining the landside vision for the Airport.

HANGAR DEVELOPMENT ALTERNATIVES

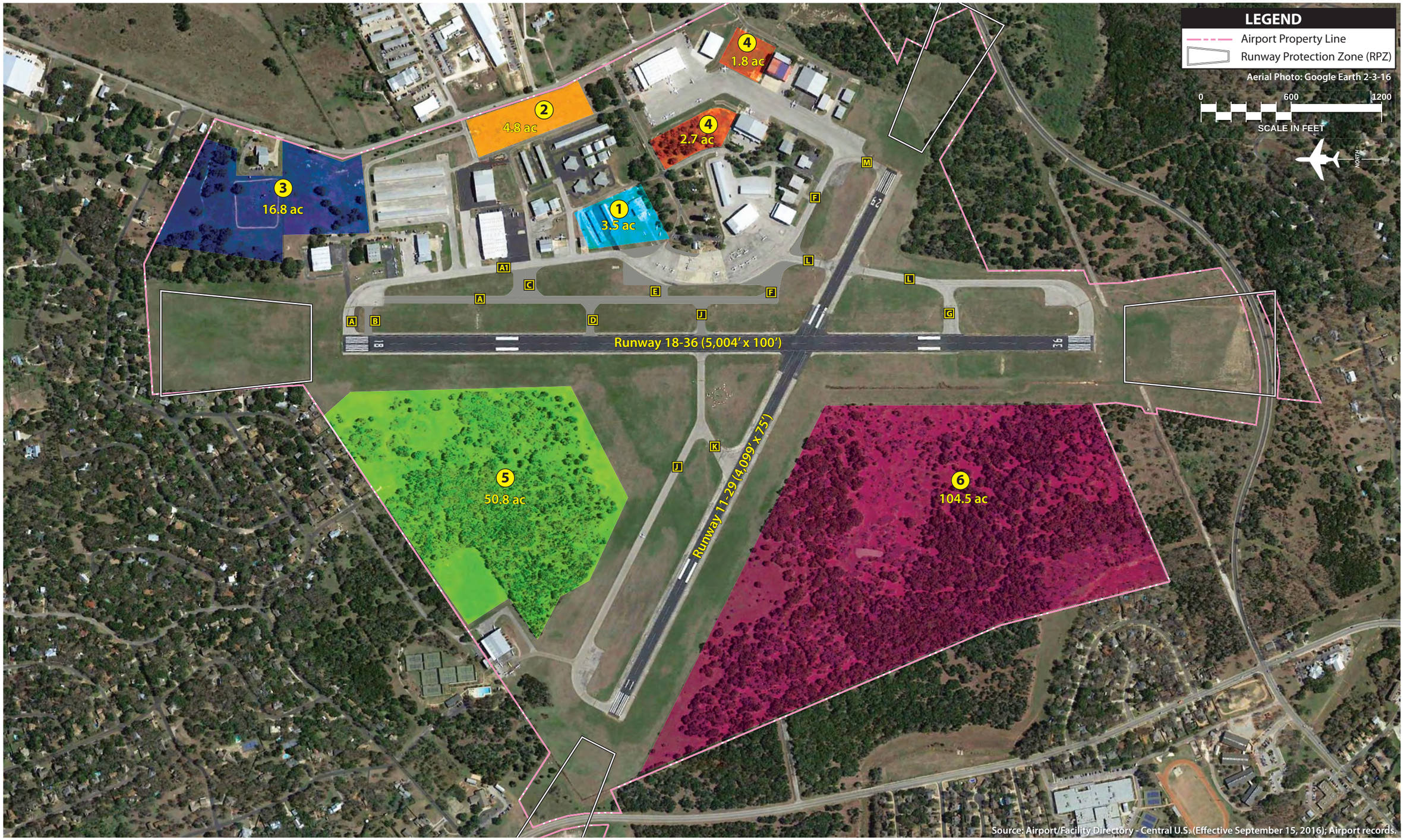
Analysis presented in the Facility Requirements chapter indicates a current and growing demand for a variety of facilities. Chief among these are aircraft hangars and aircraft apron space. With a current wait list of approximately 180 aircraft owners, there is an immediate need for hangar space.

There are approximately 282 existing aircraft parking positions. Within the next 20 years, it is estimated there will be a need for approximately 400 hangar positions or an additional 118 positions. Another method of assessing hangar needs is to examine total square-footage needs. There is approximately 501,500 square feet of existing aircraft hangar space. Within the next 20 years, it is estimated that a total of 722,000 square feet will be needed.

There are several distinct locations on the airport that are suitable for aviation development as shown on **Exhibit 4L**. Some of these areas are undeveloped parcels within the east development areas. These parcels would be the easiest to develop because of the existing access to the runway/taxiway system, and the proximity of utilities, both of which contribute to a reduced cost to develop as compared to west side land.

TERMINAL DEVELOPMENT AREA 1

Area One (1), immediately north of the terminal area, currently has several hangar structures, including two T-hangar structures and one box hangar. This location encompasses approximately 3.5 acres and is considered for redevelopment as the hangars are well past their useful life. Having T-hangars in this location does not follow the strategy of situating high activity conventional hangars on the flight line.



Source: Airport/Facility Directory - Central U.S. (Effective September 15, 2016); Airport records.

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This area is centrally located and is ideally suited for high activity conventional hangars supporting aviation businesses. When considering redevelopment of these three hangars, there will be an additional process to undertake with the City of Georgetown Historic Preservation Department because these hangars have been identified as potentially having historic significance due to their age.

Exhibit 4M presents five different potential development alternatives. The central theme to each of these alternatives is to plan for larger conventional hangars to face the existing aircraft apron. On four of the five alternatives, a taxiway is planned between the flight line hangars to provide access to somewhat smaller hangars. One of the alternatives has an access taxilane extending from an existing taxilane. **Table 4E** presents a summary of the total square footage of the considered hangars.

TABLE 4E
Area One (1) Alternatives Summary
Georgetown Municipal Airport

Alternative	Conventional Hangar Space (s.f.)	Executive/Box Hangar Space (s.f.)	Total (s.f.)	Estimated Units
1	32,100	21,800	53,900	22
2	33,300	29,200	62,500	25
3	79,200	5,000	84,200	34
4	16,800	28,800	45,600	18
5	70,500	6,100	76,600	31

(s.f.): square feet

TERMINAL DEVELOPMENT AREA 2

Area Two (2), encompassing approximately 4.8 acres, is situated along the east property line and is set back from the flight line. This location is best-suited for lower activity box and T-hangars. **Exhibit 4N** presents three development alternatives. Each of the alternatives has taxilane access from the north of this parcel near the existing T-hangars. This access point is also the location of the existing aircraft wash rack, which would have to be relocated. A new wash rack is shown on the exhibits slightly to the north of the current location. The new wash rack should meet environmental standards, including having filtration, water recycling, and industrial waste collection systems. There are overhead utility lines in this area, along the surface road, that would likely have to be buried underground in order to accommodate hangar construction.

Alternative 1 considers several small T-hangar structures that are situated so that the doors open to the north and south. The structures encompass 35 individual units and 43,000 square feet.

Alternative 2 considers individual box hangars. These could also be connected box hangars. One development scenario would be for the airport to construct the access taxilane and then enter into ground leases to individuals who then can build their own hangar. The structures encompass 26 individual units and 65,000 square feet.

Alternative 3 considers three nested T-hangar structures. The structures encompass 31 individual units and 38,000 square feet. **Table 4F** summarizes the hangar capacity for each of these alternatives.

TABLE 4F
Area Two (2) Alternatives Summary
Georgetown Municipal Airport

Alternative	T-Hangar Space (s.f.)	Executive/Box Hangar Space (s.f.)	Total (s.f.)	Estimated Units
1	46,200	0	46,200	35
2	0	65,000	65,000	26
3	41,000	0	41,000	31

(s.f.): square feet

TERMINAL DEVELOPMENT AREA 3

Area Three (3) consists of approximately 17 acres in the northeast quadrant of the airport. This parcel wraps around the existing city fire station and is situated away from the flight line. All alternatives for this area will include a fire station access point to the airport, which will allow for faster response times for any emergencies at the airport. Taxilane access to this parcel is considered as an extension of Taxiway A1.

Potential development of this parcel has been divided into a north and south half. This provides greater flexibility to the airport to develop one half at a time. **Exhibit 4P** shows three development options for the south portion of the parcel.

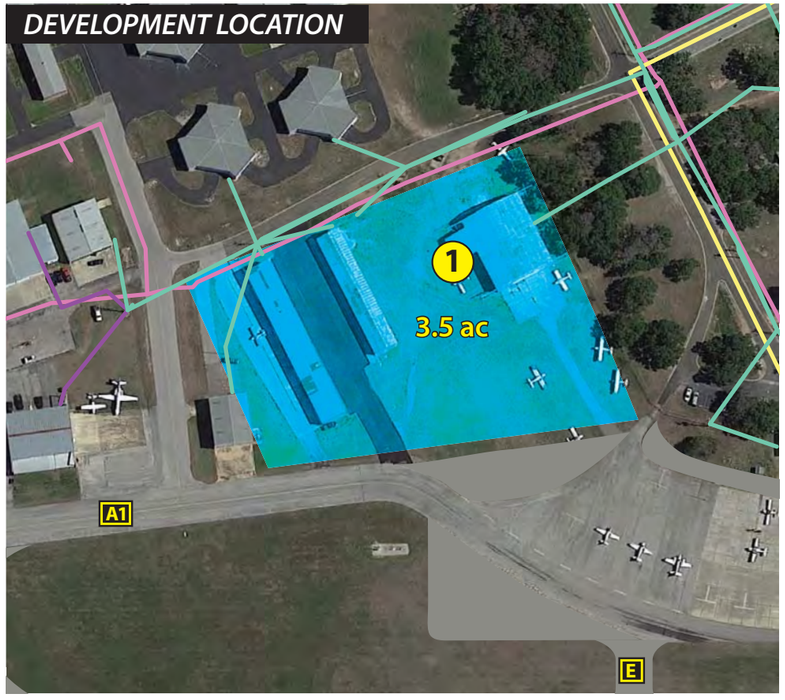
South Portion Area 3

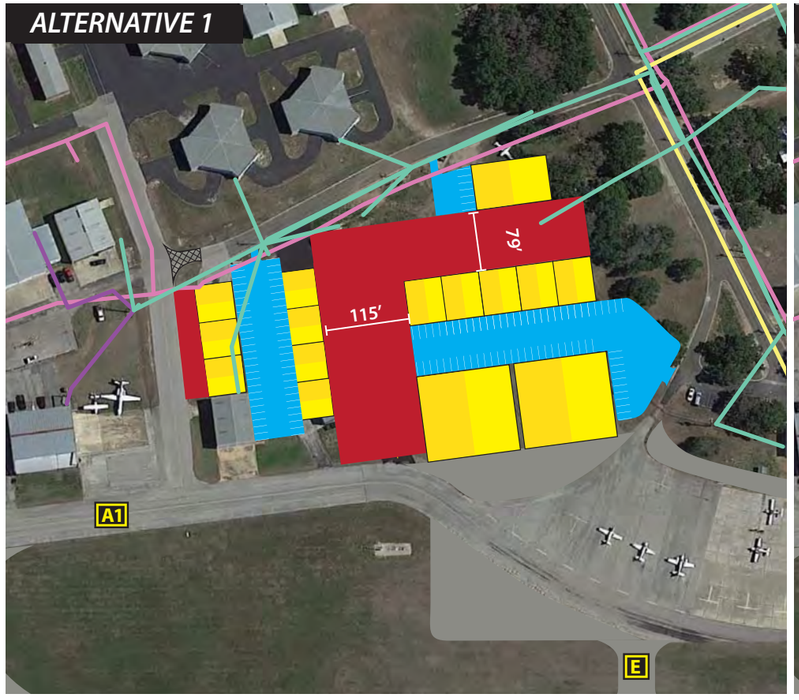
Alternative 1 considers connected box hangars for the south portion of this area. Alternative 2 considers a mix of conventional and box hangars in the south portion of this area. Alternative 3 considers three T-hangar structures, each having 20 individual units. **Table 4G** summarizes the hangar capacity for each of the three alternatives in this area.

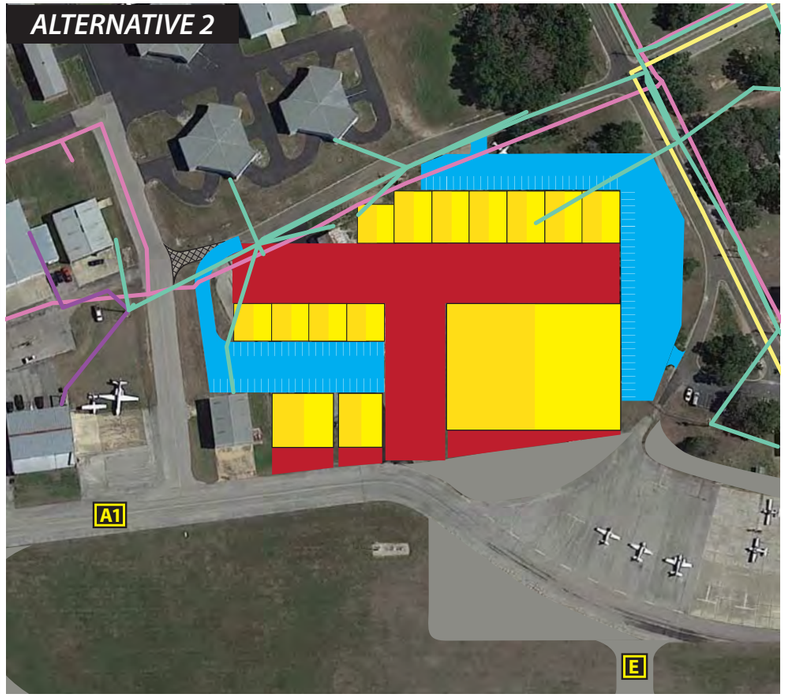
TABLE 4G
Area Three (3) - South Alternatives Summary
Georgetown Municipal Airport

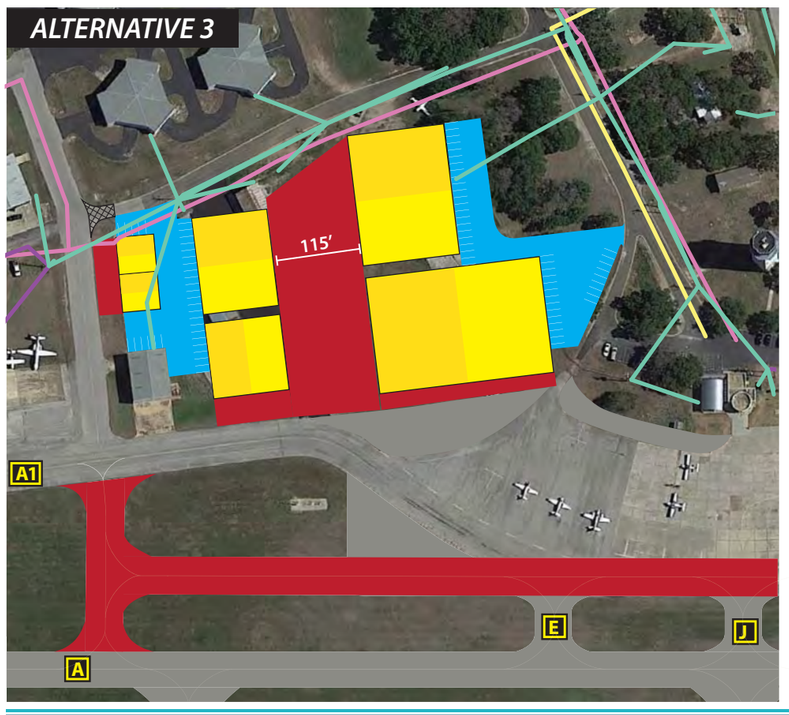
Alternative	T-Hangar Space (s.f.)	Executive/Box Hangar Space (s.f.)	Conventional Hangar Space (s.f.)	Total (s.f.)	Estimated Units
1	0	70,600	0	70,600	28
2	0	32,500	17,900	50,400	20
3	66,000	10,900	0	76,900	65

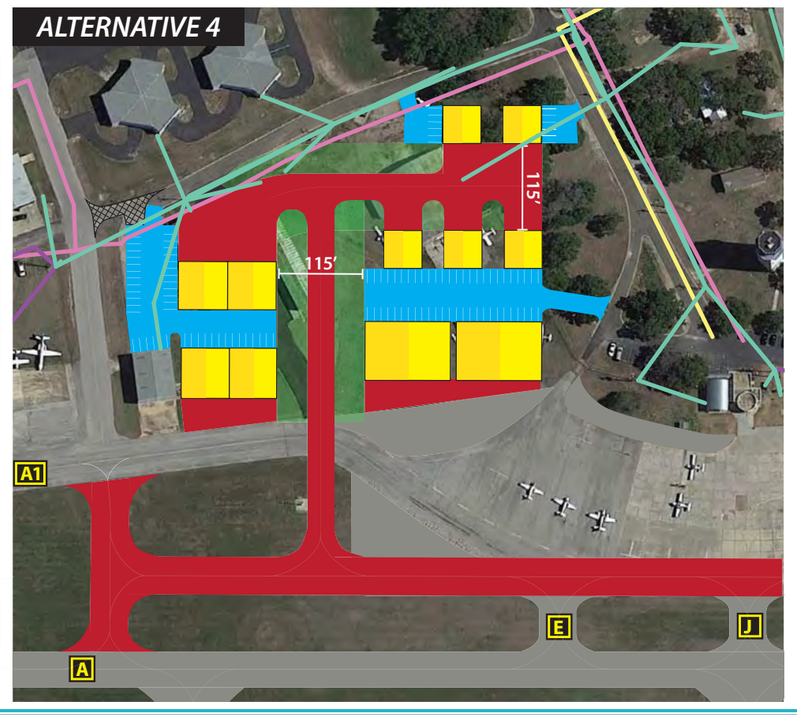
(s.f.): square feet

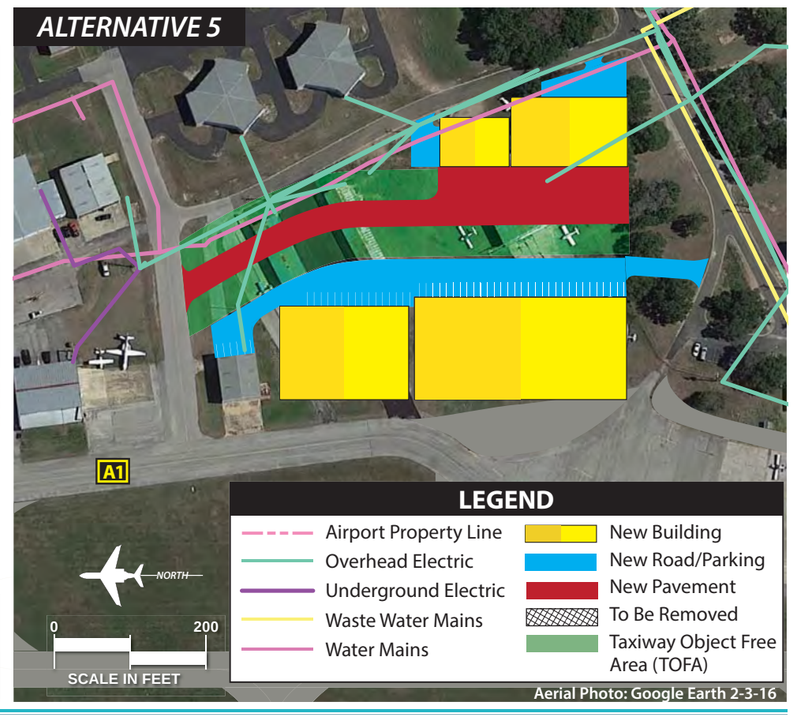

DEVELOPMENT LOCATION
1
3.5 ac
A1
E


ALTERNATIVE 1
79'
115'
A1
E


ALTERNATIVE 2
A1
E


ALTERNATIVE 3
115'
A1
E
J
A


ALTERNATIVE 4
115'
115'
A1
E
J
A


ALTERNATIVE 5
A1
NORTH
0
200
SCALE IN FEET
LEGEND
Airport Property Line
Overhead Electric
Underground Electric
Waste Water Mains
Water Mains
New Building
New Road/Parking
New Pavement
To Be Removed
Taxiway Object Free Area (TOFA)
Aerial Photo: Google Earth 2-3-16

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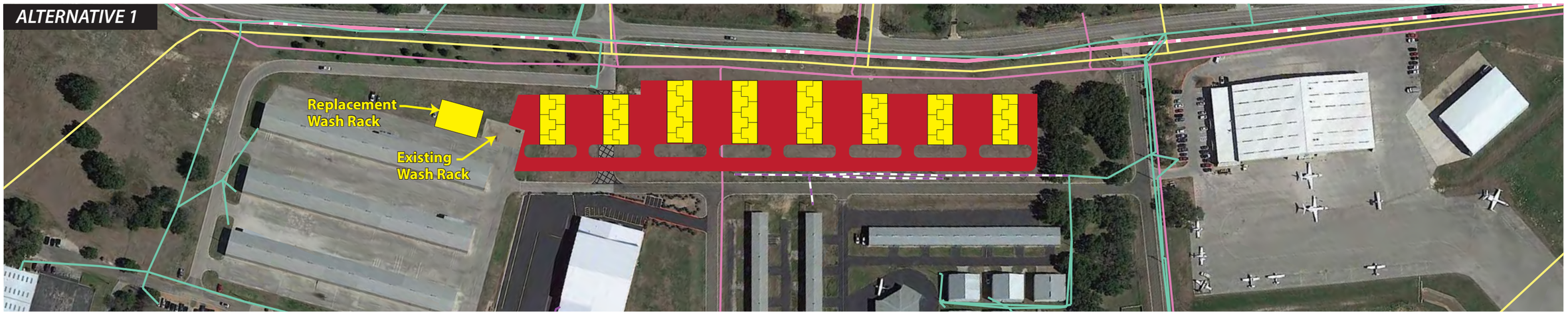
ALTERNATIVE 1



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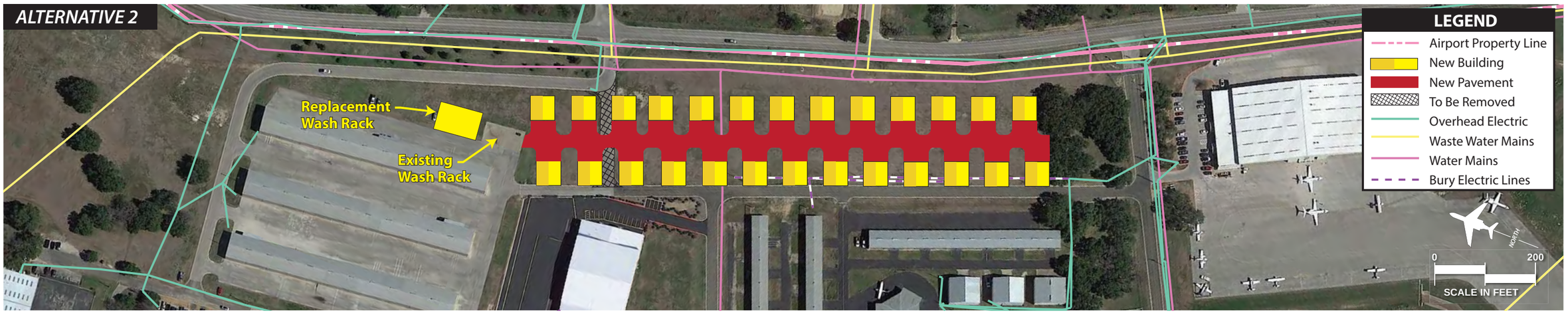

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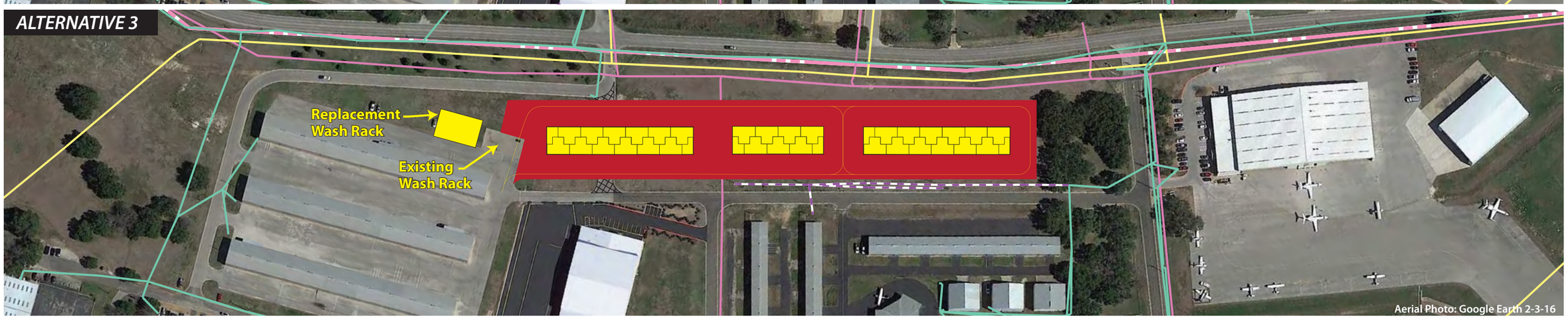

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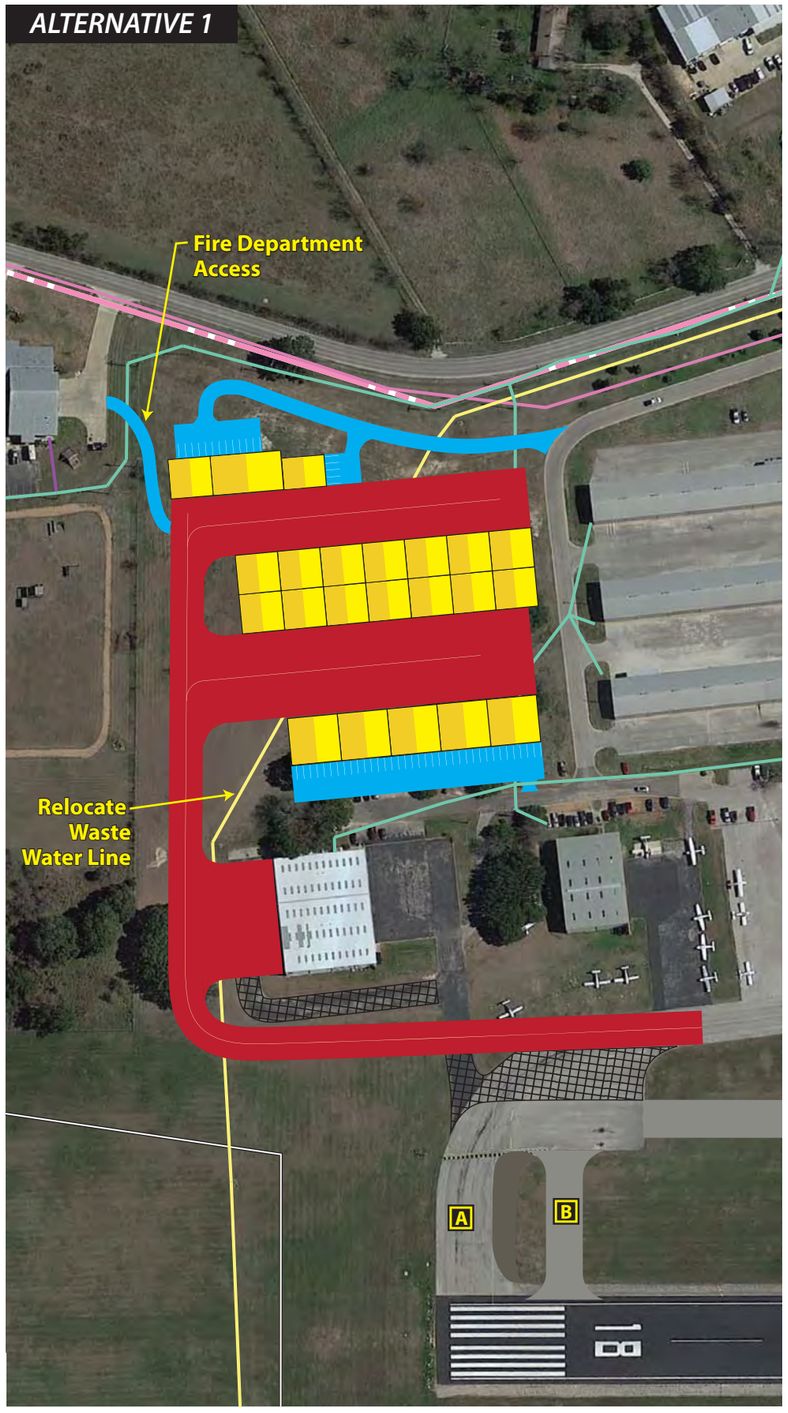
ALTERNATIVE 1



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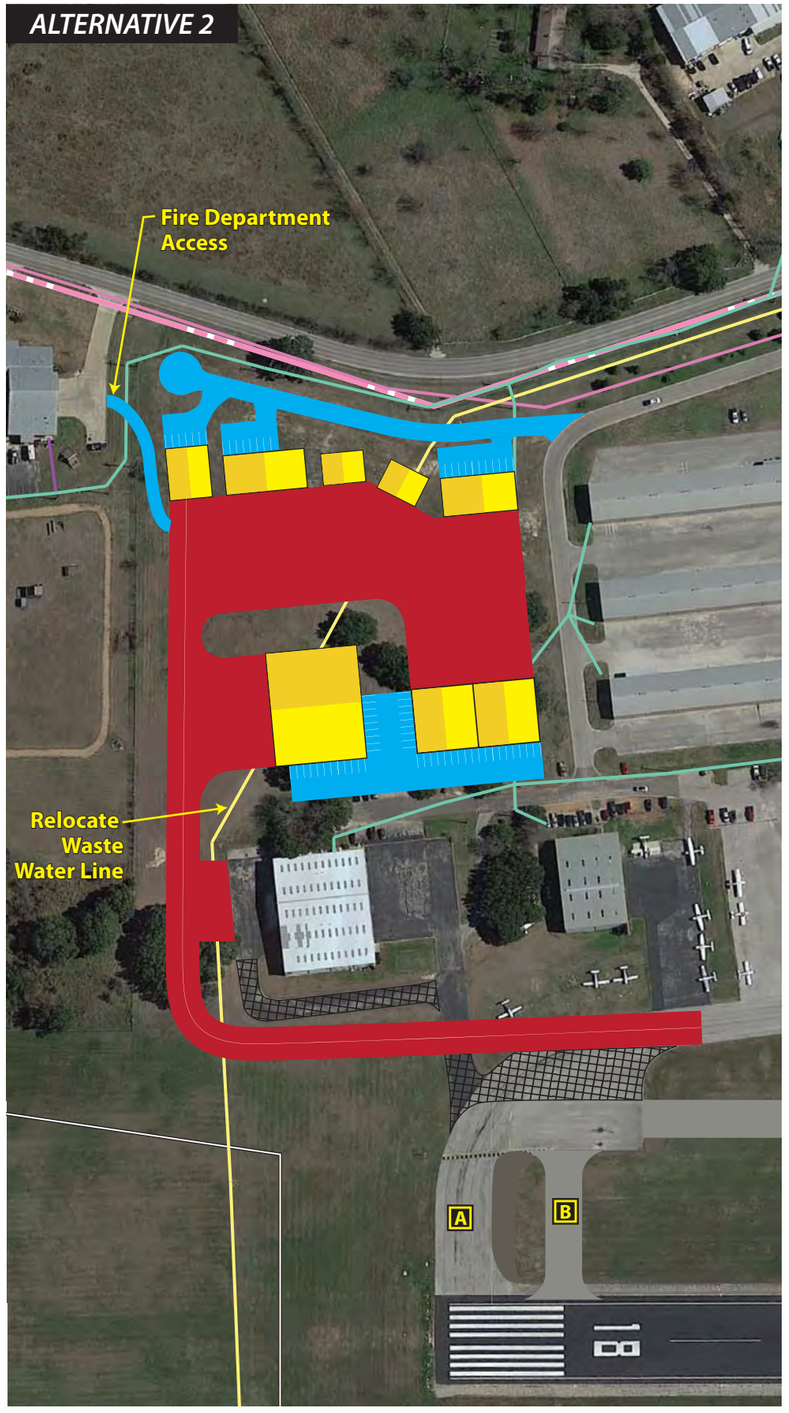
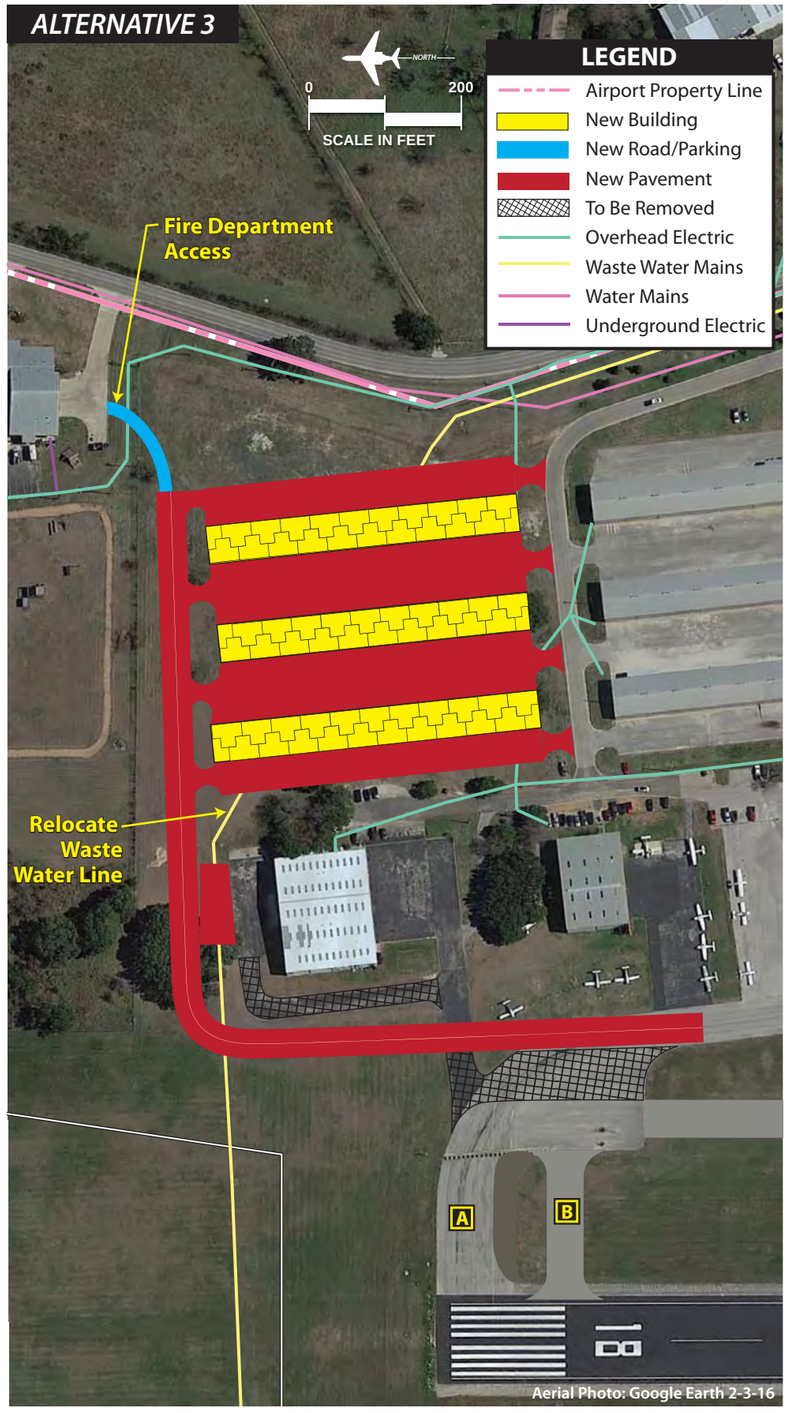


ALTERNATIVE 3



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North Portion Area 3

The north portion of Area 3 is more distant from the runway system and should be considered for lower activity development, such as box and T-hangars. Three development alternatives are presented on **Exhibit 4Q.**

Alternative 1 considers T-hangars exclusively for this area. A total of 97 individual units are planned. Alternative 2 considers three rows of connected box hangars. An additional taxilane then extends into an area identified with individual development parcels. The parcel concept provides the airport and a hangar developer with a great deal of flexibility. The airport would provide a ground lease and the aircraft owner can build a hangar to suit their specific needs. Alternative 3 considers five rows of T-hangars. **Table 4H** summarizes the hangar capacity for each of these three alternatives for the north portion of Area 3.

TABLE 4H
Area Three (3) - North Alternatives Summary
Georgetown Municipal Air-port

Alternative	T-Hangar Space (s.f.)	Executive/Box Hangar Space (s.f.)	Conventional Hangar Space (s.f.)	Total (s.f.)	Estimated Units
1	157,900	0	0	157,900	97
2	0	52,100	0	52,100	36
3	108,200	0	0	108,200	64

(s.f.): square feet

TERMINAL DEVELOPMENT AREA 4

Area Four (4) is comprised of two parcels in the southeast area, encompassing a total of 4.5 acres of undeveloped land. These two parcels have long been identified for larger conventional hangars, which is consistent with the other hangar types in the area. Utilities and taxiways are immediately available.

Exhibit 4R shows the planned hangar development for this area. Each of the three hangars shown is approximately 25,000 square feet.

The exhibit also shows potential restaurant sites. Site 1 is an expansion of the existing terminal building. This expansion could accommodate both a restaurant and additional terminal building space. Site 2 would be a stand-alone facility located just to the north of the tower.

NORTHWEST DEVELOPMENT AREA 5

Area Five (5), in the northwest quadrant of the airport, has one existing conventional hangar and approximately 51 acres of undeveloped land. There are utilities available along the edge of the property that could be extended onto airport property.

Vehicle Access to Area 5

Providing vehicle access to the site must be planned first in order to facilitate maximum benefit when the site is developed. Currently, vehicles utilize Toledo Trail to access the existing office building and on-airport hangar. Toledo Trail is a private road. Vehicles must pass through residential streets in order to access Toledo Trail. Where feasible, q new access point should be planned that would reduce or eliminate the need for vehicles to use residential streets.

Exhibit 4S shows three viable access road alternatives. The first alternative considers extending Granada Road to an access point on the west side of the existing hangar. This road currently provides access to the swim and tennis club. If the access road were to enter at this location, it would necessarily have to cross the taxilane leading to the existing hangar. This is not an acceptable design as aircraft and vehicles would be crossing paths. This is especially true of a public road that may be utilized by drivers who are unfamiliar with airport markings and operations on airfield pavements. This alternative is, therefore, not recommended.

The second alternative considers an entry point on the immediate east side of the existing hangar. This access point would extend from Toledo Trail. Access to Toledo Trail is considered from a new road that would wrap around the swim and tennis club. This new road would have the effect of removing airport-bound vehicles from the residential streets to the east. A portion of the Toledo Trail private easement would need to be acquired. This access point has a similar problem in that it would effectively cut off the cleared parcel, located immediately east of the existing hangar from the airfield. The same situation of having a public road and a taxilane would exist, which is not considered feasible. One option would be to have the road turn east immediately upon entering airport property and traversing along the fence line.

The third alternative considers an entry point that is east of the undeveloped parcel. Access to this point would also utilize a new road that extends from Granada Dr. to the point of airport entry. Access at this point is more centrally located in Area 5 and, therefore, future taxilanes would not have to cross public roads. A portion of the Toledo Trail private easement would have to be acquired. Each of the development alternatives considered a more centrally located airport access road.

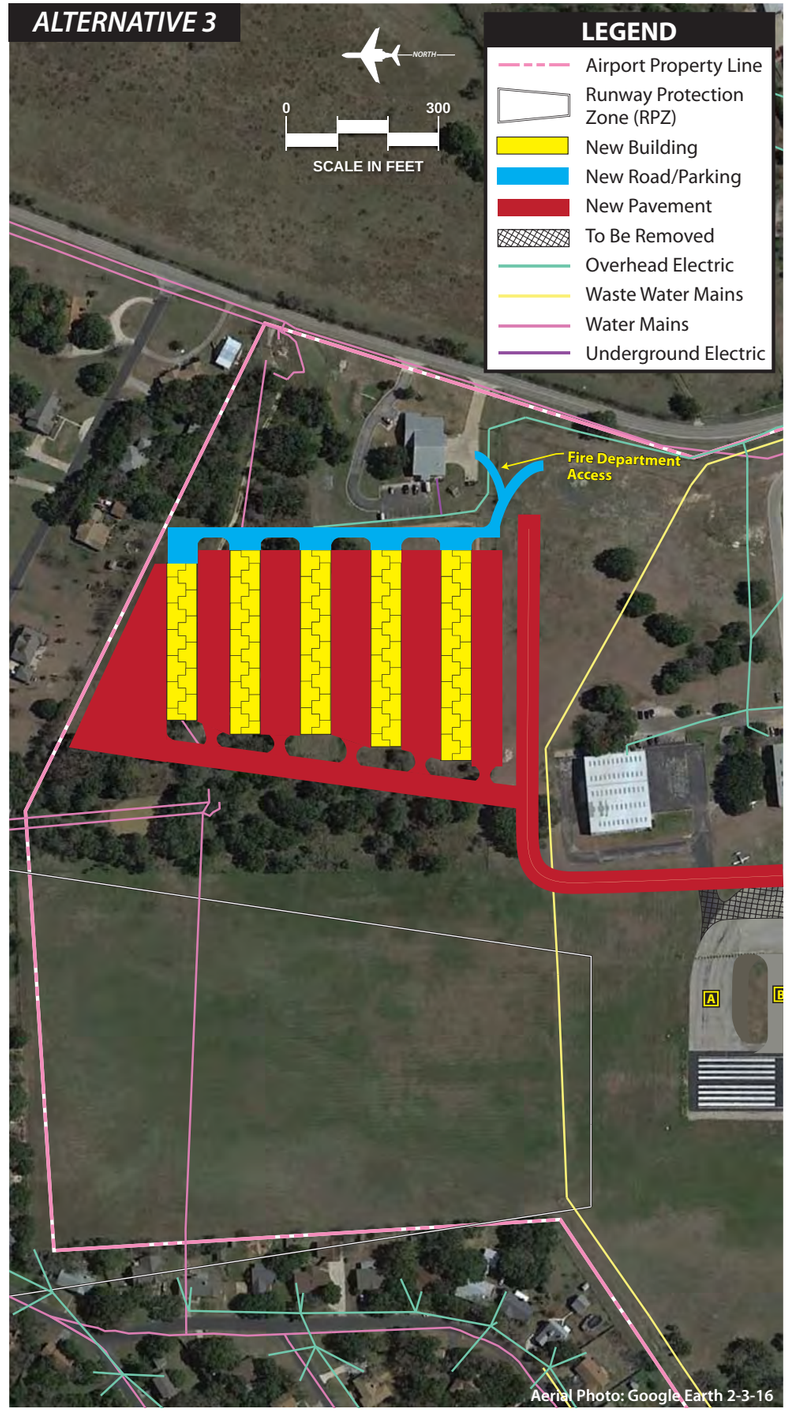
Alternatives

Planning of Area 5 presents a unique opportunity to consider a greenfield site. This opportunity allows for a plan that will maximize the available land and to plan for an appropriate mix of aviation uses. To that end, each of the development alternatives presented on **Exhibit 4T** follows the traditional development method of positioning high activity conventional hangars to face an aircraft apron and the runway system. Lower activity box and T-hangars are then situated back from the flight line. **Table 4J** presents a summary of the capacity provided by each of the four development alternatives.

ALTERNATIVE 1

ALTERNATIVE 2

ALTERNATIVE 3



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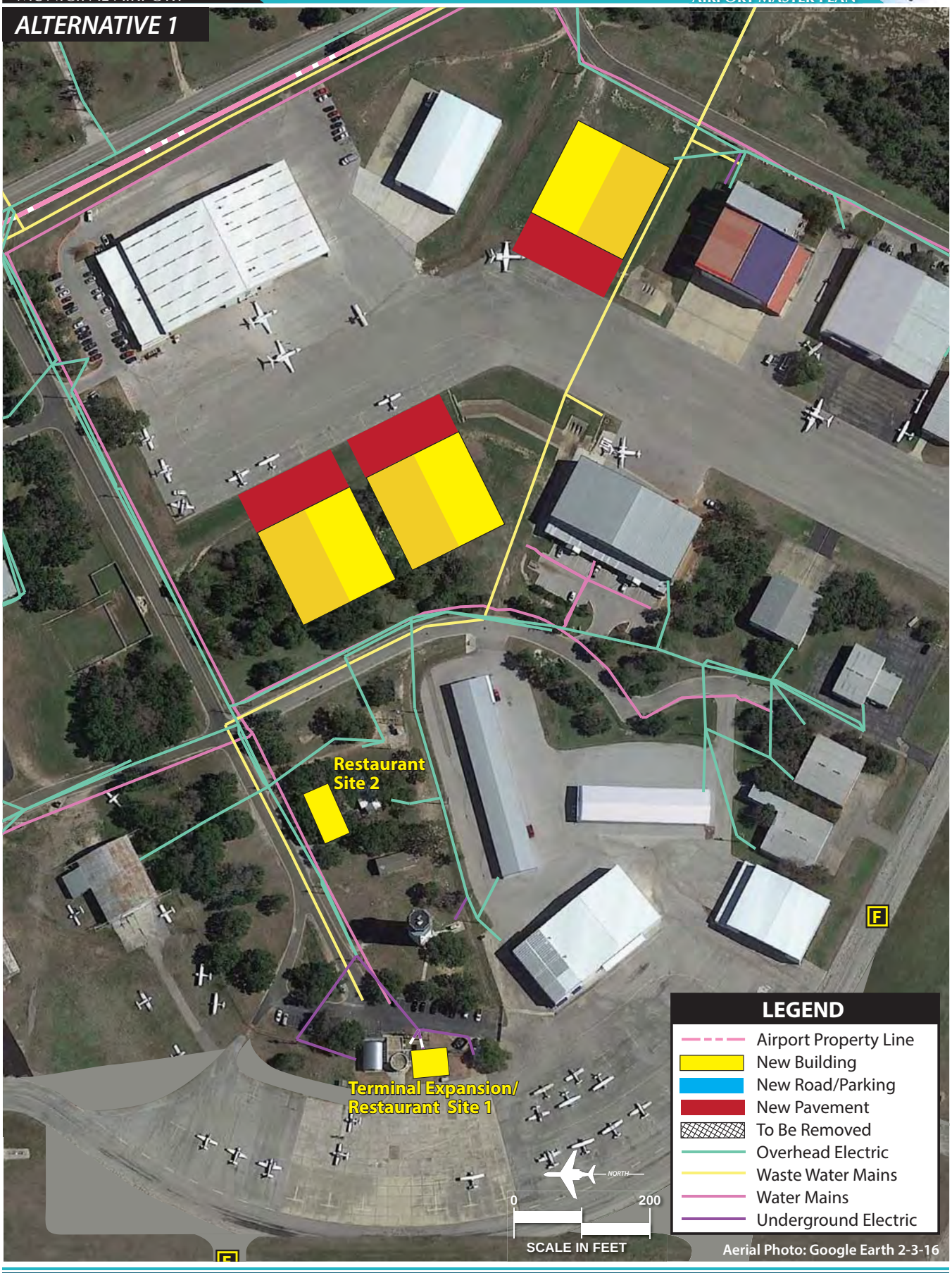
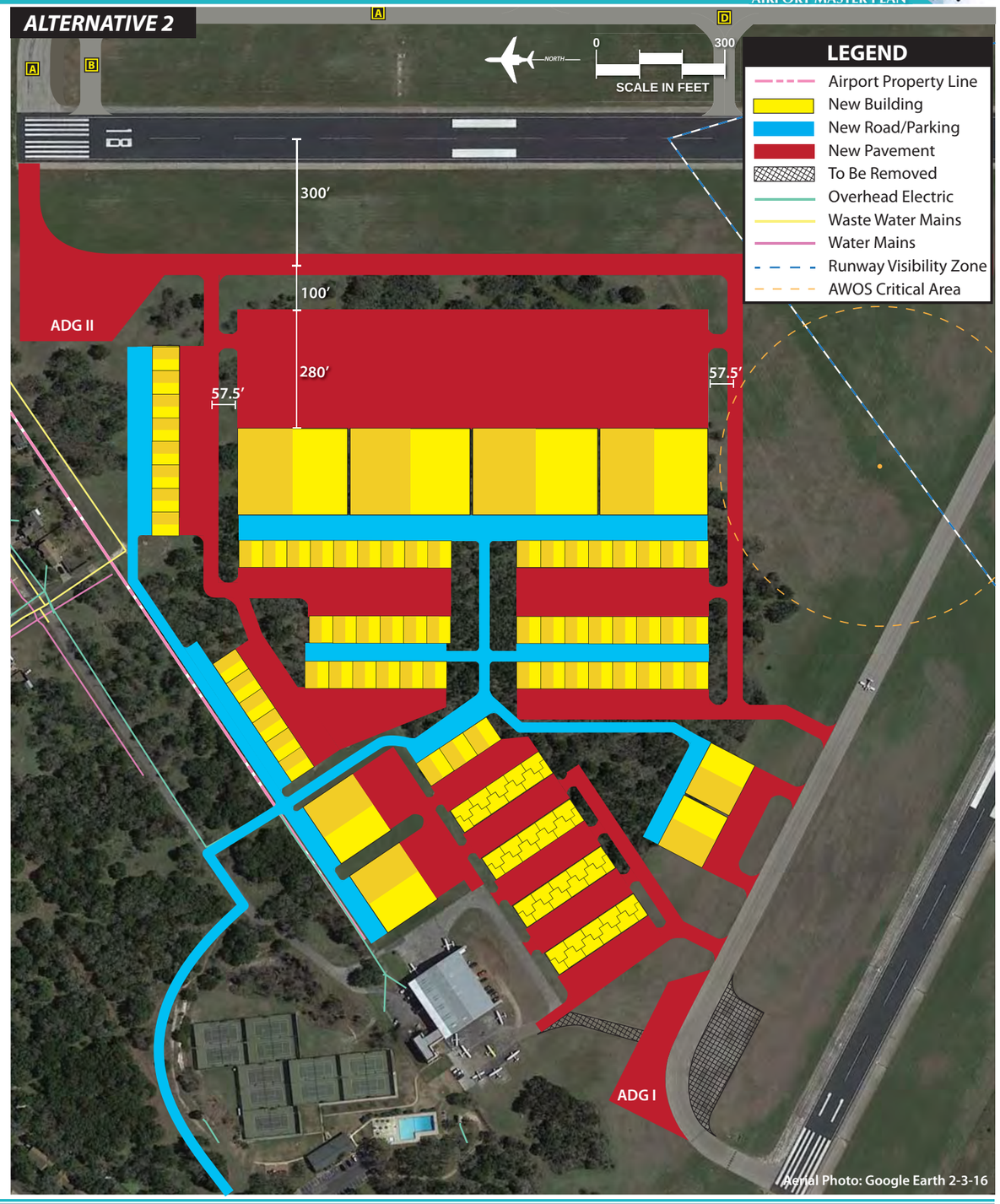
ALTERNATIVE 1



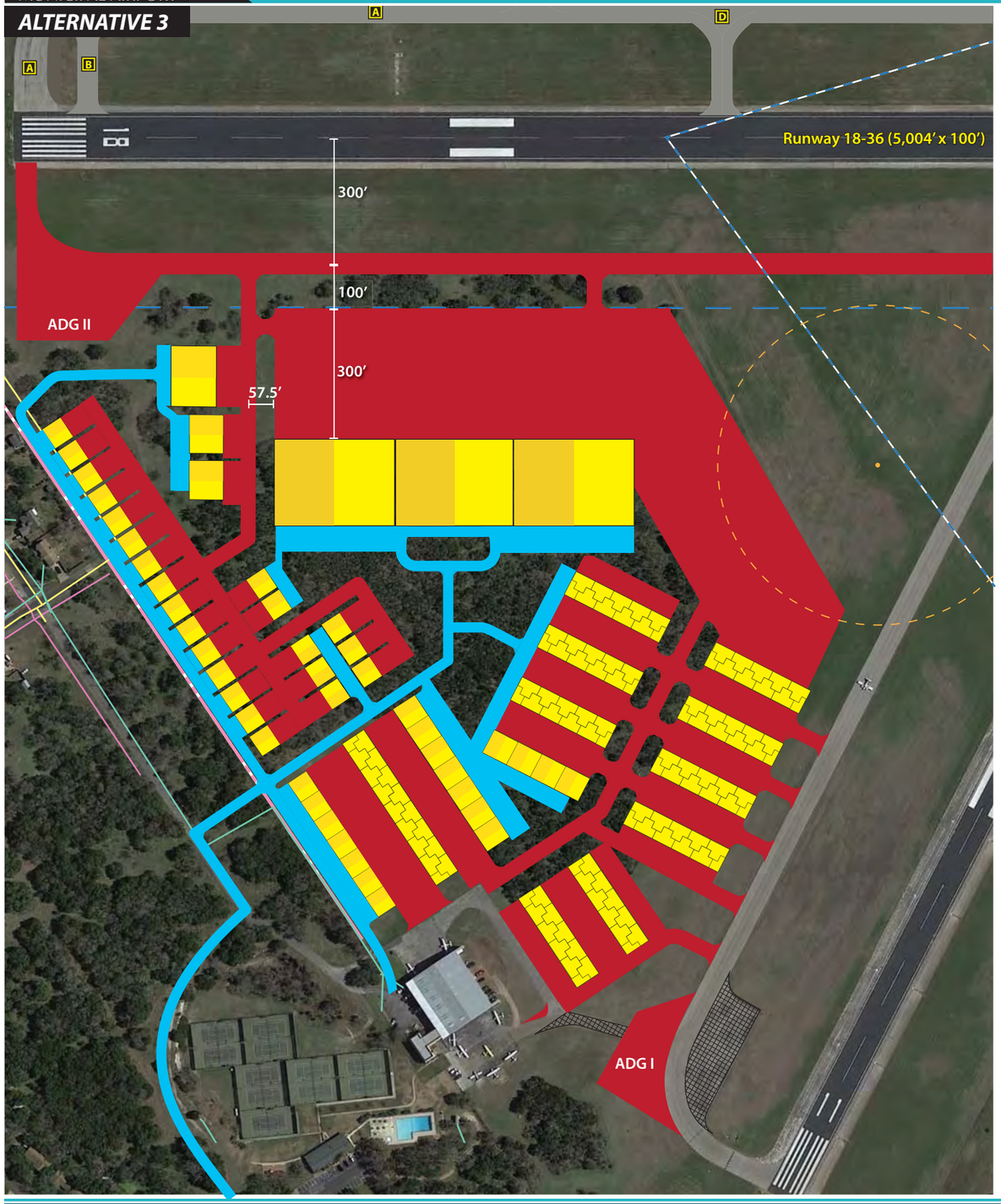

Granada Dr
Serenada Dr
Toledo Trail
Access Point 3
Access Point 2
Access Point 1
Northwest Blvd
NORTH
0
400
SCALE IN FEET
LEGEND
Airport Property Line
Runway Protection Zone (RPZ)
New Road
Existing Private Road Easement
Parcels

ALTERNATIVE 1

ALTERNATIVE 2



ALTERNATIVE 3



ALTERNATIVE 4

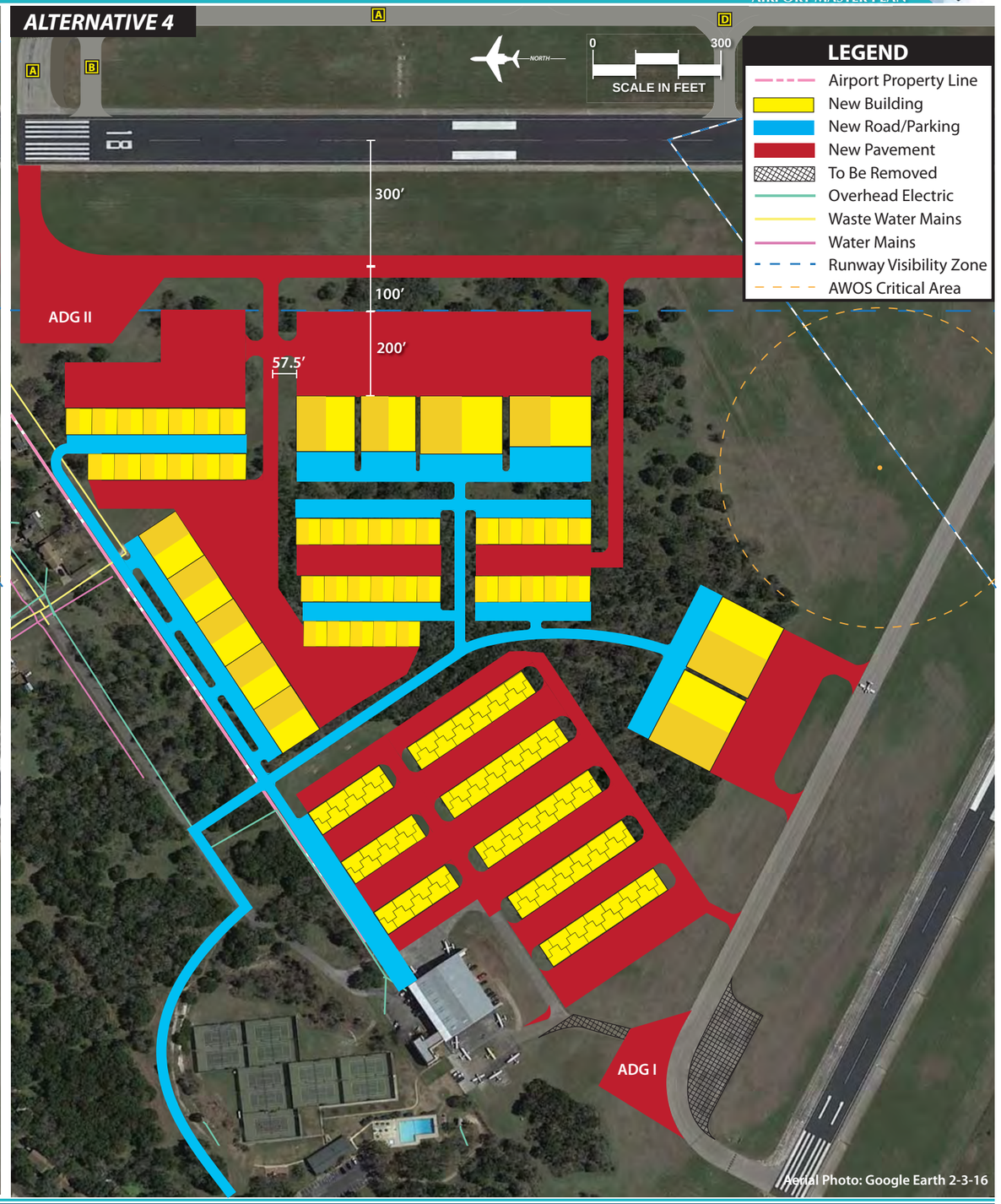


TABLE 4J
Area Five (5) Alternatives Summary
Georgetown Municipal Airport

Alternative	T-Hangar Space (s.f.)	Executive/Box Hangar Space (s.f.)	Conventional Hangar Space (s.f.)	Total (s.f.)	Estimated Units
1	163,500	36,800	199,600	399,900	193
2	77,500	227,800	306,500	611,800	221
3	153,400	130,500	187,800	471,700	219
4	138,000	143,100	272,400	553,500	287

(s.f.): square feet

SOUTHWEST DEVELOPMENT AREA 6

Area Six (6) encompasses approximately 105 acres in the southwest quadrant of the airport. This land is currently undeveloped and has no existing infrastructure, such as utilities. The combination of the previous alternatives provides for enough hangar space; therefore, this area is planned to be reserved for long term future development.

TERMINAL BUILDING

Currently, the FBOs at the Airport provide most of the aviation services, such as line services, pilot's lounge, and flight planning stations. The terminal building at the Airport provides for various additional needs, such as administrative services, conference room, vending machines, restrooms, and a public lounge area. The existing terminal building also provides an appealing entry/departure point and a positive impression of the community.

The existing terminal building is located in the optimal place, central to the runway system and easily accessible from both the airside and the landside. Consideration is given to enhancing the services available at the terminal building such as expanded line service capabilities and a restaurant.

ALTERNATIVES SUMMARY

The alternatives chapter of a master plan is intended to present analysis of various options that may be considered for specific airport elements. The need for alternatives is typically spurred by projections of aviation demand growth and/or by the need to resolve non-standard airport elements. FAA design standards are frequently updated with the intent of improving the safety and efficiency of aircraft movements on and around airports, which can lead to certain pavement geometries now being classified as non-standard when previously they did meet standard.

The following three major elements have been discussed in this alternatives chapter:

- Non-Development Alternatives
- Airside Alternatives
- Landside Alternatives

Among the non-development alternatives considered were: 1) No-Build; 2) Relocate Airport; and 3) Transfer Services. Each of these was analyzed and supporting information, such as impacts and costs, was presented. This analysis is not intended as a recommendation to pursue one of these alternatives; instead, it is for informational purposes only. If the airport sponsor were to pursue one of these alternatives, additional study beyond the scope of this master plan would be required.

Two of the three non-development alternatives would lead to the closure of the existing airport. There is a lengthy process to obtain approval for this course of action. Often the primary hindrance to considering airport closure is the fact that airports that have accepted federal development grants agree to certain grant assurances, one of which is to maintain the improvement for its useful life (20 years). If an airport is closed in the interim, then the sponsor must refund grants to the federal government. For Georgetown Municipal Airport, which has accepted $17 million since 2001, including more than $10 million in recent years, this would be a significant cost.

On the airside, the most significant discussion related to the possibility of: 1) raising the instrument approach visibility minimums from ⅞-mile to 1-mile; and 2) maintaining the critical design aircraft (and applicable design standards) as B-II. While it is unusual to voluntarily raise visibility minimums (because the airport would be giving up capability), consideration should be given to these actions at Georgetown Municipal Airport in order to meet land use compatibility standards and remove numerous homes from the RPZs.

NOTE: The Airport did request increasing the visibility minimums to both ends of Runway 18-36 to 1-mile. On June 26, 2018, the FAA issued a NOTAM indicating the visibility minimum is now 1-mile. Ultimately, the approach plates will be updated, and the visibility minimums will be permanently set at 1-mile. In addition, on February 8, 2018, the FAA indicated that the critical design aircraft for the Airport is in the B-II category because activity by C-II aircraft have not exceeded the 500 operations threshold for four straight years. Therefore, the Airport will be listed with a B-II ARC with 1-mile visibility minimums. Because the Airport could transition back to C-II, based on future activity, a plan will be identified to meet the C-II standards; however, the visibility minimums are planned to remain at 1-mile.

The minimum FAA recommended runway length for the Airport is 5,500 feet. Extending the runway in either direction to achieve this length would trigger the need for significant property acquisition and possibly road closure or relocation. This is because when the size or location of the RPZ changes, current guidance suggests that the new RPZ fully meet design standards and the “grandfathered” status of the current RPZs would no longer apply. One solution that implements declared distances would provide the necessary length for takeoff without altering the RPZs.

On the landside, various areas for potential future aviation development have been identified. A potential hangar layout has been presented to maximize the developable land. The future planned facility layout may be one of the specific alternatives or a combination of elements from each of the alternatives.

The next step in the master plan development process is to arrive at a recommended development concept. Participation of the PAC and the public will be important considerations. Additional consultation with the FAA may also be required. Once a consolidated development plan is identified, a 20-year capital improvement program, with a list of prioritized projects triggered to aviation demand and/or necessity, will be presented. Finally, a financial analysis will be presented to identify potential funding sources and to show Airport management what local funds will be necessary to implement the plan.