



CHAPTER FIVE

RECOMMENDED DEVELOPMENT PLAN

The airport master planning process for the Georgetown Municipal Airport (GTU) has evolved through the development of forecasts of future demand, an assessment of future facility needs, and an evaluation of airport development alternatives to meet those future facility needs. The planning process has included the development of three sets of draft working papers to date, which were presented to the Planning Advisory Committee (PAC) and discussed at several coordination meetings and three public information workshops.

In the previous chapter, several alternatives were analyzed to explore options for the future growth and development of the Airport. The development alternatives have been refined into a single recommended development plan for this Master Plan. This chapter describes, in narrative and graphic form, the recommended direction for the future use and development of Georgetown Municipal Airport. Where appropriate, the alternatives are summarized and a rationale for the selected alternative is presented.

AIRSIDE CONCEPT

The airside concept generally relates to planned improvements to the runway and taxiway system. **Exhibit 5A** presents the long-term Master Plan development concept for the Georgetown Municipal Airport. The following sections will present the resolution to each issue analyzed in Chapter Four – Alternatives.





AIRPORT REFERENCE CODE

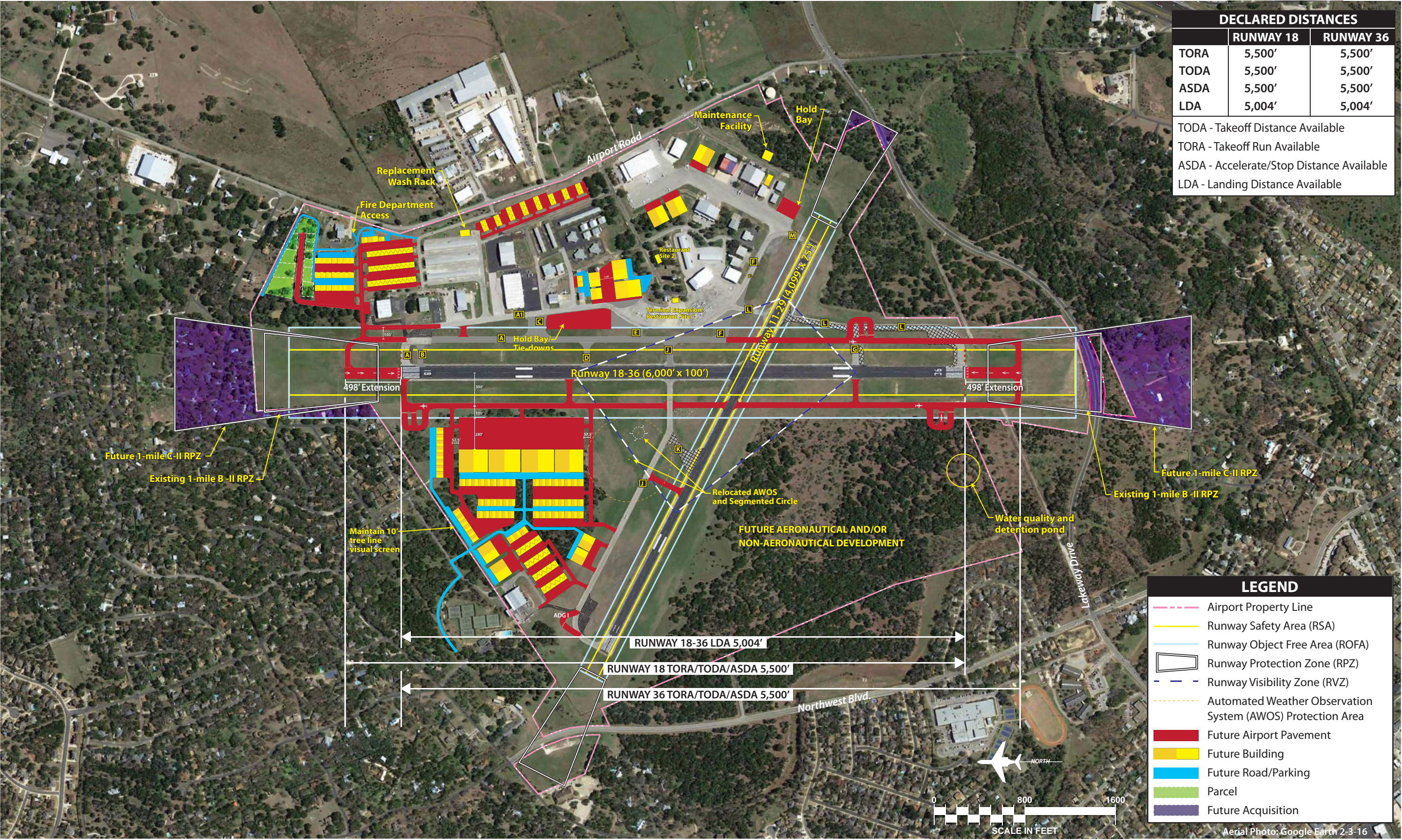
The FAA has established design criteria to define the physical dimensions of runways and taxiways, as well as the imaginary surfaces surrounding them, which protect the safe operation of aircraft at an airport. These design standards also define the separation criteria for the placement of landside facilities.

As discussed previously, the design criteria primarily center on the airport's critical design aircraft. The critical aircraft is the most demanding aircraft or family of aircraft which currently, or are projected to, conduct 500 or more operations (take-offs and landings) per year at an airport. Factors included in airport design are an aircraft's wingspan, approach speed, tail height and, in some cases, the instrument approach visibility minimums for each runway. The FAA has established the Airport Reference Code (ARC) to relate these critical aircraft factors to airfield design standards.

Analysis conducted in Chapter Two – Forecasts demonstrated that operations by aircraft in Aircraft Approach Category (AAC) C have exceeded the 500 operations threshold, in six of the last 10 years. Thus, the Airport has been planned and constructed to ARC C-II standards for many years. However, for the last four years, the operations count by category C aircraft has been below the 500 operations threshold. Because of the decline in operations by category C aircraft, extensive consideration was given in Chapter Four – Alternatives, to the potential to revert to B-II design standards. The design standards for B and C were presented in Table 4B.

After having received considered input from the Planning Advisory Committee (PAC) and from the public, initial consideration was given to continuing to identify the Airport as a C-II facility, the same as what is indicated on the current ALP. The following are the primary reasons for this consideration:

- C-II design standards require more restrictive safety standards for the airport. For example, the Runway Safety Area (RSA) beyond the primary runway ends is required to be 1,000 feet long versus the B-II standard of only 300 feet (applicable to the crosswind runway).
- While the 500 operations threshold for critical aircraft determination has not been met (according to the Traffic Flow Management System Count (TFMSC)) the last four years, it was met in the previous six years before that.
- There is a reasonable possibility that operations by C-II aircraft will once again exceed the 500 operations threshold. This considers the fact that the TFMS count represents an absolute minimum and additional operations by category C aircraft are likely.
- The 2007-2009 national recession, followed by the relatively slow recovery (by historical standards) severely slowed general aviation growth. The economy is now stronger and growing so general aviation demand is rebounding as well.
- Maintaining C-II standards to the greatest extent practical prepares the airport for a potential transition back to C-II in the future.
- As an economic engine for the city and the region, a reduction in design standards could negatively impact current operators and most certainly would deter future operators.
- An airport master plan is a roadmap to meeting future demand in an unconstrained environment. Therefore, the master plan must preserve the capability to meet future needs to the greatest degree feasible. Local policy can and does restrict what can be implemented on a case-by-case



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basis. For example, the plan shows a need for additional hangars but construction is dependent upon the airport or a private developer paying for them.

Upon completion of the draft Master Plan, the FAA contacted TxDOT and indicated that they desired to provide comment on the Master Plan. Comments from the FAA were received in February 2018. The FAA indicated that the Airport should be identified as a current B-II facility. Future planning will continue to consider the impacts of C-II design standards.

While airfield elements, such as the safety areas, must meet design standards associated with the applicable ARC, landside elements can be planned to accommodate specific categories of aircraft. For example, a taxilane into a T-hangar area only needs to meet the taxiway object free area (TOFA) width standard for smaller single and multi-engine piston aircraft expected to utilize the taxilane, not those standards for the larger aircraft representing the overall critical aircraft for the Airport.

RUNWAY DESIGN CODE (RDC)

Each runway is assigned an RDC. As discussed in Chapter Three – Facility Requirements, the RDC is comprised of the Approach Category, the Airplane Design Group, and the instrument visibility minimums. For Runway 18-36, the RDC is currently described as B-II-5000. The future RDC is planned to be C-II-5000 as the instrument approach visibility minimums are planned to remain 1-mile. This change in the approach visibility minimums is described in detail below but the primary purpose is to reduce the number of residential homes within the runway protection zones (RPZs).

The RDC for a crosswind runway is a function of the crosswind components, which were described in detail in Chapter Three – Facility Requirements. At Georgetown Municipal Airport, Runway 11-29 should be designed to ARC A/B-I design standards at a minimum. With 1-mile visibility minimums to both runway ends, the current RDC is A/B-I-5000 (small). Runway 11-29 has been planned to B-II standards and all safety surfaces meet these standards. The B-II design standards should be maintained to the greatest degree feasible. Runway 11-29 meets ARC B-II design standards. **Table 5A** shows the main differences between B-I and B-II design standards:

Maintaining the B-II standards provides an additional safety margin that is valuable when this runway is used by aircraft that might ordinarily use the primary runway. Greater usage of this runway might be the result of high crosswinds or closure of the primary runway due to maintenance activity or for efficiency of movement as directed by tower personnel. At the time of the next reconstruction, additional analysis may be necessary to continue to justify the B-II standards.



TABLE 5A
B-I vs. B-II Design Standards

Element	B-I Standard	B-II Standard
Runway Width	60'	75'
Runway Safety Area (RSA) Width	120'	150'
RSA Length Beyond the Runway End	240'	300'
Runway Object Free Area (ROFA) Width	250'	500'
ROFA Length Beyond the Runway End	240'	300'
Obstacle Free Zone (OFA) Width	250'	400'
OFZ Length Beyond the Runway End	200'	200'
Runway Protection Zone (1-mile visibility)		
Inner Width	250'	500'
Outer Width	450'	700'
Length	1,000'	1,000'

RUNWAY 18-36 LENGTH

Issue: Runway 18-36 is currently 5,004 feet long. The minimum recommended runway length is 5,500 feet.

Alternatives Summary: Four different runway extension alternatives were presented. The first three showed the impact to implementing a traditional extension to one end or the other or by splitting the extension among the two ends. The fourth alternative considered adding approximately 500 feet of pavement to each end that would be available for takeoff operations only. By then implementing declared distances, the requisite 5,500 feet of runway length would be available for takeoff calculations. The runway length available for landing would remain unchanged at 5,004 feet, as it exists today.

Recommendation: None of the first three alternatives are considered feasible because each would change the various runway safety surfaces to include areas not already covered. The most significant is the RPZ. When an RPZ changes in size or location to encompass more incompatible land uses, a special analysis is required (typically outside the master plan) which is reviewed by FAA HQ. The goal of that analysis is to identify the feasibility of removing all incompatible land uses from the RPZ, including roads and homes. While removing incompatible land uses within an RPZ is always the goal, those that existed prior to the September 29, 2012 (publication of FAA Memorandum, *Interim Guidance on Land Uses Within a Runway Protection Zone*) are not subject to the Interim Guidance.

It is recommended to extend the runway to support 5,500 feet of take-off length while maintaining 5,004 feet for landing.

Therefore, the only feasible method of extending the runway is the fourth alternative. This alternative would add approximately 500 feet to each end of the runway and designate that pavement for takeoff only. As takeoff-only pavement, none of the runway safety surfaces (RSA, ROFA, and RPZ) would change



in size or location. Declared distances would have to be implemented, which would inform pilots that 5,500 feet is available for takeoff and the existing 5,004 feet is available for landing.

Planning a future runway extension is important for this airport, as it is already deficient in terms of runway length. This airport cannot fully meet its role as a reliever airport without providing the minimum recommended runway length. Constructing the extension will have to clear several hurdles, including environmental clearance, likely an environmental assessment, and the restrictive council resolution from 1996 that sets a maximum runway length for the airport at 5,000 feet.

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. Under the existing B-II design standards, the ROFA for both runways is entirely on airport property.

Runway 18-36 ROFA – North End

Issue: The future C-II ROFA to the west of the Runway 18 end extends beyond the airport property line and encompasses all or part of seven residential properties.

Alternatives: Four alternatives were considered in Chapter Four – Alternatives. These included: 1) acquire the property; 2) obtain a Modification to Standard (MOS) from the FAA; 3) shorten the runway; and 4) reduce the applicable runway design standards from C-II to B-II.

Recommendation: Only alternatives 1 (meet the standard) and 2 (FAA Modification of Standard - MOS) remain viable. Other alternatives including shortening the runway are not feasible as that would negatively impact the current operators at the Airport, many of which are already weight-restricted because of the existing runway length. The FAA has indicated that the ARC for the Airport should be changed from C-II to B-II, based on a lack of 500 C-II operations over the last four years. By changing the applicable design standards to B-II, the Airport will not have to seek a modification of design standards for the current condition. In a future C-II condition, an MOS will not be a viable solution because it is not typical to permit building into a non-standard condition. Therefore, for a future C-II condition, acquisition of the seven properties in the ROFA will be shown on the ALP. This is the same recommendation that was presented in the previous 2005 master plan and shown on the previous airport layout plan.



Runway 18-36 ROFA – South End

Issue: The B-II ROFA on the Runway 36 end meets standard. When applying a future C-II ROFA, a small (0.14-acre) corner of the ROFA extends beyond the airport property line and through the perimeter fence.

Alternatives: Four alternatives were considered. The first was to acquire the property, which may also require slightly rerouting Lakeway Drive. The second was to petition TxDOT for a MOS. The third was to shorten the runway, whether physically or through declared distances. The fourth was to reduce the design standards from C-II to B-II.

Recommendation: Since the B-II ROFA is entirely on airport property and meets current standards, no current action is necessary. If the airport transitions back to C-II standards, then the corner of the ROFA will encroach upon Lakeway Drive. The recommended solution at that time is to re-route Lakeway Drive around the ROFA. If this is not feasible, then the Airport may need to implement declared distances which would reduce takeoff and landing length for Runway 18 by 90 feet.

RUNWAY PROTECTION ZONES (RPZ)

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 the RPZ.

Runway 18-36 RPZs

Issue: The size of the RPZ is a function of the type of aircraft utilizing the runway (i.e., B-II) and the instrument approach visibility minimums (1-mile). During this Master Plan process, the RPZ became smaller because the critical aircraft changed from B-II to C-II and the instrument visibility minimums changed from $\frac{3}{8}$ -mile to 1-mile. The RPZ on the Runway 18 end is entirely on airport property. On the Runway 36 end, Lakeway Drive traverses the RPZ. The alternatives considered the RPZs if the Airport transitions back to C-II with 1-mile visibility minimums.

Alternatives: Two alternatives were considered. The first was C-II with lower than 1-mile visibility minimums and the second considered C-II with 1-mile visibility minimums. Both would introduce incompatible land uses, namely residential properties and streets. The 1-mile RPZ would have fewer residences. To meet the design standard for RPZs, the land would need to be acquired.



Recommendation: In the future, if the airport transitions to C-II with 1-mile visibility minimums, a total of 17 homes on the north end and five on the south end would then fall within the RPZ. As is shown on the current ALP, these properties should continue to be shown for acquisition. This action should not be considered until and unless the airport transitions back to C-II.

Runway 11-29 RPZs

The RPZ for Runway 11 has compatible land uses except for the presence of Northwest Boulevard. The airport recently acquired most of this RPZ in order to preserve land use compatibility. No action is necessary as the road pre-dates the most recent RPZ guidance from the FAA; however, if an opportunity arises in the future, the airport should support relocating the road to outside the RPZ. There is a small corner of the RPZ that is not currently owned by the airport (1.2 acres) that the airport should acquire if feasible.

The RPZ on the Runway 29 end encompasses one home and Lakeway Drive. No immediate action is needed to relocate the road but the airport should support those efforts if they are pursued by local road transportation planning agencies. The airport should acquire the home and approximately 2 acres of RPZ land, when and if it is feasible.

APPROACH SURFACE

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. 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).

Issue: The current TSS meets standard. A future TSS associated with ARC C-II leading to Runway 18 penetrates the perimeter fence and, potentially, several trees.

Alternatives: Two alternatives were considered: 1) maintain the existing TSS; or 2) voluntarily change the airport ARC from C-II to B-II.

Recommendation: No action is necessary currently as the TSS is clear of obstructions. If, in the future, the airport transitions to back to ARC C-II, there would be numerous TSS penetrations. The TSS can have penetrations which are considered obstructions, but only the FAA can make a final determination that an obstruction is a hazard to air navigation.



TAXIWAYS

As documented in the previous chapter, there are several existing taxiways that do not meet the most recent guidelines for proper geometry. In most cases, there is only one viable alternative for meeting the taxiway geometry standards. Most of the taxiways at the airport are at least 50 feet wide. The applicable taxiway design group (TDG) is '2,' which translates to a 35-foot wide taxiway. All future taxiways should be planned to a width of 35 feet, as that is what is eligible for FAA funding. If the Airport desires to fund the difference between 35 and 50 feet, they may do that. **Table 5B** presents the issues for each taxiway's segment and the planned solution.

TABLE 5B

**Taxiway Design Solutions
Georgetown Municipal Airport**

Taxiway Issue	Solution
Taxiway J crosses the high-energy portion of Runway 18-36.	Existing condition. No action necessary.
Taxiway L is at an acute angle to Runway 11-29.	Minor issue. Taxiway L is planned to be replaced with an extension of Taxiway A when Taxiway L needs to be reconstructed.
Taxiway G is wider than the 35-foot standard.	Narrow Taxiway G to 35 feet at the time of the next reconstruction.
Taxiway L at the Runway 36 threshold is wider than the 35-foot standard.	Narrow Taxiway L to 35 feet at the time of the next reconstruction.
Taxiway K is at an acute angle to Runway 11-29.	Reconstruct Taxiway K at the standard 90-degree angle. Relocate Taxiway K so its intersection with Taxiway J is at a standard angle.
The south portion of Taxiway L is 400 feet from Runway 18-36, which exceeds the current standard of 300 feet.	Replace Taxiway L with an extension of Taxiway A when Taxiway L needs to be reconstructed.
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.	Extend Taxiway A to the Runway 36 threshold when Taxiway L needs to be reconstructed.
Taxiway J is 375 feet from Runway 11-29 where the standard is 240 feet.	No action is needed; however, when Taxiway J needs to be reconstructed, consideration should be given to relocating it to 240 feet.
Intersection of Taxiways A, A1, and B is a wide expanse of pavement.	Physically separate Taxiways A and A1 by removing pavement. To be completed when Taxiway A1 is extended to provide access to new hangars development areas.

HOLD BAYS

Georgetown Municipal Airport has several busy flight schools. As such, it is common for numerous students to be operating at the same time, especially during good weather. All pilots must complete pre-flight checks and engine run-up. These activities typically take place in proximity to the departure ends



of the runways on pavement surfaces called hold bays. The current hold bays at the airport are non-standard in design and, in some cases, located in the incorrect place.

New/replacement hold bays are planned in proximity to each runway end. Where feasible, the design of the hold bays reflects the most recent design considerations. Hold bays should be designed to allow aircraft to bypass others both on entrance and exit. Each holding location should be independently marked and include non-movement islands between each to provide additional cues to pilots.

Runway 18 is the most common departure runway and, thus, is the most in need of an adequate holding location. Currently, a wide expanse of pavement near the threshold and Taxiway C (which is an extra wide expanse of pavement) are used for holding aircraft. There is no ability to construct the standard hold bay design on the Runway 18 end. Therefore, a larger holding apron is planned adjacent to Taxiway C and between Taxiways A and A1.

Runway 36 currently has a hold bay available near the runway threshold, which is located between Taxiway L and the runway. This “interior” hold bay location is discouraged because pilots’ views can be blocked. A new hold bay, designed to meet current standards, is planned immediately east of Taxiway G. This is the closest location to the threshold without acquiring additional property. The exits from this hold bay do not line up with Taxiway G, which is a cue to the pilot that they need to taxi to the departure threshold.

Runway 11 also has an existing “interior” hold bay. This is planned to be replaced by a single bay standard design at the end of Taxiway J.

Runway 29 also has an “interior” hold bay. This is planned to be replaced by a hold bay pad located near Taxiway M (the Runway 29 threshold taxiway). This design provides a location for engine run-ups where the aircraft does not obstruct the view of other pilots.

Runway 18-36 west side hold bays are planned once a parallel taxiway is constructed on the west side of the runway. These hold bays meet the design criteria and remain on airport property in proximity to the runway threshold.

INSTRUMENT APPROACHES

Georgetown Municipal Airport has instrument approach procedures to each runway end. The visibility minimums are $\frac{3}{8}$ -mile to both ends of Runway 18-36 (since changed to 1-mile) and 1-mile to both ends of Runway 11-29. The visibility minimums to the crosswind runway are adequate and should be maintained. As a busy reliever airport, the primary runway should have the lowest visibility minimums feasible in order to fulfill its role. The lowest visibility minimums typically available to reliever airports is $\frac{1}{2}$ -mile.



Issue: The visibility minimums to both ends of Runway 18-36 require an RPZ with an inner width of 1,000 feet, outer width of 1,510 feet, and a length of 1,700 feet (beginning 200 feet from the runway end). This is an area that encompasses approximately 49 acres. On the Runway 18 end, this RPZ covers approximately 40 homes. On the Runway 36 end, an additional seven homes fall within the RPZ. By today's standards, homes and roads are considered incompatible land uses within an RPZ.

Alternatives: Several alternatives were considered previously in this chapter in relation to the design standards discussion. The first was to “do-nothing” as the current RPZs were implemented by the FAA and prior to the latest design standards (2012). The next was to plan to acquire all land and relocate all roads in the RPZs. The next was to voluntarily increase the visibility minimums from $\frac{3}{8}$ -mile to 1-mile.

Recommendation: It is recommended that the airport voluntarily increase their visibility minimums to 1-mile (completed June 26, 2018). Analysis of 10 years of meteorological data showed that the impact to operations would be minimal. In fact, only 0.15 percent of time were visibility minimums between $\frac{3}{8}$ -mile and 1-mile. Very few operations would be impacted by this change to the visibility minimums. The 1-mile B-II RPZ is has an inner width of 500 feet, outer width of 700 feet, and a length of 1,000 feet. On the Runway 18 end, this RPZ is entirely on airport property. On the Runway 36 end, this RPZ closes over Lakeway Drive slightly. If the Airport transitions back to ARC C-II, then the 1-mile RPZ has an inner width of 500 feet, outer width of 1,010 feet, and a length of 1,700 feet. This RPZ would encompass approximately 29 acres. On the Runway 18 end, 23 homes would be in the RPZ, and on the Runway 36 end, another five homes would be in the RPZ. This is the condition shown on the current ALP; however, to return to this condition may require acquisition of this land.

PROPERTY ACQUISITION

Planning for an airport includes the consideration of strategic property acquisition of adjacent lands in order to allow for facility expansion, or for the protection of the function and role of the Airport. The FAA/TxDOT supports and provides reimbursement for necessary property acquisition. The reimbursements are provided when the land is needed for airport development or protection. While the FAA/TxDOT supports and funds land acquisition, it does not support “land-banking” of property that may or may not be needed in the future.

The FAA/TxDOT recommends that airports own the entirety of their RPZs where feasible. Therefore, for those RPZs that extend beyond the airport property line, an airport should identify and pursue opportunities for fee simple acquisition. In lieu of fee simple ownership, an airport should actively pursue aviation easements over all RPZ lands. This would permit an airport to limit the height of man-made or natural growth objects that could impact air navigation.



AIRSIDE CONCLUSION

The Georgetown Municipal Airport is a reliever general aviation airport. As such, it serves an important role as an alternate landing location for private aircraft that might otherwise use a commercial service airport. Currently, the airport cannot fully serve this role because the runway is approximately 500 feet shorter than what is recommended.

Several options were considered for extending the runway, including additional length to one end or the other, or splitting an extension between the two ends. None of these options are considered viable because of the recent FAA design standards that would likely require acquisition of all homes and relocation of roads in RPZs.

The only viable method for providing the minimum recommended runway length is the addition of approximately 500 feet to each end and then designating the new runway pavement for takeoff operations only. Declared distances are then implemented which would indicate that there is 5,500 feet available for takeoff and the existing 5,004 feet available for landing.

To remove incompatible land uses that fall within the existing RPZs, it is recommended that the instrument approach visibility minimums be raised from $\frac{3}{8}$ -mile to 1-mile (completed June 26, 2018). This action will have little to no effect on operations at the airport. Acquisition of aviation easements should be planned for all RPZ lands not owned by the airport. If the opportunity is available, the airport should acquire RPZ lands through fee simple acquisition.

Replacement aircraft holding bays are planned in proximity to each runway end. Several taxiways are planned to be relocated/reconstructed to meet current design standards.

LANDSIDE CONCEPT

The primary goal of landside facility planning is to provide adequate aircraft storage space to meet forecast needs, while also maximizing operational efficiencies. The development scheme presented segregates aircraft activity levels, while placing the Airport in a position to maximize revenue potential. The landside facility plan is depicted on **Exhibit 5A**.

There are an unlimited number of potential facility layout concepts that could be considered. The plan shown is only one possible layout for future hangars, which may change based on developer needs. Nonetheless, the layout presented is a starting point for future development needs. What should be strongly adhered to is utilization of aviation reserve land for aviation facilities.



HANGARS

In the Facility Requirements chapter, it was determined, based on forecast growth and hangar occupancy arrangements, that the Airport may need approximately 238,300 square feet of additional aircraft hangar space over the 20-year forecast period (reference Table 3J). Approximately 118 individual aircraft positions were estimated. The layout of new hangars visualized on **Exhibit 5A** shows a total of 941,000 square feet of new hangar space. Clearly, the hangar development depicted far exceeds the projected need. Nonetheless, the layout does provide a sense of which areas should be reserved for future aviation development and the type of development (T-hangars, box hangars, or conventional hangars).

As discussed previously, high activity conventional hangars should be located adjacent to the main taxiways. Medium activity box hangars should be the next layer of development and T-hangars should be set the farthest from the main taxiways. The discussion of the selected alternative for hangar development references the six development locations previously shown on Exhibit 4K. **Table 5C** presents a summary of the planned hangar development.

TABLE 5C
Hangar Summary
Georgetown Municipal Airport

Location*	T-Hangar Space (s.f.)	Executive/Box Hangar Space (s.f.)	Conventional Hangar Space (s.f.)	Total (s.f.)	Estimated Units
Area 1	0	5,000	79,200	84,200	34
Area 2	46,200	0	0	46,200	35
Area 3 (South)	66,000	10,900	0	76,900	65
Area 3 (North)	0	52,100	0	52,100	21
Area 4	0	3,700	66,100	69,800	28
Area 5	77,500	227,800	306,500	611,800	221
TOTAL	189,700	299,500	451,800	941,000	403

*Reference Exhibit 4K

Area 1 Planned Development

Area 1 is immediately north of the terminal building and is currently occupied by older hangar structures designed to house multiple aircraft. This area represents highly desirable development land at the Airport because of its central location. Typically, high activity uses should be planned in this location, such as conventional hangars for FBOs or other active airport businesses. This area is planned for redevelopment and shown with four conventional hangars and one box hangar. It should be noted that the existing hangars in this area have been identified by the City of Georgetown as having potential historical significance because of their age. This may require additional environmental consideration prior to construction of replacement hangars.

As shown, Area 1 is planned with four larger conventional hangars and one smaller box hangar. A central taxilane/apron area is planned to accommodate ingress and egress from the hangars. A total of 84,000



square feet of hangar space, providing approximately 34 aircraft parking positions, are planned for Area 1.

Area 2 Planned Development

Area 2 is located away from a main taxiway along the perimeter fence adjacent to Airport Road. The preferred option for this area is a series of small T-hangar structures. In total, 35 individual positions would be available once built out. The access taxilane serving the existing T-hangars is planned to be utilized to extend access to the new T-hangar development area. This will necessitate closure of W. Halmar Drive. Terminal and Service Drives will continue to provide access to hangars located west of the planned new T-hangars.

Area 3 Planned Development

Area 3 is located to the north of the existing T-hangars and is subdivided into the north and south sections for planning purposes. This area is set back from the main taxiway and is ideally suited for T-hangars or small box hangars. The south section is planned for three T-hangar structures which would mirror the existing T-hangar development. A total of 60 T-hangar positions are planned. Three small box hangars are situated at the east end of this development area to fill in the available space. Four parking positions are estimated to be available in the planned box hangars.

The north half of Area 3 is planned for connected box hangars and an area of aviation parcel development. A total of 21 box hangar positions are planned and a total of 11 parcels of varying size are planned.

Area 4 Planned Development

Area 4 is located just east of the existing terminal area. There are numerous existing hangars of all types located in this area. There are currently four open parcels available for development. These are planned for three larger conventional hangars and one smaller box hangar. A total of 69,600 square feet of space providing an estimate of 27 spaces is planned.

Area 5 Planned Development

Area 5 is located on the west side of Runway 18-36. There is one existing conventional hangar on this side of the Airport. This is a large 51-acre aviation development site. The plan is to provide the full range of hangar types in this area in the future. Four large conventional hangars are planned to face the runway and a large apron space. Smaller box hangars are set to the back and sides of the conventional hangars. Several T-hangar structures fill in the remaining space in proximity to Runway 11. As planned, Area 5 can accommodate nearly 612,000 square feet of hangar space.



Surface road access to Area 5 is planned to extend from the intersection of Serenada Drive and Granada Drive. Granada Drive currently provides access to a tennis/swim club. A new road extending from Granada Drive is planned to wrap around the tennis/swim club, crossing Toledo Trail and entering the airport property to the east of the existing conventional hangar.

There are several homes along the Area 5 fence line. The plan includes preserving the tree line along the fence to reduce any potential environmental impacts of increased aviation activity in Area 5.

Hangar Summary

The hangar development plan depicted exceeds that which is forecast to be needed through the 20-year planning horizon of this master plan. If Areas 2, 3, and 4 were to be completely developed in the next 20 years, that would meet the forecast demand. A full development plan of Area 5 has been presented in order to allow airport management to move forward with any development requests for this area.

AREA 6 DEVELOPMENT

Area 6 is a large parcel encompassing approximately 105 acres of undeveloped land in the southwest quadrant of the Airport. Because of the availability of aviation land at the Airport, this entire parcel is planned to be available for either aviation or compatible non-aviation development. Several small portions of Area 6 are planned to be reserved for specific functions. First, a future hold bay on the west side of the Runway 36 threshold is planned. Second, all obstructions within the runway visibility zone, including existing trees, should be cleared and maintained clear. Third, following proper engineering assessment, a storm water runoff detention facility is planned.

Any future non-aviation development on Area 6 should first consider locations farthest from the runways. Often, airports will reserve a buffer of up to 1,200 feet from the runway centerlines to allow for future aviation needs. This distance preserves the potential for apron space, hangar space, and access roads. In fact, TxDOT or FAA could require this aviation reserve buffer; however, it is not planned to be depicted on the airport layout plan because the need for aviation development of this area is likely more than 50 years into the future.

MAINTENANCE EQUIPMENT BUILDING

The Airport does not have a consolidated maintenance facility. The primary factor when considering locations for a maintenance facility is to avoid land that has a highest and best use as an aviation facility. The one commodity that an airport has that is in short supply is land with potential access to the runway/taxiway system. If feasible, this aviation land should only be used for aviation purposes.



A new maintenance facility is planned on the east side of Wright Brothers Drive. This land does not have ready access to the runway/taxiway system and is appropriate for airport support functions.

SUPPORT FACILITIES

Georgetown Municipal Airport has a terminal building that includes administrative offices, a small conference room, public restrooms, a lobby/lounge area, and a line service desk used by airport staff. This facility serves as an excellent entry point to the City of Georgetown. The building is optimally located, central to the airfield, and facing the main terminal apron area. The building should be maintained to an aesthetically high standard in its current location.

Analysis of terminal facilities indicated that the space made available at airport FBOs, in conjunction with the public facilities available in the terminal building, meet the needs of aviation users at the airport. As new airport businesses are established at the Airport, each should make appropriate space available for their customers.

Consideration may be given to expanding the terminal building to include a restaurant. This would be a local decision as TxDOT grant funding is not available for revenue spaces in terminal buildings. Another location considered for a restaurant is immediately east of the control tower.

The parking lot serving the terminal building is currently being expanded. Once complete, the number of parking spaces should be adequate through the long-term planning period. As more hangars are constructed, each should include dedicated vehicle parking lots to serve both based and transient users. As noted in Chapter Three – Facility Requirements, approximately 60 new parking spaces are forecast to be needed over the long term.

AIRPORT LAND USE PLAN

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. First is to secure those areas essential to the safe and efficient operation of the airport. 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.

ON-AIRPORT LAND USE OBLIGATIONS

The Airport has accepted grants for capital improvements from the FAA. As such, the Airport sponsor has agreed to certain grant assurances (See **Appendix C**). Grant assurances related to land use ensure that Airport property will be reserved for aeronautical purposes. If the Airport sponsor wishes to sell



(release) airport land or lease airport land for a non-aeronautical purpose (land use change), they must petition TxDOT for approval. The Airport Layout Plan and the Airport Property Map must then be updated to reflect the sale or land use change of the identified property.

The FAA's Airport Compliance Program (as enforced by TxDOT) ensures airport sponsors comply with the Federal obligations they assume when they accept Federal grant funds or the transfer of Federal property for airport purposes. The program serves to protect the public interest in civil aviation and ensure compliance with applicable Federal laws, FAA rules, and policies.

Sources of Obligations

When airports receive Federal assistance, the owners or sponsors accept certain obligations and conditions which may be incurred by contract or by restrictive covenants in property deeds. This generally involves the following:

- Grant agreements (Grant Assurances) issued under Federal grant programs
- Instruments of approved property transfers (e.g., property acquisition)
- Deeds of conveyance

When Airport owners and operators accept Federal grants, they agree to preserve and operate their facilities in a safe and efficient manner and comply with certain conditions and assurances. These obligations can span different airport development grant programs, including the Federal Aid to Airports Program (FAAP), the Airport Development Aid Program (ADAP), and the current Airport Improvement Program (AIP). Airport owners should be aware that obligations incurred under each program or conveyance document vary.

Major Obligations

The following list includes some of the major obligations an airport owner can incur when accepting a Federal airport development grant.

- Prohibition of exclusive rights
- Proper use of airport revenue for Airport needs
- Proper maintenance and operation of airport facilities
- Protection of approaches
- Keeping good title of airport property
- Compatible land use
- Availability of fair and reasonable terms without unjust discrimination
- Adhering to the approved airport layout plan
- Financial self-sustainability
- Sale or disposal of Federally acquired property
- Preserving rights and powers



- Using acceptable accounting and record-keeping systems
- Compliance with civil rights requirements

The FAA encourages airport owners to review each agreement and conveyance document to ensure that they understand their obligations. Keeping good records will allow them to quickly reference incurred obligations. Further, annual reviews of all agreements will aid efforts in complying with incurred Federal obligations.

ON-AIRPORT LAND USE PLAN

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 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 5B** presents the proposed land use classification for the Airport, each of which is discussed in the following sections.

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 (where applicable).

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 require access to the airfield operations area. This might include aircraft hangars and trans-



portation 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 must be reserved for aviation development. For undeveloped areas in this classification, a depth of approximately 1,200 feet from the runway centerline is typically reserved. This distance will allow for future taxiways, taxilanes, aprons, hangars, and access roads. This land use category has been further subdivided as follows:

High Activity Areas: High activity areas are those locations that are planned for greater frequency of aircraft movements. These areas are typically situated closest to the runway/taxiway system. Common uses in the high activity areas include conventional hangars and airport aviation businesses. Uses in the high activity areas frequently cater to transient users.

Low-Activity Areas: Low activity areas are typically set to the side or back from the high activity areas. Often these are areas utilized by locally based aircraft owners. Typical uses include T-hangars and box hangars.

Airport Support Function Area: This land use designation encompasses the variety of services necessary for operating an airport, including the fuel farm, maintenance building, and dedicated drainage facilities.

Aviation Development/Non-Aviation Revenue Support

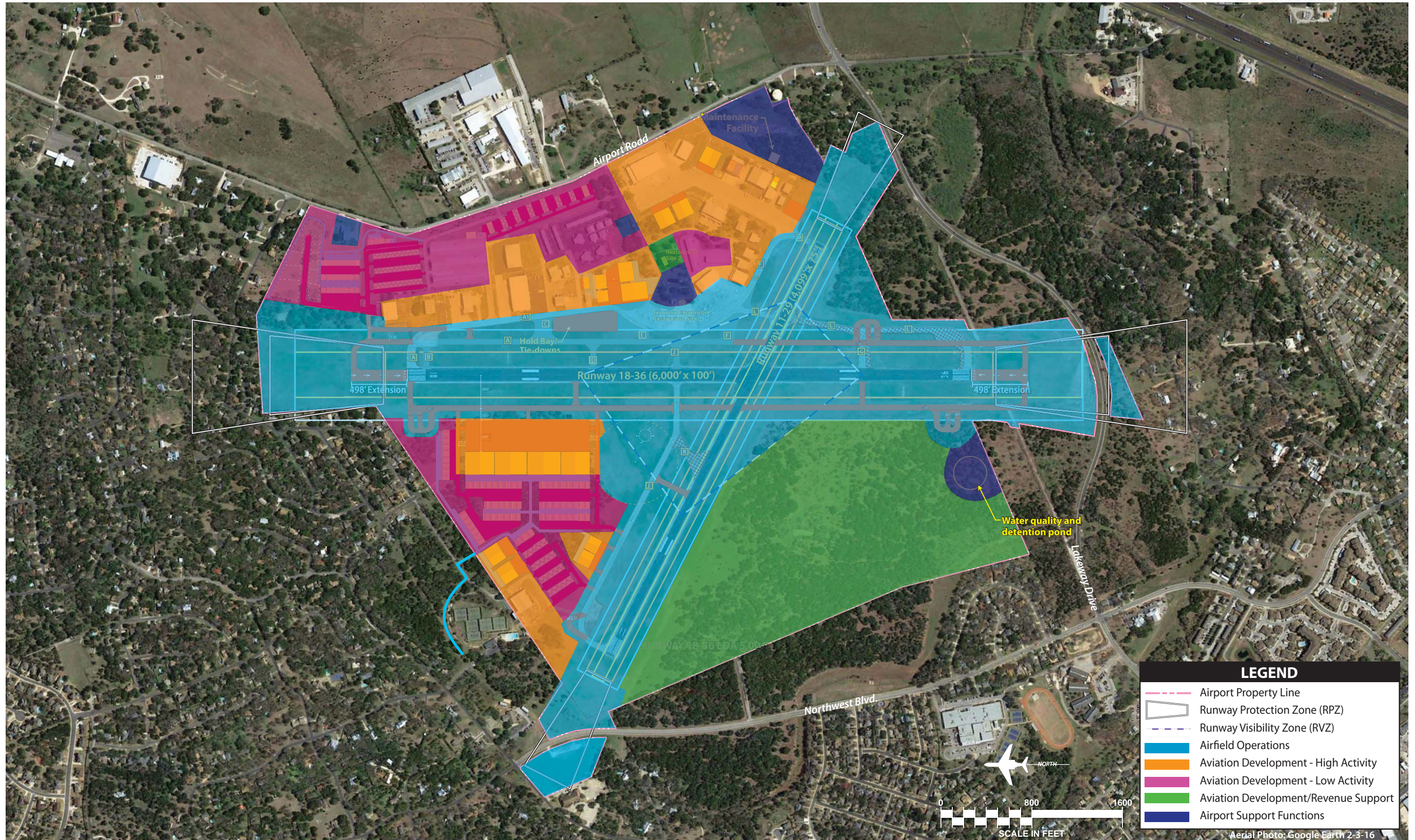
This land use classification may accommodate aviation functions, but the analysis in this master plan has indicated that it may also be used for compatible non-aviation development. There are three primary areas identified for this land use classification. The first is the land surrounding the control tower, east of the terminal building. A stand-alone restaurant has been considered for this location. The second is the undeveloped land to the east of Wright Brothers Drive. A portion of this land currently serves as storm water detention. A new airport maintenance building is planned for a site adjacent to the detention basin. A new detention basin site has been identified to the west of the Runway 36 threshold. This basin should be sized to accommodate additional runoff created by the planned development.

ENVIRONMENTAL OVERVIEW, RECYCLING PLAN & LAND USE COMPATIBILITY

This section discusses three instrumental topics in the airport master planning process: the environmental overview, recycling plan, and land use compatibility. Each of these categories are uniquely influenced by the proposed master plan concept, as is explored below.

ENVIRONMENTAL OVERVIEW

Analysis of the potential environmental impacts of recommended airport development projects, as discussed in this chapter and depicted on **Exhibit 5A**, is a key component of the Airport Master Plan process.



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The primary purpose of this Environmental Overview is to identify significance thresholds for the various resource categories contained in FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, Exhibit 4-1 and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementation Instructions for Airport Actions*, Table 7.1. The Environmental Overview then evaluates the development program to determine whether proposed actions could individually or collectively significantly affect the quality of the environment.

Construction of any improvements depicted on the recommended development concept plan requires compliance with NEPA to receive federal financial assistance or to obtain a federal approval (i.e., a federal action). For projects not “categorically excluded” under FAA Order 1050.1F, compliance with NEPA is generally satisfied through the preparation of an Environmental Assessment (EA). An EA is prepared when the initial review of the proposed action indicates that it is not categorically excluded, involves at least one extraordinary circumstance, or the action is not one known normally to require an Environmental Impact Statement (EIS). If none of the potential impacts are likely to be significant, then the responsible FAA official prepares a Finding of No Significant Impact (FONSI), which briefly presents, in writing, the reasons why an action, not otherwise categorically excluded, would not have a significant impact on the human environment and the approving official may approve it. Issuance of a FONSI signifies that FAA would not prepare an EIS and has completed the NEPA process for the proposed action.

In instances where significant environmental impacts are expected, an EIS may be required. An EIS is a clear, concise, and appropriately detailed document that provides agency decision-makers and the public with a full and fair discussion of significant environmental impacts of the proposed action and reasonable alternatives and implements the requirement in NEPA §102(2)(C) for a detailed written statement.

The Airport is currently engaged in a year-long Wildlife Hazard Assessment (WHA) and Wildlife Hazard Management Plan (WHMP). The WHA identifies those species that could increase the risk of a wildlife strike with an aircraft. The WHMP identifies the specific actions an airport will take to mitigate the risk of wildlife strikes on or near the airport. The WHA and WHMP should be used to inform airport management when undertaking any capital projects at the airport.

POTENTIAL ENVIRONMENTAL CONCERNS

Table 5D summarizes potential environmental concerns associated with implementation of the recommended Master Plan development concept. Analysis under NEPA includes direct, indirect, and cumulative impacts. Chapter 6 provides the full capital improvement projects list.



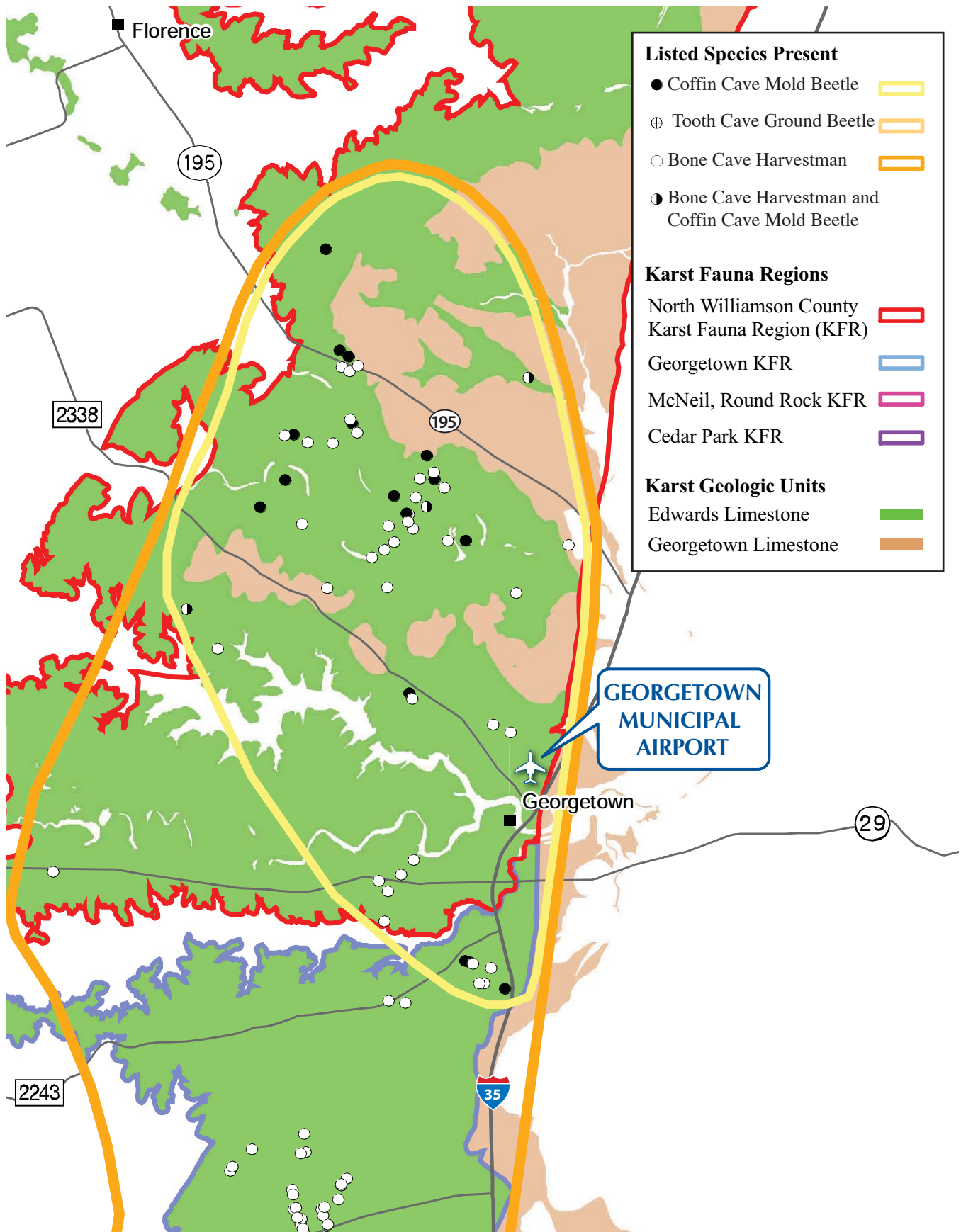
TABLE 5D

**Summary of Potential Environmental Concerns
Georgetown Municipal Airport**

Environmental Impact Category	Significance Threshold/ Factors to Consider	Potential Concern
Air Quality	Threshold: The action would cause pollutant concentrations to exceed one or more of the National Ambient Air Quality Standards (NAAQS), as established by the United States (U.S.) Environmental Protection Agency (EPA) under the <i>Clean Air Act</i> , for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations.	None. According to the most recent FAA <i>Aviation Emissions and Air Quality Handbook</i> (2015), an emissions inventory under NEPA may be necessary for any proposed action that would result in a foreseeable increase in emissions due to its implementation. For construction emissions, a qualitative or quantitative emissions inventory under NEPA may be required, depending on the type of environmental review required for the project. As seen on Exhibit 2F in Chapter 2, operations are anticipated to increase at a rate of 1.59 percent annually over the 20-year planning horizon of this Airport Master Plan. Williamson County currently meets federal NAAQS standards; ¹ thus, general conformity review per the <i>Clean Air Act</i> would not be required as part of NEPA analyses.
Biological Resources (including fish, wildlife, and plants)	<p>Threshold: The U.S. Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMFS) determines that the action would be likely to jeopardize the continued existence of a federally listed threatened or endangered species, or would result in the destruction or adverse modification of federally designated critical habitat.</p> <p>FAA has not established a significance threshold for non-listed species. However, factors to consider are if an action would have the potential for:</p> <ul style="list-style-type: none"> • Long term or permanent loss of unlisted plant or wildlife species; • Adverse impacts to special status species or their habitats; • Substantial loss, reduction, degradation, disturbance, or fragmentation of native species' habitats or their populations; or • Adverse impacts on a species' reproductive rates, non-natural mortality, or ability to sustain the minimum population levels required for population maintenance. 	<p>For federally-listed species: Indirect. There are 12 species protected by the <i>Endangered Species Act</i> (ESA) with potential to occur on airport property, some of which have the potential to be impacted by proposed projects. The 12 species include: the Georgetown salamander; Jollyville plateau salamander; Salado salamander; bone cave harvestman; black-capped vireo; golden-cheeked warbler; least tern; piping plover; red knot; whooping crane; coffin cave mold beetle; and, tooth cave ground beetle.²</p> <p>Much of Williamson County (approximately 112,000 acres or 15.5 percent of the County) is underlain by geology that is likely to contain caves with endangered karst invertebrates – which includes the bone cave harvestman, the coffin cave mold beetle, and the tooth cave ground beetle (see Exhibit 5C). Some of the greatest threats to karst species are indirect, in that activities that alter surface drainage patterns through changes in topography, impervious cover, and site grading can lead to the drying of karst features and changes in nutrient input. Changes to surface plant communities</p>

¹ Texas Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants, EPA (data current as of Sept. 30, 2017; accessed Oct. 10, 2017) (https://www3.epa.gov/airquality/greenbook/anayo_tx.html)

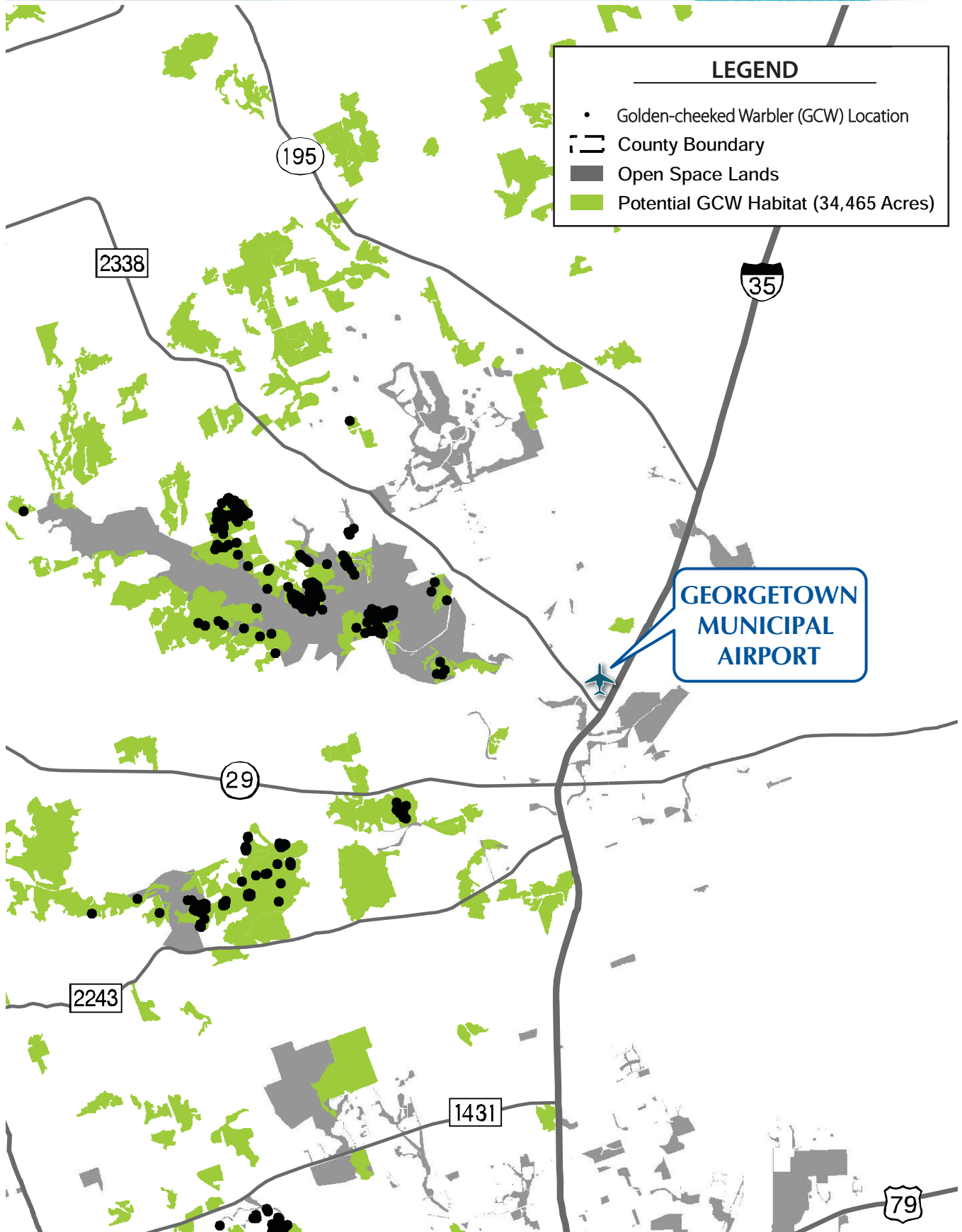
² U.S. Fish and Wildlife Service Information for Planning and Consultation (<https://ecos.fws.gov/ipac/location/SDVE6YAUZ5GZXJT6URBHAKKHRI/resources>)



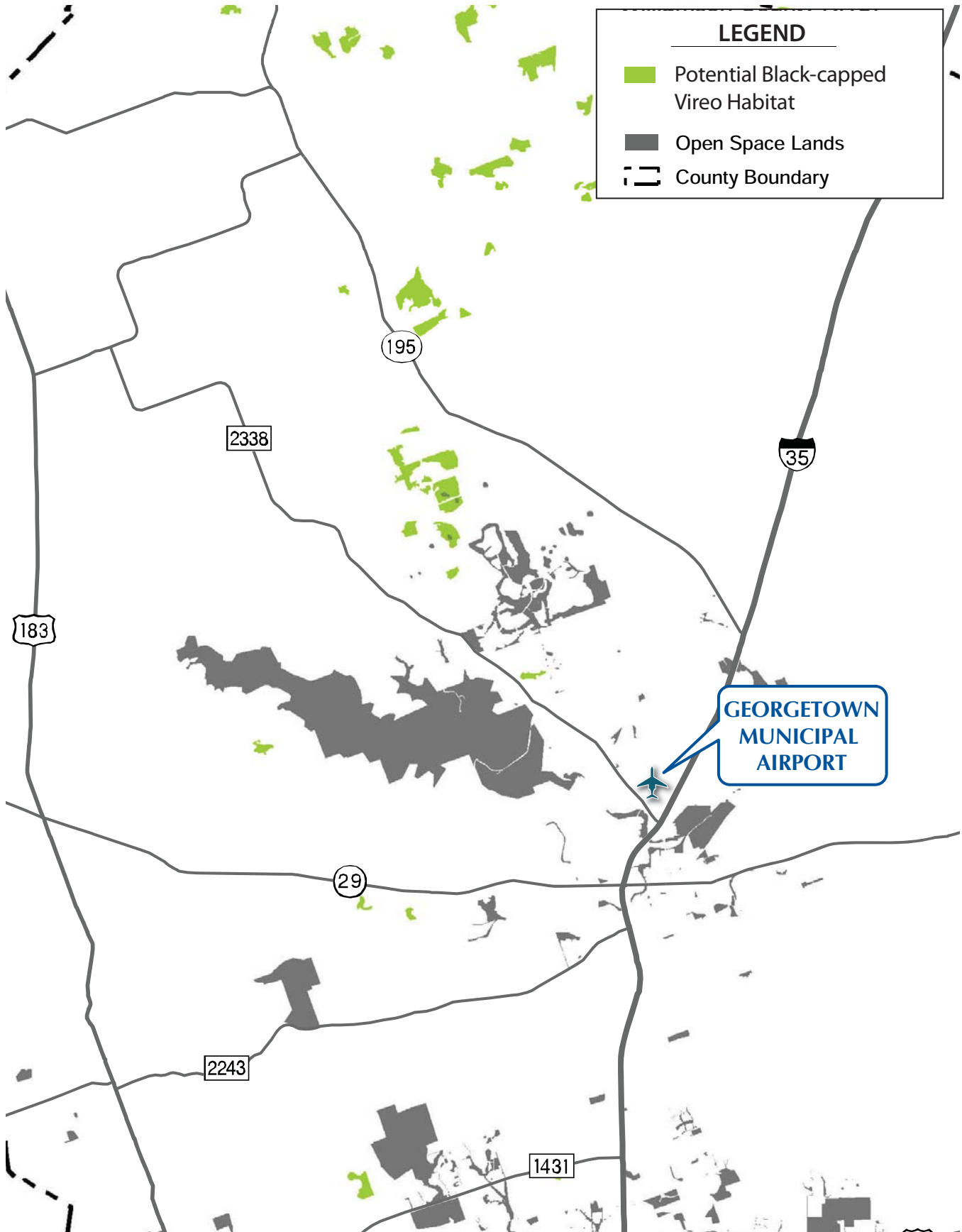


		<p>through land grading and paving can also lead to decreased levels of nutrient input into caves, altering cave temperatures and moisture levels that karst invertebrates require.³ Projects in the Master Plan concept that could impact these species include future roads/parking areas; future airport pavement; and future buildings, all of which require grading, land clearing, and paving.</p> <p>In addition, there's an estimated 34,465 acres of woodland habitat in Williamson County that could potentially support the golden-cheeked warbler (see Exhibit 5D). The golden-cheeked warbler is known to arrive in central Texas in early to mid-March for breeding. They prefer relatively dense and mature woodland composed of a combination of Ashe juniper and hardwood tree species, especially deciduous oaks. The greatest threats to the continued existence of the golden-cheeked warbler is habitat loss and urban encroachment on its breeding habitat.³ Projects that would result in the reduction of tree habitat on airport property could impact the livelihood of the golden-cheeked warbler.</p> <p>There is also approximately 4,267 acres of scrubland habitat that could potentially support the black-capped vireo (see Exhibit 5E). Typical breeding habitat is semi-open to relatively dense shrubland with vegetative cover down to ground level. Their habitat is usually dominated by shin oak or evergreen sumac, and sometimes Texas oak, plateau live oak, fragrant sumac, prairie sumac, poison ivy, Texas persimmon, redbud and Ashe juniper. The primary threats to the black-capped vireo include destruction of breeding habitat, loss or deterioration of breeding habitat through natural processes, low reproductive success, and indirect effect of land use on breeding grounds.³ Although the black-capped vireo is not known to be omnipresent in Williamson County, any proposed construction that would destroy potential breeding habitat would impact this species.</p> <p>The least tern, piping plover, red knot, and whooping crane all prefer beachy substrates</p>
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³ Williamson County Regional Habitat Conservation Plan (SWCA, August 15, 2008)



Source: Williamson County Regional Habitat Conservation Plan (SWCA, August 15, 2008)



Source: Williamson County Regional Habitat Conservation Plan (SWCA, August 15, 2008)



		<p>and tidal areas as habitat and, therefore, construction activities at the airport will not impact any habitat for these endangered species.</p> <p>Further, projects that could degrade the water quality and quantity in springs and streams in the watersheds of Williamson County could have implications for protected salamanders, including the Georgetown salamander, Jollyville plateau salamander, and Salado salamander. Pecan Branch is the closest surface water to the Airport that could support these aquatic species; however, the primary location for these salamanders are in the North and South Forks of San Gabriel River, which would not be impacted by construction activities at the airport.³</p> <p>Presence of any of the above-mentioned species, with potential to occur on or near airport property, should be evaluated prior to any development to ensure no harm to these protected species occur. Informal or formal ESA, Section 7 consultation may be required.</p> <p>For designated critical habitat: None. There is no designated critical habitat located on airport property.</p> <p>For non-listed species: Indirect. Non-listed species of concern include those protected by the <i>Migratory Bird Treaty Act</i> and the <i>Golden and Bald Eagle Protection Act</i>.</p> <p>There are several pockets of airport property that are forested, which could provide roosting and/or foraging habitat for migratory birds protected under the <i>Migratory Bird Treaty Act</i> (MBTA) (see Table 1P for full list of protected birds). Conducting bird surveys prior to development may be required to identify mitigation for potential harm to nests and/or ground-dwelling birds and to ensure compliance with the MBTA.</p>
Climate	FAA has not established a significance threshold for Climate; refer to FAA Order 1050.1F's Desk Reference for the most up-to-date methodology for examining impacts associated with climate change.	Indirect. An increase in greenhouse gas (GHG) emissions could occur over the 20-year planning horizon of the Airport Master Plan due to the projected increase in operations (see Air Quality). Project-specific analysis may be required per the FAA Order 1050.1F Desk Reference.



Coastal Resources	FAA has not established a significance threshold for Coastal Resources.	None. The airport is not located within a designated coastal zone.
Department of Transportation (DOT) Act: Section 4(f)	Threshold: The action involves more than a minimal physical use of a Section 4(f) resource or constitutes a “constructive use” based on an FAA determination that the aviation project would substantially impair the Section 4(f) resource. Resources that are protected by Section 4(f) are publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance; and publicly or privately-owned land from an historic site of national, state, or local significance. Substantial impairment occurs when the activities, features, or attributes of the resource that contribute to its significance or enjoyment are substantially diminished.	<p>Indirect. There are no wilderness areas, wildlife refuges, or properties included in the National Register of Historic Places (NRHP) that would be physically or constructively used by proposed development. However, there are four locally significant historical properties on Airport property that could be impacted by proposed development (see discussion in Historical, Architectural, Archaeological, and Cultural Resources).</p> <p>All development is proposed on airport property, except for the planned new access road extending 0.30 miles from Granada Drive to the airport property line. This proposed access road would be adjacent to the Georgetown Tennis Center, which is a City-owned recreation area.</p> <p>During the NEPA process for the roadway extension, additional study may be required to determine if physical or constructive use of the Georgetown Tennis Center property would occur. Additionally, consultation with the City of Georgetown would be needed to determine if the project-related impacts would substantially impair the resource. Using this information, FAA would then determine Section 4(f) applicability and determine what impacts, if any, would occur.</p>
Farmlands	Threshold: The total combined score on Form AD-1006, <i>Farmland Conversion Impact Rating</i>,” ranges between 200 and 260. (Form AD-1006 is used by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) to assess impacts under the <i>Farmland Protection Policy Act</i> (FPPA).	None. Based on the U.S. Department of Agriculture, Natural Resources Conservation Service – Web Soil Survey (NRCS-WSS), there are three areas on airport property classified as prime farmland (see Exhibit 1P). Two of the parcels are in the Runway 18 Runway Protection Zone (RPZ), and thus are not slated for development. The third parcel is east of the Georgetown Jet Center hangar and has no development proposed.
Hazardous Materials, Solid Waste, and Pollution Prevention	<p>FAA has not established a significance threshold for Hazardous Materials, Solid Waste, and Pollution Prevention. However, factors to be considered are if an action would have the potential to:</p> <ul style="list-style-type: none"> Violate applicable federal, state, tribal, or local laws or regulations regarding hazardous materials and/or solid waste management; Involve a contaminated site; 	<p>None. There are no documented Superfund sites, brownfields or hazardous waste facilities on airport property. The closest of these facilities are two hazardous waste generators located on Aviation Drive and Halmar Cove just east of airport property (see Exhibit 1P). Construction activities would not interfere with these uses.</p> <p>The recommended Master Plan development</p>



	<ul style="list-style-type: none"> • Produce an appreciably different quantity or type of hazardous waste; • Generate an appreciably different quantity or type of solid waste or use a different method of collection or disposal and/or would exceed local capacity; or • Adversely affect human health and the environment. 	<p>concept does not anticipate land uses that would produce an appreciably different quantity or type of hazardous waste. However, should this type of land use be proposed, operators of the activities that would generate the hazardous waste would have to obtain a Resource Conservation and Recovery Act (RCRA) hazardous waste generator identification (ID) number from the EPA or an authorized state (40 CFR Section 262.12). There may also be some situations that would require RCRA hazardous waste treatment, storage, and disposal (TSD) permits. If an RCRA generator ID number or TSD permit would be required, it should be stated in subsequent NEPA documentation.</p> <p>Construction and demolition waste would be generated because of development proposed in the Master Plan. Construction and demolition waste, along with all other types of non-hazardous solid waste, would be hauled to the Georgetown Transfer Station, approximately 1.5 miles south of the airport. The current solid waste service provider is Texas Disposal Systems, who provides weekly pickups. In addition, the airport operates under a Spill Prevention, Control, and Countermeasure Plan, which provides guidance and regulations for the prevention and control of spills of potentially hazardous materials, particularly oil and fuel. It outlines procedures and storage requirements for spill prevention.</p>
Historical, Architectural, Archaeological, and Cultural Resources	<p>FAA has not established a significance threshold for Historical, Architectural, Archaeological, and Cultural Resources. Factors to consider are if an action would result in a finding of “adverse effect” through the Section 106 process. However, an adverse effect finding does not automatically trigger preparation of an EIS (i.e., a significant impact).</p>	<p>None. The closest properties listed on the NRHP are two miles away from the airport and thus would not be impacted by proposed development on airport property. However, there are four properties on airport property that are considered local historic resources (see Exhibit 1P and Chapter One for additional information). These properties include the terminal building (500 Terminal Drive), the airport traffic control tower (408 Terminal Drive), a T-hangar structure (204 Hangar Drive), and a box hangar (108 Hangar Drive, at intersection with Terminal Drive in the northwest corner). The development concept shows the following potential impacts to these sites:</p> <ul style="list-style-type: none"> – Terminal building: expansion to include a potential restaurant. – T-Hangar: replaced to update facility and provide for parking area.



		<ul style="list-style-type: none"> – Box hangar: replaced to update facility and provide for parking area. <p>These sites cannot be demolished or significantly altered without approval from the local Historic and Architectural Review Commission. These buildings are eligible for listing in the NRHP and will thus require Section 106 and 4(f) reviews if any federal funds or permits are associated with future development projects at the airport. TxDOT and the FAA will need to coordinate with the State Historic Preservation Office (SHPO) and the Advisory Council for Historic preservation to determine the appropriate treatments for the structure. In addition, City staff is required to submit comments on any federally funded or permitted projects to the SHPO through the City's Certified Local Government Agreement.⁴</p> <p>Should any previously undisturbed areas of the airport be subject to ground disturbance, a cultural resources survey may be necessary to determine the potential presence of historic artifacts.</p>
Land Use	FAA has not established a significance threshold for Land Use. There are also no specific independent factors to consider. The determination that significant impacts exist is normally dependent on the significance of other impacts.	<p>None. The proposed development concept shows development primarily occurring within existing airport boundaries, except for the planned access road extension from Granada Drive. Chapter 1 presents existing land uses (Exhibit 1C), future land uses (Exhibit 1D), and current zoning (Exhibit 1E). Disruption of local traffic patterns could occur during construction of the access road extension from Granada Drive; however, these impacts would be temporary in nature. Further, there are three areas proposed for property acquisition that would require the acquisition of many homes. This is discussed in greater detail in the Socioeconomic Impacts section below.</p> <p>Note that all development proposed in the Master Plan would be subject to the regulations outlined in the Planned Unit Development (PUD) for the Airport, which institutes impervious cover limitations, stormwater control requirements, and tree/natural resource preservation requirements.</p>

⁴ Information from email communications, dated February 16, 2017, with the City of Georgetown Historic Planner.



<p>Natural Resources and Energy Supply</p>	<p>FAA has not established a significance threshold for Natural Resources and Energy Supply. However, factors to consider are if an action would have the potential to cause demand to exceed available or future supplies of these resources.</p>	<p>None. Planned development projects at the airport could increase demands on energy utilities, water supplies and treatment, and other natural resources during construction; however, long-term impacts to service providers are not anticipated. Should long-term impacts be a concern, coordination with the Georgetown Utility Systems Department, as well as the City of Georgetown's Utility Master Plan, is recommended.⁵</p>
<p>Noise and Noise-Compatible Land Use</p>	<p>Threshold: The action would increase noise by Day-Night Average Sound Level (DNL) 1.5 decibel (dB) or more for a noise-sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe.</p> <p>Another factor to consider is that special consideration needs to be given to the evaluation of the significance of noise impacts on noise-sensitive areas within Section 4(f) properties where the land use compatibility guidelines in Title 14 Code of Federal Regulations (CFR) Part 150 are not relevant to the value, significance, and enjoyment of the area in question.</p>	<p>Direct. The airport's existing (2016) and long-term (2036) DNL noise exposure contours are shown on Exhibit 5F. The contours include the 65, 70, and 75 DNL.⁶ The FAA's threshold for compatibility with noise-sensitive land uses is the 65 DNL contour. The City of Georgetown Zoning Code (Chapter 12.36, Section 8.16.030) defines what is considered a noise nuisance based on the decibels emitted (see Chapter One); however, Federal law preempts local authority in regard to noise and thus the City Zoning Code cannot be used to restrict aircraft noise levels. Further, the Airport engages in a "Fly Friendly" Program that the City developed in response to concerned neighboring communities (see Exhibit 1K). The purpose of the Program is to minimize the impact of aircraft operations on the surrounding neighborhoods without unduly restricting the use of the airport.⁷</p> <p>The airport is surrounded by noise-sensitive land uses to the north, west, and south, which are primarily residential developments (see Exhibit 1P). Presently, and as shown on Exhibit 5F, the 65 and 70 DNL noise contours (2016) extend off airport property. Northwest of the Runway 18 end, the 65 and 70 DNL noise contours extend off airport property into a residential development. The 65 DNL noise contour extends off airport property between the Runway 29 and 36 ends; however, this area is vacant and undeveloped. There are no existing noise impacts to Section 4(f) protected resources.</p> <p>The long-term (2036) noise contours (Exhibit</p>

⁵ Utility/Infrastructure Plan (<https://2030.georgetown.org/utility-master-plan/>)

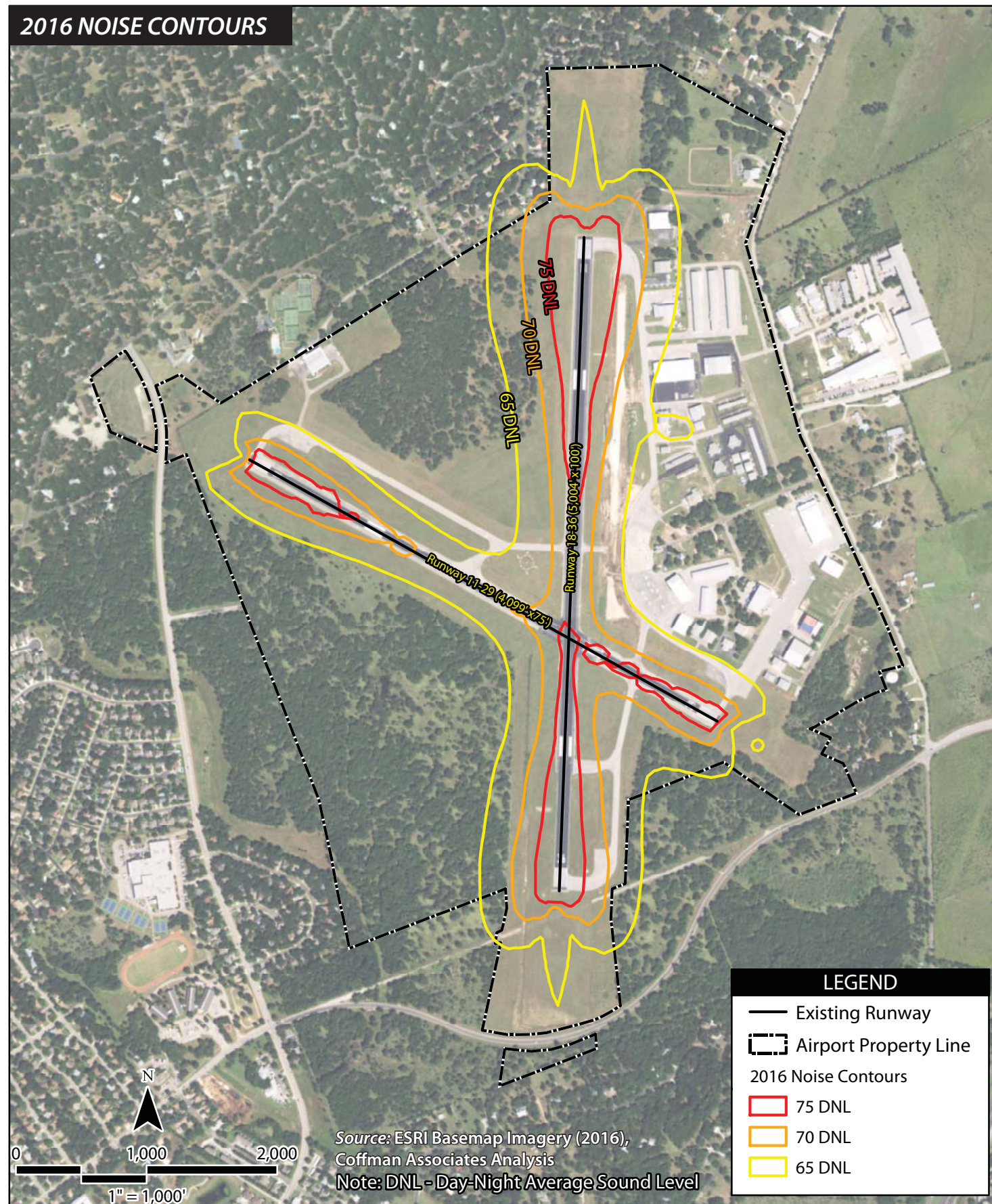
⁶ Day-Night Average Sound Level (DNL). The 24-hour average sound level, in decibels, for the period from midnight to midnight, obtained after the addition of ten decibels to sound levels for the periods between midnight and 7 a.m., and between 10 p.m., and midnight, local time. The symbol for DNL is Ldn (See 14 CFR § 150.7).

⁷ "Fly Friendly" Program (<https://airport.georgetown.org/fly-friendly-program/>)

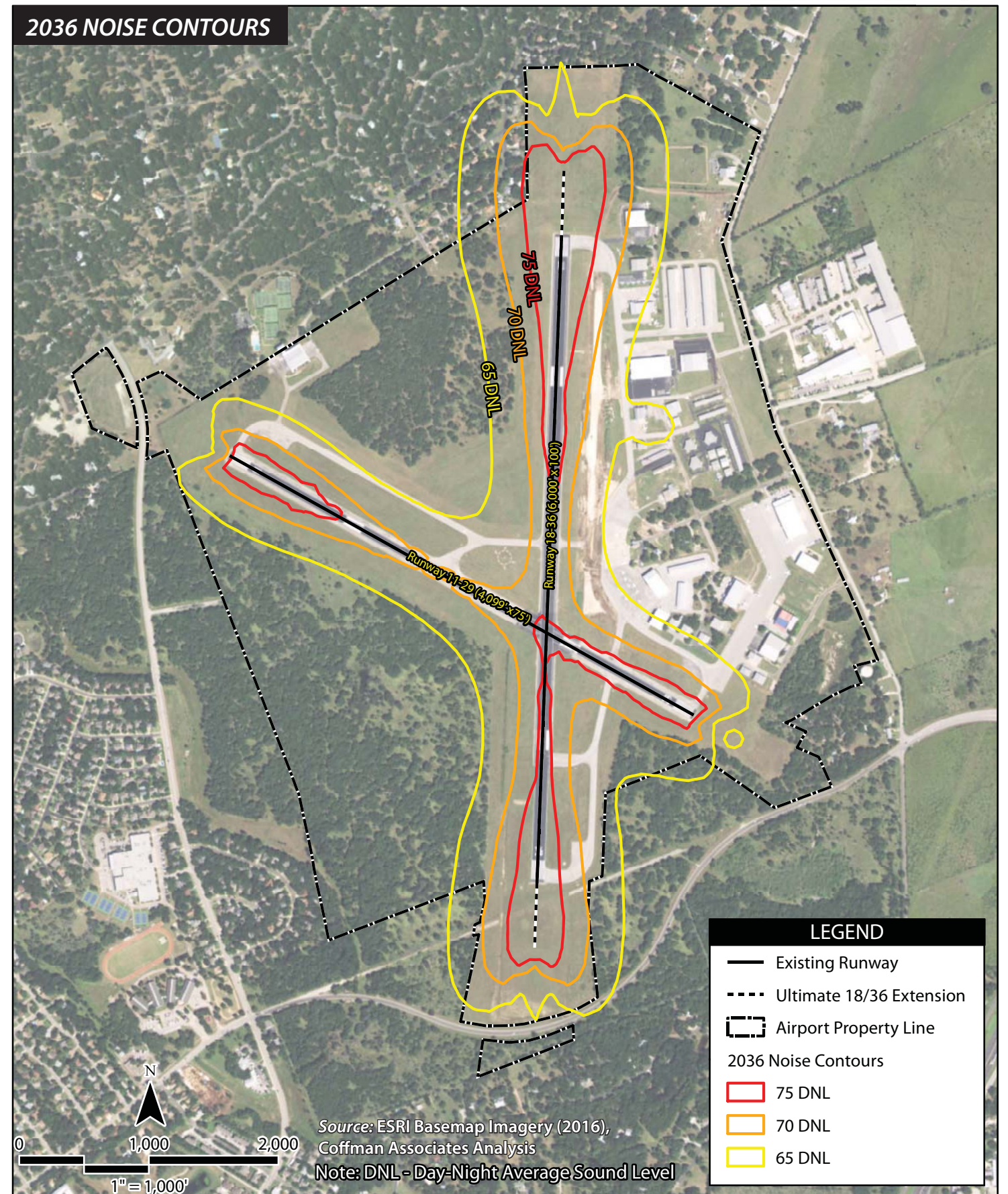


		<p>5F) extend off airport property in the same areas as the existing contours. The 65 and 70 DNL noise contours northwest of the Runway 18 end are larger than the existing condition, likely due to the proposed runway extension. The 65 DNL noise contour that extends off both sides of the Runway 36 end are larger than the existing condition. There are no Section 4(f) protected resources within the future condition noise exposure contours.</p> <p>The FAA encourages local governments to take actions to reduce and prevent land uses around airports that are not compatible with airport operation and aircraft noise. As previously discussed in Chapter One, Environmental Inventory, the City of Georgetown adopted an airport zoning designation in November 2005 that intended to limit residential uses near the airport by requiring appropriate buffers.</p> <p>Additionally, the Airport has an adopted Part 150 Noise Compatibility Study (November 2004) that outlines the following recommendations related to noise:</p> <ul style="list-style-type: none"> – Encourage departing aircraft to use the best rate of climb; – Encourage aircraft to begin departure from the end of the runway; – Avoid prolonged run-ups and perform them as near the center of the airport as possible; – Continue use of the National Business Aviation Association Noise Abatement Departure Procedures; – Maintain right-hand traffic pattern on Runway 36; – Designate Runway 11 as the preferential nighttime runway; and, – Runway 11 noise abatement departure turn. <p>Note that in 2007, an Air Traffic Control Tower (ATCT) was constructed at the Airport. ATCT Controllers provide arrivals and departure guidance to ensure safe operations at the airport. The Fly Friendly Program documents are now for general reference only.</p>
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2016 NOISE CONTOURS



2036 NOISE CONTOURS



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Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks		
Socioeconomic Impacts	<p>FAA has not established a significance threshold for socioeconomic impacts. However, factors to consider are if an action would have the potential to:</p> <ul style="list-style-type: none"> • Induce substantial economic growth in an area, either directly or indirectly (e.g., through establishing projects in an undeveloped area); • Disrupt or divide the physical arrangement of an established community; • Cause extensive relocation when sufficient replacement housing is unavailable; • Cause extensive relocation of community businesses that would cause severe economic hardship for affected communities; • Disrupt local traffic patterns and substantially reduce the levels of service of roads serving the airport and its surrounding communities; or • Produce a substantial change in the community tax base. 	<p>Direct. Proposed development projects would occur primarily on airport property, except for the access road extension from Granada Drive. This roadway extension will occur in undeveloped, vacant land, resulting in no home or business relocation; however, it could temporarily disrupt local traffic during construction. Additionally, traffic volumes on and around airport property may increase during construction. However, neither of these impacts would result in long-term congestion.</p> <p>Following FAA guidelines, there are three areas proposed for future acquisition by the airport, when feasible. They are:</p> <ul style="list-style-type: none"> – Runway 18 RPZ – 13 acres and 17 homes – Runway 36 RPZ – 12 acres and 7 homes – Runway 29 RPZ – 2.3 acres and 1 home <p>If acquisition of real property or displacement of persons is involved, 49 CFR Part 24, as amended (implementing the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970), must be met for Federal projects and projects involving Federal funding.</p> <p>There is potential for increased economic activity with the proposed aeronautical and non-aeronautical related revenue development.</p>
Environmental Justice	<p>FAA has not established a significance threshold for Environmental Justice. However, factors to consider are if an action would have the potential to lead to a disproportionately high and adverse impact to an environmental justice population (i.e., a low-income or minority population) due to:</p> <ul style="list-style-type: none"> • Significant impacts in other environmental impact categories; or • Impacts on the physical or natural environment that affect an environmental justice population in a way that FAA determines are unique to the environmental 	<p>None. Since the Environmental Inventory (Chapter One) was conducted, the American Community Survey (ACS) 2011 – 2015 estimates have become available, providing new data for the block group^{8,9} that contains the airport. Within this block group, there is a total population of 933 people, of which 48 persons (5.1%) are living below the poverty level.¹⁰ In this block group, almost 100 percent of the persons are White (930 people). Less than one percent of the block group is comprised of Black or African American persons, or individuals that are some other race.¹¹</p>

⁸ Block Groups are statistical divisions of census tracts that generally contain between 600 and 3,000 people and are used to present data and control block numbering (U.S. Census Bureau, https://www.census.gov/geo/reference/gtc/gtc_bg.html).

⁹ The airport is in block group 2, census tract 201.08.

¹⁰ American Community Survey 2011 – 2015 estimates (Table B17021: Poverty Status of Individuals in the Past 12 Months by Living Arrangement).

¹¹ American Community Survey 2011 – 2015 estimates (Table B02001: Total Population).



	justice population and significant to that population.	The closest residences abut airport property to the north, west and south; however, per the EPA's Environmental Justice Screening (EJSCREEN) and Mapping Tool, the closest assisted multi-family housing development ¹² is at the intersection of Northwest Boulevard and Janis Drive, west of Interstate 35 (approximately 0.70 miles south of the airport). Given the distance, it is not expected that construction would result in any disproportionately high and/or adverse impacts to any environmental justice populations residing near the airport.
Children's Environmental Health and Safety Risks	FAA has not established a significance threshold for Children's Environmental Health and Safety Risks. However, factors to consider are if an action would have the potential to lead to a disproportionate health or safety risk to children.	None. The nearest education facility is Frost Elementary School, which is approximately one-half mile west of the airport.
Visual Effects		
Light Emissions	<p>FAA has not established a significance threshold for Light Emissions. However, a factor to consider is the degree to which an action would have the potential to:</p> <ul style="list-style-type: none"> • Create annoyance or interfere with normal activities from light emissions; and • Affect the visual character of the area due to the light emissions, including the importance, uniqueness, and aesthetic value of the affected visual resources. 	<p>Indirect. The primary recommendations related to lighting include implementing a two-light precision approach path indicator (PAPI-2) on both ends of the Runway 11-29; and, maintaining the PAPI-4 and runway end identifier lights (REILs) on Runway 18-36.</p> <p>The addition of lighting to proposed buildings, like additional hangars, the maintenance facility, parallel taxiway, parking areas, and aviation and non-aviation revenue support facilities, could increase the amount of light emissions on the airport. This additional lighting could cause impacts to nearby residences, specifically those located just north of the airport, as this is where the bulk of development is proposed.</p> <p>Further, additional lighting could impact nearby wildlife, like light-sensitive species that hunt, migrate, or mate at night near the airport. However, these species are likely already acclimated to airport lights. The incremental change in lighting due to recommended Master Plan projects is not anticipated to cause undue stress.</p>

¹² The multi-family assisted properties layer in the EPA's EJSCREEN consist primarily of rental housing properties with five or more dwelling units, but also include nursing homes, hospitals, elderly housing, mobile home parks, and retirement service centers. The U.S. Department of Housing and Urban Development (HUD) provides subsidies and grants to property owners and developers to promote the development and preservation of affordable rental units for low-income populations and those with special needs, such as the elderly and disabled.



Visual Resources/Visual Character	<p>FAA has not established a significance threshold for Visual Resources/Visual Character. However, a factor to consider is the extent an action would have the potential to:</p> <ul style="list-style-type: none"> • Affect the nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources; • Contrast with the visual resources and/or visual character in the study area; and • Block or obstruct the views of the visual resources, including whether these resources would still be viewable from other locations. 	<p>None. Development planned in the recommended Master Plan development concept would not significantly change the overall visual character of the airport. Additionally, all development is primarily on airport property and improvements to the airside and/or landside facilities would not obstruct or interfere with any visual resources nearby.</p> <p>The City of Georgetown has a Courthouse View Protection (CVP) Overlay District that is intended to preserve views of the Williamson County Courthouse from various locations along corridors in Georgetown.¹³ The airport is over two miles away from the CVP overlay district and realization of the development concept would not interfere with any view sheds the district is intended to protect.</p>
Water Resources (including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)		
Wetlands	<p>Threshold: The action would:</p> <ol style="list-style-type: none"> 1. Adversely affect a wetland's function to protect the quality or quantity of municipal water supplies, including surface waters and sole source and other aquifers; 2. Substantially alter the hydrology needed to sustain the affected wetland system's values and functions or those of a wetland to which it is connected; 3. Substantially reduce the affected wetland's ability to retain floodwaters or storm runoff, thereby threatening public health, safety or welfare (the term welfare includes cultural, recreational, and scientific resources or property important to the public); 4. Adversely affect the maintenance of natural systems supporting wildlife and fish habitat or economically important timber, food, or fiber resources of the affected or surrounding wetlands. 5. Promote development of secondary activities or services that would cause the circumstances listed above to occur; or 6. Be inconsistent with applicable state wetland strategies. 	<p>None. There are no wetlands or hydric soils on airport property according to the USFWS National Wetlands Inventory.</p>
Floodplains	<p>Threshold: The action would cause notable adverse impacts on natural and beneficial floodplain values. Natural and beneficial floodplain values are defined in Paragraph 4.k</p>	<p>None. There is a 100-year floodplain associated with Pecan Branch along the southwest airport boundary. There is no development proposed in or near the floodplain. Should development be</p>

¹³ City of Georgetown Zoning, Chapter 4, Section 4.12



	<p>of DOT Order 5650.2, <i>Floodplain Management and Protection</i>.</p>	<p>considered in the southwest portion of the Airport, best management practices (BMPs) should be used to ensure development does not occur in the part of the floodplain that is on airport property (see Exhibit 1P). Additionally, if no practicable alternative avoids a floodplain, the FAA or applicant must incorporate mitigation measures into the proposed project to minimize potential harm to or within floodplains (see FAA Desk Reference 1050.1F, Chapter 14 for mitigation measures).</p>
Surface Waters	<p>Threshold: The action would:</p> <ol style="list-style-type: none"> 1. Exceed water quality standards established by federal, state, local, and tribal regulatory agencies; or 2. Contaminate public drinking water supply such that public health may be adversely affected. <p>Factors to consider are when a project would have the potential to:</p> <ul style="list-style-type: none"> • Adversely affect natural and beneficial water resource values to a degree that substantially diminishes or destroys such values; • Adversely affect surface water such that the beneficial uses and values of such waters are appreciably diminished or can no longer be maintained and such impairment cannot be avoided or satisfactorily mitigated; or • Present difficulties based on water quality impacts when obtaining a permit or authorization. 	<p>Indirect. Airport projects, such as additional apron, parking lots, buildings and other impervious surfaces, could increase the amount of runoff from the Airport. The airport is required by the EPA and Texas Commission on Environmental Quality (TCEQ) to treat storm water runoff before it is discharged. There are two storm water pollution prevention control facilities at the airport (see Exhibit 1P) and a third storm water feature is proposed to accommodate potential increased runoff in the southwest corner of airport property (see Exhibit 5A).</p> <p>One of the existing storm water features on airport property is a water quality pond (located adjacent and north to Terminal Drive) designed to capture and filter the first one-half inch of storm water runoff from the north T-hangar areas of approximately 16.2 acres. Treated storm water runoff is then discharged into culverts beneath Terminal Drive. There is development proposed to the east, south, and west of this water quality pond.</p> <p>The second storm water feature is a detention pond, located at the southeast corner of airport property. This detention pond, which also functions as a sedimentation and filtration structure, captures storm water runoff from upstream and retains it for a period of time. There is no development proposed near this detention pond.</p> <p>Pecan Branch flows onto the southwest corner of airport property, where there is potential for future aeronautical and/or non-aeronautical development. If construction is proposed around Pecan Branch, FAA's Advisory Circular 150/5370-10G, <i>Standards for Specifying Construction of Airports, Item P-156, Temporary Air and Water Pollution, Soil Erosion and Siltation</i></p>



		<p><i>Control</i> should be implemented.</p> <p>If Pecan Branch is deemed jurisdictional by the U.S. Army Corps of Engineers (USACE), coordination with USACE would be required to determine the level of permitting, if any, that would be required.</p>
Groundwater	<p>Threshold: The action would:</p> <ol style="list-style-type: none"> 1. Exceed groundwater quality standards established by federal, state, local, and tribal regulatory agencies: or 2. Contaminate an aquifer used for public water supply such that public health may be adversely affected. <p>Factors to consider are when a project would have the potential to:</p> <ul style="list-style-type: none"> • Adversely affect natural and beneficial groundwater values to a degree that substantially diminishes or destroys such values; • Adversely affect groundwater quantities such that the beneficial uses and values of such groundwater are appreciably diminished or can no longer be maintained and such impairment cannot be avoided or satisfactorily mitigated; or • Present difficulties based on water quality impacts when obtaining a permit or authorization. 	<p>Indirect. According to the City of Georgetown's <i>2030 Comprehensive Plan</i> (2009), most of the City sits within the designated protection zones of the Edwards Aquifer, which is a natural groundwater resource extending 180 miles along the Balcones Fault Zone. The City draws its water from Lake Georgetown, but the Edwards Aquifer provides water for many communities, and thus is a resource the City protects and monitors.</p> <p>The Master Plan concept demonstrates future revenue-generating opportunities on airport property that could increase the amount of water used on site. The aviation and non-aviation related revenue support areas could result in increased water use as these properties are developed in the future. At the time of development, water scarcity impacts should be addressed during design.</p>
Wild and Scenic Rivers	FAA has not established a significance threshold for Wild and Scenic Rivers.	None. There are no Wild and Scenic Rivers within 250 miles of the airport.

RECYCLING PLAN

The *FAA Modernization and Reform Act of 2012* (FMRA), which amended Title 49, United States Code (U.S.C.), included several changes to the Airport Improvement Program (AIP). Two of these changes are related to recycling, reuse, and waste reduction at airports.

- Section 132 (b) of the FMRA expanded the definition of airport planning to include “developing a plan for recycling and minimizing the generation of airport solid waste, consistent with applicable State and local recycling laws, including the cost of a waste audit.”
- Section 133 of the FMRA requires airports that have, or plan to prepare a master plan, and that receive AIP funding for an eligible project, to ensure that the new or updated master plan addresses issues relating to solid waste recycling at the airport. This includes:
 - The feasibility of solid waste recycling at the airport;
 - Minimizing the generation of solid waste at the airport;



- Operation and maintenance requirements;
- A review of waste management contracts; and,
- The potential for cost savings or the generation of revenue.

CURRENT RECYCLING PRACTICES

Recycling services are presently managed independently by various tenants and entities in what is known as a decentralized waste management system. The terminal building is the only place on airport that has public recycling bins. Currently, there are two recycling bins – one on the inside of the terminal building and one on the outside that are emptied into a 96-gallon cart. Recycling services at the terminal building are provided by Texas Disposal Systems, and pick-ups are scheduled as needed.

CURRENT SOLID WASTE PRACTICES

The airport terminal and ATCT share a 4-yard dumpster that is serviced once per week for solid waste. Additionally, the Airport has one 8-yard dumpster and one 3-yard dumpster on the property that are serviced once per week for tenant use.

FUTURE OPPORTUNITIES

Future recycling opportunities at the airport include an additional paper- and cardboard-only dumpster for the airport, as this is a common item that is thrown in the trash. A tenant at the airport has indicated that this is a need. Further, the airport could consider incorporating clearly marked signage of what is and is not accepted placed near the solid waste and recycling containers to ensure consistent and effective recycling practices. **Figure 1** provides an example of signage that the airport could use in the future to explain what can and cannot be recycled. The airport should explore a centralized recycling management system that would provide greater opportunity for participation from airport tenants who many not be incentivized to recycle on their own. A centralized system would reduce the number of players involved in the overall management of the recycling efforts. Lastly, the City of Georgetown is developing a Solid Waste Master Plan that provides the vision and framework necessary to guide future activities and to develop the infrastructure, programs and policies needed to manage the City's solid waste for the



Figure 1 Recycling Signage Example



next 20 years. When this document becomes available, the airport could look to this document for additional suggestions on how to improve solid waste diversion rates to support the City's goals.¹⁴

RECYCLING GOALS AND OBJECTIVES

While the airport may or may not pursue the implementation of a centralized recycling management system, there are other opportunities for improvement. **Table 5E** outlines objectives that could help reduce waste generation and increase recycling efforts. To increase the effectiveness of tracking progress at the airport, a baseline state of all suggested metrics should be established to provide a comparison over time.

Table 5E
Waste Management and Recycling Goals
Georgetown Municipal Airport

Goals	Objectives to Meet Goals	Metrics
Reduce amount of solid waste generated	Begin recycling cardboard and paper products	Establishment of a dedicated cardboard and paper dumpster
	Switch to online bill pay	No longer receiving monthly paper bills
	Conduct a waste audit to identify most common types of waste collected	Identification of most common wastes
	Eliminate purchase of items that are not recyclable (i.e., Styrofoam)	Number of items purchased that are not recyclable
	Explore feasibility of on- or off-site composting of landscaping and food waste	Pounds of landscaping and food waste
Increase amount of material recycled	Increase the number of recycling bins in public areas of the terminal building	Number of recycling bins available to the public
	Incorporate recycling requirements and/or recommendations into tenant lease agreements	Number of tenant contracts with recycling requirements and/or recommendations
	Expand recycling marketing & promotion efforts in the terminal building	Number of marketing & promotional materials
	Require contractors to implement strategies to reduce, reuse, & recycle C&D waste	Incorporation of waste reduction, reuse and recycling language into construction contracts; reduced construction costs

C&D: Construction and Demolition

MSW: Municipal Solid Waste

Source: Airport Management (October 17, 2016).

¹⁴ <https://recycle.georgetown.org/solid-waste-master-plan-swmp/>



AIRPORT LAND USE COMPATIBILITY

This section will discuss the current and future land uses around the airport, as well as the regulatory framework in the airport's environs. Land use planning in the area surrounding the airport occurs through regulatory and non-regulatory means. The primary tools include:

- Zoning Ordinance
- General Plan
- Specific Plan
- Subdivision Regulations
- Building Codes
- Fair Disclosure Regulations
- Land and/or Property Acquisition

The main regulatory tool for directing land use is the zoning ordinance, which limits the types, size, and density of land uses in various locations. Examples of land use types include residential, commercial, industrial, and agricultural. Non-regulatory means of land use control include land use plans, commonly referred to as general plans, comprehensive plans, or future land use plans. These can be adopted for the greater municipality or for specific areas. While general land use plans are intended to establish policies to guide development and land use, cities and counties control land use through zoning ordinances. Within the study area, land is only zoned within the city limits of Georgetown as the State of Texas has not passed legislation which would allow Williamson County to adopt a zoning ordinance.

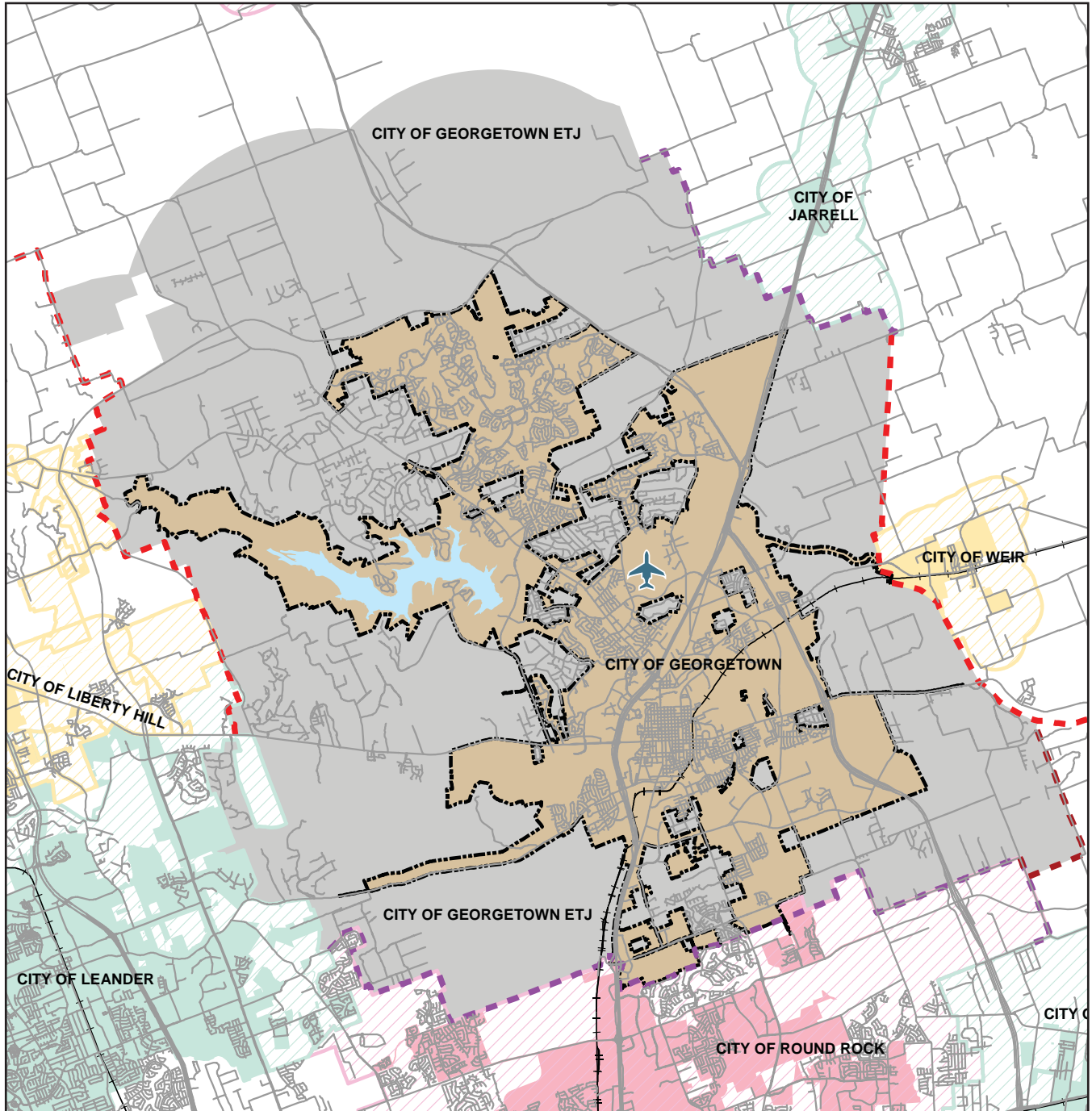
In the case of Georgetown Municipal Airport, the responsible jurisdiction exerting land use authority within the vicinity of the airport is the City of Georgetown. Areas around the airport that are unincorporated parts of Williamson County are considered parts of the City of Georgetown's extraterritorial jurisdiction (ETJ), which is the legal ability of a government to exercise land use authority beyond its normal boundaries. **Exhibit 5G** shows the City of Georgetown limits, as well as areas under its ETJ.

EXISTING LAND USE

As discussed in Chapter One, existing land uses around the airport include residential developments to the north, west, and south. To the east are commercial/industrial land uses. As can be seen on Exhibit 1C in Chapter One, the airport is nearly surrounded by development. However, to better protect itself from incompatible development, the City of Georgetown acquired land that falls within the RPZs for Runways 11, 29, and 36.

FUTURE LAND USE

Future land uses are shown on Exhibit 1D in Chapter One and are based on what is planned for in the *City of Georgetown 2030 Comprehensive Plan*. Areas to the north are planned for low density residential, whereas areas to the east and immediate south are designated as employment centers. Areas to the west are planned for low- to moderate-density residential.



LEGEND

- Road
- +— Railroad
- Lake Georgetown
- Georgetown City Limits



ETJ Agreement Lines

- City of Hutto - 2007
- City of Jarrell - 2009
- City of Liberty Hill - 2008
- City of Weir - 1988
- City of Round Rock 2005
- Georgetown Municipal Airport

Extra-Territorial Jurisdiction

- FLORENCE
- HUTTO
- JARRELL
- LEANDER
- LIBERTY HILL
- ROUND ROCK
- WEIR
- GEORGETOWN

Incorporated City

- FLORENCE
- HUTTO
- JARRELL
- LEANDER
- LIBERTY HILL
- ROUND ROCK
- WEIR

Source: City of Georgetown Mapping and Geographic Information Systems



ZONING

Area zoning is presented on Exhibit 1E in Chapter One. Areas to the immediate north and south of the airport are unincorporated parts of Williamson County and do not have any existing zoning designations. However, these unincorporated areas are presently fully developed with low density residential housing. The airport property is zoned as industrial but has a Planned Unit Development Overlay District. An overlay district is one that is applied over a previously established zoning district to create additional and/or in some cases more flexible development standards in addition to the underlying districts. The City of Georgetown Municipal Code (Chapter 4, Sec. 4.04.030, Part D) defines the PUD Overlay District as the following:

“The Planned Unit Development District (PUD) is intended to allow flexibility in planning and designing for unique or environmentally sensitive properties and that are to be developed in accordance with a common development scheme. PUD zoning is designed to accommodate various types of development, including multiple housing types, neighborhood and community retail, professional and administrative areas, industrial and business parks, and other uses or a combination thereof. A PUD may be used to permit new or innovative concepts in land use and standards not permitted by zoning or the standards of this Code. Although greater flexibility is given to allow development in a PUD that would not otherwise be allowed, procedures and standards are established in this Code that are intended to ensure against misuse.”

Chapter 12.36 of the City of Georgetown Municipal Code establishes the Georgetown Airport Zoning Ordinance, which defines certain zones in and around the airport. As discussed in Chapter One, this ordinance was created based on the Part 77 imaginary surfaces around the airport. Each individual zone is explained in Chapter One, as well as below. In addition to protections guaranteed by Chapter 8 (Sec. 8.02.030, Part 2a), the Ordinance states that any protected and heritage trees located in the Airport Clear Zone are exempt from the requirements laid out in Chapter 8, which discusses tree preservation, landscaping, and fencing ordinances.

The Part 77 surfaces that the Airport Zoning Ordinance is based on would change as a result of the proposed changes to Runway 18-36. The City of Georgetown should consider updating the Airport Zoning Ordinance per the planned Part 77 surfaces to ensure that incompatible development does not occur prior to the runway extension.

Chapter 5 (Sec. 5.05.010) of the City of Georgetown Municipal Code establishes uses that are allowed in each zoning district. If a Special Use Permit is obtained from the City Council, agriculture, industrial, and public use zones are allowed on airport property. Chapter 5 (Sec. 5.10.090) goes on to state that any service provider wanting to erect and operate a cell tower must follow current FAA rules and regulations so as to not interfere with the Georgetown Municipal Airport.



SUBDIVISION REGULATIONS

Subdivision regulations apply in cases where a parcel of land is proposed to be divided into lots or tracts. They are established to ensure the proper arrangements of streets, adequate and convenient public spaces, efficient movement of traffic, adequate and properly located facilities, and orderly and efficient layout and use of land. Subdivision regulations can be used to specify requirements for airport-compatible land development by requiring developers to plat and develop land to minimize noise impacts or reduce the noise exposure to new development. The regulations can also be used to protect the airport proprietor from litigation for noise impacts.

The most common requirement is the dedication of a noise or aviation easement to the airport sponsor by the land developer as a condition of the development approval. Easements typically authorize overflights of property, with noise levels attendant to such operations. They can also require developers to incorporate noise insulation during construction. The *Airport Compatibility Guidelines* (January 2003) for Texas¹⁵ provides examples of subdivision regulations as tools to regulate aviation activity. One example is designating a public easement as the overflight of an aircraft along with its associated noise. A subdivision regulation could also restrict residential housing or require special acoustical construction within certain DNL contours. For example, the cities of Irving and Grapevine both have subdivision regulations that require the dedication of aviation easements as both municipalities have neighborhoods within the Dallas-Fort Worth International Airport's 65 DNL noise contour. The aviation easement protects both cities from lawsuits by homeowners who move into the noise-impacted areas.

Although the Georgetown Municipal Airport has residential land uses that are impacted by the 65 and 70 DNL contours (both presently and in the future), subdivision regulations that would dedicate an airport easement synonymous with the airport's noise contours would only protect future homeowners in areas that are currently undeveloped. Subdivision regulations that dedicate an aviation easement in the approach paths of Runways 18, 29, and 36 would provide protection to future buyers of the undeveloped parcels, as well as the airport. Several of the undeveloped parcels in the Runway 29 approach path are zoned for single family residential, which are considered noise-sensitive. An aviation easement would alert prospective owners that there is an airport nearby. Note that, per the explanation below, the undeveloped parcel in the Runway 18 approach path would be subject to an aviation easement (if it were applied) as subdivision regulations apply within the City's ETJs.

Per Chapter 1 (Sec. 1.05.020) of the City of Georgetown Municipal Code, the City, as authorized by Texas Local Government Code chapters 212 and 216, applies its applicable subdivision provisions to the City's ETJs. Subdivision regulations are in place only within the ETJs of Georgetown as Williamson County has not adopted subdivision regulations. The City of Georgetown subdivision regulations require that all final plats that lie within two miles of the Georgetown Municipal Airport have height restriction imposed by the Georgetown-Williamson County Joint Airport Ordinance. These restrictions are designated as an aviation easement. In addition, no building areas are permitted in areas designated as runway approach clear zones.¹⁶

¹⁵ http://ftp.dot.state.tx.us/pub/txdot-info/d/avninfo/Airport_Compatibility_Guidelines.pdf, Page 22: Subdivision Regulations (accessed October 19, 2017)

¹⁶ Georgetown Municipal Airport Noise Compatibility Study (November 2003)



BUILDING CODES

Building codes regulate the construction of buildings and ensure that they are constructed in a safe manner. Building codes may be used to require sound insulation in new residential, office, and institutional buildings when warranted by existing or potential high aircraft noise levels. According to the City of Georgetown Municipal Code, the City has adopted the 2012 edition of the International Building Code, which does not include specific provisions for aircraft noise attenuation.

Given that there are residential areas in the 65 and 70 DNL noise contours, as well as the proximity of other noise-sensitive uses, the City of Georgetown should consider adopting language that requires construction techniques that reduce internal noise levels in noise-impacted areas. These provisions could help promote compatible development, but only for future structures, as building codes cannot be applied retroactively. Therefore, this method would only work within the vacant areas that the 65 DNL noise contour encompasses. Building codes could require any future construction on parcels impacted by the 65 DNL to adhere to standards that attenuate internal sound levels to appropriate levels, given the type of use.

LAND AND/OR PROPERTY ACQUISITION

The intent of property acquisition is to remove residences from severely noise-impacted areas, as well as to prevent incompatible uses from being developed near an airport. This can be an effective way to ensure land use compatibility around an airport, although it has several drawbacks:

- Potentially excessive costs
- Very complex
- High administrative effort
- Disruption to lives of residents in acquisition area
- Risk of considerable damage to character of established neighborhoods

Property acquisition is typically accomplished through voluntary programs in which the purchaser – in this case the City of Georgetown – notifies property owners when it is ready to negotiate the purchase of their land and home(s). In some instances, the purchaser can use eminent domain to complete an acquisition if the property owner will not voluntarily relinquish the rights to the land.

As discussed earlier in the chapter, the FAA and TxDOT recommend that airports own the entirety of their RPZs when feasible. Therefore, for those RPZs that extend beyond the airport property line, which includes Runways 18, 36, and 29, the airport has identified areas proposed for fee simple acquisition. As mentioned in the Environmental Overview, there are three areas proposed for acquisition, including:

- Runway 18 RPZ – 13 acres and 17 homes
- Runway 36 RPZ – 12 acres and 7 homes
- Runway 29 RPZ – 2.3 acres and 1 home



The acquisition of these homes is planned for in the long term. If acquired, the number of noise-impacted homes would be reduced near the airport.

FAIR DISCLOSURE REGULATIONS

Fair disclosure regulations, also known as real estate disclosures, are intended to ensure that prospective property buyers are informed that the property is or will be exposed to potentially disruptive aircraft noise. At the most formal level, fair disclosure can be implemented through regulations requiring the seller and agent to provide a notice of aircraft exposure on the real estate listing sheet and at the time a sales contract is executed. Additionally, any easements should be revealed at the time of closing. Fair disclosure regulations can place a high responsibility on real estate agents and lenders to disclose this information if legislation is not properly drafted. To ensure effectiveness, the disclosure regulations should clearly define the airport noise levels or overlay districts impacting the property and direct buyers to airport officials for more information.

NOISE EXPOSURE CONTOURS

The standard methodology for analyzing noise conditions at airports involves the use of a computer simulation model. The FAA has approved the Airport Environmental Design Tool (AEDT) for use in environmental and planning analyses. The purpose of the noise model is to produce noise exposure contours that are overlain on a map of the airport and vicinity to graphically represent aircraft noise conditions. When compared to land use, zoning, and general plan maps, the noise exposure contours may be used to identify areas that are currently, or have the potential to be, exposed to aircraft noise.

To achieve an accurate representation of an airport's noise conditions, the AEDT uses a combination of industry standard information and user-supplied inputs specific to the airport. The software provides noise characteristics, standard flight profiles, and manufacturer supplied flight procedures for aircraft within the U.S. civil and military fleets, including those which commonly operate at Georgetown Municipal Airport. As each aircraft has unique design and operating characteristics (number and type of engines, weight, and thrust levels), each aircraft emits different noise levels. The most common way to spatially represent the noise levels emitted by an aircraft is a noise exposure contour.

Airport-specific information, including runway configuration, flight paths, aircraft fleet mix, runway use distribution, local terrain and elevation, average temperature, and numbers of daytime and nighttime operations, are also used as modeling inputs.

Based on the assumptions provided by the user, the AEDT calculates average 24-hour aircraft sound exposure within a grid covering the airport and surrounding areas. The grid values, represented with the day-night noise level metric or DNL, at each intersection point on the grid, represent a noise level for that geographic location. To create the noise contours, an isoline, similar to those on a topographic map, is drawn which connect points of the same DNL noise value. In the same way that a topographic contour represents the same elevation, the noise contour identifies areas of equal noise exposure.



DNL is the metric currently accepted by the FAA, EPA, and HUD as an appropriate measure of cumulative noise exposure. These three agencies have each identified the 65 DNL noise contour as the threshold of incompatibility.

Noise exposure contours were prepared for the airport for a baseline condition (2016) and a long-range condition (2036) based on the operational forecasts presented in Chapter Two. The resulting contours are shown on **Exhibit 5F** and discussed in depth in **Table 5D**, which explains that the existing and future condition 65 and 70 DNL noise contours extend off airport property in select areas.

NON-COMPATIBLE DEVELOPMENT ANALYSIS

Areas with the potential for non-compatible development, when compared to the noise exposure contours and Part 77 approach surfaces, have been evaluated. This was done by evaluating the locally adopted zoning designations and future land use plan for undeveloped parcels encompassed within the four approach zones to determine if noise-sensitive land uses could be developed on these areas. An analysis of land uses within the noise contours is also discussed.

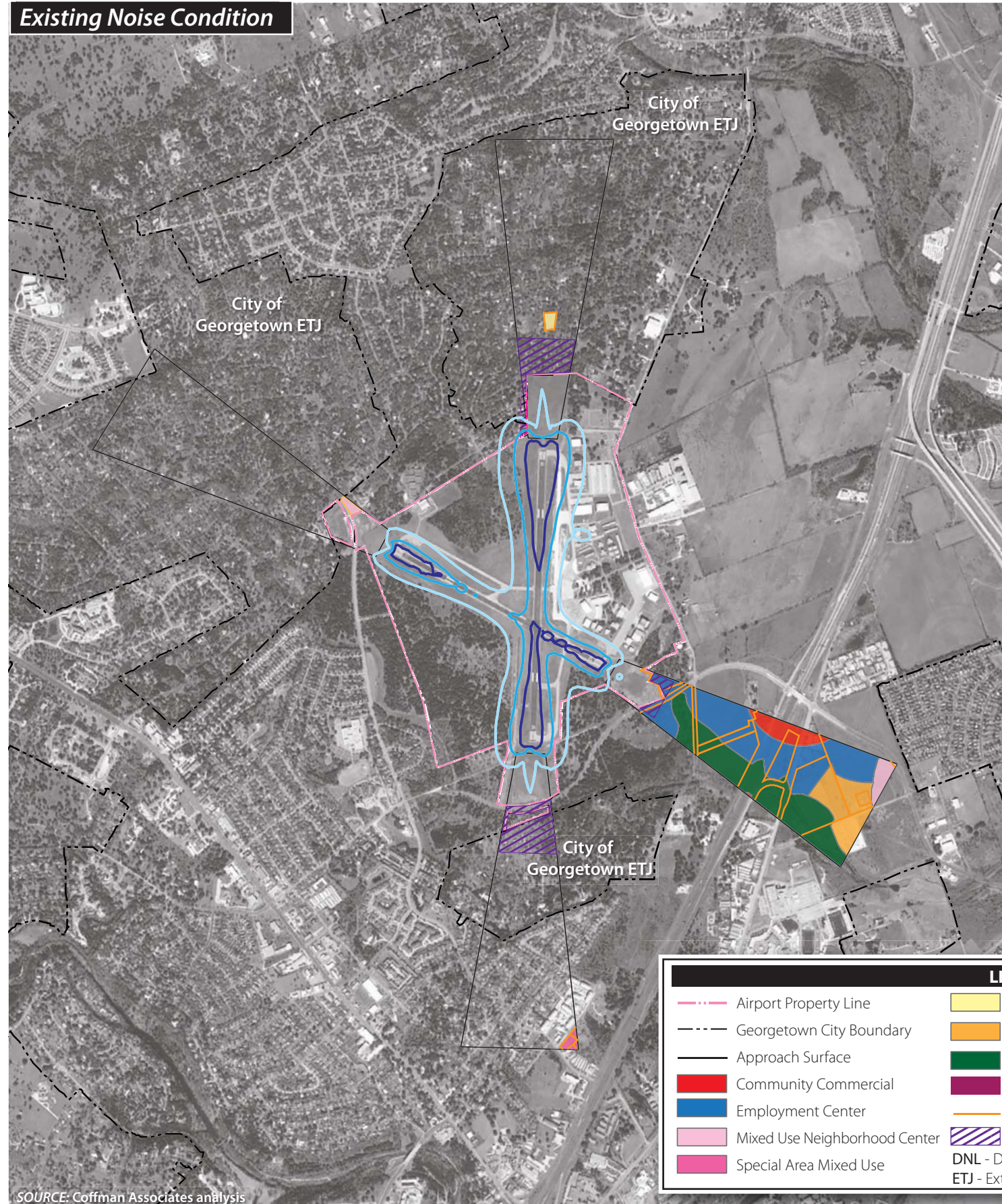
As previously discussed in the Environmental Overview (**Table 5D**), the 65 DNL noise contour is the threshold of incompatibility for noise-sensitive land uses, such as residential land uses without acoustic treatment, mobile homes, transient lodging, schools, religious entities, medical buildings, and public facilities. **Exhibits 5H** and **5J** depict existing and future noise exposure contours on future land uses and zoning, respectively.

As seen in the left-hand panel of **Exhibit 5H**, and as discussed previously in the Environmental Overview, the airport is surrounded by noise-sensitive land uses to the north, west, and south, which are primarily residential developments (see Exhibit 1P). Currently, the 65 and 70 DNL noise contours extend off airport property into a residential development northwest of Runway 18, impacting approximately 11 homes. The 65 DNL noise contour extends off airport property between the Runway 29 and 36 ends; however, this area is vacant and undeveloped.

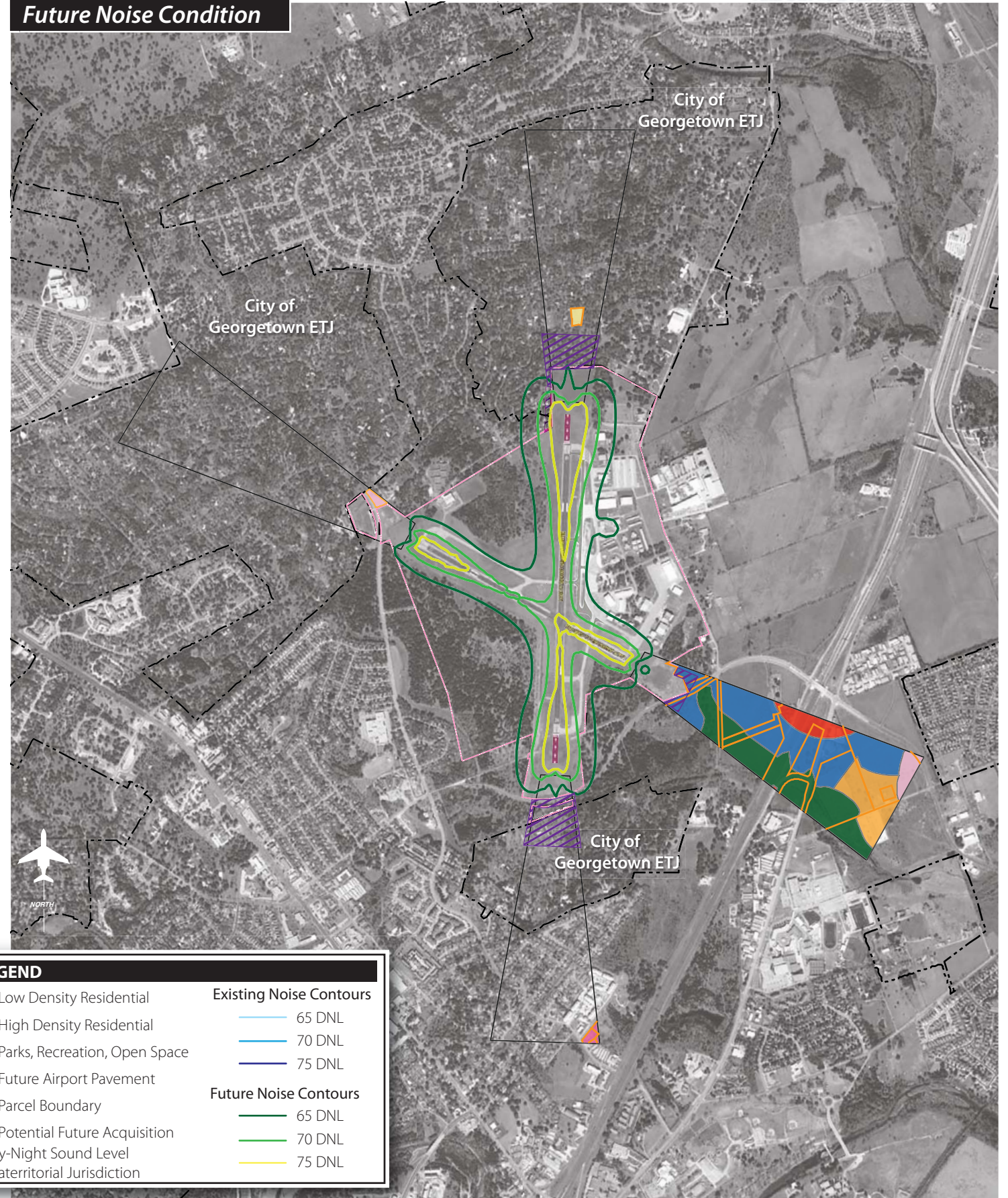
The long-term (2036) noise contours, as shown in the right-hand panel on **Exhibit 5H**, extend off airport property in the same areas as the existing contours. The 65 and 70 DNL noise contours northwest of Runway end 18 are larger than the existing condition, likely due to the proposed runway extension, thus impacting approximately five homes in 70 DNL noise contours and 20 homes in the 65 DNL noise contour (approximately 25 homes total). The 65 DNL noise contour that extends off both sides of the Runway 36 end are larger than the existing condition.

The parcels within the Part 77 approach surfaces were evaluated to identify potential non-compatible development related to the height of structures. As depicted on **Exhibit 5J**, parcels within the Part 77 approach surfaces that are undeveloped, and thus have the potential to be developed incompatible in the future, are zoned: Local Commercial, Industrial, Residential Single Family, General Commercial, and Agriculture. Note that some areas have no zoning classification as they are in the City of Georgetown ETJ

Existing Noise Condition



Future Noise Condition

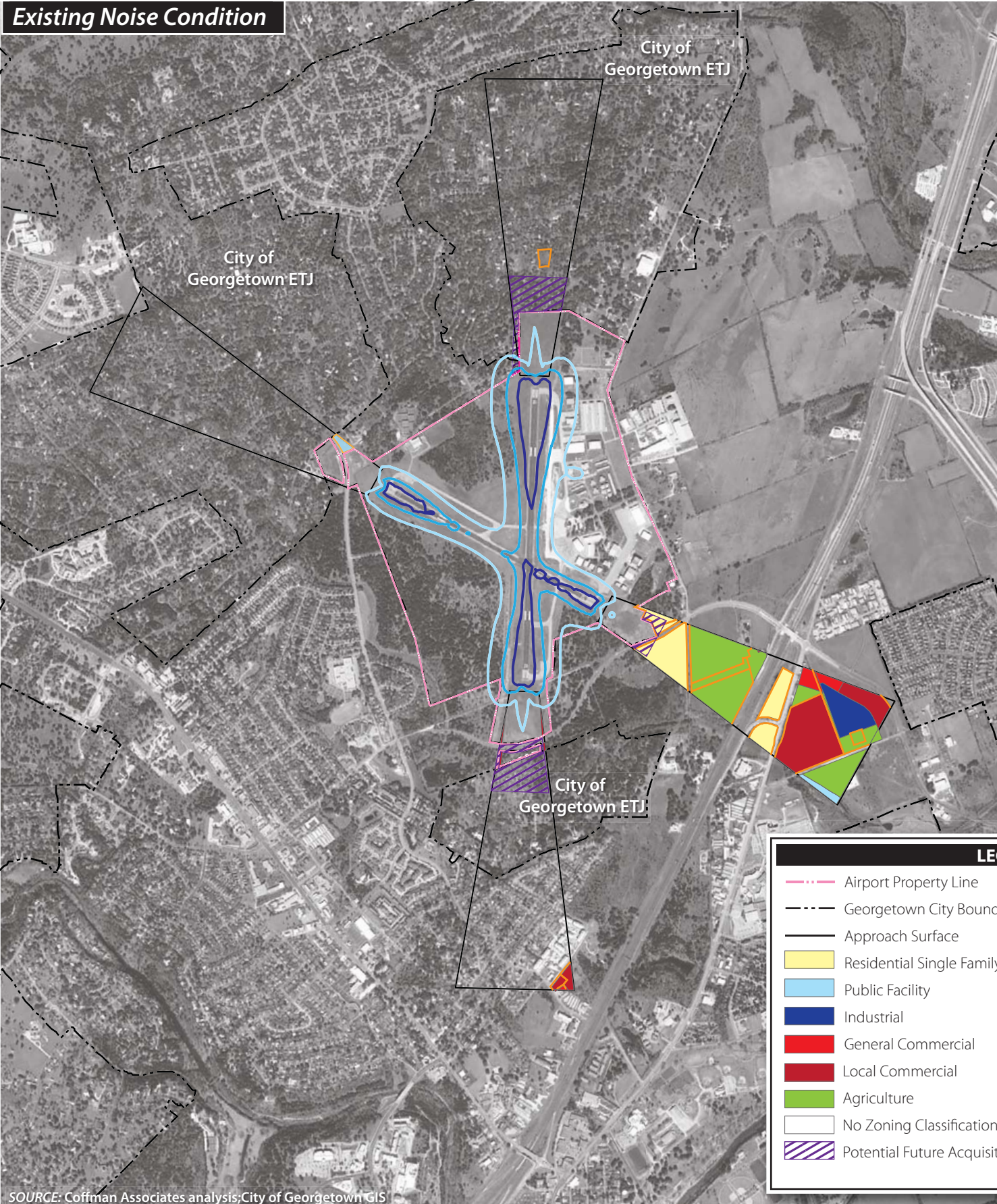


LEGEND		
	Airport Property Line	
	Georgetown City Boundary	
	Approach Surface	
	Community Commercial	
	Employment Center	
	Mixed Use Neighborhood Center	
	Special Area Mixed Use	
	Low Density Residential	
	High Density Residential	
	Parks, Recreation, Open Space	
	Future Airport Pavement	
	Potential Future Acquisition	
	Parcel Boundary	
DNL - Day-Night Sound Level		
ETJ - Extraterritorial Jurisdiction		
		Existing Noise Contours
	65 DNL	
	70 DNL	
	75 DNL	
		Future Noise Contours
	65 DNL	
	70 DNL	
	75 DNL	

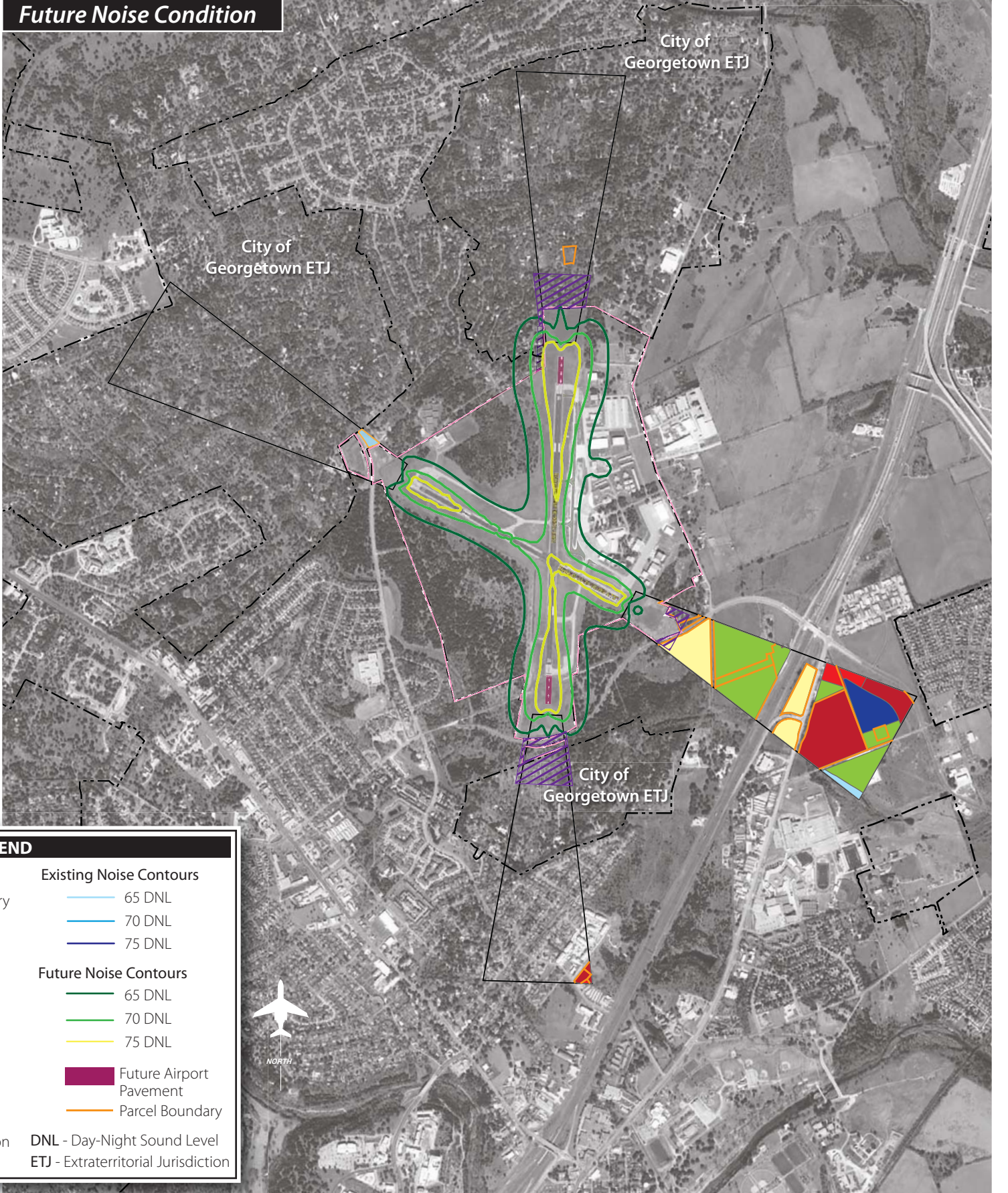
SOURCE: Coffman Associates analysis

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Existing Noise Condition



Future Noise Condition



LEGEND	
	Airport Property Line
	Georgetown City Boundary
	Approach Surface
	Residential Single Family
	Public Facility
	Industrial
	General Commercial
	Local Commercial
	Agriculture
	No Zoning Classification
	Potential Future Acquisition
Existing Noise Contours	
	65 DNL
	70 DNL
	75 DNL
Future Noise Contours	
	65 DNL
	70 DNL
	75 DNL
	Future Airport Pavement
	Parcel Boundary
DNL - Day-Night Sound Level	
ETJ - Extraterritorial Jurisdiction	

SOURCE: Coffman Associates analysis; City of Georgetown GIS

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areas (see **Exhibit 5G**). However, as stated in Section 7.01.030 in Chapter 7 of the City of Georgetown Code of Ordinances, all non-residential development within the City's ETJ is subject to the provisions outlined below.

The maximum height limits for the following zoning districts are as follows:

- Industrial (IN): 60 feet
- Residential Single Family (RS): 35 feet
- Local Commercial (C-1): 35 feet
- General Commercial (C-3): 45 feet
- Agriculture (AG): 35 feet

As previously discussed, the City of Georgetown has adopted an Airport Zoning Ordinance, which defines use restrictions based on the Part 77 imaginary surfaces, including the approach zone, transition zones, horizontal zones, and conical zone. Any new development within the approach zones, as seen on **Exhibits 5H** and **5J**, would be subject to the height limitations of the Airport Zoning Ordinance. Per the Airport Zoning Code, when an area is covered by more than one height limitation, the more restrictive limitations shall prevail. Further, the Airport Zoning Code should not be construed as prohibiting the growth, construction or maintenance of any tree or structure up to a height of 20 feet above the surface of the land.

The maximum height limits for these Part 77 surfaces are as follows:

- Approach Zones: One foot in height for each 34 feet in horizontal distance beginning at a point 200 feet from and at the elevation of the end of the runway and extending to a point 10,200 feet from the end of the runway.
- Transition Zones: One foot in height for each seven feet in horizontal distance beginning at any point 250 feet normal to and at the elevation of the centerline of runways extending 200 feet beyond each end thereof, extending to a height of 150 feet above the airport elevation or a height of 937 feet above mean sea level. Additionally, there are established height limits of one foot of vertical height for each seven feet horizontal distance measured from the edges of all approach zones for the entire length of the approach zones and extending upward and outward to the points where they intersect the horizontal or conical surfaces.
- Horizontal Zone: That area beneath the horizontal surface which is located 150 feet above the airport elevation, or a height of 937 feet above mean sea level.
- Conical Zone: That area beneath the conical surface which is one foot in height for each 20 feet of horizontal distance beginning at the periphery of the horizontal surface extending to a height of 350 feet above the airport elevation.



LAND USE COMPATIBILITY RECOMMENDATIONS

This analysis specifically examines undeveloped parcels in the four approach paths at the airport as these are the areas with the most potential to be developed incompatibly in the future. Based on the above findings, the following are recommended for the City of Georgetown to pursue:

- **Zoning Ordinance:** The City of Georgetown should work with the Georgetown-Williamson County Joint Airport Zoning Board (JAZB) to re-zone undeveloped parcels in the Runway 29 approach path to better protect the airport and surrounding public. Some of these parcels are presently zoned for residential uses. Rezoning these parcels to uses that are less noise-sensitive, like industrial, commercial, or agriculture, could result in future tenants of these undeveloped parcels to be less likely to be impacted by the noise from the airport. Further, as seen on **Exhibit 5J**, there are areas of land within the Runways 18, 36, and 11 approach zones that do not have zoning classifications because they are part of the City's ETJ. It is recommended that the City of Georgetown work with the JAZB to revise their Zoning Ordinance in a way that reduces and/or prevents incompatible land use development in these areas.
- **Subdivision Regulations, Avigation Easement:** subdivision regulations that would dedicate an avigation easement within the airport's noise contours and Runway 29 approach path would protect future buyers of undeveloped contours within these areas. Future land owners would then be pre-exposed to the notion that his/her property is likely to be impacted by activities at the airport.
- **Land and/or Property Acquisition:** The airport plans to acquire 25 homes in the long-term in the RPZs of Runways 18, 29, and 36. Purchasing these homes would better protect both airport users and homeowners in these zones as they are areas intended to be free of all development.
- **Building Codes:** Implementing building codes within the 65 and 70 DNL noise contours, as well as in the approach paths of Runways 18, 29, and 36, would require noise-attenuating construction methods in new structures within noise-impacted areas around the airport.
- **Fair Disclosure Regulations:** Undeveloped parcels would benefit from fair disclosure regulations as prospective buyers would be alerted that the land is within the vicinity of an active airfield with associated noise and safety hazards.

SUMMARY

A recommended development plan has been put forward that addresses future airside and landside needs. The primary feature of the airside plan is consideration of an extension of the runway. A runway length of between 5,000 and 7,600 feet is optimal for a reliever airport, such as Georgetown. Existing land use constraints limit the potential length of the runway to 6,000 feet, of which 5,500 feet would be available for takeoff. The current length of 5,004 feet would remain the landing length available. The considered runway extension is designed to meet the needs of current airport users and is not intended to attract larger aircraft.



On the landside, a long term conceptual plan has been put forth. Areas on the east side of the airport are shown with future hangar development. This includes potential redevelopment of some older hangars just north of the terminal building. The redevelopment would remove the older hangars and replace them with high-activity conventional/FBO hangars. This is a much more appropriate use of this land area. If all the land on the east side of the airfield were developed as presented on the plan, this would meet the 20-year need for hangar space.

To provide a long-term vision for the airport, the large parcel on the west side of the airport has been shown with a full build-out scenario. The land to the southwest has been identified for either aviation or compatible non-aviation land uses. No development plan is currently shown for this parcel, instead, this should be considered for development on a case-by-case basis.

The next chapter of the master plan will consider a reasonable plan to phase development of the Airport over time.