



TEXARKANA
REGIONAL AIRPORT

Chapter Four

ALTERNATIVES

In the previous chapter, aviation facilities required to satisfy airside and landside demand through the long-term planning period of the master plan were identified. In addition, various Federal Aviation Administration (FAA) standards were discussed that apply to airfield design. The next step in the planning process is to evaluate reasonable ways in which these facilities can be provided, and the design standards can be met. The purpose of this chapter is to formulate and examine rational development alternatives that address the short-, intermediate-, and long-term planning horizon levels. Because there are a multitude of possibilities and combinations, it is necessary to focus on those opportunities that have the greatest potential for success. Each alternative provides a differing approach to meet existing and future facility needs, and these layouts are presented for purposes of evaluation and discussion.

The primary goal of this planning process is to develop a feasible plan for meeting the needs resulting from the projected market demand over the next 20 years. The plan of action should be developed in a manner that is consistent with the future goals and objectives of the Texarkana Regional Airport Authority (TRAA), airport users, the local community, and the surrounding region, all of whom have a vested interest in the development and operation of Texarkana Regional Airport (TXK).

The development alternatives for the airport can be categorized into two functional areas: the **airside** (runways, navigational aids, taxiways, etc.) and **landside** (passenger terminal, hangars, aprons, and support facilities). Within each of these areas, specific capabilities and facilities are required or desired. In addition, the utilization of airport property to provide revenue support and to benefit the economic development and wellbeing of the local area must be considered.

Each functional area interrelates and affects the development potential of the others. Therefore, all areas are examined individually and then coordinated as a whole to ensure the final plan is functional, efficient, and cost-effective. The total impact of these factors on the airport must be evaluated to determine if the investment in TXK will meet the needs of the Texarkana metropolitan area, both during and beyond the 20-year planning period.

The alternatives presented in this chapter have been formulated as a potential means to meet the overall program objectives for the airport in a balanced manner. Through coordination with the TRAA, airport staff, the Planning Advisory Committee (PAC), and the public, an alternative (or combination thereof) will be refined and modified as necessary into a recommended development concept; therefore, the planning considerations and alternatives presented in this chapter can be considered a beginning point in the evolution of a recommended concept for the future of TXK.

PLANNING OBJECTIVES

A set of basic planning objectives has been established to guide the alternatives development process. It is the goal of this master planning effort to produce a development plan for the airport that addresses forecasted aviation demand and meets FAA design standards to the greatest degree possible. The TRAA provides overall guidance for the operation and development of the airport. It is of primary concern that TXK is marketed, developed, and operated for the betterment of the community and its users. The following basic planning principles and objectives will be utilized as general guidelines during this planning effort:

- To develop a safe, attractive, and efficient aviation facility in accordance with applicable federal, state, and local regulations;
- To preserve and protect public and private investments in existing airport facilities;
- To provide a means for the airport to grow as dictated by demand;
- To put into place a plan to ensure the long-term viability of the airport and to promote compatible land uses surrounding the airport;
- To develop a facility that is readily responsive to the changing needs of all aviation users;
- To be reflective and supportive of the long-term planning efforts currently applicable to the region;
- To develop a facility with a focus on self-sufficiency in both operational and developmental cost recovery; and
- To ensure that future development is environmentally compatible.

NON-DEVELOPMENT ALTERNATIVES

Prior to the presentation of development alternatives for TXK, there are several non-development options that should be considered. Non-development alternatives include a “no-build” or “do-nothing” alternative, development of a new replacement airport at a new location, or closure of the existing airport and the transfer of services to another existing airport. The following presents a discussion of the three primary non-development alternatives and the impact of pursuing each.

NO-BUILD/DO-NOTHING ALTERNATIVE

The no-build alternative essentially considers making no new capital investments in the airport. Limited maintenance and upkeep would continue so that the airport remains safe for aviation activity. No new

hangars or apron area would be planned to be built by the airport sponsor; however, this would not, and could not, include the prohibition of hangar construction by a private entity. The obvious result of the no-build alternative is that the airport would be unable to accommodate forecasted demand for aviation services in the area.

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

The unavoidable consequence of the no-build alternative is that the capability of the airport would diminish over time. Its ability to serve as a primary commercial service airport for the Texarkana metropolitan area would deteriorate. This would lead to diminished activity levels and would ultimately negatively impact the local and regional economy. Safety concerns would arise, especially if necessary and routine maintenance were deferred, and the liability for damage to aircraft or accidents would increase. The long-term consequences of the no-build alternative would reduce the quality of the existing airport facilities over time, producing undesirable results. This scenario would result in an overall unpleasant experience for regular users and visitors.

TXK has received more than \$55.7 million in FAA development grants since 1999, a significant portion of which has been received in the past five years for the development of a new terminal building and associated taxiways and apron. These grants represent a direct economic stimulus that has lasting positive economic impacts. The TRAA has a vested interest in maintaining and improving airport facilities for commercial service and general aviation (GA) users. Without a commitment to ongoing improvement of the airport, users of the airport will be prevented from taking full advantage of the airport's air transportation capabilities.

RELOCATE AIRPORT ALTERNATIVE

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

An important consideration is the potential cost associated with both constructing a new airport and closing the existing airport. A broad estimate for a replacement airport is close to \$1.0 billion to construct a new airport with similar capabilities as the existing airport.

A more detailed analysis would need to be undertaken to identify an acceptable site and to refine the project cost estimates. A large portion of the development costs would be eligible for FAA grant funding. Typically, non-revenue-producing facilities to be located within the airport property line are eligible for FAA funding. New passenger terminal buildings are eligible for FAA grant funding; however, funding eligibility is restricted to public-use areas only. Elements outside the property line, such as utility extension and surface roads – and other privatized facilities – are not eligible for funding. Moreover, the TRAA could have other financial costs, such as the cost of retiring existing leases with private or public entities. As an example, a fixed base operator (FBO) could need to be compensated for its facilities (and, in some cases, loss of business), potentially resulting in costs extending into millions of dollars.

Often, the trigger for pursuing a replacement airport is encroachment upon the existing airport to the point where it can no longer fulfill its role in the national aviation system. While development has extended to property immediately surrounding the airport – including Interstate 49 to the west, Highway 67 to the northwest, and residential and commercial developments to the north and west – TXK can still serve its existing and future commercial, GA, and military users.

If a replacement airport feasibility study were to be undertaken, a detailed analysis should identify a site capable of developing airside, terminal, and landside facilities equivalent to those that exist at TXK today while providing convenient access to the local and regional service areas.

TRANSFER SERVICE TO ANOTHER AIRPORT ALTERNATIVE

The feasibility of transferring services to an alternate airport relies on answering two primary questions. First: is a capable alternative airport reasonably located to accommodate TXK's primary air service area (Texarkana metropolitan area)? Second: can a nearby airport accommodate TXK's existing and projected aviation demand factors? An analysis of regional airports has been completed to determine if transferring aviation demand is reasonable.

There are only two public-use GA airports within 30 nautical miles of TXK: Hope Municipal Airport (M18) and Hall-Miller Municipal Airport (ATA). Both airports have dual runways – the longest of which is Runway 16-34 at M18 at 5,501 feet – and offer basic GA services. The secondary runway at ATA is a turf runway, incapable of supporting business jets or commercial service aircraft. The nearest primary commercial service airports are South Arkansas Regional Airport (ELD) and Shreveport Regional Airport (SHV), both of which are located 61 nautical miles to the east and south, respectively. Neither of the GA airports are positioned to accept a transfer of service from TXK because they lack the necessary Part 139 certification requirements and facilities to accommodate commercial service activity, both from an airfield (runways/taxiways/navigational aids) and landside (passenger terminal/ARFF/road network and parking) perspective. The cost to improve any of these facilities to meet Part 139 certification and to offer ample facilities for passengers would likely not be feasible for those communities. Furthermore, none of these airports are geographically located to provide convenient access to TXK's primary service area, which would lead to a lower utilization rate, declining service, and significant economic losses for the local area.

The TRAA has accepted \$55.7 million dollars in federal development grant funding through the Airport Improvement Program (AIP) for projects at TXK since 1999. As was previously discussed, acceptance of development grants obligates the airport sponsor, through grant assurances, to maintain the airport as

an airport. Closing the existing airport and transferring services to another existing airport would be considered a violation of these grant assurances, requiring repayment of grants not yet fully depreciated. The investments made, as well as the economic benefits received from the airport (both public and private), could not readily be shifted or regenerated to another airport without significant costs/losses. As such, this alternative is not considered practical, reasonable, and/or financially feasible.

NON-DEVELOPMENT ALTERNATIVES SUMMARY

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

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

Two of the three non-development alternatives would lead to the closure or significantly reduced operation of the existing airport. There is a lengthy process to obtain approval for this course of action. As outlined, the primary hindrance to considering airport closure is the fact that airports have accepted federal development grants that include certain grant assurances, one of which is to maintain the improvement for its useful life (20 years). If an airport is closed in the interim, then the sponsor could be required to refund all or a portion of the past federal investment. Moreover, private investments by any airport operator would also require some form of repayment based on negotiated lease terms. The non-development options are not found to be feasible, practical, or prudent. TXK is a vibrant facility with plenty of remaining growth potential. As such, the non-development alternatives will not be considered further in this planning process.

AIRSIDE PLANNING CONSIDERATIONS

Generally, airside issues relate to those airport elements that contribute to the safe and efficient transition of aircraft and passengers from air transportation to the landside facilities at the airport. Planning must factor and balance many airside items, including meeting FAA design parameters of the established design aircraft; instrument approach capability; airfield capacity; runway length; taxiway layouts; and pavement strengths. Each of these elements for TXK was analyzed in the previous chapters. This chapter will examine airside improvement opportunities to meet design standards and/or capacity constraints. A summary of the primary airside planning issues to be considered in this alternatives analysis is listed on the following page.



Airside Planning Considerations

- Meet runway design code (RDC) C-III-2400 standards on Runway 4-22
- Meet RDC B-II-4000 standards on Runway 13-31
- Extend Runway 4-22 to more safely accommodate larger commercial aircraft
- Increase strength rating on both Runway 4-22 and 13-31
- Relocate Automated Surface Observing System (ASOS) and Segmented Circle/Wind Cone outside the runway visibility zone (RVZ)
- Consider corrective measures for non-standard taxiway design

AIRFIELD DESIGN STANDARDS

As a primary commercial service airport in the FAA's *National Plan of Integrated Airport Systems* (NPIAS), TXK should be capable of safely accommodating all commercial service aircraft operating there now and in the future. The critical design aircraft analysis in Chapter Two concluded that Runway 4-22 should meet Runway Design Code (RDC) C-II-2400 design standards in the existing condition and C-III-2400 in the future condition, which coincides with regular use by Bombardier CRJ-700 and Embraer ERJ-175 regional jet aircraft, respectively.

Crosswind Runway 13-31 should meet RDC B-II-4000 design standards, which coincides with regular use by mid-size business jet and turboprop aircraft, such as the Beechcraft King Air family of turboprops and most of the Cessna Citation and Dassault Falcon family of business jets, among many others. The ultimate condition for Runway 13-31 includes improving the published instrument approaches for one or both runways to $\frac{3}{4}$ -mile visibility minimums.

RUNWAY LENGTH

The runway length analysis in the previous chapter concluded that the existing length of Runway 4-22 (6,601 feet) is capable of safely accommodating most commercial and business jet aircraft currently operating at TXK. However, during hot summer periods, some larger aircraft must depart from TXK with restricted payloads (less fuel/passengers/freight), which can limit non-stop destination distances. Furthermore, businesses expressing interest in locating their operations and the introduction of air cargo at TXK would result in operations by larger aircraft, such as various Boeing wide-body jets. To safely accommodate these types of aircraft, additional runway length is required. Previous planning has considered an extension to Runway 4-22, with the current ALP showing a 499-foot extension to the Runway 4 end for a full length of 7,100 feet. The alternatives to follow will consider a variety of extension options to meet the needs of existing and future users.

Crosswind Runway 13-31 has a current length of 5,200 feet and is adequate to safely accommodate most small- to mid-size business jets and turboprop aircraft. The wind coverage analysis performed in the previous chapter determined that the primary runway exceeds minimum crosswind coverage requirements, and therefore, Runway 13-31 may become ineligible for funding through AIP. During

situations where a business jet may require a longer runway, Runway 4-22 is sufficiently long enough (before any extension) to provide safe operations. Currently, no extension to Runway 13-31 is recommended. Ultimately, if the FAA determines that Runway 13-31 is ineligible for AIP funding, the maintenance of the runway may fall on the airport. The alternatives presented will consider the continued operation of Runway 13-31 as well as the potential closure of Runway 13-31 in lieu of a taxiway.

Additionally, an evaluation of the approach surface to Runway 13 identified that the current threshold displacement of 641 feet exceeds what would be required under current standards. Discussion with airport staff indicated that the displacement was put in place to provide proper clearance over the railway located approximately 490 feet beyond the end of the runway. The following scenarios were evaluated based on eliminating the displaced threshold entirely:

- Adjusting the elevation of the railway by a vertical distance of 23 feet; accounting for the height of trains traversing the approach surface, and an ultimate $\frac{3}{4}$ -mile instrument approach (34:1 approach slope) to Runway 13, the railway would penetrate the approach surface by only 0.24 feet.
- If the instrument approach minimums to Runway 13 remain at 1-mile or greater (20:1 approach slope), the railway does not penetrate the approach surface.
- The railway does not penetrate the departure surface (40:1 slope).
- Runway 13 has 300 feet of runway safety area (RSA) prior to the end of the runway; therefore, a displacement is not required to meet RSA standards.

Based on this evaluation, the displacement to Runway 13 could be eliminated entirely, which would increase the usable Runway 13 length for landing operations to the full length of 5,200 feet.

The facility requirements analysis concluded that the available lengths of the primary and crosswind runway are adequate for existing users. Additional length on the primary runway may become necessary in the future depending on how the commercial and GA aircraft fleet mix changes and grows. An extension to the crosswind runway was deemed unnecessary and possibly unsupported by the FAA. For these reasons, the alternatives to follow consider extensions to the primary runway so that the airport is prepared in the future should demand for an extension materialize, as well as maintaining the crosswind runway or converting the surface to a taxiway. At a minimum, planning for runway extensions allows the TRAA to develop land use and zoning policies that limit the potential for encroaching developments that would restrict future airport expansion.

TAXIWAY CONFIGURATION

There are several existing non-standard taxiway geometry conditions that need to be addressed. These non-standard conditions include:

1. The current commercial terminal apron provides direct access to both runways.
2. Taxiways B and C intersect their runways at acute angles.
3. Taxiway A1/D1 intersects with Runway 4-22 in the high-energy area.
4. The holding bay on Taxiway B prior to Runway 22 is of non-standard design.

Each of these conditions can lead to pilots inadvertently taxiing onto the runway and causing a runway incursion, and other potentially dangerous airfield safety concerns. Each of these conditions is addressed in the airside alternatives to follow.

AIRSIDE ALTERNATIVES

Five airfield alternatives have been prepared to address the issues outlined above. The details of each alternative are described below, along with the alternative's associated advantages and disadvantages.

AIRSIDE ALTERNATIVE 1

Depicted on **Exhibit 4A**, Airside Alternative 1 considers improvements to the airfield based on a minimally recommended ultimate length of 7,101 feet. This includes a 500-foot extension of the primary runway to the south and no extension of the crosswind runway. The terrain off the end of Runway 4 is relatively flat, which would make an extension in this direction easier and cheaper to construct than off the Runway 22 end, where the terrain drops off considerably.

Runway 4-22 | A 500-foot extension of Runway 4-22 to the south results in a full length of 7,101 feet, which would allow a Bombardier CRJ-700 or Embraer E170 to takeoff at maximum takeoff weight (MTOW) during the hottest periods of the summer and would meet the needs of various maintenance/repair/overhaul (MRO) operators that have expressed interest in starting service at TXK. An extension of the runway would involve several connected projects, including:

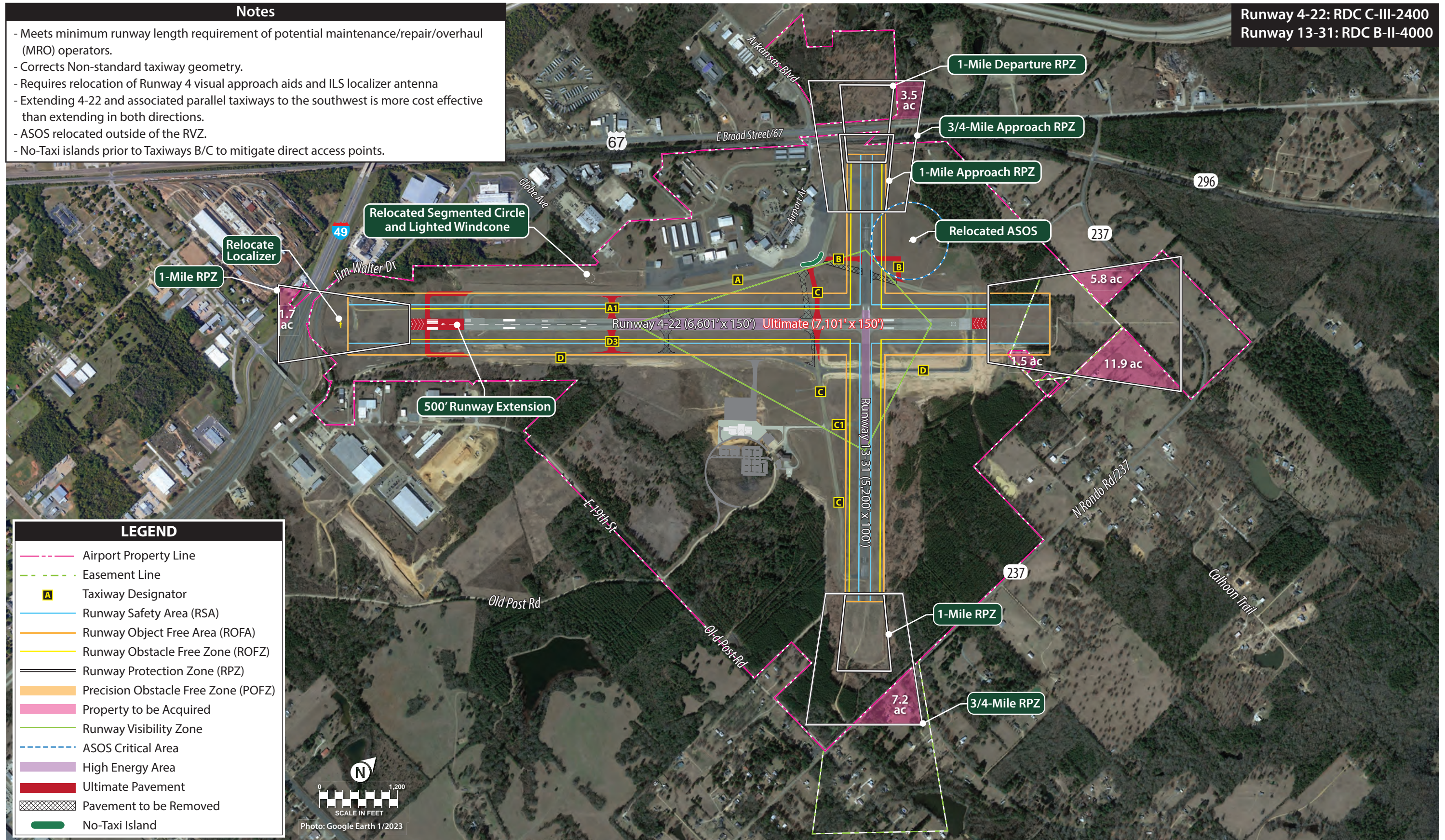
- An extension of Taxiways A and D
- Relocation of the instrument landing system (ILS) localizer antenna
- Relocation of the visual approach slope indicator (VASI-4) or installation of a newer precision approach path indicator (PAPI-4) visual approach aid system
- Acquisition (fee simple/easement) of 1.7 acres of property within the shifted runway protection zone (RPZ). The shifted RPZ would extend over Interstate 49 and L.E. Gilliland Road, as well as a park adjacent to the Lantz Lurry Juvenile Detention Center. While there are no structures within the park that would obstruct the approach surface of the runway, public parks are not generally compatible land uses within an RPZ. Furthermore, while public roadways are generally also not compatible land uses within an RPZ, the FAA has placed the ultimate responsibility of ensuring safe clearways of an RPZ with the airport.
- Addition of blast pads measuring 200 feet wide and 200 feet long to both ends of Runway 4-22

Runway 13-31 | The crosswind runway is maintained at its current length in this alternative. It will still be capable of accommodating its critical design aircraft and most small- to mid-size business jet aircraft. This alternative presents the possibility of establishing $\frac{3}{4}$ -mile instrument approaches on both runway ends. Establishing ownership control over both approach RPZs would require the acquisition of approximately 10.7 acres. E. Broad Street/U.S. Highway 67 and N. Rondo Road would be located within the larger RPZs associated with lowered instrument approach capabilities. This would increase the utility of the crosswind runway during times of poor weather conditions or when the winds might favor Runway 13-31.

Notes

- Meets minimum runway length requirement of potential maintenance/repair/overhaul (MRO) operators.
- Corrects Non-standard taxiway geometry.
- Requires relocation of Runway 4 visual approach aids and ILS localizer antenna
- Extending 4-22 and associated parallel taxiways to the southwest is more cost effective than extending in both directions.
- ASOS relocated outside of the RVZ.
- No-Taxi islands prior to Taxiways B/C to mitigate direct access points.

Runway 4-22: RDC C-III-2400
Runway 13-31: RDC B-II-4000



LEGEND

- Airport Property Line
- Easement Line
- A Taxiway Designator
- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Runway Obstacle Free Zone (ROFZ)
- Runway Protection Zone (RPZ)
- Precision Obstacle Free Zone (POFZ)
- Property to be Acquired
- Runway Visibility Zone
- ASOS Critical Area
- High Energy Area
- Ultimate Pavement
- Pavement to be Removed
- No-Taxi Island



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Taxiway Improvements | This alternative corrects several non-standard taxiway conditions. A “no-taxi” island is established prior to Taxiways B and C to mitigate the direct access points from the current terminal apron. The routes of both taxiways are also improved so that they intersect with their respective runways at 90-degree angles, which optimizes the visibility of aircraft operating on the runway for those aircraft waiting to cross. Taxiway A1/D3 is relocated roughly 700 feet south from its current location so that it is outside the high-energy crossing zone of Runway 4-22.

Ancillary Improvements | The ASOS weather equipment and the segmented circle/wind cone assembly are relocated outside the RVZ according to FAA design standards.

AIRSIDE ALTERNATIVE 2

Depicted on **Exhibit 4B**, Airside Alternative 2 considers the same ultimate length of 7,101 feet for Runway 4-22. In order to minimize the impacts to the south – including the need to relocate the ILS localizer – this alternative extends the Runway 22 end by 500 feet. As mentioned previously, the sloping terrain to the north of the runway would make this project more challenging. The pavement itself would be constructed on the current RSA, which is already graded and level; however, land beyond the current RSA boundary would need to be filled and graded to meet ultimate RSA standards that coincide with the runway extension.

Runway 4-22 | A 500-foot extension of Runway 4-22 to the north results in a full length of 7,101 feet, just as in Airside Alternative 1. An extension of the runway to the north involves several connected projects, including:

- An extension of Taxiways B and D
- Relocation of the instrument landing system (ILS) glide slope antenna
- Relocation of the medium intensity approach lighting system with runway alignment indicator lights (MALSR)
- Acquisition (fee simple/easement) of 23.8 acres of property (adjacent to N Rondo Road and Heights Road) within the shifted runway protection zone (RPZ). It is likely that a portion of the shifted RPZ would also extend over residences (the FAA generally does not allow places that accommodate the gathering of people – such as residential or commercial buildings – within RPZs. While an aviation easement may suffice to prevent upward growth into the RPZ in open lands (parks), it is generally recommended that airports acquire any houses that fall within an RPZ.
- Addition of blast pads measuring 200 feet wide and 200 feet long to both ends of Runway 4-22

Runway 13-31 | The crosswind runway is presented in this alternative in the same way as in Airside Alternative 1, with no change to the runway length. In this alternative, however, only Runway 31 is shown with the optional $\frac{3}{4}$ -mile instrument approach. This requires only 7.2 acres of land to be acquired to maintain positive control over the airspace within the RPZ. Also, if the Runway 13 displaced threshold were eliminated entirely, the approach RPZ shown on the exhibit would be eliminated, with the departure RPZ becoming the approach and departure RPZ.

Taxiway Improvements | This alternative includes the establishment of a “no-taxi” island prior to Taxiway C to mitigate direct access from the terminal ramp. Taxiway B is removed from its current location at the terminal ramp and constructed as a “T” intersection on Taxiway C, with both taxiways corrected to intersect runways at 90 degrees. This option could require immediate turns by an aircraft taxiing to Runway 22 from the terminal ramp, potentially causing confusion for a pilot and increasing the chances of an incident. Taxiway A1/D2 is relocated approximately 1,580 feet to the south to remove the high-energy crossing on Runway 4-22. In this location, the A1/D2 exits would better serve larger/heavier aircraft landing on Runway 22. These aircraft, which might have missed the exits in their current location, will have an opportunity to decrease speed by this point to make the turn off the runway rather than taxi to the end of the runway. This increases the capacity of the runway by reducing runway occupancy times.

Ancillary Improvements | The ASOS weather equipment and the segmented circle/wind cone assembly are relocated outside the RVZ according to FAA design standards.

AIRSIDE ALTERNATIVE 3

Depicted on **Exhibit 4C**, Airside Alternative 3 considers an extension of Runway 4-22 to 7,101 feet, splitting the extension in both directions while also avoiding the relocation of the ILS localizer and minimizing the amount of land acquisition necessary with the shifted RPZs.

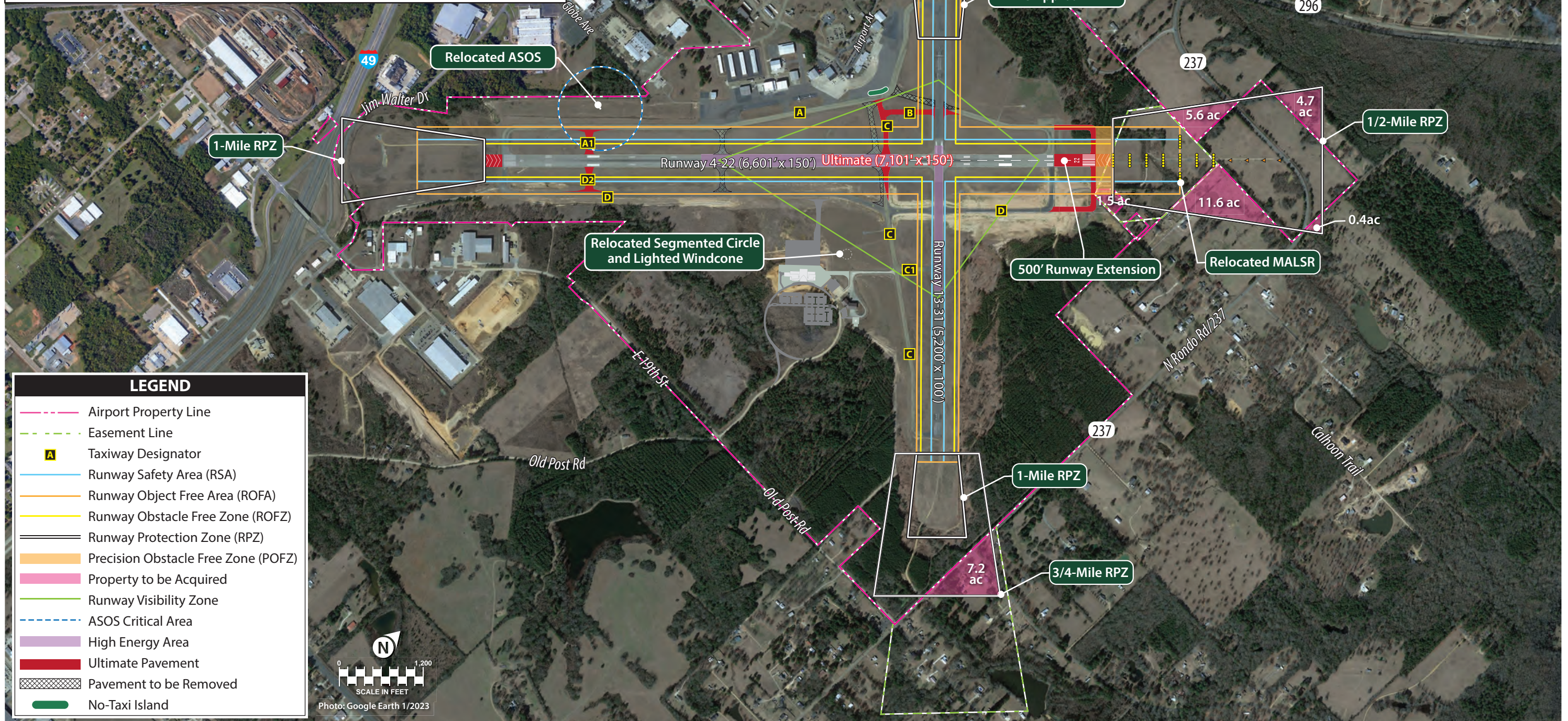
Runway 4-22 | The 500-foot extension of Runway 4-22 is derived from the combination of a 360-foot extension south and a 140-foot extension north. While this minimizes the impacts of the previous two alternatives – such as relocating the localizer antenna on the Runway 4 end and the amount of groundwork needed to meet RSA standards to the north – it increases construction time and costs by requiring changes to both ends of the runway and associated fixtures. The extension of the runway in both directions would involve several connected projects, including:

- An extension of Taxiways A, B, and D
- Relocation of the instrument landing system (ILS) glide slope antenna
- Relocation of the visual approach slope indicator (VASI-4) or installation of a newer precision approach path indicator (PAPI-4) visual approach aid system
- Relocation of the medium intensity approach lighting system with runway alignment indicator lights (MALSR)
- Acquisition (fee simple/easement) of 20.4 acres of property within the shifted runway protection zones (RPZs). This includes approximately 0.3 acres of land near the Lantz Lurry Juvenile Detention Center and 20.1 acres of land north of Runway 22 adjacent Heights Road. It is likely that a portion of the shifted RPZ would also extend over residences. The FAA generally does not allow places that accommodate the gathering of people – such as residential or commercial buildings – within RPZs. While an aviation easement may suffice to prevent upward growth into the RPZ in open lands (parks), it is generally recommended that airports acquire any houses that fall within an RPZ.
- Addition of blast pads measuring 200 feet wide and 200 feet long are to both ends of Runway 4-22

Notes

- Meets minimum runway length requirement of potential maintenance/repair/overhaul (MRO) operators.
- Corrects Non-standard taxiway geometry.
- Requires relocation of visual approach aids, glideslope and MALSR for Runway 22.
- Extending 4-22 and associated parallel taxiways to the northeast is more cost effective than extending in both directions.
- ASOS relocated outside of the RVZ.
- Segmented circle and lighted windcone relocated for Taxiway B/C reroute.
- No-Taxi island prior to Taxiway C to mitigate direct access point.

Runway 4-22: RDC C-III-2400
Runway 13-31: RDC B-II-4000



LEGEND

- Airport Property Line
- Easement Line
- A Taxiway Designator
- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Runway Obstacle Free Zone (ROFZ)
- Runway Protection Zone (RPZ)
- Precision Obstacle Free Zone (POFZ)
- Property to be Acquired
- Runway Visibility Zone
- ASOS Critical Area
- High Energy Area
- Ultimate Pavement
- Pavement to be Removed
- No-Taxi Island



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Notes

- Meets minimum runway length requirement of potential maintenance/repair/overhaul (MRO) operators.
- Corrects Non-standard taxiway geometry.
- Requires relocation of visual approach aids for both ends of Runway 4-22 and glideslope and MALSR for Runway 22.
- Extending 4-22 and associated parallel taxiways in both directions increases construction cost and time.
- ASOS relocated outside of the RVZ.
- No-Taxi islands prior to Taxiways B/C to mitigate direct access points.

Runway 4-22: RDC C-III-2400
Runway 13-31: RDC B-II-4000



LEGEND

- Airport Property Line
- Easement Line
- A Taxiway Designator
- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Runway Obstacle Free Zone (ROFZ)
- Runway Protection Zone (RPZ)
- Precision Obstacle Free Zone (POFZ)
- Property to be Acquired
- Runway Visibility Zone
- ASOS Critical Area
- High Energy Area
- Ultimate Pavement
- Pavement to be Removed
- No-Taxi Island



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Runway 13-31 | The crosswind runway is maintained at its current length in this alternative. It will still be capable of accommodating its critical design aircraft and most small- to mid-size business jet aircraft. This alternative presents the possibility of establishing $\frac{3}{4}$ -mile instrument approaches on both runway ends while also eliminating the Runway 13 displacement. This would require the total acquisition of approximately 15.8 acres. E. Broad Street/U.S. Highway 67 and N. Rondo Road would be located within the larger RPZs associated with lowered instrument approach capabilities. This would increase the utility of the crosswind runway during times of poor weather conditions or when the winds might favor Runway 13-31.

Taxiway Improvements | A “no-taxi” island is established prior to Taxiways B and C to mitigate the direct access points from the terminal apron. The routes of both taxiways are also adjusted so that they intersect their respective runways at 90-degree angles, which optimizes the visibility of runway operations for waiting aircraft. Taxiway A1/D3 is relocated roughly 700 feet south from its current location so that it is outside of the high-energy crossing zone of Runway 4-22.

Ancillary Improvements | The ASOS weather equipment and the segmented circle/wind cone assembly are relocated outside the RVZ according to FAA design standards.

AIRSIDE ALTERNATIVE 4

Depicted on **Exhibit 4D**, Airside Alternative 4 considers the maximum extension of Runway 4-22 while relocating the ILS localizer without impacting N. Rondo Road. The ultimate length of 8,301 feet is adequate for 80-90 percent useful loads of most commercial service aircraft and would also satisfy length requirements of aircraft utilized by the potential MRO operators.

Runway 4-22 | A total of 1,700 feet is added to Runway 4-22 through a 500-foot extension to the south and a 1,200-foot extension to the north. This alternative would increase both construction time and costs by expanding the runway in two separate locations. Additionally, a $\frac{3}{4}$ -mile instrument approach option for Runway 4 is proposed to increase the utility of the runway during poor weather conditions. The 1,700-foot extension of the runway in both directions would involve several connected projects, including:

- An extension of Taxiways A, B and D
- Relocation of the instrument landing system (ILS) localizer and glide slope antenna
- Relocation of the visual approach slope indicator (VASI-4) or installation of a newer precision approach path indicator (PAPI-4) visual approach aid system
- Relocation of the medium intensity approach lighting system with runway alignment indicator lights (MALSR)
- Acquisition (fee simple/easement) of 34.5 acres of property within the shifted runway protection zones (RPZs). This includes approximately 3.5 acres of land near the UTLX train yard and Lantz Lurry Juvenile Detention Center in conjunction with a $\frac{3}{4}$ -mile instrument approach on Runway 4; an additional 32.5 acres needs to be acquired to the north, adjacent to N Rondo Road
- Addition of blast pads measuring 200 feet wide and 200 feet long to both ends of Runway 4-22

Runway 13-31 | The crosswind runway is converted to a taxiway, opening the northwest and southeast sections for development. This eliminates the RVZ and the ongoing costs of maintaining a runway surface that might not be supported by FAA funding. It would still need to be maintained to taxiway standards and edge lighting would need to be installed.

Taxiway Improvements | Taxiway A is rerouted to a true parallel taxiway to Runway 4-22 by maintaining a uniform separation distance from the runway centerline, providing an increased opportunity to develop the GA side of the airport. A small connector taxiway provides access to Taxiway A from the ramp area while the direct access sections of Taxiways B and C are removed. Taxiway B is removed completely as Taxiway A runs the full length of Runway 4-22 and no designation change should be present. Taxiway C extends from the new section of Taxiway A and crosses Runway 4-22 at a 90-degree angle. Taxiway A1/D1 remains in its current location with a “no-taxi” island installed to correct direct access from the GA hangars.

Ancillary Improvements | Due to the conversion of Runway 13-31 to a taxiway, the RVZ no longer applies and the ASOS may remain in its current location; however, the segmented circle/wind cone lies in the route of the new Taxiway A section and still needs to be relocated.

AIRSIDE ALTERNATIVE 5

Depicted on **Exhibit 4E**, Airside Alternative 5 presents the maximum extension of Runway 4-22 to accommodate 90-100 percent useful loads of most commercial service aircraft. A length of 10,001 feet would require the relocation of N Rondo Road and the greatest amount of land acquisitions to meet design standards and maintain control of land uses within the airport.

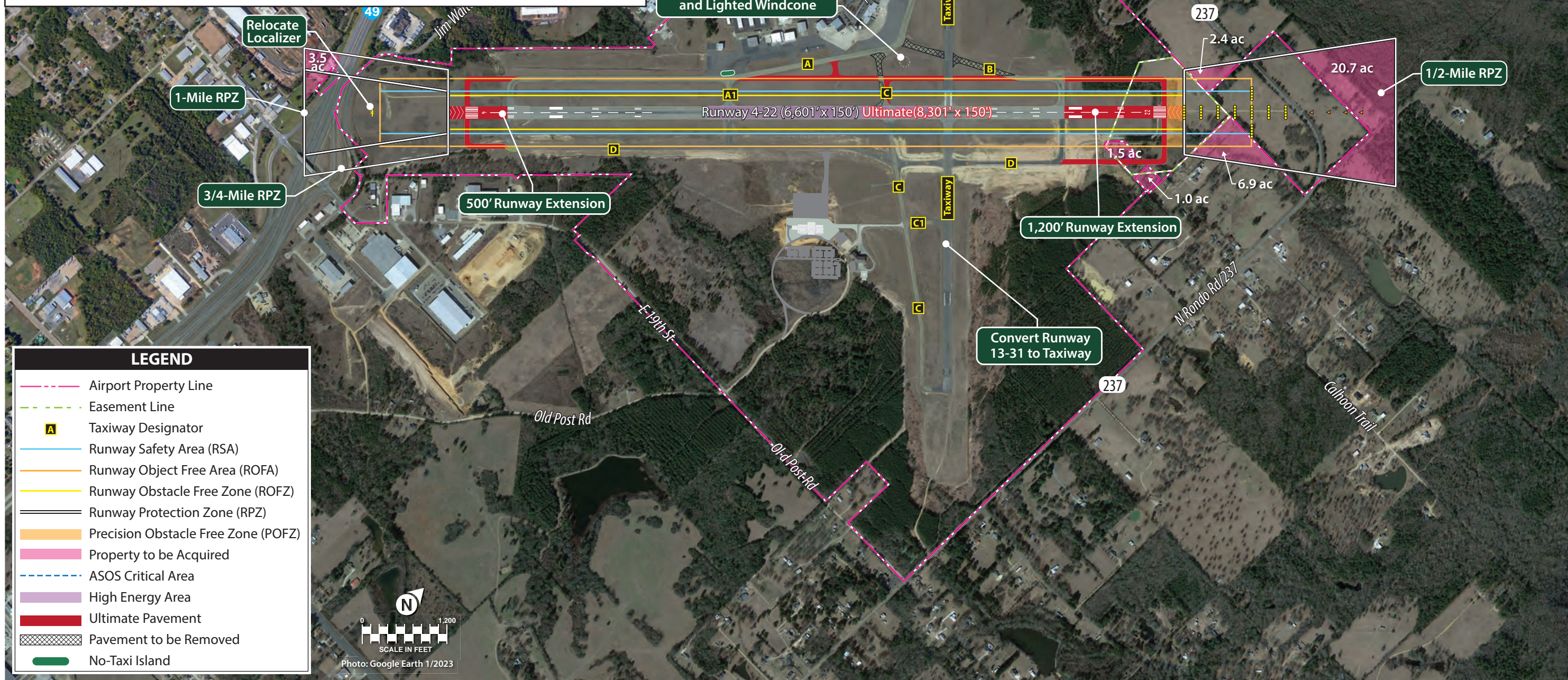
Runway 4-22 | The primary runway is extended 500 feet to the south and 2,900 feet to the north in this alternative, for a full length of 10,001 feet (the longest of each alternative). At this length, the runway’s utility is increased to allow for over 90 percent useful load takeoffs by several Boeing wide-body jets, which were the most demanding aircraft analyzed in the runway length evaluation of Chapter Three. All other commercial aircraft that currently or are anticipated to operate at TXK in the future can take off at MTOW via this length. The 3,400-foot extension of the runway in both directions would involve several connected projects, including:

- An extension of Taxiways A, B and D
- Relocation of the instrument landing system (ILS) localizer and glide slope antenna
- Relocation of the visual approach slope indicator (VASI-4) or installation of a newer precision approach path indicator (PAPI-4) visual approach aid system
- Relocation of the medium intensity approach lighting system with runway alignment indicator lights (MALSR)
- Acquisition (fee simple/easement) of 113.3 acres of property within the shifted runway protection zones (RPZs). This includes approximately 1.7 acres of property near the Lantz Lurry Juvenile Detention Center and 111.6 acres north of the airport; this would include the acquisition of at least one residential property and the rerouting of N Rondo Road
- Addition of blast pads measuring 200 feet wide and 200 feet long to both ends of Runway 4-22

Notes

- Maximum extension of Runway 4-22 without requiring relocation of the localizer antenna array or impacting N Rondo Road. Adequate length for 80%-90% useful loads for most commercial service aircraft.
- Reroutes Taxiway A at uniform separation from Runway 4-22 for full-length. Allows for landside facility expansion on north side.
- Requires relocation of visual approach aids for both ends of Runway 4-22 and glideslope and MALSR for Runway 22.
- Extending 4-22 and associated parallel taxiways in both directions increases construction cost and time.
- Segmented circle and lighted windcone relocated for Taxiway A reroute.
- Taxiway A1 remains in place. No-taxi island corrects direct-access point.
- Runway 13-31 is converted to a taxiway opening the southeast side to more landside development and eliminating the runway visibility zone and the need to relocate the ASOS. Reduces ongoing pavement maintenance costs

Runway 4-22: RDC C-III-2400
Runway 13-31: RDC B-II-4000

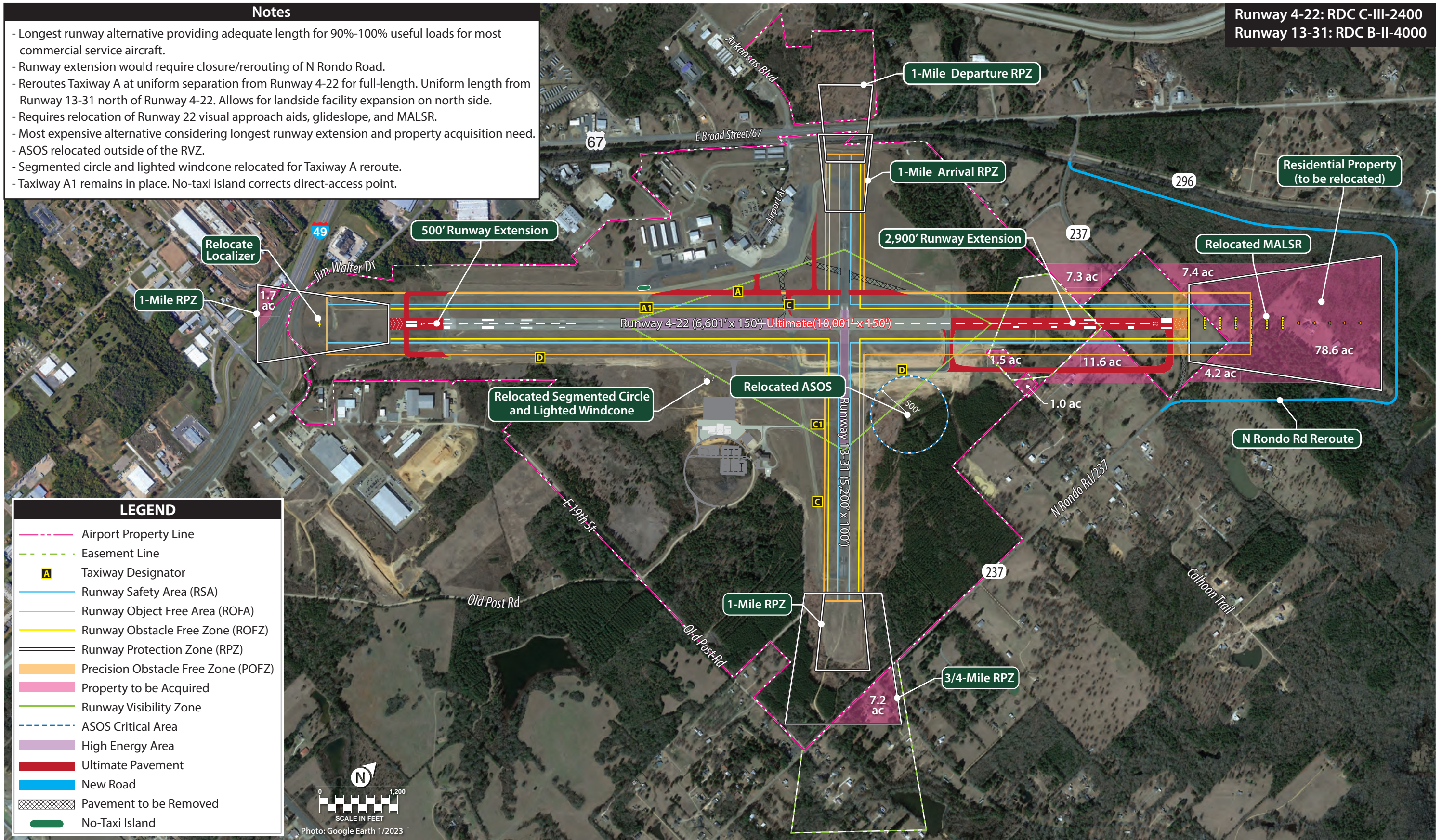


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Notes

- Longest runway alternative providing adequate length for 90%-100% useful loads for most commercial service aircraft.
- Runway extension would require closure/rerouting of N Rondo Road.
- Reroutes Taxiway A at uniform separation from Runway 4-22 for full-length. Uniform length from Runway 13-31 north of Runway 4-22. Allows for landside facility expansion on north side.
- Requires relocation of Runway 22 visual approach aids, glideslope, and MALSR.
- Most expensive alternative considering longest runway extension and property acquisition need.
- ASOS relocated outside of the RVZ.
- Segmented circle and lighted windcone relocated for Taxiway A reroute.
- Taxiway A1 remains in place. No-taxi island corrects direct-access point.

Runway 4-22: RDC C-III-2400
Runway 13-31: RDC B-II-4000



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Runway 13-31 | The crosswind runway is presented in this alternative with no change to its length. A ¾-mile instrument approach is proposed for Runway 31, requiring the acquisition of roughly 7.2 acres of land adjacent to N. Rondo Road.

Taxiway Improvements | Taxiway A is realigned to be a true parallel taxiway to Runway 4-22 by maintaining uniform separation distance from the runway. Two connector taxiways provide access to the new Taxiway A segment from the ramp area. The direct access section of Taxiway C is removed from the terminal ramp in favor of a connection to the new section of Taxiway A. Taxiway B is removed entirely. Taxiway C extends from the new section of Taxiway A and crosses Runway 4-22 at a 90-degree angle. Taxiway A1/D1 remains in its current location with a “no-taxi” island installed to correct direct access from the GA hangars.

Ancillary Improvements | Due to the largest change in the length of Runway 4-22, the dimensions of the RVZ are adjusted; however, the ASOS and segmented circle/wind cone will still need to be relocated to meet FAA design standards for RVZs.

AIRSIDE ALTERNATIVES SUMMARY

The five different alternatives presented in this section offer options for extending the primary runway at TXK from 7,101 feet up to 10,001 feet. Variations of length will accommodate larger aircraft at increased useful loads, including the existing and ultimate critical design aircraft (CRJ-700 and ERJ-170/175, respectively) and could also satisfy length requirements of larger wide-body jet aircraft used by potential MRO operators. Improvements to taxiway geometry and mitigation of non-standard conditions are also shown. In all but one alternative, the ASOS and segmented circle/wind cone are shown to be relocated to different locations on the airfield to maintain an unobstructed RVZ.

LANDSIDE PLANNING CONSIDERATIONS

Landside development alternatives include consideration of the GA services and support areas, as well as potential revenue enhancement opportunities. Landside considerations for TXK are listed below.

Landside Planning Considerations

- Terminal area improvements
- Identify locations for hangar development
- Development potential for FBO or specialized aviation service operators (SASO)-related facilities
- Identify locations for incoming large-scale maintenance/repair/overhaul (MRO) businesses
- Development potential for future air cargo operations
- Non-aviation use development for revenue enhancement
- Identify land areas optimal for future acquisition

For non-aviation-related developments on airport property, it is important to note that the FAA typically requires airports to receive approval through a land use release to lease airport-owned land for non-aviation-related purposes. The FAA stipulates that all land with reasonable airside access should be used or reserved for aviation purposes. Those areas on the airport not readily linked to the airfield can be considered favorably in a land use release. In some cases, the FAA will be hesitant to release land use if the airport has limited development areas near the airfield system. In TXK's case, there is a surplus of land for aviation uses well beyond the scope of this master plan's 20-year planning period.

The alternatives to follow focus on maximizing the development potential of existing airport property, but also consider growth potential beyond the existing property boundary. Each alternative meets FAA design standards and satisfies long-term horizon facility demand identified in the previous chapter. The landside element of the Recommended Master Plan Concept, to be presented in the next chapter, may be one of these alternatives or, more likely, will be a combination of elements from each of them.

TERMINAL AREA

As outlined in the facility requirements chapter, the new terminal building (expected to open in 2024) has a gross building area of 39,300 square feet (sf) and is adequately sized for the current and future level of enplanements. The terminal has two gates, which should be adequate to meet the long-term enplanement level.

Other area support facilities located adjacent to the terminal include a public parking lot which provides approximately 383 spaces, an employee parking lot which provides 42 spaces, and the airport's new aircraft rescue and firefighting (ARFF) building. The facility requirements analysis found these facilities to be adequately sized for current and future activity levels.

With the completion of the new terminal and ARFF building, commercial service operations and users are well-served throughout the long term. As consideration for continued growth beyond the 20-year horizon, an expanded parking area is shown in each alternative. A new operations building is also presented in each landside alternative as a replacement for the aging administration and operations facilities at TXK.

GENERAL AVIATION FACILITIES

The core existing GA facilities at TXK are located in the western area of the airport, consisting of an FBO and a variety of aircraft storage hangars and aprons. GA needs identified in the previous chapter focus on additional aircraft storage hangar capacity for both private aircraft storage and for aviation-related business (FBOs/SASOs). Hangar development takes on a variety of sizes corresponding with several different intended uses.

Commercial GA activities are essential to providing the necessary services on an airport. This includes privately owned businesses involved with (but not limited to) aircraft rental and flight training; aircraft charters; aircraft maintenance; line service; and aircraft fueling. These types of operations are commonly

referred to as FBOs or SASOs, and the facilities associated with such businesses include large conventional type hangars that hold several aircraft. High activity levels often characterize these operations, with a need for apron space for the storage and circulation of aircraft. These facilities are best placed along ample apron frontage with good visibility from the runway system for transient aircraft. Utility services and vehicle parking areas are needed for these types of facilities.

Aircraft hangars used for the storage of smaller aircraft primarily include T-hangars or linear box hangars. Since storage hangars often have lower levels of activity, these types of facilities can be located away from the primary apron areas in more remote locations of the airport. Limited utility services are needed for these areas.

Other types of hangar development can include executive hangars for accommodating either one larger aircraft or multiple smaller aircraft. Typically, these types of hangars are used by corporations with company-owned aircraft or by an individual or group of individuals with multiple aircraft. These hangar areas typically require all utilities and segregated roadway access.

Currently, there is approximately 181,500 sf of hangar space (including maintenance area) provided on the airport, made up of a combination of the hangar types previously discussed. The various landside alternatives to follow consider new GA facilities in various locations throughout the airport.

MRO & AIR CARGO OPERATORS

In the previous two chapters, it was discussed that aircraft maintenance/repair/overhaul (MRO) businesses have indicated plans to establish locations at TXK. Generic layouts for MRO operations are shown on each of the landside alternatives based on input from the MROs. The introduction of air cargo operations was also presented; facilities to accommodate these operators are also included in these alternatives. The ultimate location and orientation of each operation may be up to the determination of the operator, TRAA, or both.

LAND USE RESERVES

Within each alternative, land not shown as planned development is, by default, reserved for other future use. As mentioned previously, any non-aeronautical uses are subject to review and approval by the FAA. These land use “reserves” identify potential locations for development of certain facilities beyond the planning horizon of this master plan. The reserves in the alternatives are separated by specific demand: aeronautical, non-aeronautical, and cargo. Furthermore, any land that is not currently owned by the airport is identified for potential expansion as opportunities present. As with the other elements of the landside alternatives, land uses may be determined and planned as specific demand materializes.

LANDSIDE ALTERNATIVES

Three landside alternatives have been prepared to address the elements previously discussed. The details of each alternative are described below.

LANDSIDE ALTERNATIVE 1

Exhibit 4F presents the first Landside Alternative, which includes approximately 174,640 sf of new hangar development and the widening of Taxiways A, B, C, and D to 75 feet to accommodate larger commercial service and air cargo aircraft.

GA Facilities | GA hangar development in this alternative includes the construction of a dedicated 2,500-sf GA terminal building along Globe Avenue for based tenants. A terminal such as this may be designed to be accessed only by those permitted to use it, by way of keycard, code, or other method. The location adjacent to the existing T-hangar facilities provides a common area for pilots to meet other pilots and passengers without requiring the use of an FBO. Additional development includes approximately 117,040 sf of new shade and T-hangar buildings for smaller piston-powered based aircraft, nine new 6,400-sf executive hangars, and parking facilities extending from Airport Drive. A new self-service fuel station is also shown at the edge of an expanded parking apron in the GA area.

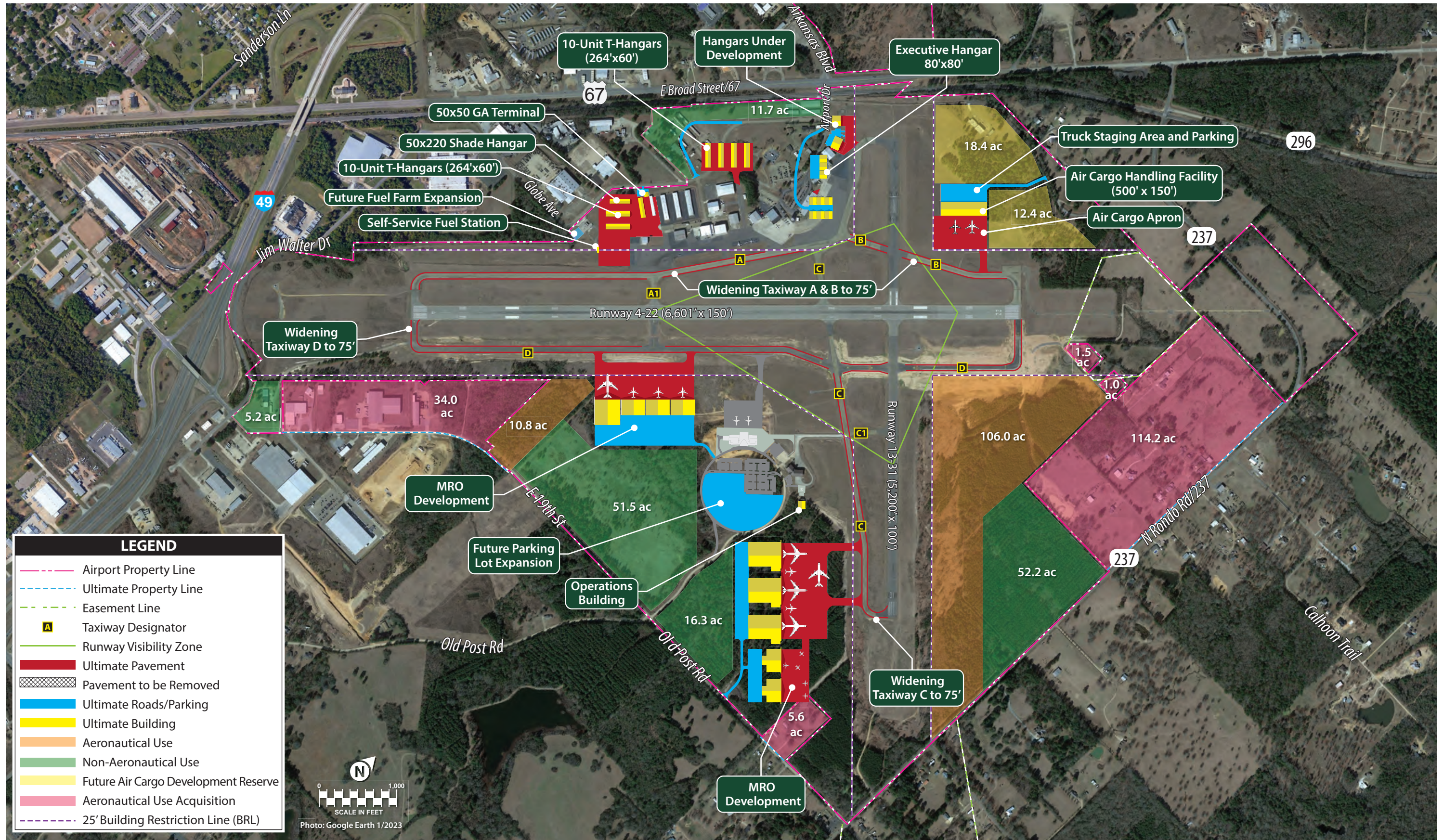
MRO & Air Cargo Facilities | Two potential MRO facilities are located at the southern end of the airport adjacent to the passenger terminal facility; access to the ramps and hangars are provided by either Taxiway C or D. Vehicle access may be provided via a dedicated, separate drive extending off Old Post Road or by tying into the new airport circle drive.

An air cargo handling facility (roughly 75,000 sf in size) and an apron capable of handling several mid-sized cargo aircraft are proposed at the north end of the airport. Aircraft access is provided by Taxiway B, while trucks are provided with a parking/staging lot off Airport Road. The location of the air cargo facility in this alternative provides separation between it and other operations at the airport, as well as providing couriers with an easy route out of the airport area to major surface roads.

Land-Use Reserves | The airport has the opportunity for expansion to the east and south along N. Rondo Road and Old Post Road/E. 19th Street. This alternative suggests that a total of 156.3 acres could be acquired along these two surface boundaries; approximately 2.5 acres of this area is already planned to be acquired as part of the airside development alternatives.

Other land use reserves in this alternative include roughly 30.8 of future air cargo land uses in the air cargo development area, 116.8 acres of aeronautical development land use along the northeastern portion of Runway 13-31 and Taxiway D, and 125.2 acres of non-aeronautical land use along both N. Rondo Road and Old Post Road/E. 19th Street. An additional 11.7 acres of non-aeronautical land use is shown along a rerouted Globe Avenue, with the abandoned military facilities being redeveloped into revenue-generating opportunities.

Ancillary Improvements | This alternative proposes relocating the self-serve fuel station with an expanded fuel farm to accommodate aviation activity demand beyond the 20-year planning period.



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LANDSIDE ALTERNATIVE 2

Exhibit 4G presents Landside Alternative 2, which includes approximately 160,960 sf of new hangar development. This alternative proposes the widening of Taxiway D only (to 75 feet); this alternative presumes the conversion of Runway 13-31 to a new taxiway; in which case it would be wide enough to accommodate larger aircraft.

GA Facilities | GA hangar development in this alternative includes a separation of smaller, single- and multi-engine piston aircraft from larger, turbine-powered based aircraft with a dedicated area of four 10-unit T-hangars at the north end of the airport. This avoids the possibility of “burying” hangar complexes so far removed from the movement area it becomes inconvenient to pilots. At the old passenger terminal apron, the terminal building is removed, large conventional hangars are installed, and 17 new 3,600-sf box hangars are planned further south in the GA area.

MRO & Air Cargo Facilities | The new MRO facilities in this alternative are located on either side of Runway 13-31 (which is a taxiway in this alternative) with ramp access provided by Taxiway D. Ground access to the north MRO development is provided by N. Rondo Road, while the south MRO complex has an automobile drive connected to the airport circle drive.

The air cargo facilities in this alternative are located at the south end of Runway 4-22, adjacent to the MRO development. The handling facility planned is approximately 45,000 sf in size; the truck parking and staging area extends from E. 19th Street. This location, while closer to other aviation activities, provides virtually immediate access to Interstate 49.

Land-Use Reserves | The airport has the opportunity for expansion to the east and south along N. Rondo Road and Old Post Road/E. 19th Street. This alternative suggests a total of 156.3 acres could be acquired along these two surface boundaries; approximately 2.5 acres of this area is already planned to be acquired as part of the airside development alternatives. The south MRO and air cargo facilities are shown as developed on some of this land to be acquired.

Approximately 253.3 acres of aeronautical development land use is proposed, with the increase mainly due to the closure and conversion of Runway 13-31 to a taxiway. Without two separate paved surfaces with dedicated safety areas, additional development may be planned. A total of 70.4 acres of non-aeronautical land use is shown across the east and west sides of the airport, including redevelopment of the military structures along Globe Avenue.

Ancillary Improvements | This alternative shows an expanded fuel farm to meet future demand.

LANDSIDE ALTERNATIVE 3

Exhibit 4H presents the third Landside Alternative, which includes approximately 171,200 sf of new hangar development and the widening of Taxiway D to 75 feet to accommodate larger commercial service and air cargo aircraft. This alternative also includes expansion of the GA aprons, the realigned Taxiway A, and new connector taxiways.

GA Facilities | Similar to the previous alternative, GA development is proposed to the north. A hangar complex consisting of 20 6,400-sf executive hangars is shown with new taxiways connecting the aprons to Runway 13-31 and Taxiway A. Three new FBO hangars are located along Globe Avenue adjacent to the fuel farm and T-hangars, totaling roughly 43,200 sf.

MRO & Air Cargo Facilities | The planned MRO development complexes are shown in this alternative on the eastern edge of the airport. Just as in the previous alternative, one is located off N. Rondo Road with access to Taxiway D. The second complex is located east of the terminal building with access to Taxiway C.

The current passenger terminal is redeveloped into a 28,750-sf air cargo handling facility with truck staging and parking provided by existing parking areas on Airport Drive. The advantage of this option is the reuse of the commercial apron area, removing the need for construction of a new cargo ramp.

Land-Use Reserves | The airport has the opportunity for expansion to the east and south along N. Rondo Road and Old Post Road/E. 19th Street. This alternative suggests a total of 156.3 acres could be acquired along these two surface boundaries; approximately 2.5 acres of this area is already planned to be acquired as part of the airside development alternatives.

Other land use reserves in this alternative include roughly 83.0 acres of aeronautical development land use between the passenger terminal/ARFF and MRO facilities, and 118.7 acres of non-aeronautical land use along both Old Post Road and Globe Avenue. This alternative also proposes the possibility of reserving roughly 21 acres of land immediately adjacent to the terminal for future terminal support facilities, such as expanded apron spaces, vehicle parking lots, or terminal facility expansion beyond the long term.

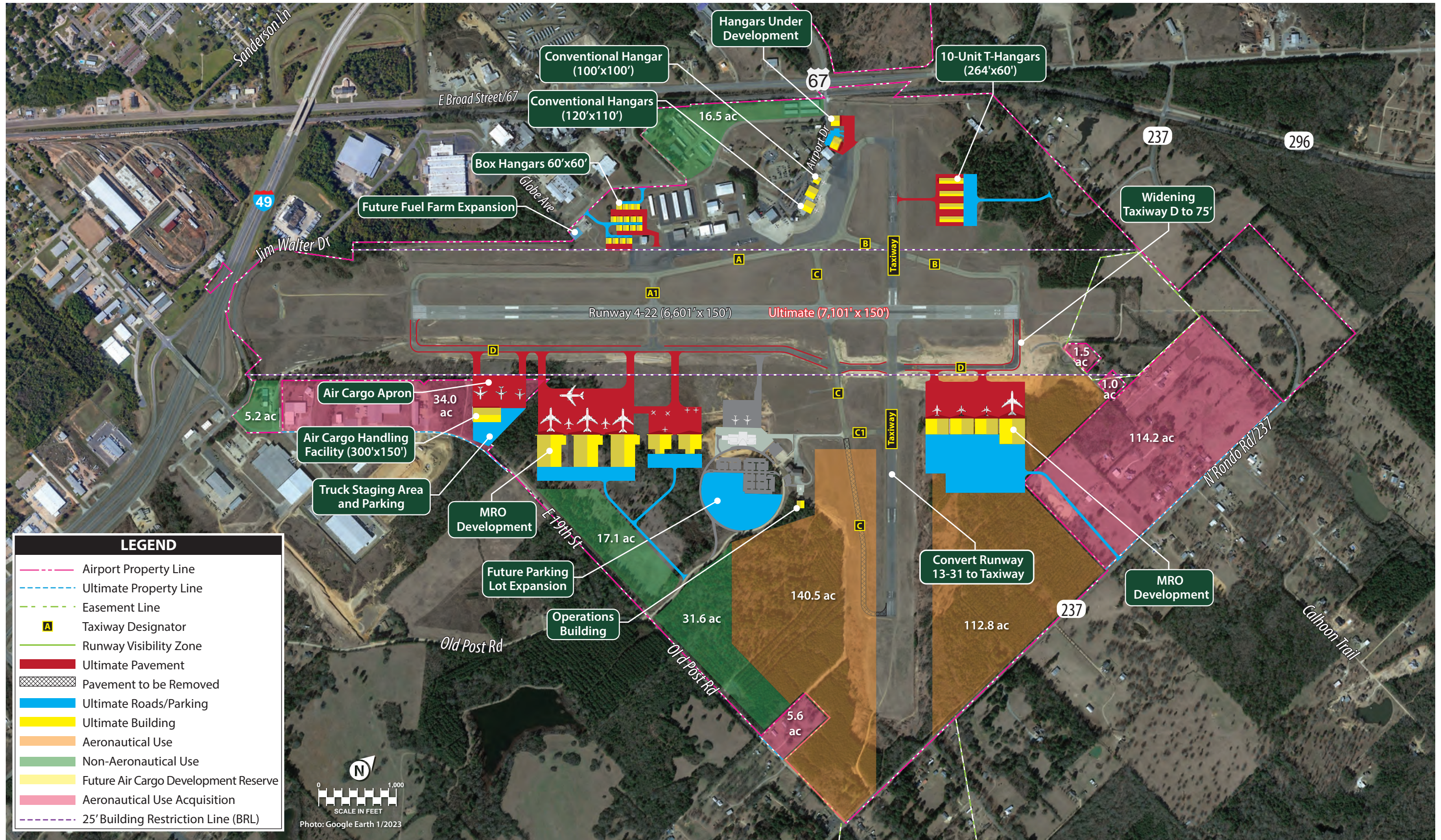
Ancillary Improvements | This alternative proposes an expanded fuel farm to accommodate aviation activity demand beyond the 20-year planning period, as well as relocating the self-serve fuel station to the south GA apron to segregate self-serve fuel activities and provide easy replenishment of the tank from the fuel farm.

ALTERNATIVES SUMMARY

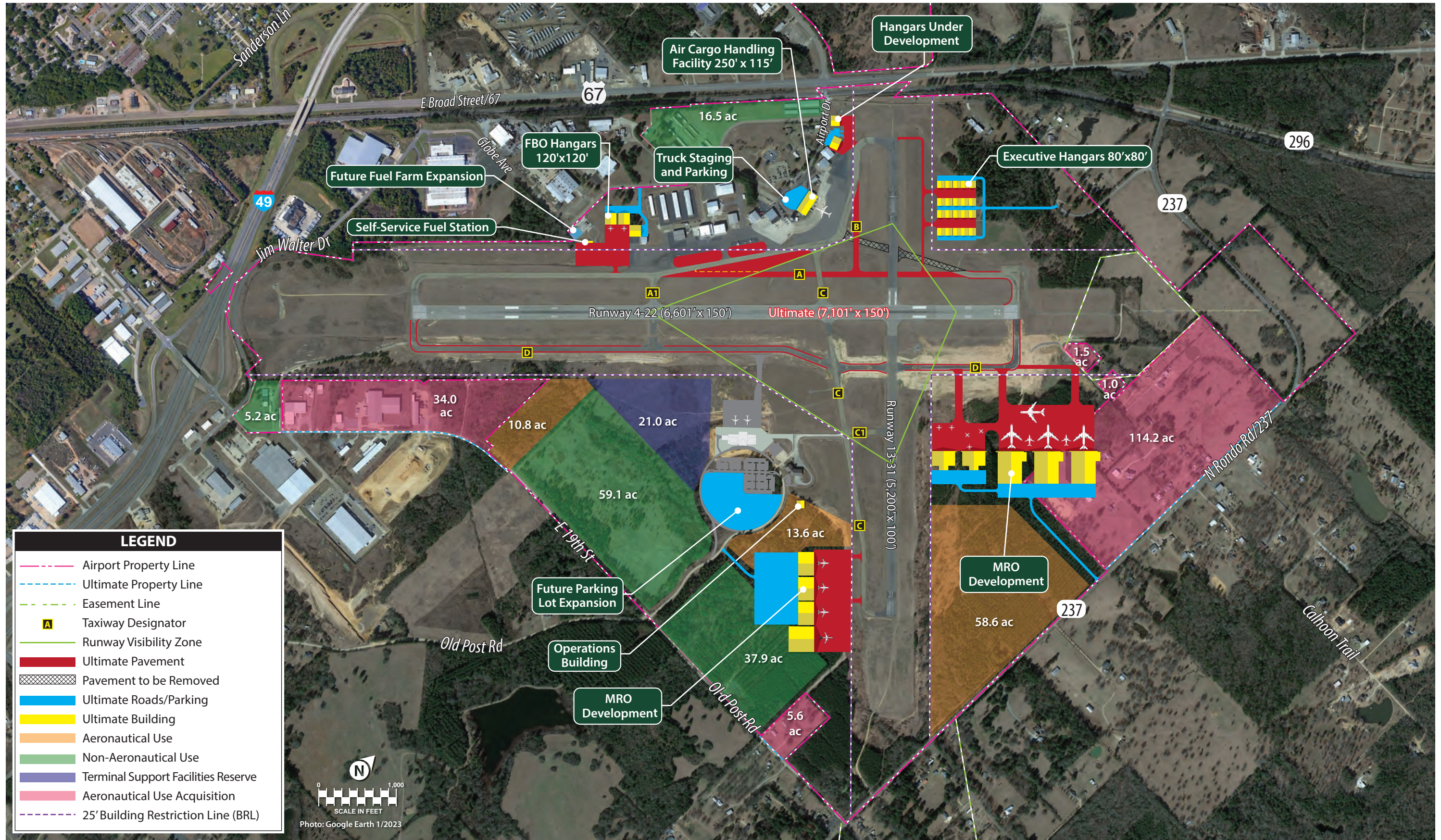
The process used in assessing airside and landside development alternatives involved a detailed analysis of short- and long-term requirements, as well as future growth potential. Current airport design standards were considered at each stage of development.

Several development alternatives related to both the airside and landside have been presented. On the airside, the major considerations involve extending the primary runway, improving the taxiway system, and ensuring all existing and future design standards are met. On the landside, alternatives were presented to consider development potential of incoming aviation businesses and air cargo operations, as well as general aviation and revenue enhancement development within the airport where there is significant potential.

After review by the PAC and the public, a recommended concept will be presented in the next chapter. The resulting plan will represent an airside facility that fulfills safety and design standards and a landside complex that can be developed as demand dictates.



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LEGEND

- Airport Property Line
- Ultimate Property Line
- Easement Line
- A** Taxiway Designator
- Runway Visibility Zone
- Ultimate Pavement
- Pavement to be Removed
- Ultimate Roads/Parking
- Ultimate Building
- Aeronautical Use
- Non-Aeronautical Use
- Terminal Support Facilities Reserve
- Aeronautical Use Acquisition
- 25' Building Restriction Line (BRL)

Photo: Google Earth 1/2023

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