

## CHAPTER FIVE RECOMMENDED MASTER PLAN CONCEPT



The process for the preparation of the Airport Master Plan has included technical efforts in the previous chapters intended to establish the role of Santa Fe Municipal Airport, forecast potential aviation demand, establish airside and landside facility needs, and evaluate options for improving the airport to meet those facility needs. The planning process has included the development of draft working papers that have been presented to the Master Plan Advisory Committee (MPAC), which is comprised of stakeholders/constituents with an investment or interest in the airport and surrounding area. This diverse group has provided extremely valuable input into the Master Plan. Additionally, a series of Public Information Workshops have been conducted as part of this planning process, providing the public an opportunity to be involved and educated about the study.

The alternatives that outlined future growth and development scenarios in the previous chapter have been refined into a recommended development concept for the Master Plan, which is included for presentation in this chapter. Environmental conditions that need to be considered during development are also examined later in the chapter.

One of the objectives of the Master Plan is to allow decision-makers the ability to either accelerate or slow development goals based on actual demand. If demand slows, development of the airport beyond routine safety and maintenance projects could be minimized. If aviation demand accelerates, development could be expedited. Any plan can account for limited development, but the lack of a plan for accelerated growth can sometimes be challenging.



Therefore, to ensure flexibility in planning and development to respond to unforeseen needs, the Master Plan Concept considers the full and balanced development potential for Santa Fe Municipal Airport.

## MASTER PLAN CONCEPT

Santa Fe Municipal Airport is classified by the Federal Aviation Administration (FAA) as a nonhub, primary commercial service airport. The airport is also included in the FAA's *National Plan of Integrated Airport Systems* (NPIAS). NPIAS airports are considered important to the national aviation system and are eligible for development grant funding from the FAA. At the state level, the New Mexico Department of Transportation – Aviation Division (NMDOT) also classifies Santa Fe Municipal Airport as a primary commercial service airport.

The Master Plan Concept, as shown on **Exhibit 5A**, presents the recommended configuration for Santa Fe Municipal Airport, which preserves and enhances the role of the facility while meeting FAA design and safety standards to the extent practicable. It is important to note that the concept provides for anticipated facility needs over the next 20 years, as well as establishing a vision and direction for meeting facility needs beyond the 20-year planning period of this study. A phased program to achieve the recommended Master Plan Concept is presented in Chapter Six. When assessing development needs, this chapter has separated the airport into airside and landside functional areas.

***While the Master Plan Concept makes recommendations for the future development of Santa Fe Municipal Airport, it is important to continue to gain local perspective and input on important development goals and objectives.***

Given the nature of this planning process, and as a follow-up to the airport alternatives presented in Chapter Four, this chapter presents additional alternatives analysis related to certain components on the airport. While the Master Plan Concept makes recommendations for the future development of Santa Fe Municipal Airport, it is important to continue

to gain local perspective and input on important development goals and objectives. This is especially important with the terminal area and future disposition of the airport terminal building. The following sections describe the Master Plan Concept and terminal area alternatives in detail.

## AIRSIDE DEVELOPMENT CONCEPT

The airside plan generally considers those improvements related to the runway and taxiway system and often requires the greatest commitment of land area to meet the physical layout of an airport. Operational activity at Santa Fe Municipal Airport is anticipated to grow modestly through the 20-year planning horizon of this Master Plan, and the airport is projected to continue to serve the full range of general aviation aircraft operations, in addition to commercial airline service activities.







This page intentionally left blank



The major airside issues addressed in the Master Plan Concept include the following:

- Adhere to ultimate Runway Design Code (RDC) D-III standards on Runway 2-20, C-III standards on Runway 15-33, and B-II standards on Runway 10-28.
- Extend Runway 2-20 634 feet to the southwest to better accommodate commercial service and business jet aircraft operations utilizing the airport, pending further justification and coordination with the FAA.
- Improve safety area deficiencies that currently exist on Runways 15-33 and 10-28.
- Realign certain taxiways at specific runway intersections in order to improve airfield geometry.
- Per FAA standards, locate hold line markings on all taxiways associated with Runways 2-20 and 15-33 to be 314 feet from the runway centerline, and relocate hold line markings associated with Runway 10-28 to be 200 feet from the runway centerline.
- Provide enhanced instrument approach capabilities on Runway 20.
- Analyze land beyond the existing airport property line that could be needed to accommodate a potential runway extension and for approach protection.
- Enhance visual approach aids on the runway system.
- Enlarge existing blast pads serving the ends of Runways 15, 20, and 33, and construct a blast pad serving Runway 2.

## RUNWAY CONFIGURATION

Santa Fe Municipal Airport is currently served by a three-runway system, which was originally constructed by the federal government in support of military aviation training during World War II. Primary Runway 2-20 is 8,366 feet long and 150 feet wide. The runway is oriented in a northeast-southwest manner. The runway can handle the full array of aircraft that utilize the airport and supports a precision instrument landing system (ILS) approach, as well as area navigation (RNAV) global positioning system (GPS) approaches. The runway is certified to accommodate commercial air carrier aircraft operations per the facility's Title 14 Code of Federal Regulations (CFR) Part 139 Airport Certification Manual (ACM).

*Santa Fe Municipal Airport is currently served by a three-runway system, which was originally constructed by the federal government in support of military aviation training during World War II.*

Crosswind Runway 15-33 is 6,316 feet long and 100 feet wide and is oriented in a northwest-southeast manner. Like Runway 2-20, this runway is also certified to accommodate commercial service aircraft



operations and has instrument approach capabilities in the form of RNAV GPS approaches and a very high frequency omnidirectional range (VOR) approach.

Runway 10-28 is another crosswind runway on the airfield that is oriented in an east-west manner. It is dimensioned at 6,301 feet in length and 75 feet wide. The runway currently supports a RNAV GPS approach. It is important to note that based on the 2002 Airport Master Plan, this runway was re-opened and has undergone several improvements since this time.

As detailed in Chapter Three, no single runway provides sufficient wind coverage; therefore, at least a two-runway system is justified by FAA standards. Given that Runway 2-20 is the longest runway and capable of accommodating the full array of aircraft that utilize the airport, it should continue to be considered in the ultimate design of the airfield system.

Previous planning has analyzed the three-runway alignment and the possibility of closing one of the crosswind runways. The 2002 Airport Master Plan studied the airfield alignment and configuration, and it ultimately determined to maintain all three runways in order to enhance noise abatement at the airport by having the ability to disperse aircraft activity over the three runways. Significant improvements have been made to the airfield system since the last Master Plan, including a parallel taxiway (existing Taxiway F) constructed to serve Runway 10-28. Based on these factors and a previous desire to maintain the current runway system, this Master Plan has considered the existing three-runway alignment to remain intact at the airport through the long term planning period.

More recently, discussions between airport management and the FAA have taken place regarding the future disposition of the three-runway alignment, and, more specifically, with the ultimate disposition of crosswind Runway 10-28. A preliminary evaluation of a two-runway alignment at the airport indicates a significant increase in the amount of land that can be developed to accommodate future aviation demand. Furthermore, the three-runway configuration that currently exists leads to challenges in adhering to airfield geometry standards recommended by the FAA and increases the overall cost and maintenance needed to maintain the airfield system.

The Master Plan Concept, as depicted on **Exhibit 5A**, maintains the three-runway alignment for current planning purposes. As such, the development concept and associated capital program to follow proposes improvements to each of the three runways at the airport. The future disposition of these runways will determine the magnitude of potential improvements made on each. Further evaluation of the impact of a two-runway alignment at Santa Fe Municipal Airport will be made in coordination with the FAA.

## RUNWAY DIMENSIONAL STANDARDS

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



As discussed previously, the design criteria primarily center on an airport's critical design aircraft. The critical design aircraft is the most demanding aircraft or family of aircraft which currently, or are projected to, conduct 500 or more operations (takeoffs or 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 RDC to relate these design aircraft factors to airfield design standards. The most restrictive RDC is also considered the overall Airport Reference Code (ARC) for an airport.

*The FAA has established the RDC to relate these design aircraft factors to airfield design standards. The most restrictive RDC is also considered the overall Airport Reference Code (ARC) for an airport.*

Analysis in Chapters Three and Four concluded that the current RDC for primary Runway 2-20 falls in D-II. This runway is intended to accommodate activity by the most demanding regional commercial service and business jet aircraft on the market. Thus, future planning considers an ultimate RDC of D-III for Runway 2-20.

Runway 15-33 can accommodate a large majority of the aircraft mix that utilizes the airport, including commercial service activities. This runway can also provide an important role in serving operations when primary Runway 2-20 is closed for maintenance and when strong crosswinds dictate its use. Its current RDC is C-II, and ultimate planning considers a RDC of C-III. Runway 10-28 can continue to accommodate general aviation aircraft ranging from small single engine aircraft up to mid-sized business jets. As such, the current and future RDC is B-II for this runway.

**Table 5A** provides a summary of the RDCs for each runway based upon the Master Plan Concept. In addition to the physical and operational components of an aircraft, the RDC also considers the instrument approach capabilities for each runway expressed in runway visual range (RVR) values. For Runway 2-20, the RVR value of 4,000 indicates approach visibility minimums not lower than  $\frac{3}{4}$ -mile, which currently correspond to the precision ILS approach to Runway 2. For Runway 15-33, the RVR value of 4,000 also indicates approach visibility minimums not lower than  $\frac{3}{4}$ -mile. This condition has recently been implemented on each end of the runway. For Runway 10-28, the RVR value of 5,000 corresponds to an instrument approach with not lower than one-mile visibility minimums. Note: The previously approved Airport Layout Plan (ALP) presented in Chapter Four indicated an existing ARC D-II and ultimate ARC D-III planning standard for Runway 2-20, an existing and ultimate ARC C-II for Runway 15-33, and an existing and ultimate ARC B-II for Runway 10-28.

**TABLE 5A**  
**Runway Design Codes**  
**Santa Fe Municipal Airport**

Runway	Planned Runway Design Code*
2-20	D-III-4000
15-33	C-III-4000
10-28	B-II-5000

\* The ultimate ARC for Santa Fe Municipal Airport is D-III based upon the most demanding RDC associated with Runway 2-20.



## RUNWAY 2-20 LENGTH

To better support the needs of commercial service aircraft operations that are forecast to utilize the airport in the future, analysis in Chapter Four considered two potential runway extension scenarios for Runway 2-20. One entailed a 634-foot extension, providing 9,000 feet of runway length, and the second constituted a 1,234-foot extension, allowing for 9,600 feet of runway length.

Currently, the 44- to 50-seat Embraer ERJ-140-series and Bombardier CRJ-200 regional jets are often weight-restricted when operating at Santa Fe Municipal Airport, especially during the summer months when combining operations factors, such as high temperatures and density altitudes. It is anticipated that larger 70- to 90-seat commercial service regional jets, including the Embraer E-170 and E-175, as well as the Bombardier CRJ-700 and CRJ-900 aircraft, could begin operating at the airport in the future as they are anticipated to replace the smaller regional jet fleet. Furthermore, larger commercial service aircraft, such as the Airbus A-319 and Boeing 737-series, should be considered for potential commercial and/or air charter activity at Santa Fe Municipal Airport through the long term planning period of this Master Plan.

During this planning process, a specific evaluation of aircraft performance was made to better determine the need for a potential runway extension on primary Runway 2-20. Since the smaller 44- to 50-seat regional jets are no longer being manufactured and are expected to be retired from the fleet mix in the coming years, the performance of larger regional jets, such as the CRJ-700 and E-175, as well as the A-319 and Boeing 737-series, were evaluated for runway length at the airport.

The evaluation assumed several factors important to runway length analysis which include:

- 86 degrees Fahrenheit (F) takeoff temperature
- Airport elevation of 6,348 feet mean sea level (MSL)
- Zero wind
- Optimum flap setting for each aircraft
- Climb limitations for each aircraft
- Dry runway
- A runway slope of +/-0.89 percent associated with Runway 2-20
- Controlling flight obstacles beyond the departure end of each runway

Due to the high elevation of the airport and the climb limitations of these aircraft at higher elevations, it has been determined that there is very little benefit gained from offering 9,600 feet of runway length versus 9,000 feet of runway length. Thus, the alternative presented in Chapter Four that provided up to 9,600 feet of runway length is no longer being considered in this study.

As illustrated on **Exhibit 5A**, the Master Plan Concept does include extending Runway 2-20 634 feet to the southwest in order to better support the needs of commercial service

*The Master Plan Concept does include extending Runway 2-20 634 feet to the southwest in order to better support the needs of commercial service aircraft operations that could potentially utilize the airport in the future.*

aircraft operations that could potentially utilize the airport in the future. This will allow for 9,000 feet of physical runway length. **Table 5B** presents the takeoff weight limits for certain commercial aircraft that could operate at the airport in the future based on the factors detailed above. A comparison is made between the takeoff weight requirements based on the existing runway length of 8,366 feet and a proposed runway length of 9,000 feet as called for on the Master Plan Concept. This information was obtained from Flight Engineering, LLC, a firm that specializes in calculating aircraft flight performance characteristics for airlines and other specialty aviation operators.

**TABLE 5B**

**Allowable Takeoff Weight Limits  
Santa Fe Municipal Airport**

Aircraft	Maximum Takeoff Weight (pounds)	Runway 2	Runway 2	Additional Takeoff Weight	Runway 20	Runway 20	Additional Takeoff Weight
		8,366 feet	9,000 feet		8,366 feet	9,000 feet	
Bombardier CRJ-700	75,000	65,400	66,900	1,500	69,300	69,300	0
Embraer E-175	82,700	64,870	66,510	1,640	72,020	72,020	0
Airbus A-319	166,448	140,960	143,150	2,190	150,370	152,930	2,560
Boeing 737-700	154,500	132,500	135,000	2,500	132,500	135,000	2,500

Source: Flight Engineering, LLC; Coffman Associates analysis

A 634-foot extension would provide for an increased allowable takeoff weight of 1,500 pounds and 1,640 pounds for the CRJ-700 and E-175, respectively, considering that these aircraft would depart on Runway 2. This could equate to approximately seven to eight additional passengers, which is significant when considering that these aircraft are configured to carry an average of 70 to 80 passengers. For these aircraft, a proposed 634-foot extension does not equate to increased allowable takeoff weight when departing on Runway 20, as obstacles and climb performance measures are limiting factors independent from the runway length. Larger commercial service aircraft, such as the A-319 and Boeing 737-700, are not as limited by climb performance at higher elevations and, thus, a 634-foot extension could be advantageous to these aircraft when departing on either Runway 2 or Runway 20. For the A-319, the allowable takeoff weight increases by 2,190 pounds when departing on Runway 2 and 2,560 pounds when departing on Runway 20. Likewise, the Boeing 737-700 gains considerable takeoff weight totaling based on a 634-foot extension.

As previously detailed, Runway 2-20 is the primary runway measuring 8,366 feet in length. This runway can accommodate a large majority of regional commercial service and business jets under moderate loading conditions, especially with shorter trip lengths and during cool to warm temperatures. Any capital expenditures required to meet the needs of aircraft utilizing Santa Fe Municipal Airport will require specific justification. As can be seen from the runway length analysis, a 634-foot extension on Runway 2-20 will benefit certain commercial service aircraft that could be expected to utilize the airport in the future; however, factors, such as the existing airport elevation, aircraft departure climb limitations, and controlling obstacles beyond the runways, would somewhat limit the effectiveness of such an extension.

While this Master Plan can address that, there is a potential need for additional runway length in the future; that need remains to be fully confirmed. As with any major capital expenditure on an airport,



specific justification will be needed for the FAA to commit to funding such a project. This will require highly specific justification outlined by the airlines serving the airport. The proposed 634-foot extension on Runway 2-20 would also result in environmental impacts which would need to be addressed prior to the actual design and construction of the extension. As a result, it is important that airport personnel continue to monitor a potential need for additional runway length and coordinate with the FAA accordingly.

*It is important that airport personnel continue to monitor a potential need for additional runway length and coordinate with the FAA accordingly.*

In order to accommodate a 634-foot extension, the glideslope antenna associated with the precision ILS approach on Runway 2 would need to be relocated. According to the FAA, glideslope antennas can be sited between 750 feet and 1,250 feet from a runway threshold. The proposed 634-foot extension would shift the runway threshold approximately 1,500 feet from the existing glideslope antenna, thus necessitating its relocation.

The FAA has also indicated that any change to the runway environment must also conform to a runway protection zone (RPZ) being free of incompatible land uses, including residences. As detailed on **Exhibit 5A**, the RPZ associated with the proposed runway extension extends farther southwest over residential parcels adjacent to the south side of the airport. Securing approach protection over this area will be further detailed later in this chapter.

## RUNWAY PAVEMENT STRENGTH

It is important to note that the pavement strength ratings associated with the runway system at Santa Fe Municipal Airport have recently been updated. The current strength rating on Runway 2-20 is now reported to be 116,000 pounds single wheel loading (SWL), 164,000 pounds dual wheel loading (DWL), and 269,000 pounds dual tandem wheel loading (DTWL). For Runway 15-33, the pavement strength is reported to be 28,000 pounds SWL and 43,500 pounds DWL. Finally, the pavement strength on Runway 10-28 is 12,500 pounds SWL.

*It is recommended that pavements associated with Runways 2-20 and 15-33, and Taxiways A and D, be ultimately constructed to support 155,000 DWL.*

A detailed evaluation of airfield pavements at Santa Fe Municipal Airport has been prepared by Molzen Corbin during the study process and includes the history, maintenance, and strength of all pavements associated with the system of runways and taxiways. This evaluation is included in

**Appendix C** of the Master Plan. Based on the report, it is recommended that pavements associated with Runways 2-20 and 15-33, and Taxiways A and D, be ultimately constructed to support 155,000 DWL. This will better meet the demands of existing and future critical aircraft utilizing the airfield on a regular basis.

The FAA is moving toward the use of the Pavement Classification Number (PCN) rating rather than a weight limit/wheel loading designation to publish pavement strength. The PCN is a five-part code described as follows:

- 1) PCN Numerical Value: Indicates the load-carrying capacity of the pavement expressed as a whole number. The value is calculated based on a number of engineering factors such as aircraft geometry and pavement usage.
- 2) Pavement Type: Expressed as either R for rigid pavement (most typically concrete) or F for flexible pavement (most typically asphalt).
- 3) Subgrade Strength: Expressed as A (High), B (Medium), C (Low), D (Ultra Low). A subgrade of A would be considered very strong, like concrete-stabilized clay, and a subgrade of D would be very weak, like un-compacted soil.
- 4) Maximum Tire Pressure: Expressed as W (Unlimited/No Pressure Limit), X (High/254 psi), Y (Medium/181 psi), or Z (Low/72 psi), this indicates the maximum tire pressure the pavement can support. Concrete surfaces are usually rated W.
- 5) Process of Determination: Expressed as either T (technical evaluation) or U (physical evaluation), this indicates how the pavement was tested.

The PCNs for all three runways at the airport were recently obtained from a study that the NMDOT commissioned for all airports in New Mexico. The PCNs were determined to be as follows:

- Runway 2-20 – 46/F/C/X/T
- Runway 15-33 – 10/F/C/Y/T
- Runway 10-28 – 4/F/C/Y/T

The PCN is compared to the Aircraft Classification Number (ACN), which is a unique number for each individual aircraft type. Generally, the PCN should be higher than the ACN for determining the suitability of a pavement for a particular aircraft. Typical ACN values for aircraft that have utilized or could potential operate at Santa Fe Municipal Airport include the Gulfstream V (29), Embraer ERJ-145 (18), and Boeing 737-700 (42).

## INSTRUMENT APPROACHES

As detailed earlier, straight-in instrument approach procedures are offered on Runways 2-20 and 15-33, as well as Runway 28. Currently, the ILS approach serving Runway 2 and the RNAV GPS approaches serving each end of Runway 15-33 provide for approach visibility minimums below one mile (not lower than  $\frac{3}{4}$ -mile). Given that Runway 2-20 is the primary runway and accommodates a large majority of commercial service aircraft operations at the airport, it is recommended that approach visibility minimums be enhanced on Runway 20 like what is currently provided on Runway 2. Furthermore, airport traffic control tower (ATCT) personnel indicate that poor weather conditions (i.e., low cloud ceilings and poor visibility) tend to occur when winds dictate the use of Runway 20.

The Master Plan Concept considers implementing not lower than  $\frac{3}{4}$ -mile visibility minimums on Runway 20. As a result, the approach RPZ associated with Runway 20 would increase in size as depicted on **Exhibit 5A**. The impacts of this RPZ change will be detailed in the following section.



It is important to note that the FAA has historically required an approach lighting system to serve a runway end that accommodates visibility minimums below one mile. In recent years, however, many runways across the country have achieved instrument approach visibility minimums lower than one mile without implementing an approach lighting system. This is currently the case on Runway 2 as well as Runway 15-33 at the airport, as these runways provide  $\frac{3}{4}$ -mile visibility minimums without an approach lighting system.

## **APPROACH PROTECTION**

The FAA recommends that the airport sponsor own in fee simple the RPZ property. When fee simple ownership is not feasible, positive land use measures should be implemented to protect an airport from encroachment by incompatible land uses or obstructions.

As previously discussed, the RPZ associated with the 634-foot extension on Runway 2-20 would extend beyond airport property and include 2.50 acres of land and portions of three private parcels that contain residential units. The extended RPZ would remain within the existing aviation easement that is currently in place south of the airport property line. If an extension is pursued on the southwest end of Runway 2-20, the airport would need to further coordinate with the FAA regarding the future disposition of the relocated RPZ in relationship to residential land uses south of the airport.

Likewise, improving the instrument approach visibility minimums on Runway 20 down to  $\frac{3}{4}$ -mile would expand the approach RPZ beyond the northeast end of Runway 2-20, encompassing approximately 12.0 acres of land outside of existing airport property. An aviation easement is currently in place over portions of this area; however, the FAA stipulates that a change to runway environment must conform to the RPZ being free from incompatible land uses, including commercial/industrial facilities and public roadways. The proposed RPZ serving Runway 20 would contain a greater amount of commercial land use and additional portions of County Highway 56. Further coordination with the FAA would be needed to determine the ultimate disposition of County Highway 56 and commercial land uses within the expanded RPZ associated with a not lower than  $\frac{3}{4}$ -mile instrument approach serving Runway 20.

As previously detailed, enhanced instrument approaches that now provide lower than one-mile visibility minimums have recently been implemented on each end of Runway 15-33. As such, the RPZs further expand beyond existing airport property as well as beyond the existing aviation easements in place adjacent to each runway end. The approach RPZ serving Runway 15 encompasses approximately 19.97 acres of land outside existing airport property, and the approach RPZ serving Runway 33 encompasses approximately 3.86 acres of land beyond the property line. It is important to note that the southwest portion of the Runway 33 approach RPZ includes residential properties.

In any event, airport officials and the City of Santa Fe should continue to monitor activity within the existing and proposed RPZs serving all runway ends at the airport and maintain them free of incompatible land uses to the extent practicable. Continued coordination with the FAA and NMDOT officials will be important when implementing projects that could require changes to the existing RPZs at the airport.

## RUNWAY SAFETY ENHANCEMENTS

The existing and ultimate runway safety area (RSA) and runway object free area (ROFA) beyond the southeast end of Runway 15-33 are currently penetrated by perimeter fencing and vegetation. The Master Plan Concept considers the removal of vegetation, relocation of portions of the perimeter fencing, and grading of terrain to conform to RSA and ROFA standards for RDC C-II and C-III. In doing so, the full length of Runway 15-33 can be utilized for takeoffs and landings.

*The Master Plan Concept considers the removal of vegetation, relocation of portions of the perimeter fencing, and grading of terrain to conform to RSA and ROFA standards for RDC C-II and C-III. In doing so, the full length of Runway 15-33 can be utilized for takeoffs and landings.*

The ROFA and runway obstacle free zone (ROFZ) associated with the east end of Runway 10-28 is obstructed by a portion of the roadway that provides access to airport support facilities on the southeast side of the airport. As depicted on **Exhibit 5A**, the Master Plan Concept proposes the relocation of the roadway farther south to remove it from the ROFZ. This is important since a Modification to Standard process does not apply to the ROFZ. Due to difficult terrain issues to the east and south of this area, the relocation of the road as proposed would still traverse portions of the ROFA but not to the extent as its current alignment. As a result, a Modification to Standard could be pursued for the area in which the roadway would still impact the ROFA. It is important to note that this road is restricted to authorized airport personnel only and is not open for public use.

## TAXIWAY DESIGN

While no significant airfield capacity improvements should be necessary during the course of the planning period, the Master Plan Concept considers improving airfield efficiency through the implementation of additional taxiways. An extension on Runway 2-20 would necessitate the need for parallel Taxiway D to extend south to serve its ultimate configuration. An exit taxiway is also proposed farther north on the east side of Runway 2-20 between entrance/exit Taxiway A and Taxiway G. This taxiway would increase the capacity and efficiency of the primary runway by allowing aircraft that land on Runway 2 with another opportunity to exit the runway should they miss Taxiway G.

In order for taxiway development to meet ultimate Taxiway Design Group (TDG) III standards, the FAA calls for a taxiway width of 50 feet. As a result, all existing and ultimate taxiways associated with Runways 2-20 and 15-33 should be planned to 50 feet in width. For taxiways associated with Runway 10-28, a 35-foot width is required to meet TDG II standards. All existing taxiways on the airfield currently meet their existing and planned TDGs.

## TAXIWAY GEOMETRY ENHANCEMENTS

Significant taxiway improvements proposed on the Master Plan Concept include realigning portions of Taxiways A, C, and G to right angles as they approach their respective runway locations. Right-angle



intersections provide the best visual perspective for a pilot to observe an aircraft in both directions. They also provide optimal orientation of the runway hold line markings and signage so they are visible to pilots.

As previously detailed in Chapter Four, the realignment of Taxiway C as it approaches the Runway 33 threshold would be very costly due to physical terrain issues immediately adjacent to the east side of the existing taxiway alignment. To lessen the impact and cost associated with the physical terrain, a relocated hold apron is proposed farther north adjacent to Taxiway C where the terrain is relatively flat. Likewise, the hold apron associated with the realignment of Taxiway G near the Runway 15 threshold is proposed in a new location to not interfere with the New Mexico Army National Guard leasehold adjacent to the east side of the taxiway.

For the realignment of Taxiway A at the Runway 20 threshold, a new holding bay is proposed that adheres to updated guidance from the FAA for hold aprons serving runway ends. Holding bays improve taxiway circulation efficiency by providing a location for aircraft to perform engine run-up procedures and allowing aircraft to bypass each other if necessary. The proposed location for the holding bay serving Runway 20 is depicted on **Exhibit 5A**. It is important to note that the proposed holding bay is deeper than the existing hold apron serving Runway 20 and would encompass additional land that could otherwise be utilized for potential landside development in the future. This is a consideration that airport personnel should account for prior to implementing such a design. A similar holding bay is also proposed on the south side of Taxiway D to replace the existing hold apron serving Runway 2.

Other taxiways do not provide a 90-degree intersection to the respective runway that they intersect and include Taxiway C at Runway 10-28, Taxiway D at Runways 15-33 and 10-28, and Taxiways F and G at Runway 2-20. Given the complexity of the airfield system at Santa Fe Municipal Airport, it is difficult and would prove costly to realign these taxiways in such a way to meet the 90-degree intersection standard. Improvements to these areas would only be implemented based upon further coordination with the FAA.

It is important to note that the future disposition of the three-runway configuration could also factor into the potential realignment of certain taxiways on the airfield. For instance, the realignment of Taxiway D parallel to Runway 2-20 has been analyzed during this planning process. This would create a more complicated intersection where the three runways currently intersect on the airfield and would require aircraft to obtain clearance to cross two runways (Runways 15-33 and 10-28) at one time as there would not be sufficient area to hold on Taxiway D between the runways. In the event of a two-runway configuration, extending Taxiway D parallel with Runway 2-20 could be a safer alternative to construct as it would require clearance over just one runway (Runway 15-33 or Runway 10-28) instead of both. The realignment of a portion of Taxiway D running parallel to Runway 2-20 is depicted on the Master Plan Concept. In addition, a slight realignment of Taxiway A as it would join the proposed Taxiway D south of the terminal area is called for. This would help to enhance the operational efficiency of aircraft in the terminal area.

Another safety project involving taxiway geometry at Santa Fe Municipal Airport is to ensure that direct access from an aircraft parking apron to runway is not provided. Configurations that allow for direct

access from an apron to runway have been targeted as they tend to increase risks for runway incursions. The Master Plan Concept ultimately calls for the implementation of up to six No Taxi Islands in various locations on parking aprons to prevent direct access to the runway system. These No Taxi Islands correspond to the existing alignments of certain taxiways extending directly to the runway environment. As previously discussed, the future alignment of certain taxiways would dictate the ultimate location of the No Taxi Islands. As with many of the proposed improvements included on the Master Plan Concept, the taxiway geometry enhancements previously detailed should be undertaken only after further coordination with and directive from the FAA.

*The taxiway geometry enhancements previously detailed should be undertaken only after further coordination with and directive from the FAA.*

## HOLD LINE MARKINGS

The hold line markings on taxiways associated with Runways 2-20 and 15-33 currently range from 250 to 300 feet from the runway centerline, which meet RDC C/D-II design standards. In the event that Runways 2-20 and 15-33 transition to RDC D-III and C-III, respectively, the standard for runway centerline to hold line separation is 250 feet plus one additional foot for each 100 feet above MSL. Santa Fe Municipal Airport is situated at 6,348 feet. As a result, the hold lines associated with these entrance/exit taxiways would need to be relocated to 314 feet from the runway centerline. It is important to note that adhering to this standard could create problems with aircraft operational efficiency on the airfield, namely associated with aircraft exiting Runway 2-20 and interfering with aircraft taxiing on portion of parallel Taxiways A and D. As such, it is possible for the airport to pursue a Modification to Standard on the ultimate hold line marking separation.

The hold lines associated with Runway 10-28 currently range from 130 to 180 feet from the runway centerline. In order to meet existing and ultimate RDC B-II design standards, these hold lines should be relocated to 200 feet from the runway centerline.

## VISUAL APPROACH AIDS

Future planning considers various enhancements to visual approach aids serving the runway system at Santa Fe Municipal Airport, as depicted on **Exhibit 5A**. Currently, each end of Runway 2-20 and Runway 33 is served by a four-box visual approach slope indicator (VASI-4).

A PAPI-4 system is proposed to serve the Runway 15 end. This system will provide pilots with visual approach guidance information during landings to the runway. The proposed runway extension on Runway 2-20 would require the relocation of the VASI-4 that currently serves Runway 2. The VASI provides similar approach guidance as the PAPI system. The Master Plan Concept recommends replacing the VASI-4 with a PAPI-4 in the event that the runway would be extended. A two-box PAPI is also recommended on each end of crosswind Runway 10-28.



Another visual approach aid enhancement to a runway system is runway end identification lights (REILs). REILs currently exist on each end of Runway 15-33, Runway 20, and Runway 10. The FAA recommends that REILs be considered for implementation on runway ends not served by a more sophisticated approach lighting system. As a result, the plan also considers REILs on the ends of Runways 2 and 28.

## **BLAST PADS**

The Master Plan Concept considers enlarging the blast pads associated with the ends of Runways 15, 20, and 33 to meet ultimate design standards. A 200-foot by 200-foot blast pad is planned for Runway 20 and 200-foot by 140-foot blast pads are planned for each end of Runway 15-33.

The construction of a blast pad is also considered for Runway 2. Similar to the Runway 20 end, the blast pad should measure 200 feet by 200 feet in order to meet ultimate RDC D-III standards. It is recommended that the new blast pad associated with Runway 2 be constructed at the same time as the proposed runway extension; however, it should be considered on the existing runway end in the event an extension does not occur as proposed.

## **LANDSIDE DEVELOPMENT CONCEPT**

Landside components include terminal buildings, hangars, aircraft parking aprons, and aviation support services, as well as the utilization of remaining airport property to provide revenue support and to benefit the economic well-being of the regional area. The primary goal of landside facility planning is to provide adequate passenger terminal facilities and aircraft storage space to meet forecast needs, while also maximizing operational efficiencies and land uses. Also important is identifying the overall land use classification of airport property in order to preserve the aviation purpose of the facility well into the future. **Exhibit 5A** presents the view of the planned landside development for Santa Fe Municipal Airport.

There are numerous facility layout concepts that could be considered. Detailed layouts of potential landside facilities were presented in Chapter Four that included hangar development, terminal building layouts, and the placement of aviation support services. The Master Plan Concept provides a more general approach to the layout of proposed landside facilities which attempts to maximize potential aviation development space on the airfield. For the most part, new development is planned in close proximity to existing facilities in order to take advantage of existing infrastructure availability and reduce future development costs.

The major landside issues addressed in the Master Plan Concept include the following:

- Analyze the potential expansion/relocation of the terminal building and associated infrastructure to meet future commercial passenger service needs.

- Designate areas that can accommodate aviation development/redevelopment potential on the east side of the airport to include aircraft storage hangars and aircraft parking apron space.
- Implement a rental car preparation center to help alleviate congestion in the terminal area.
- Construct a de-icing pad near the departure end of Runway 2.
- Construct an additional airport maintenance facility to support equipment storage.
- Capitalize on the new airport entrance road extending from State Highway 599.
- Designate non-aviation development on airport property to further enhance potential airport revenues.

## TERMINAL BUILDING EXPANSION/RELOCATION

In Chapter Four, alternatives were considered that called for the expansion of the existing terminal building to better meet the needs of commercial passenger airline service demands. The analysis considered an expansion on the north and south sides of the existing facility, while attempting to reconfigure the internal workings of the building to segregate arriving and departing passengers and, at the same time, expand and enhance passenger support services. In addition, a detailed vehicle parking plan was presented that could accommodate increased passenger activity in and around the terminal area.

*It is the goal of this effort to get feedback from the MPAC and general public for input into a study to be conducted separate from this Master Plan that will further detail the expansion/relocation potential of a future terminal building at the airport.*

After further discussions with airport management regarding the future disposition of a terminal building at Santa Fe Municipal Airport, the Master Plan Concept considers additional alternatives for terminal area development. **Exhibit 5B** presents two alternatives that build upon the analysis conducted in Chapter Four and provides differ-

ing concepts related to the expansion and potential relocation of the existing terminal building. It is the goal of this effort to get feedback from the MPAC and general public for input into a study to be conducted separate from this Master Plan that will further detail the expansion/relocation potential of a future terminal building at the airport.

### Terminal Area Alternative A

As depicted on the left-hand side of **Exhibit 5B**, Terminal Area Alternative A considers the expansion of the existing terminal building to the south, providing approximately 30,000 square feet of total enclosed space. The southerly expansion would necessitate the relocation of the Signature Flight Support fixed

base operator (FBO) facility (formerly Landmark Aviation). As a result, the FBO terminal could be relocated farther east in an area currently occupied by an abandoned electrical vault.

With this alternative, and like the alternatives in Chapter Four, the existing vehicle circulation and parking lot could be utilized to accommodate the expanded terminal building and associated FBO facilities. Additional vehicle parking is proposed farther east as detailed in Chapter Four.

## Terminal Area Alternative B

The right-hand side of **Exhibit 5B** presents Terminal Area Alternative B, which details a new approach to meeting future terminal facility needs at the airport. A new 30,000 square-foot terminal building would be located farther east in an area currently occupied by general aviation storage hangars. This alternative would necessitate the removal and relocation of certain hangar facilities in the east area of the airport in order to accommodate the relocated terminal building. These hangar facilities could be relocated farther north on airport property and, in doing so, the concept of separating aviation activity levels could be better achieved by dedicating the east portion of the airport to commercial passenger service functions, and the midfield and north areas of the airport to general aviation activities.

This alternative maximizes the use of the new airport entrance road that will extend west from State Highway 599 by connecting a terminal access road and associated vehicle parking and circulation prior to entering the existing terminal area. The existing terminal area could be evaluated for future redevelopment potential that could include the expansion of general aviation facilities and services, while also accommodating existing airport support facilities, such as the ATCT. This alternative would also serve to relieve the congestion of vehicle parking and circulation that currently exists near the terminal building.

It is important to note that the existing aircraft parking apron on the east side of the airport would need to be reconstructed to better support larger commercial service aircraft that would be operating to/from the relocated terminal building. Currently, this aircraft parking apron is only capable of supporting smaller general aviation aircraft.

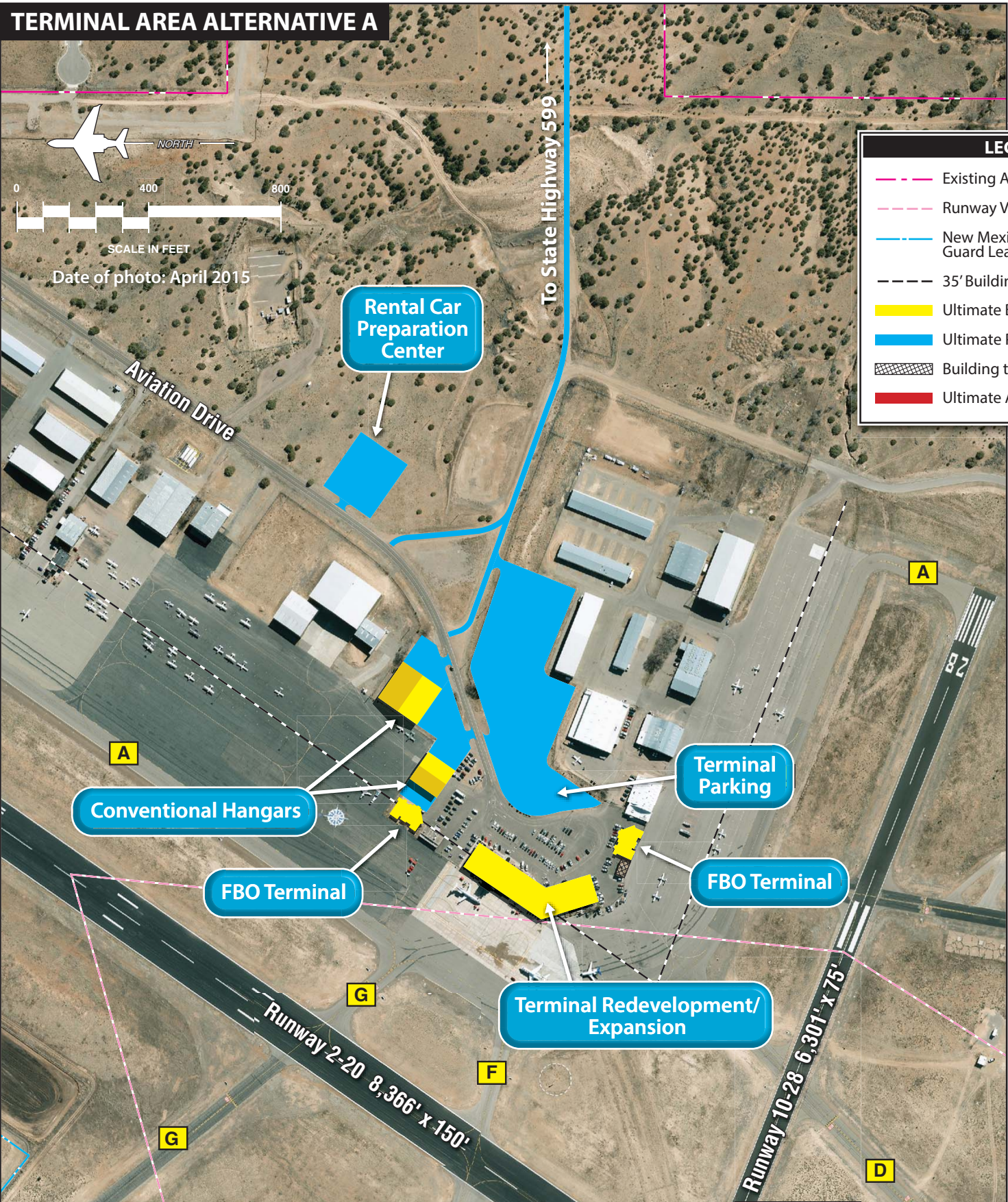
## Terminal Area Alternatives Summary

The purpose of this analysis is to build upon the commercial terminal complex alternatives that were presented in Chapter Four by providing additional scenarios for meeting future commercial passenger service demands at Santa Fe Municipal Airport. As previously detailed, the existing terminal area is somewhat constrained due to the mix of commercial service and general aviation activities that currently exist. While there is land available on the airport to accommodate future commercial passenger terminal needs, the costs associated

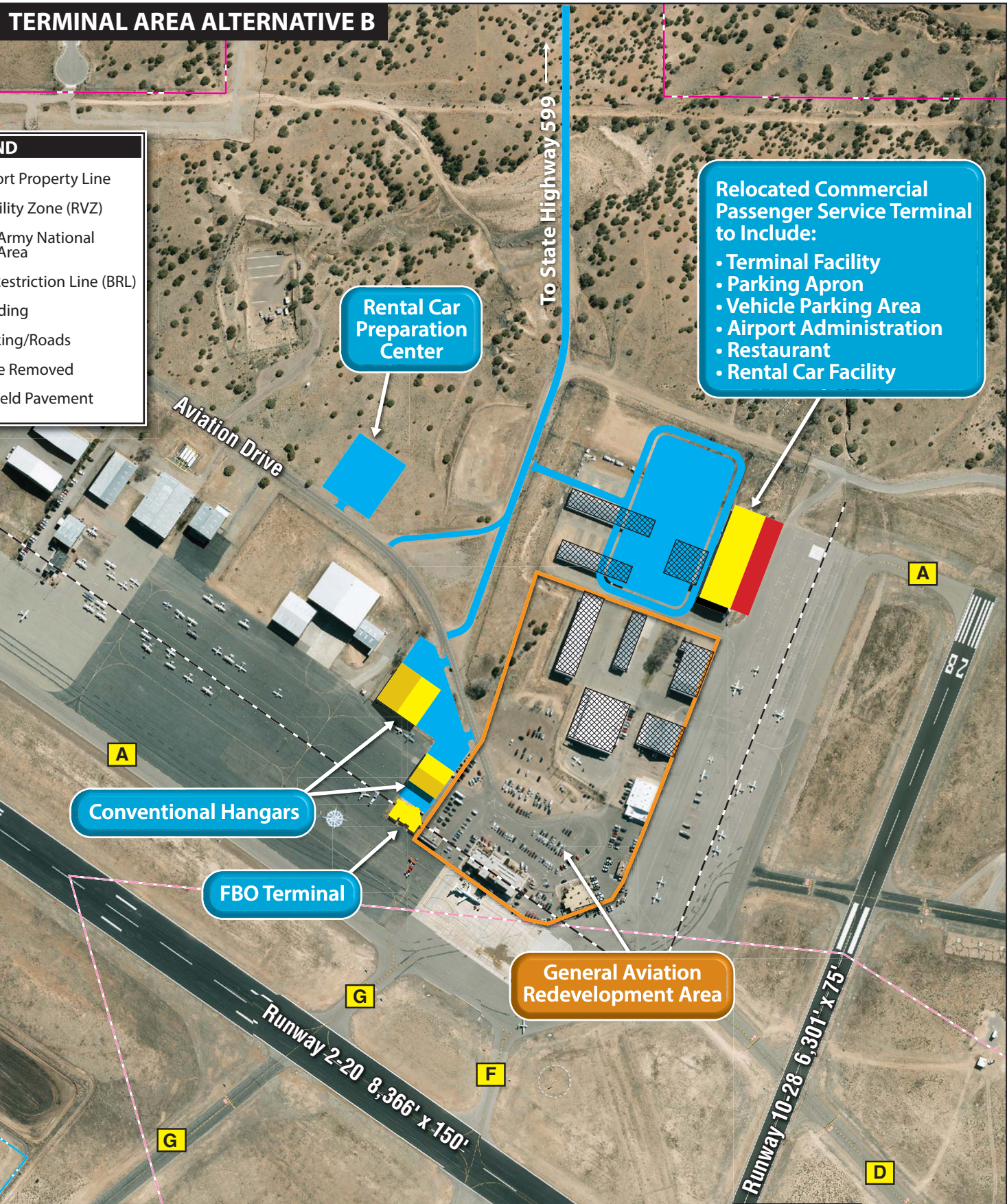
*The Airport Layout Plan (ALP) drawing that is being prepared as part of this Master Plan will include a placeholder that acknowledges the future disposition of the terminal building being dependent on the expansion/relocation study that is to follow the Master Plan process.*



TERMINAL AREA ALTERNATIVE A



TERMINAL AREA ALTERNATIVE B



**Relocated Commercial Passenger Service Terminal to Include:**

- Terminal Facility
- Parking Apron
- Vehicle Parking Area
- Airport Administration
- Restaurant
- Rental Car Facility



This page intentionally left blank

with constructing a new building, vehicle parking lot, and aircraft parking apron would be significant. In addition, the potential displacement of existing airport infrastructure (i.e., hangar facilities) must be considered as well.

As mentioned earlier, the City of Santa Fe is conducting a study that further evaluates the expansion/relocation potential of the terminal building. As part of the Master Plan process, additional feedback can be obtained from the MPAC, City of Santa Fe, and general public for input into the expansion/relocation study. The Airport Layout Plan (ALP) drawing that is being prepared as part of this Master Plan will include a placeholder that acknowledges the future disposition of the terminal building being dependent on the expansion/relocation study that is separate from the Master Plan process.

As detailed in Chapter Four, the future disposition of the existing terminal facility will need to consider the City of Santa Fe's *Resolution No. 2015-101*, which provides for Historic Preservation Division design review in consultation with the chair of the Historic Districts Review Board. **Appendix B** further details the standards to apply when considering future alterations or new construction to the terminal building.

## AVIATION DEVELOPMENT

As previously discussed, the Master Plan Concept takes a more general approach to future landside development potential on the east side of the airport when compared to the detailed layouts presented in the previous chapter. As illustrated on **Exhibit 5A**, several areas are highlighted for potential development as demand would dictate that could accommodate aircraft storage hangars, additional aircraft parking apron space, seasonal aerial firefighting activities, and other specialty aviation support services.

## RENTAL CAR PREPARATION CENTER

The Master Plan Concept includes the construction of a rental car preparation center adjacent to the proposed intersection of Aviation Drive and the new airport entrance road extending west from State Highway 599. This facility would provide a location for rental car companies to service and stage vehicles until they are needed at the terminal building for passenger use. The implementation of this facility could help alleviate congestion within the terminal area and is independent of the location of a future terminal building.

## DE-ICING PAD

A de-icing pad is proposed on the Master Plan Concept adjacent to the south side of Taxiway D that would better serve aircraft departing on Runway 2. Chapter Four provided alternatives for a de-icing pad in areas north of the terminal building; however, it was determined that the location of a de-icing pad may be more beneficial in an area closer to the departure end of Runway 2 given the longer taxi time needed for aircraft to transition to this area. An area to the north of the terminal building adjacent to Taxiway A could be considered in the future as well; however, aircraft departing on Runway 20 could



continue to receive de-icing treatment in the existing terminal area given the shorter taxi time to this runway end.

## AIRPORT MAINTENANCE FACILITY

Airport maintenance activities are currently staged from two separate facilities that make up one larger complex on the southeast side of the airport. The Master Plan Concept depicts an additional airport maintenance facility to be constructed in the southeast area of the airport in the same general location of the existing maintenance complex that will provide indoor storage space for equipment currently kept outside.

## NON-AVIATION RELATED REVENUE SUPPORT

**Exhibit 5A** also details portions of property on the east side of the airport that could be utilized for non-aviation development, most likely in the form of industrial or commercial uses. Existing vehicle access routes, including Aviation Drive and the layout of existing hangar development, would limit the area to non-aviation uses since aircraft access to the airfield would not be readily granted. These uses are allowable by the FAA if they are not minimizing the availability of aviation-related development from occurring that could meet future aviation demand.

Furthermore, the new access road extending west from State Highway 599 would further grant opportunities for non-aviation development in areas likely to remain vacant. The Master Plan Concept also considers a new roadway extending along the east side of airport property, connecting Aviation Drive to the new access road leading to State Highway 599 which could further open this area for non-aviation development potential.

It should be noted that the City of Santa Fe has not obtained specific approval from the FAA to use certain portions of airport property for non-aviation purposes. Chapter Four provided a detailed description of the steps that must be taken in order to allow non-aviation uses on airport property should City of Santa Fe officials desire to do so in the future.

## ENVIRONMENTAL OVERVIEW

Analysis of the potential environmental impacts of recommended airport development projects, as discussed in this chapter and depicted on **Exhibit 5A**, is an important component of the Airport Master Plan process. The primary purpose of this Environmental Overview is to identify significance thresholds for the various resource categories contained in Federal Aviation Administration (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 overview then evaluates the development program to determine whether proposed actions could individually or collectively affect the quality of the environment.

The construction of any improvements depicted on the recommended development concept plan would require compliance with NEPA to receive federal financial assistance or if the project would require 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, will not have a significant impact on the human environment and the approving official may approve it. Issuance of a FONSI signifies that FAA will 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.

This portion of the Airport Master Plan process is not designed to satisfy the NEPA requirements for a Categorical Exclusion (CatEx), EA, or EIS, which is done on a project-by-project basis. It is intended, however, to supply a preliminary review of environmental issues.

## Potential Environmental Concerns

**Table 5C** summarizes potential environmental concerns associated with implementation of the recommended Master Plan development concept. Analysis under NEPA includes direct, indirect, and cumulative impacts.

<b>TABLE 5C</b> <b>Summary of Potential Environmental Concerns</b> <b>Santa Fe Municipal Airport</b>		
Environmental Impact Category	Significance Threshold/ Factors to Consider	Potential Concern
Air Quality	<b>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.</b>	None. Although the projected increase in operations over the 20-year planning horizon of the Airport Master Plan would result in additional emissions, Santa Fe County currently meets federal NAAQS standards. Thus, general conformity review per the <i>Clean Air Act</i> is not required. According to the most recent <i>FAA 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. Further, depending on the potential emissions associated with the

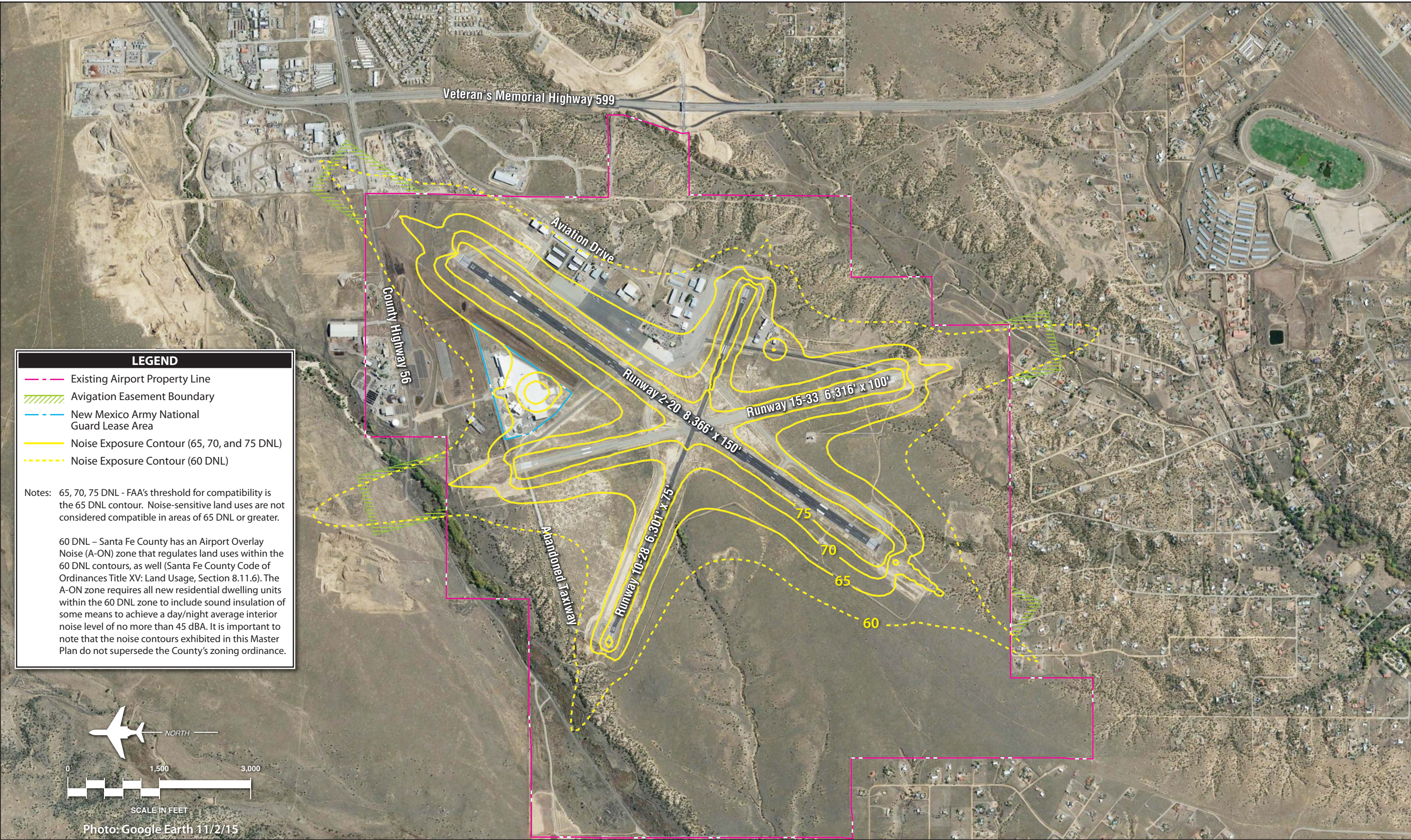
		proposed construction, consultation with the Air Quality Bureau of the New Mexico Environment Department may be warranted to determine what type of air quality permit is necessary (minor source, major source, or technical services).
Biological Resources (including fish, wildlife, and plants)	<p><b>Threshold: 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.</b></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"> <li>• Long term or permanent loss of unlisted plant or wildlife species;</li> <li>• Adverse impacts to special status species or their habitats;</li> <li>• Substantial loss, reduction, degradation, disturbance, or fragmentation of native species' habitats or their populations; or</li> <li>• Adverse impacts on a species' reproductive rates, non-natural mortality, or ability to sustain the minimum population levels required for population maintenance.</li> </ul>	<p><b>For federally-listed species:</b> There are four species protected by the <i>Endangered Species Act</i> (ESA) that have the potential to be affected by airport projects: Mexican Spotted Owl (<i>Strix occidentalis lucida</i>); Southwestern Willow Flycatcher (<i>Empidonax traillii extimus</i>); Yellow-billed Cuckoo (<i>Coccyzus americanus</i>); and New Mexico Meadow Jumping Mouse (<i>Zapus hudsonius luteus</i>). There is suitable habitat for these species on and/or near airport property. Thus, presence of these species should be evaluated prior to any development to ensure no harm to these protected species could occur. Informal or formal ESA, Section 7 consultation may be required.</p> <p><b>For designated critical habitat:</b> None. There is no designated critical habitat located at or near the Airport.</p> <p><b>For non-listed species:</b> Non-listed species of concern include those protected by the <i>Migratory Bird Treaty Act</i> (MBTA) and the <i>Golden and Bald Eagle Protection Act</i>. There is potential for migratory birds to occur in the airport operations area (AOA) and immediately adjacent to airport property. Conducting bird surveys prior to development is, therefore, 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.	An increase in greenhouse gas (GHG) emissions could occur over the 20-year planning horizon of the Airport Master Plan. Project-specific analysis may be required per the FAA Order 1050.1F Desk Reference based on the parameters of the individual projects.
Coastal Resources	FAA has not established a significance threshold for Coastal Resources.	None. The Airport is not located within a designated Coastal Zone.
Department of Transportation (DOT) Act: Section 4(f)	<p><b>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.</b></p>	None. The nearest property protected by Section 4(f) is the J.B. Jackson House (listed on the National Register of Historic Places), which is 1.2 miles south of the airport within the La Cienega community. The La Cienega community is approximately four miles southwest of the airport and is identified as a "traditional community" by Santa Fe County (County). "Traditional communities" are given this status by the County if they have had continuous settlement since 1925. Guidelines for what classified an area as a "traditional community" is defined in Section 8.6.8 of Article XV: Land Usage in the County Code of Ordinances. Despite the proximity of the J.B. Jackson House and La



		<p>Cienega to the airport, this property and community would not be affected by proposed development on the airport. This property and community also falls outside the existing noise exposure contours shown on <b>Exhibit 5C</b>.</p> <p>None. There are no wilderness areas, wildlife refuges, recreation areas, national marine sanctuaries, or locally owned public parks that would be impacted by construction on airport property. The nearest property of this type is over three miles away.</p>
Farmlands	<p><b>Threshold: The total combined score on Form AD-1006, <i>Farmland Conversion Impact Rating</i>, ranges between 200 and 260.</b> (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).)</p>	<p>None. Based on the U.S. Department of Agriculture, Natural Resources Conservation Service – Web Soil Survey (NRCS-WSS), none of the soils on airport property are classified as prime farmland, unique farmland, or land of statewide or local importance.</p>
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"> <li>• Violate applicable federal, state, tribal, or local laws or regulations regarding hazardous materials and/or solid waste management;</li> <li>• Involve a contaminated site;</li> <li>• Produce an appreciably different quantity or type of hazardous waste;</li> <li>• 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</li> <li>• Adversely affect human health and the environment.</li> </ul>	<p>None. There are no documented Superfund sites or brownfields on airport property; however, there are three hazardous waste processing facilities within airport boundaries. Construction activity should not interfere with these facilities.</p> <p>The recommended Master Plan development concept does not anticipate land uses that would produce an appreciably different quantity or type of hazardous waste. However, should this type of land use be proposed, further NEPA review and/or permitting would be required. There are no known hazardous materials or waste contamination sites at the Airport.</p> <p>Construction-related solid waste will be generated because of development proposed in the Master Plan. Solid waste at the Airport is collected by the Santa Fe Solid Waste Management Agency (SFSWMA). The Caja del Rio Landfill is located approximately 4.7 miles north of the airport and serves the entire County. The SFSWMA also manages the Buckman Road Recycling Facility, located approximately 8.3 miles northeast of the airport.</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>The airport is in an area that is considered sensitive due to previous identification of historical, archaeological, and cultural resources near the airport. A known cultural resource site is located on the opposite side of the Santa Fe River from the airport. Thus, any areas at the airport that would be subject to ground disturbance should be surveyed for cultural resources prior to construction unless previously disturbed to the point that artifacts could no longer be intact.</p> <p>Data recovery (to determine the extent and significance of resources) and/or monitoring during construction activities may also be required.</p>
Land Use	<p>FAA has not established a significance threshold for Land Use. There are also no specific independent factors to consider. The determination</p>	<p>None. The proposed development concept recommends the acquisition of 14.5 acres for the</p>

	that significant impacts exist is normally dependent on the significance of other impacts.	RPZs on Runway 2-20. The acquisition recommended on the north end of Runway 20 would be 12.0 acres on two parcels of land. This acquisition would include a salvage yard and part of a parking lot, and would extend into an area currently zoned for industrial/mining uses. If the existing land uses remain after the proposed property acquisition, FAA may need to approve this use (i.e., light industrial and vehicular parking facility) in the RPZ on the ALP. This acquisition may also result in the need to relocate County Highway 56, which would require further coordination with the FAA. On the south end of Runway 2, the proposed property acquisition includes 2.5 acres on one parcel, which may interfere with existing land uses. If any displacement of property should occur, the Airport should follow the Uniform Relocation Assistance and Real Property Acquisition Policies to ensure compliance. All other proposed Master Plan development is within airport property boundaries.
Natural Resources and Energy Supply	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.	None. Planned development projects at the Airport are not anticipated to result in a demand for natural resources or energy consumption beyond what is available by service providers. However, if water becomes a scarce resource in the County, additional analysis may be required.
Noise and Noise-Compatible Land Use	<b>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.</b> 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.	None. The airport's existing and future DNL noise exposure contours are shown on <b>Exhibits 5C and 5D</b> , respectively. The contours include the 60, 65, 70, and 75 Day-Night Sound Levels (DNL). The FAA's threshold for compatibility is the 65 DNL contour; however, Santa Fe County has an Airport Overlay Noise (A-ON) zone that regulates land uses within the 60 DNL contours, as well (Santa Fe County Code of Ordinances Title XV: Land Usage, Section 8.11.6). The A-ON zone requires all new residential dwelling units within the 60 DNL zone to include sound insulation of some means to achieve a day/night average interior noise level of no more than 45 dBA (decibels on the "A" weighted scale). The purpose of the ordinance is to reduce the impact of aircraft noise on human health by requiring noise insulation, noise disclosure statements, and noise easements, as applicable. The A-ON also restricts hospitals, clinics, nursing homes, childcare facilities, nonresidential housing units, and schools (except for aviation-related training/educational facilities) within the 65 DNL contour, although conditional use permits can be used to locate these property types within the O-AN zone. It is important to note that the noise contours exhibited in this Master Plan do not supersede the County's zoning ordinance that establishes the A-ON.

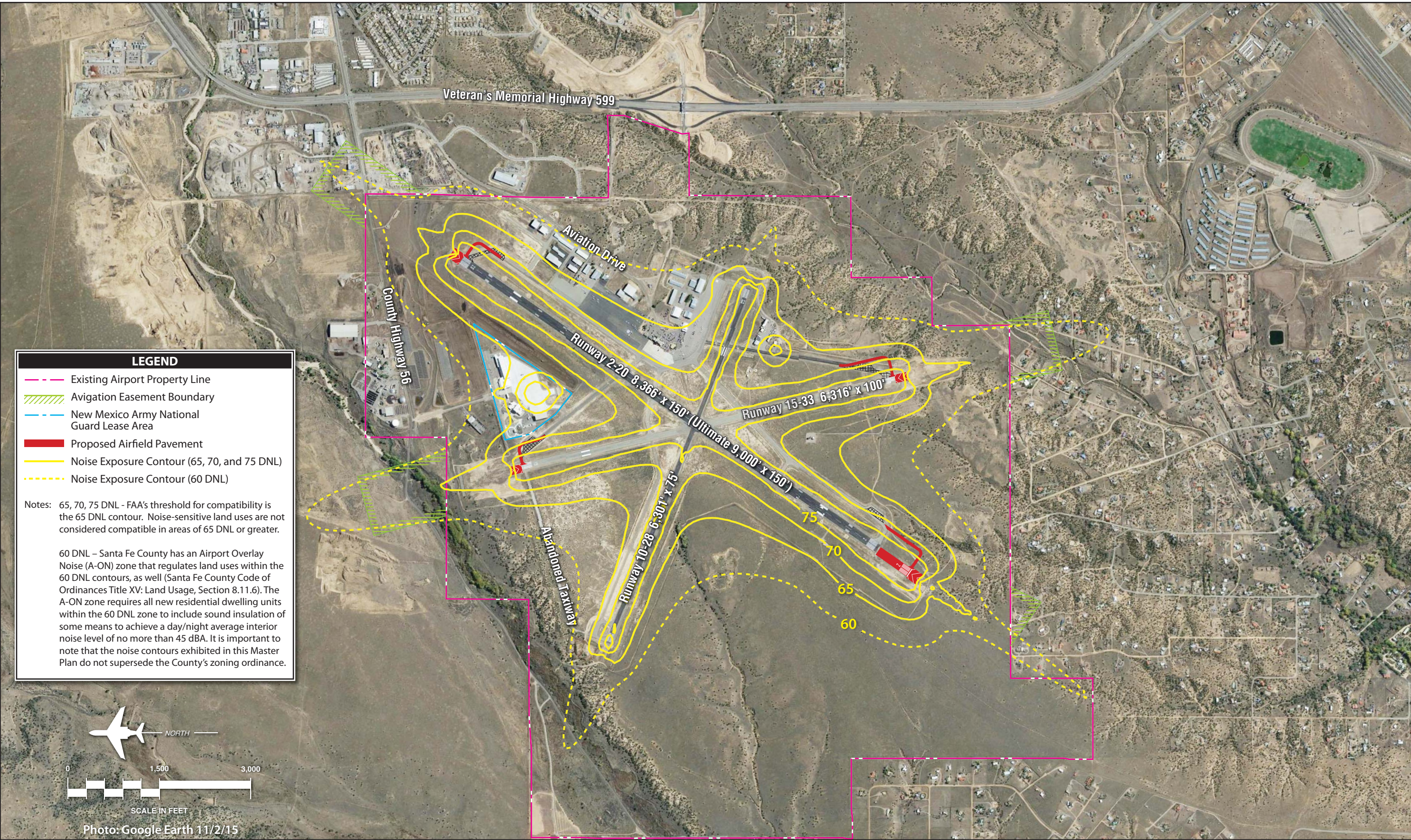






This page intentionally left blank







This page intentionally left blank

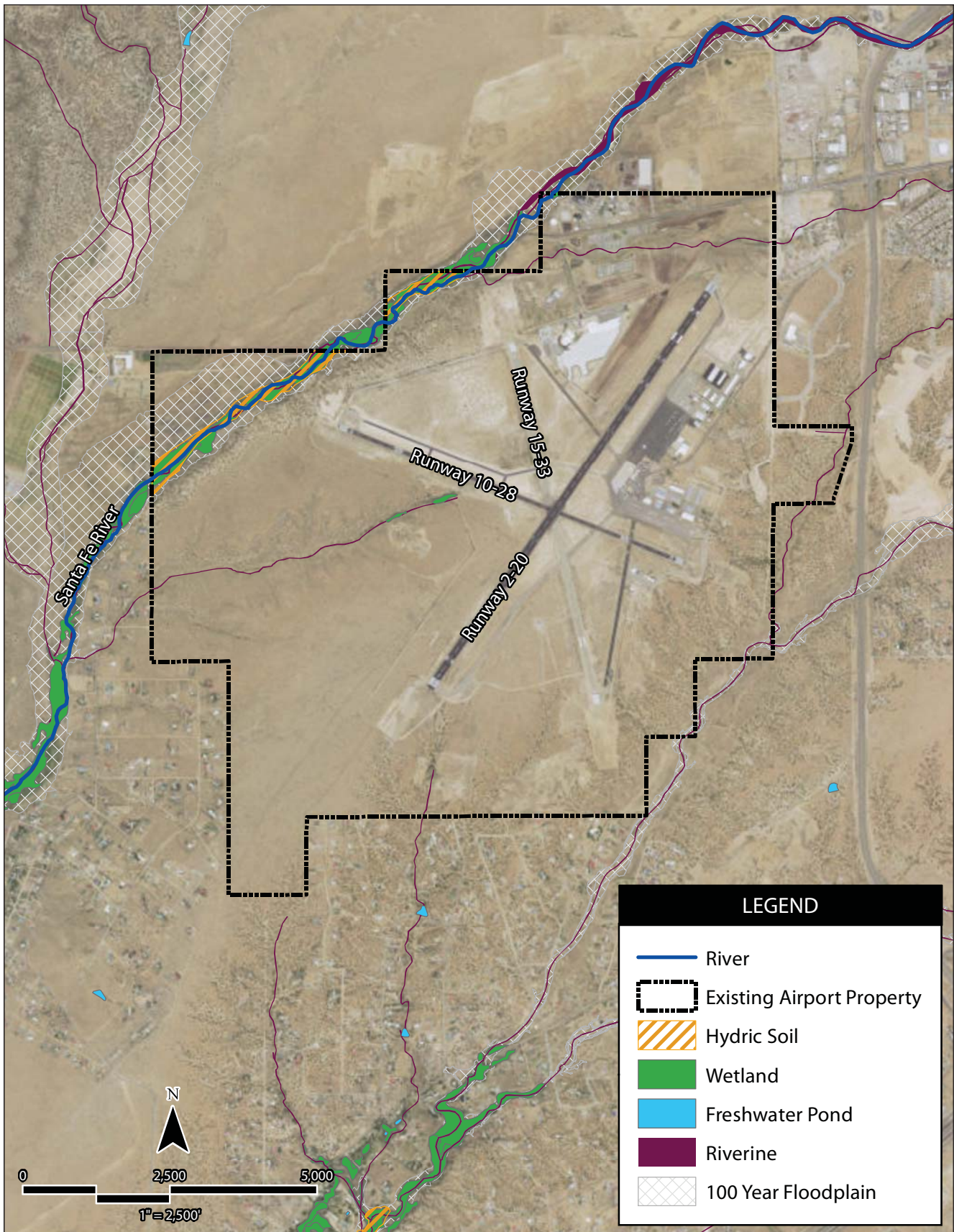


		<p>The airport is primarily undeveloped to the north and northwest with residential development to the east, south, and southwest. There are parks and recreation facilities scattered around the airport with industrial uses directly northwest. The 65, 70, and 75 existing noise contours (<b>Exhibit 5C</b>) all lie within airport property, resulting in no adverse noise impacts to the surrounding land uses. Future noise contours (<b>Exhibit 5D</b>) are almost entirely on airport property, with the exception of a small section of land north of Runway 15 where the 65 future noise contour extends off airport property. However, the area the contour extends into is undeveloped, vacant land, which would not be subject to any disturbance caused by aircraft noise.</p> <p>None. In terms of Section 4(f) lands, there are no parks, refuges, known historic sites, or known traditional cultural properties in proximity to the Airport. However, there are known cultural resources present at the Airport, for which significance has yet to be determined.</p>
<b>Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks</b>		
Socioeconomics	<p>FAA has not established a significance threshold for socioeconomic. However, factors to consider are if an action would have the potential to:</p> <ul style="list-style-type: none"> <li>• Induce substantial economic growth in an area, either directly or indirectly (e.g., through establishing projects in an undeveloped area);</li> <li>• Disrupt or divide the physical arrangement of an established community;</li> <li>• Cause extensive relocation when sufficient replacement housing is unavailable;</li> <li>• Cause extensive relocation of community businesses that would cause severe economic hardship for affected communities;</li> <li>• Disrupt local traffic patterns and substantially reduce the levels of service of roads serving the airport and its surrounding communities; or</li> <li>• Produce a substantial change in the community tax base.</li> </ul>	<p>Proposed development projects would occur primarily on the Airport property and would not result in substantial physical disruption or division within the Santa Fe area. The proposed property acquisition (discussed in Land Use) may require further coordination with the FAA, but significant impacts are not expected.</p> <p>There is potential for increased economic activity on airport property with the proposed aviation development/redevelopment area and the non-aviation related revenue support. If any displacement of property should occur due to proposed land acquisition, the Airport would follow the Uniform Relocation Assistance and Real Property Acquisition Policies to ensure compliance. However, disruption of local traffic patterns may occur if it is determined that County Highway 56 needs to be relocated to accommodate the extended RPZ. Traffic volumes on and around airport property may increase during construction, but will not result in long-term congestion.</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"> <li>• Significant impacts in other environmental impact categories; or</li> </ul>	<p>Eleven percent of the population residing near the airport is below the poverty level. Despite this, it is not expected that construction will result in disproportionately high and/or adverse impacts to any environmental justice populations residing in the residential developments to the east, south, and west of the airport since all recommended development would be contained within existing airport boundaries.</p>

	<ul style="list-style-type: none"> <li>Impacts on the physical or natural environment that affect an environmental justice population in a way that FAA determines are unique to the environmental justice population and significant to that population.</li> </ul>	
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 Capital High School, which is over two miles away from the airport.
<b>Visual Effects</b>		
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"> <li>Create annoyance or interfere with normal activities from light emissions; and</li> <li>Affect the visual character of the area due to the light emissions, including the importance, uniqueness, and aesthetic value of the affected visual resources.</li> </ul>	<p>The primary recommendations related to lighting are to replace incandescent airfield lighting and signage systems with LED technology and to continue the application of MIRL to Runways 2-20, 15-33, and 10-28, and MITL on all existing and proposed taxiways serving the runway system. Transitioning from incandescent to LED technology would not result in a change to current light emissions from the airfield; however, the addition of MIRL and MITL to the necessary areas of the airfield would increase the amount of light on the airport. This additional lighting could be noticed by residences to the west as some of these houses are directly adjacent to airport property - near Runways 2 and 33 - which are both anticipated to have additional lighting. Residences southwest and east of the airport should not experience impacts as the nearest residents are over one-half mile away.</p> <p>New Mexico enacted the <i>Night Sky Protection Act</i> in 1999 to regulate outdoor night lighting fixtures to preserve and enhance the state's dark sky, while promoting safety, conserving energy, and preserving the environment for astronomy. Airport development shall be consistent with the City of Santa Fe Outdoor Lighting Code (Development and Design Standards Code, Article 14-8, Section 9) and Section 7.8 of the Santa Fe County Code of Ordinances (Title XV: Land Usage).</p>
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"> <li>Affect the nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources;</li> <li>Contrast with the visual resources and/or visual character in the study area; and</li> <li>Block or obstruct the views of the visual resources, including whether these resources would still be viewable from other locations.</li> </ul>	None. Development planned in the recommended Master Plan development concept would not change the overall visual character of the Airport. On nearby Bureau of Land Management (BLM) lands (i.e., in the La Cienega area), there is an area of critical concern (ACEC) that is designated as such given the significant scenic values. This area is located approximately two miles from the airport and would not be impacted by airport development.

Water Resources (including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)		
Wetlands	<p><b>Threshold: The action would:</b></p> <ol style="list-style-type: none"> <li>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;</li> <li>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;</li> <li>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);</li> <li>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.</li> <li>5. Promote development of secondary activities or services that would cause the circumstances listed above to occur; or</li> <li>6. Be inconsistent with applicable state wetland strategies.</li> </ol>	<p>There are many different types of wetlands along the 100-year floodplain that the Santa Fe River runs through (shown on <b>Exhibit 5E</b>). Several sections of the Santa Fe River run through Airport property. There is a riverine flowing east to Runway 10-28 that contains two wetlands. Any construction near Runways 10 and 15 should take great care to ensure no construction by-products flow into the wetlands and/or the Santa Fe River. There are other sections of riverines that run through Airport property that could be implicated by construction by-products, as well, and these areas should be protected during construction activity. Only 1.3 percent of airport property contains hydric soils, which occur along the Santa Fe River.</p>
Floodplains	<p><b>Threshold: The action would cause notable adverse impacts on natural and beneficial floodplain values. Natural and beneficial floodplain values are defined in Paragraph 4.k of DOT Order 5650.2, <i>Floodplain Management and Protection</i>.</b></p>	<p>None. There is a 100-year floodplain that runs along the northern airport property line in Santa Fe River. The RPZs for Runways 10 and 15 both include the 100-year floodplain, meaning no development will occur there. This is both a safety measure for the airport and a benefit to this existing natural feature.</p>
Surface Waters	<p><b>Threshold: The action would:</b></p> <ol style="list-style-type: none"> <li>1. Exceed water quality standards established by federal, state, local, and tribal regulatory agencies; or</li> <li>2. Contaminate public drinking water supply such that public health may be adversely affected.</li> </ol> <p>Factors to consider are when a project would have the potential to:</p> <ul style="list-style-type: none"> <li>• Adversely affect natural and beneficial water resource values to a degree that substantially diminishes or destroys such values;</li> <li>• Adversely affect surface water such that the beneficial uses and values of such waters are appreciably diminished or can no longer be</li> </ul>	<p>For pollution prevention, the Airport operates under a National Pollutant Discharge Elimination System (NPDES) permit and has a valid stormwater pollution prevention plan (SWPPP) in place. Airport projects, such as additional apron, parking lots, or other impervious surfaces, could increase the amount of runoff from the Airport. The Airport's stormwater drainage system will need to be upgraded to handle additional runoff quantities, when necessary, and its NPDES permit and SWPPP updated accordingly.</p> <p>Per Title 14, Chapter 5, Part 2 of the New Mexico Administrative Code (NMAC), a building permit from the Construction Industries Division of the Regulation and Licensing Department of New Mexico would be required prior to any construction proposed by the Master Plan. FAA's Advisory</p>





Source: ESRI Basemap Imagery (2014), USFWS, FEMA, USDA

	<p>maintained and such impairment cannot be avoided or satisfactorily mitigated; or</p> <ul style="list-style-type: none"> <li>• Present difficulties based on water quality impacts when obtaining a permit or authorization.</li> </ul>	<p>Circular (AC) 150/5370-10G, <i>Standards for Specifying Construction of Airports, Item P-156, Temporary Air and Water Pollution, Soil Erosion and Siltation Control</i> should also be implemented during construction projects at the Airport.</p>
Groundwater	<p><b>Threshold: The action would:</b></p> <ol style="list-style-type: none"> <li>1. <b>Exceed groundwater quality standards established by federal, state, local, and tribal regulatory agencies: or</b></li> <li>2. <b>Contaminate an aquifer used for public water supply such that public health may be adversely affected.</b></li> </ol> <p>Factors to consider are when a project would have the potential to:</p> <ul style="list-style-type: none"> <li>• Adversely affect natural and beneficial groundwater values to a degree that substantially diminishes or destroys such values;</li> <li>• 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</li> <li>• Present difficulties based on water quality impacts when obtaining a permit or authorization.</li> </ul>	<p>Indirect. The master plan concept demonstrates future revenue-generating opportunities on airport property that could increase the amount of water used on site. The aviation development/ redevelopment potential area, as well as the non-aviation related revenue support area on-site, could result in increased water use as these properties are developed in the future.</p>
Wild and Scenic Rivers	<p>FAA has not established a significance threshold for Wild and Scenic Rivers.</p>	<p>None. The closest designated Wild and Scenic river segments (Pecos River) are approximately 22 miles from the Airport. The closest river listed on the NRI is Pecos River. The recommended Airport projects would not have adverse effects on the river's outstanding remarkable values under consideration in the NRI (i.e., scenery, recreation, geology, fish, wildlife, and history).</p>

## SUMMARY

This chapter has been prepared to help the City of Santa Fe in making decisions on the future growth and development of Santa Fe Municipal Airport by describing narratively and graphically the Master Plan Concept. The plan represents an airfield facility that fulfills aviation needs for the airport, while conforming to safety and design standards to the extent practicable. It also provides a landside complex that can be developed as demand dictates and is subject to further refinement pending comments from the MPAC, City of Santa Fe, and general public.



***The Master Plan Concept provides airport stakeholders with a general guide that, if followed, can maintain the airport's long term viability and allow the airport to continue to provide air transportation service to the region.***

Flexibility will be very important to future development at the airport, as activity may not occur as predicted. The Master Plan Concept provides airport stakeholders with a general guide that, if followed, can maintain the airport's long term viability and allow the airport to continue to provide air transportation service to the region. The next chapter of this Master Plan will consider

strategies for funding the recommended improvements and will provide a reasonable schedule for undertaking the projects based on safety and demand over the course of the next 20 years.