



CHAPTER FIVE
Airport Plans

AIRPORT PLANS

The airport master planning process has evolved through several analytical efforts in the previous chapters, intended to analyze future aviation demand, establish airside and landside facility needs, and evaluate options for the future development of the airside and landside facilities. The planning process included the presentation of Phase Reports of the master plan to the Planning Advisory Committee (PAC). A master plan concept has evolved with their input and the input of the Federal Aviation Administration (FAA).

This concept has been subsequently refined into the final airport layout plan (ALP) set of drawings which represents the extent of planned future improvements at the airport. A full-color, half-sized set of the airport layout plan drawings is included in **Appendix C**. A half-sized copy of the FAA approved and signed ALP plan drawing is included in **Appendix D**, along with the FAA approval letter.



AIRPORT DESIGN STANDARDS

Cottonwood Municipal Airport is utilized by a variety of general aviation aircraft ranging from small single and multi-engine piston aircraft that are included within the airport reference code (ARC) B-I. These aircraft comprise the majority of aircraft operations at the airport. (Refer to Chapter Three for details discussing the airport reference code criterion.)

The airport is also used occasionally today by small turboprop and business jets, generally weighing less than 12,500 pounds. Over the planning period, it is expected that the airport will be used on a more regular basis by



an increasing number of these aircraft. For this reason, it is recommended that the airport be planned and designed to ARC B-II. **Table 5A** summarizes the current FAA planning standards used in the ultimate design and layout of Cottonwood Municipal Airport.

RECOMMENDED MASTER PLAN CONCEPT

The recommended master plan concept provides for anticipated facility needs over the next 20 years, while ensuring a viable aviation facility for the Cottonwood area well beyond this period. The recommended concept is depicted on **Exhibit 5A**. The following paragraphs summarize the airside and landside recommendations.

AIRFIELD RECOMMENDATIONS

The principal airfield recommendations focus first upon safety and security. Of key importance is to ensure that airport design standards are met, particularly in consideration of future development of an instrument approach to the airport. Other recommendations are provided to improve the operational capability for the design aircraft. The following paragraphs discuss the recommendations as they pertain to the runway, the taxiway system, and the airfield support facilities.

Runway 14-32 is currently 4,250 feet in length, with an FAA pavement strength rating of 4,000 pounds single wheel loading (SWL). Pavement analyses in the past have indicated the runway has been designed to handle aircraft up to

30,000 pounds SWL. To accommodate the design aircraft (turboprops and small business jets) in ARC B-II, the runway should be maintained at 12,500 pounds SWL in the future.

The current runway length is sometimes limiting for some of the aircraft that use it. The previous chapter reviewed options for providing additional runway length for takeoff. It was determined that the extension options requiring a major diversion or relocation of Mingus Avenue (Alternatives A and C) would have a significant impact upon the city's roadway and traffic system.

Alternative B proposed converting the current overruns at each end to be part of the runway length and implementing declared distances in accordance with FAA Advisory 150/5300-13 to increase the effective takeoff length to at least 4,550 feet. Upon review, however, the FAA indicated that they would not support this alternative, so the runway length remains unchanged in the final Master Plan concept.

A 60-acre parcel on the west side of the airport is recommended for purchase. This is recommended to provide a midfield location for an airport weather observation station (AWOS) and to allow for the relocation of the segmented circle and the parachute drop zone. This, in turn, will provide space for adding hangars in the terminal area. The property acquisition is based upon the purchase of full properties with sufficient depth back from the runway to provide room for future growth. This will better preserve the long term viability of the airport.

TABLE 5A Airfield Design Standards by ARC (dimensions in feet, unless noted)	
	Runway 14-32
Airport Reference Code	B-II
Design Pavement Strength (pounds)	12,500
Design Aircraft Wingspan	54.5
Approach Visibility Minimums	Greater than One Mile
<u>Runway</u>	
Width	75
Runway Safety Area (RSA)	
Width	150
Length Beyond Runway End	300
Object Free Area (OFA)	
Width	500
Length Beyond Runway End	300
Obstacle Free Zone (OFZ)	
Width	200
Length Beyond Runway End	250
Runway Centerline To:	
Parallel Taxiway Centerline	240
Edge of Aircraft Parking Apron	250
<u>Runway Protection Zone</u>	
Inner Width	250
Outer Width	450
Length	1000
<u>Obstacle Clearance</u>	
	20:1
<u>Building Restriction Line</u>	
To On-Airport Buildings	265 ¹
To Minimum Property Line	370 ²
<u>Taxiways</u>	
Width	35
Safety Area Width	79
Taxiway Centerline To:	
Parallel Taxiway/Taxilane	76
Fixed or Moveable Object	50
<u>Taxilanes</u>	
Taxilane Centerline To:	
Parallel Taxilane Centerline	70
Fixed or Movable Object	43
Source: FAA Advisory Circular 150/5300-13, <i>Airport Design</i> , F.A.R. Part 77, TERPS	
¹ 20-foot building height	
² 35-foot building height	

The plan also allows for a connector road along the existing west side of the property. While this will not be eligible as an airport access road, it would provide for improved access on the west side of Cottonwood.

TERMINAL AREA RECOMMENDATIONS

The terminal area development plans include recommendations for landside access and parking, hangars, and parking apron. All of this development is currently at the north end of the west side of the airport. As indicated earlier on **Exhibit 5A**, plans call for reorganization of the ramp, fill-in of hangar parcels, and development of T-hangars beyond the south end of the existing ramp.

The aircraft parking ramp layout is reconfigured to coincide with the parallel taxiway relocation and the ARC B-II design standards. The shade hangar will be relocated from the north ramp to convert it to transient parking. The south ramp would remain in its current tie-down configuration. If desired, the shade hangar could be moved to the south ramp. It would need to be maintained at least 350 feet from the runway centerline.

The current flight line along the west side of the ramp is planned to allow conventional hangar development within the available parcels. The public terminal building will continue to provide areas for airport administration, general aviation services, and for transient facilities such as restrooms

and flight planning. An aircraft wash rack is planned adjacent to the fuel storage tanks. The wash rack would provide an area for aircraft cleaning and the proper collection of the aircraft cleaning solvents and contaminants removed from the aircraft hull during cleaning.

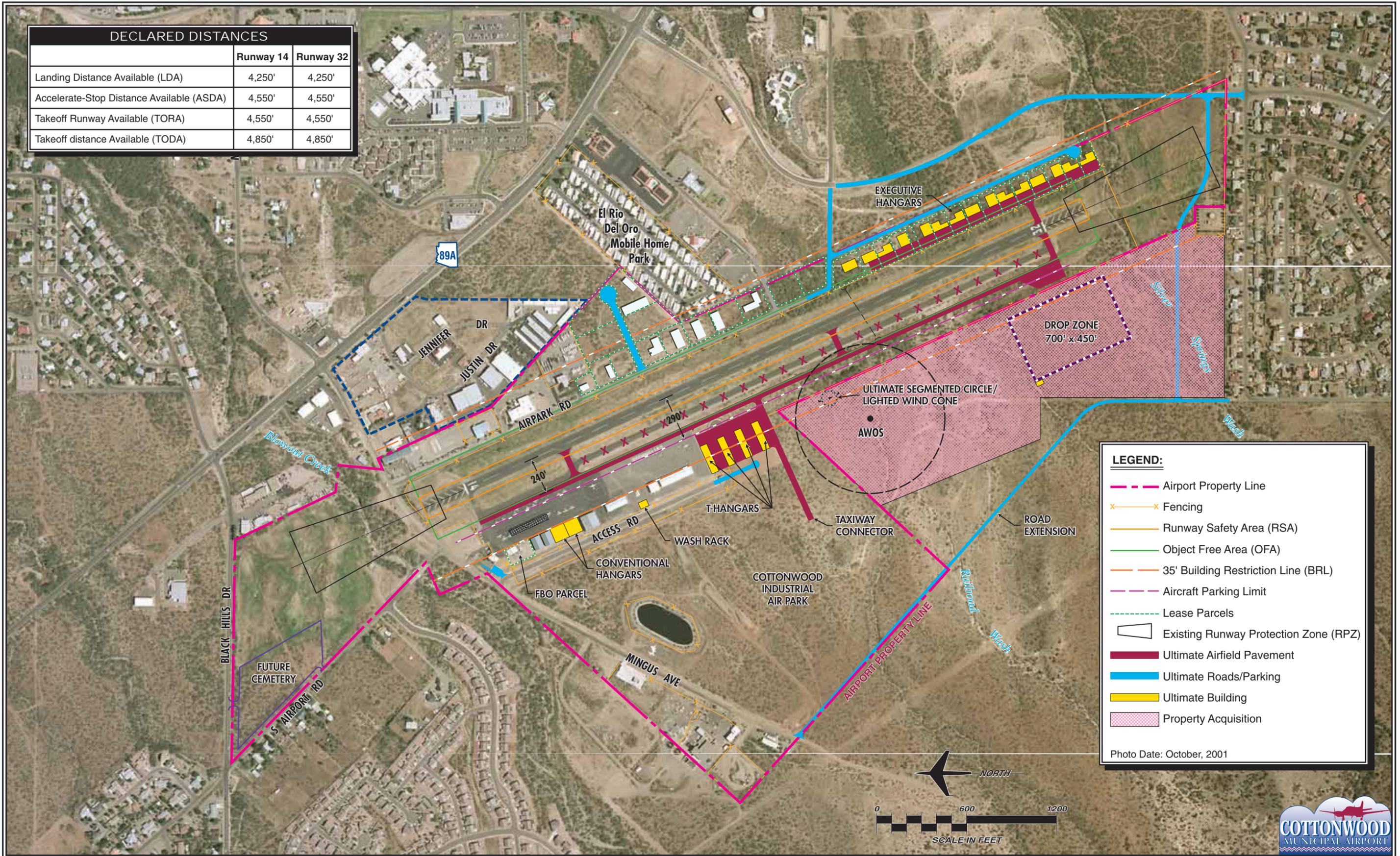
A T-hangar area is planned to the south of the aircraft ramp. This features up to four eight-unit T-hangars. A taxiway connector running from the parallel taxiway to the airport property west of the future T-hangars is also planned. This will provide access to the industrial airpark planned for this area.

Additional auto parking is planned in the vicinity of the terminal building and the FBO hangar. The access road is planned to be extended south to serve the T-hangars.

The plan for the east side of the airport depicts a proposed development of parcels that would support additional hangar development. This area is planned to be privately developed on property leased from the airport.

Since September 11, 2001, security at airports has increased in importance and awareness. The *Aviation and Transportation Security Act of 2001* established the Transportation Security Administration (TSA) to administer transportation security nationally. While the focus of the TSA has been primarily on commercial airline checked baggage and carry-on baggage screening, improved security at general aviation airports is still part of the plan.

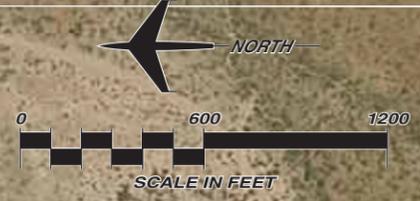
DECLARED DISTANCES		
	Runway 14	Runway 32
Landing Distance Available (LDA)	4,250'	4,250'
Accelerate-Stop Distance Available (ASDA)	4,550'	4,550'
Takeoff Runway Available (TORA)	4,550'	4,550'
Takeoff distance Available (TODA)	4,850'	4,850'



LEGEND:

- Airport Property Line
- x Fencing
- Runway Safety Area (RSA)
- Object Free Area (OFA)
- 35' Building Restriction Line (BRL)
- Aircraft Parking Limit
- Lease Parcels
- Existing Runway Protection Zone (RPZ)
- █ Ultimate Airfield Pavement
- █ Ultimate Roads/Parking
- █ Ultimate Building
- █ Property Acquisition

Photo Date: October, 2001



Industry groups had made a series of recommendations to the TSA for general aviation threat assessment and security standards for general aviation airports. This Master Plan has recognized that greater security scrutiny will be placed on general aviation airports in the future. For Cottonwood Municipal Airport, the Master Plan security recommendations focus on limiting vehicle and pedestrian access to the apron areas and aircraft operational areas.

The segregation of vehicle and aircraft operational areas is further supported by new FAA guidance established in June 2002. FAA AC 150/5210-20, *Ground Vehicle Operations on Airports*, states, "The control of vehicular activity on the airside of an airport is of the highest importance." The AC further states, "An airport operator should limit vehicle operations on the movement areas of the airport to only those vehicles necessary to support the operational activity of the airport." The terminal area plan for Cottonwood Municipal Airport has been developed in a manner that reduces the need for vehicles to cross the apron or a taxiway.

Attention has been given to ensure public access routes to the public terminal building and commercial general aviation facilities. Commercial general aviation facilities or fixed base operator (FBO) facilities are focal points for users who are not familiar with aircraft operations (i.e., delivery vehicles, charter passengers, etc.).

The primary emphasis is on maintaining a fenced apron and

operations area with gated access. Also important is the provision of ample, convenient, and well-lighted vehicle parking outside the secured area.

NOISE EXPOSURE ANALYSIS

Aircraft sound emissions are often the most noticeable environmental effect an airport will produce on the surrounding community. If the sound is sufficiently loud or frequent in occurrence, it may interfere with various activities or otherwise be considered objectionable.

To determine the noise-related impacts the proposed development could have on the environment surrounding Cottonwood Municipal Airport, noise exposure patterns were analyzed for both existing airport activity conditions and projected long term activity conditions.

The basic methodology employed to define aircraft noise levels involves the use of a mathematical model for aircraft noise predication. The Yearly Day-Night Average Sound Level (DNL) is used in this study to assess aircraft noise. DNL is the metric currently accepted by the FAA, Environmental Protection Agency (EPA), and Department of Housing and Urban Development (HUD) as an appropriate measure of cumulative noise exposure. These three federal agencies have each identified the 65 DNL noise contour as the threshold of incompatibility, meaning that noise levels below 65 DNL are considered compatible with underlying land uses. Most federally-

funded airport noise studies use DNL as the primary metric for evaluating noise.

DNL is defined as the average A-weighted sound level as measured in decibels (dB) during a 24-hour period. A 10-dB penalty applies to noise events occurring at night (10:00 p.m. to 7:00 a.m.). DNL is a summation metric which allows objective analysis and can describe noise exposure comprehensively over a large area. The 65 DNL contour has been established as the threshold of incompatibility, meaning that noise levels below 65 DNL are considered compatible with underlying land uses.

Since noise decreases at a constant rate in all directions from a source, points of equal DNL noise levels are routinely indicated by means of a contour line. The various contour lines are then superimposed on a map of the airport and its environs. It is important to recognize that a line drawn on a map does not imply that a particular noise condition exists on one side of the line and not on the other. DNL calculations do not precisely define noise impacts. Nevertheless, DNL contours can be used to: (1) highlight existing or potential incompatibilities between an airport and any surrounding development; (2) assess relative exposure levels; (3) assist in the preparation of airport environs land use plans; and (4) provide guidance in the development of land use control devices, such as zoning ordinances, subdivision regulations, and building codes.

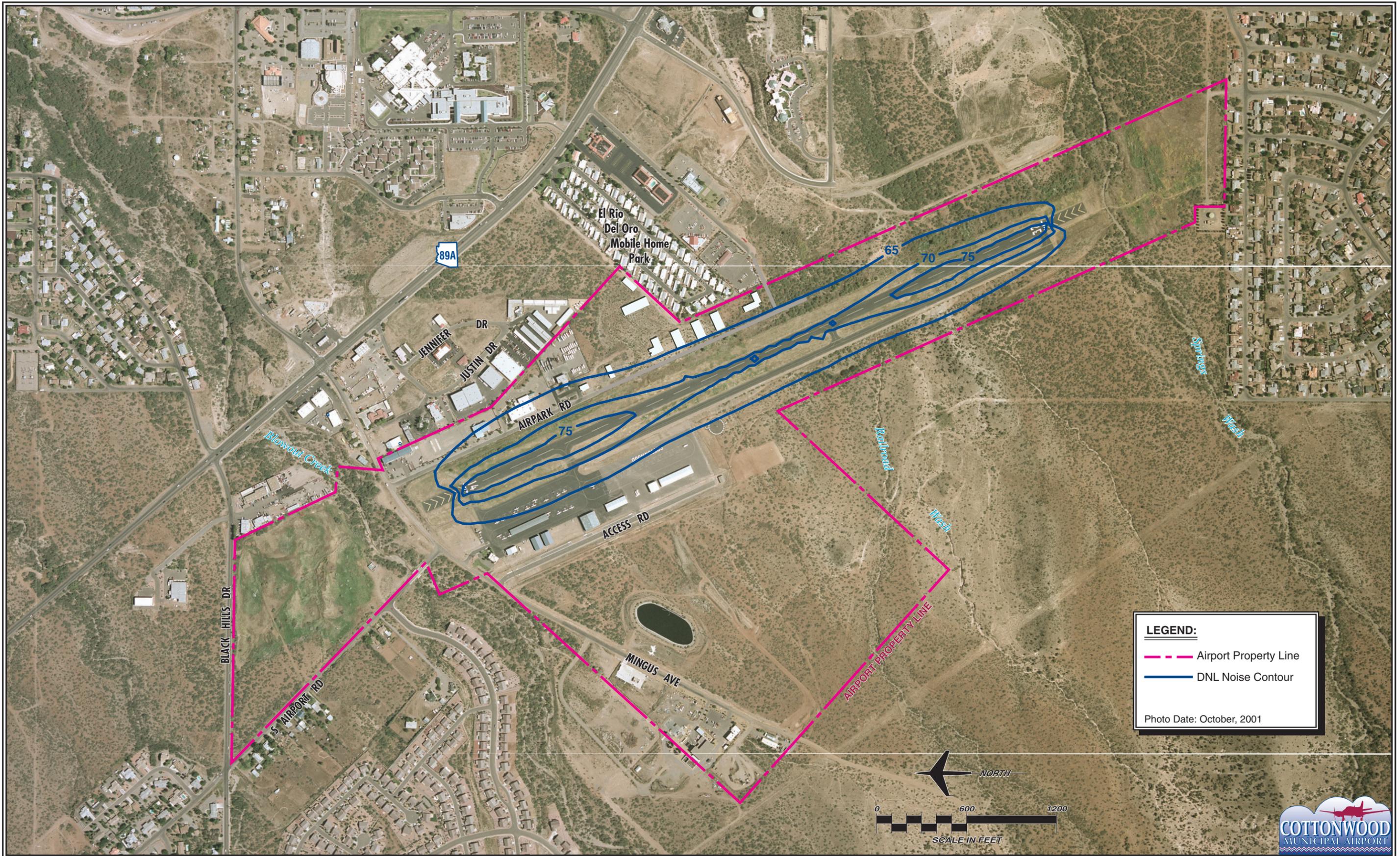
The noise contours for Cottonwood Municipal Airport have been developed

from the Integrated Noise Model (INM), Version 6.1. The INM was developed by the Transportation Systems Center of the U.S. Department of Transportation at Cambridge, Massachusetts, and has been specified by the FAA as one of two models acceptable for federally funded noise analysis.

The INM is a computer model which accounts for each aircraft along flight tracks during an average 24-hour period. These flight tracks are coupled with separate tables contained in the database of the INM which relate to noise, distances, and engine thrust for each make and model of aircraft type selected.

Computer input files for the noise analysis assumed implementation of the proposed airfield plan. The input files contain operational data, runway utilization, aircraft flight tracks, and fleet mix as projected in the plan. The operational data and aircraft fleet mix are summarized in **Table 5B**.

The aircraft noise contours generated using the aforementioned data for Cottonwood Municipal Airport are depicted on **Exhibit 5B**, Existing Noise Exposure and **Exhibit 5C**, Long Term Noise Exposure. As shown on both exhibits, the 65 DNL noise contour is expected to remain almost entirely within the existing airport property when considering both existing and forecast activity at the airport. A small portion of the long term 65 DNL contour extends beyond the northern airport boundary.



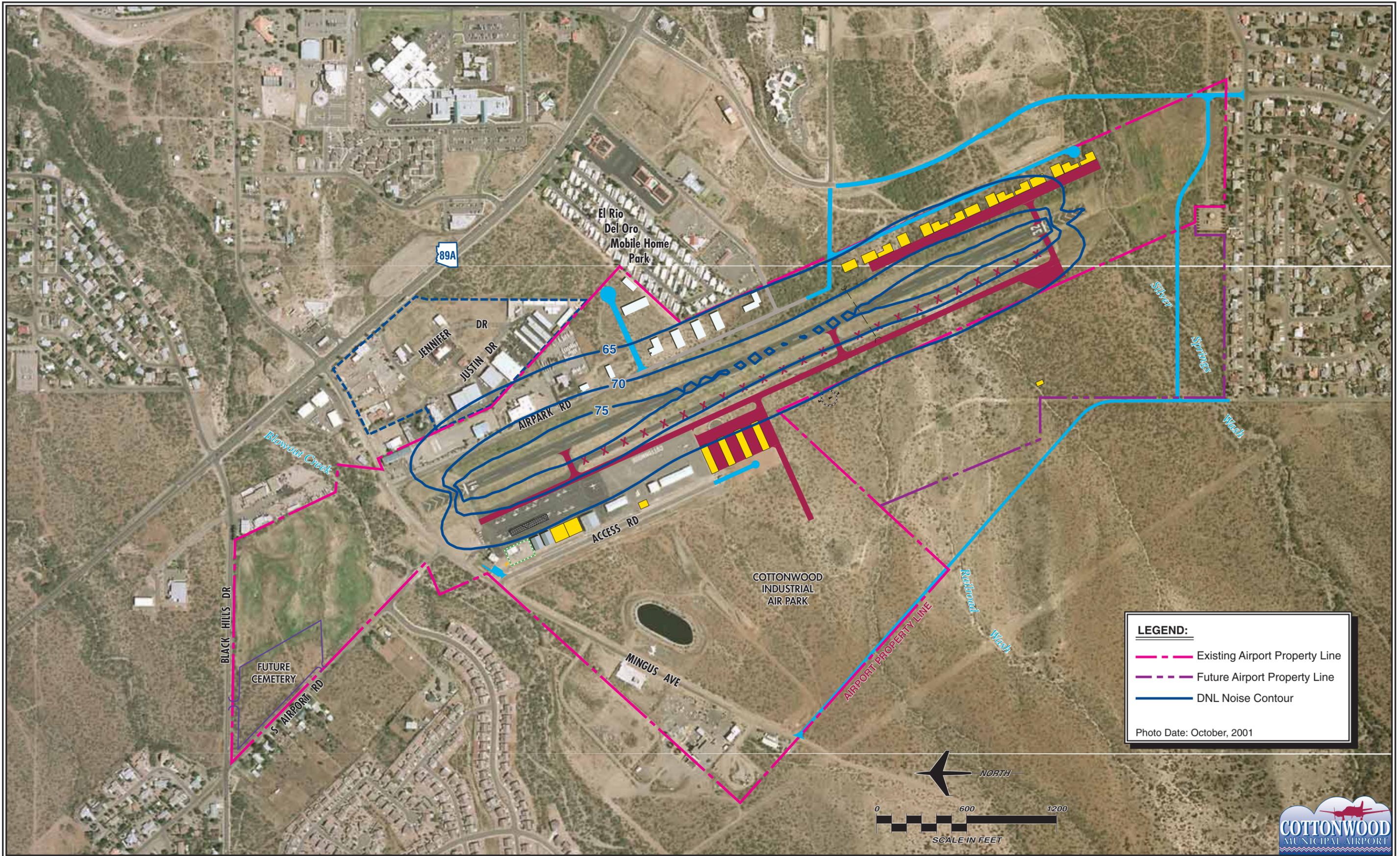


TABLE 5B Aircraft Forecast Summary		
Type of Operation	Annual Operations	
	Existing	Long Term
Single-Engine Piston	17,500	31,000
Multi-Engine Piston	1,100	2,200
Turboprop	200	1,200
Business Jet	200	1,000
Helicopter	500	1,100
Total Operations	19,500	36,500

ENVIRONMENTAL OVERVIEW

The protection and preservation of the local environment are essential concerns in the master planning process. Now that a program for the use and development of Cottonwood Municipal Airport has been proposed, it is necessary to review environmental issues to ensure that the program can be implemented in compliance with applicable environmental regulations, standards, and guidelines.

All the improvements planned for Cottonwood Municipal Airport, as depicted on the Airport Layout Plan (ALP), will require compliance with the *National Environmental Policy Act (NEPA) of 1969*, as amended. Many of the improvements will be categorically excluded and will not require full NEPA documentation. FAA will determine if projects such as the upgrade to B-II standards or the acquisition of property

require full documentation. As detailed in FAA Order 5050.4A, *Airport Environmental Handbook*, compliance with NEPA is generally satisfied with the preparation of an Environmental Assessment (EA). In cases where a categorical exclusion is issued, environmental issues such as wetlands, threatened or endangered species, and cultural resources are further evaluated during the federal, state, and/or local permitting processes.

This section of the Master Plan is not intended to satisfy NEPA requirements; rather, it is intended only to supply a preliminary review of environmental issues that would need to be analyzed in more detail within these or permitting processes. Consequently, this analysis ***does not*** address mitigation or the resolution of environmental issues. The following pages consider the environmental resources as outlined in FAA Order 5050.4A.

Review of Environmental Resources Proposed Facility Improvements	
Environmental Resource	Anticipated Impacts
<p>Noise. The Yearly Day-Night Average Sound Level (DNL) is used in this study to assess aircraft noise. DNL is the metric currently accepted by the Federal Aviation Administration (FAA), Environmental Protection Agency (EPA), and Department of Housing and Urban Development (HUD), as an appropriate measure of cumulative noise exposure. These three agencies have each identified the noise contour as the threshold of incompatibility.</p>	<ul style="list-style-type: none"> Noise impacts will primarily remain on airport property as the contours do not extend beyond airport property lines. No noise-sensitive development is anticipated to be impacted by noise in excess of 65 DNL.
<p>Compatible Land Use. The compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of noise impacts related to that airport. In this context, if the noise analysis described above concludes that there is no significant impact, a similar conclusion usually may be drawn with respect to compatible land use. FAA officials shall contact the sponsor and representatives of affected communities to encourage the development of appropriate compatible land use controls early in the project planning stage.</p>	<ul style="list-style-type: none"> Noise impacts do not extend onto noise-sensitive development located north and east of the airport. Noise contours are confined to airport property.
<p>Social Impacts. These impacts are often associated with the relocation of residents or businesses or other community disruptions.</p>	<ul style="list-style-type: none"> No off-airport business will be affected with implementation of the plan. No off-airport roadways will be relocated.

Review of Environmental Resources (Continued)
Proposed Facility Improvements

Environmental Resource	Anticipated Impacts
<p>Induced Socioeconomic Impacts. These impacts address those secondary impacts to surrounding communities resulting from the proposed development, including shifts in patterns of population growth, public service demands, and changes in business and economic activity to the extent influenced by the airport development.</p>	<ul style="list-style-type: none"> • It could be expected that the proposed development would potentially induce positive socioeconomic impacts for the community over a period of years. The airport, with expanded facilities and services, would be expected to attract additional users. It is also expected to encourage tourism, industry, and trade, and to enhance the future growth and expansion of the community's economic base. Future socioeconomic impacts resulting from the proposed development would be primarily positive in nature.
<p>Air Quality. The U.S. Environmental Protection Agency (EPA) has adopted air quality standards that specify the maximum permissible short-term and long-term concentrations of various air contaminants. The National Ambient Air Quality Standards (NAAQS) consist of primary and secondary standards for six criteria pollutants which include: Ozone (O3), Carbon Monoxide (CO), Sulfur Dioxide (SO2), Nitrogen Oxide (NO), Particulate matter (PM10), and Lead (Pb). Various levels of review apply within both NEPA and permitting requirements.</p>	<ul style="list-style-type: none"> • Cottonwood Municipal Airport is located in Yavapai County, which is in attainment for all criterial pollutants. • According to FAA Order 5050.4A, during the NEPA process, an emission inventory is not required for airports which are forecasted to handle less than 180,000 general aviation operations per year. However, the Western-Pacific Regional Office has begun requiring an emissions inventory for all projects, subject to the NEPA process, in order to determine conformity with the <i>Clean Air Act</i>. Therefore, should a NEPA document be required for any airport improvements, an emissions inventory will likely be required.

Review of Environmental Resources (Continued)
Proposed Facility Improvements

Environmental Resource	Anticipated Impacts
<p>Water Quality. Water quality concerns associated with airport expansion most often relate to domestic sewage disposal, increased surface runoff and soil erosion, and the storage and handling of fuel, petroleum, solvents, etc.</p>	<ul style="list-style-type: none"> • Blowout Creek is located in the northern portions of airport property, Railroad Wash is located in the central portion of airport property, and Silver Springs Wash is located in the southern portion of airport property. Any construction in these areas will require the use of Best Management Practices (BMPs) to reduce or prevent storm water runoff and potential drainage impacts. • The airport will need to comply with current Arizona Pollutant Discharge Elimination System Permits (APDES) operations permit requirements. • With regard to construction activities, the airport and all applicable contractors will need to obtain and comply with the requirements and procedures of the construction-related APDES General Permit, including the preparation of a <i>Notice of Intent</i> and a <i>Stormwater Pollution Prevention Plan</i>, prior to the initiation of product construction activities.
<p>Section 4(f) Lands. These include publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or any land from a historic site of national, state, or local significance.</p>	<ul style="list-style-type: none"> • No impacts anticipated. Proposed airport improvements will occur on existing airport property. Property being proposed for acquisition is currently within the Cottonwood city limits and is planned for industrial and commercial land uses.
<p>Historical and Cultural Resources</p>	<ul style="list-style-type: none"> • Further coordination with the State Historic Preservation Officer will be required to determine potential impacts to historical or cultural resources. It is anticipated that a cultural resources survey will be required for areas that have not been previously surveyed.

Review of Environmental Resources (Continued) Proposed Facility Improvements	
Environmental Resource	Anticipated Impacts
Threatened or Endangered Species and Biological Resources	<ul style="list-style-type: none"> A number of protected species are located within Yavapai County. Further coordination with the U.S. Fish and Wildlife Service and the Arizona Department of Fish and Game is required to determine potential impacts to protected species.
Waters of the U.S. Including Wetlands	<ul style="list-style-type: none"> A jurisdictional delineation by the U.S. Army Corps of Engineers will be required to determine potential impacts to jurisdictional waters.
Floodplains	<ul style="list-style-type: none"> No impacts to any 100-year floodplains.
Wild and Scenic Rivers	<ul style="list-style-type: none"> No impacts. The airport is not near any designated wild and scenic rivers.
Farmland	<ul style="list-style-type: none"> The proposed development will not affect lands protected by the <i>Farmland Protection Policy Act</i> as the area does not contain prime or unique farmland and is already committed to urban development.
Energy Supply and Natural Resources	<ul style="list-style-type: none"> The proposed alternative will result in a less-than-significant impact to energy supply and natural resources. Impacts will be a result of increased operations and upgraded facilities.
Light Emissions	<ul style="list-style-type: none"> Because of the distance from the airfield to light-sensitive land uses, impacts associated with any new light emissions are expected to be less-than-significant. Any off-site lighting impacts resulting from landside facilities can be addressed on a case-by-case basis through either shielding or redirecting the light source.

Review of Environmental Resources (Continued)
Proposed Facility Improvements

Environmental Resource	Anticipated Impacts
Solid Waste	<ul style="list-style-type: none">• Based on the forecasts of increased airport activity in the short and long terms, slight increases in the amount of solid waste generated at the airport are expected. These increases are not expected to result in a significant impact in the production of solid waste.