



CHAPTER FIVE: RECOMMENDED MASTER PLAN CONCEPT AND CAPITAL PROGRAM





Chapter Five

RECOMMENDED MASTER PLAN CONCEPT AND CAPITAL PROGRAM

The planning process for the Laughlin/Bullhead International Airport Master Plan has included several analytic efforts in the previous chapters intended to project potential aviation demand, establish airside and landside facility needs, and evaluate options for improving the airport to meet those airside and landside facility needs. The process, thus far, has included the presentation of two draft phase reports (representing the first four chapters of the Master Plan) to the Planning Advisory Committee (PAC) and the Mohave County Airport Authority (MCAA). A plan for the use of Laughlin/Bullhead International Airport has evolved considering their input. The purpose of this chapter is to describe, in narrative and graphic form, the plan for the future use of Laughlin/Bullhead International Airport.

DEMAND-BASED PLAN

The Master Plan for Laughlin/Bullhead International Airport has been developed according to a demand-based schedule. Demand-based planning establishes planning guidelines for the airport based upon airport activity levels, instead of points in time. By doing so, the levels of activity derived from the demand forecasts can be related to the actual capital investments needed to safely and efficiently accommodate the level of demand being experienced at the airport. More specifically, the intention of this Master Plan is that the facility improvements needed to serve new levels of demand should only be implemented when the levels of demand experienced at the airport justify their implementation.

For example, the aviation demand forecasts indicate airline enplanements at Laughlin/Bullhead International Airport can be expected to grow over the

long term. This forecast is supported by the airport service area's expectation for a growing population and economy, as well as historical trends that indicate higher enplanement levels can be supported by the airport service area.

Future enplanement levels, however, will be dependent upon the actual growth in population and the economy, air service levels, as well as the trends in the industry. Factors affecting future enplanement levels could include the number of airlines serving the airport, destinations served, schedule, and ticket prices. Individually or collectively, these factors can slow or accelerate based aircraft levels differently. Since changes in these factors can affect the accuracy of time-based forecasts over time, it can be difficult to predict the exact time a given improvement may become justified for the later portions of the planning period.

For these reasons, the Laughlin/Bullhead International Airport Master Plan has been developed as a demand-based plan. The Master Plan projects 145,000 enplaned passengers by the short term planning horizon. As such, the five-year capital improvement program (CIP) should be considering those needs necessary to accommodate a milestone of 145,000 enplaned passengers. When the airport reaches 145,000 enplaned passengers, the Master Plan suggests planning begin to consider the next horizon level of 200,000 enplaned passengers. While the aviation demand forecasts suggest this level could be reached in another five years, a varying economy or changes in the airport service area could speed up or slow down when this horizon is reached.

Should the 145,000 enplaned passengers level take longer to achieve than projected in the aviation demand forecasts, any related improvements to accommodate the next horizon of 200,000 enplaned passengers would be delayed. Should this level be reached sooner, the schedule to implement the improvements could be accelerated. This provides a level of flexibility in the master plan and can extend the time between master plan updates.



A demand-based master plan does not specifically require the implementation of any of the demand-based improvements. Instead, it is envisioned that implementation of any master plan improvement would be examined against demand levels prior to implementation. In many ways, this master plan is similar to a community's general plan. The master plan establishes a plan for the use of airport facilities consistent with the potential aviation needs and capital needs required to support that use. However, individual projects in the plan are not implemented until the need is demonstrated and the project is approved for funding. **Table 5A** summarizes the planning milestones used in this Master Plan.

RECOMMENDED MASTER PLAN CONCEPT

The Master Plan Concept represents the development direction for the Laughlin/Bullhead International Airport through the planning period of this

Master Plan. The Master Plan Concept is the consolidation and refinement of the airfield and landside alternatives presented in Chapter Four into a single development concept collectively representing input received from the PAC and the MCAA.

AIRSIDE PLAN

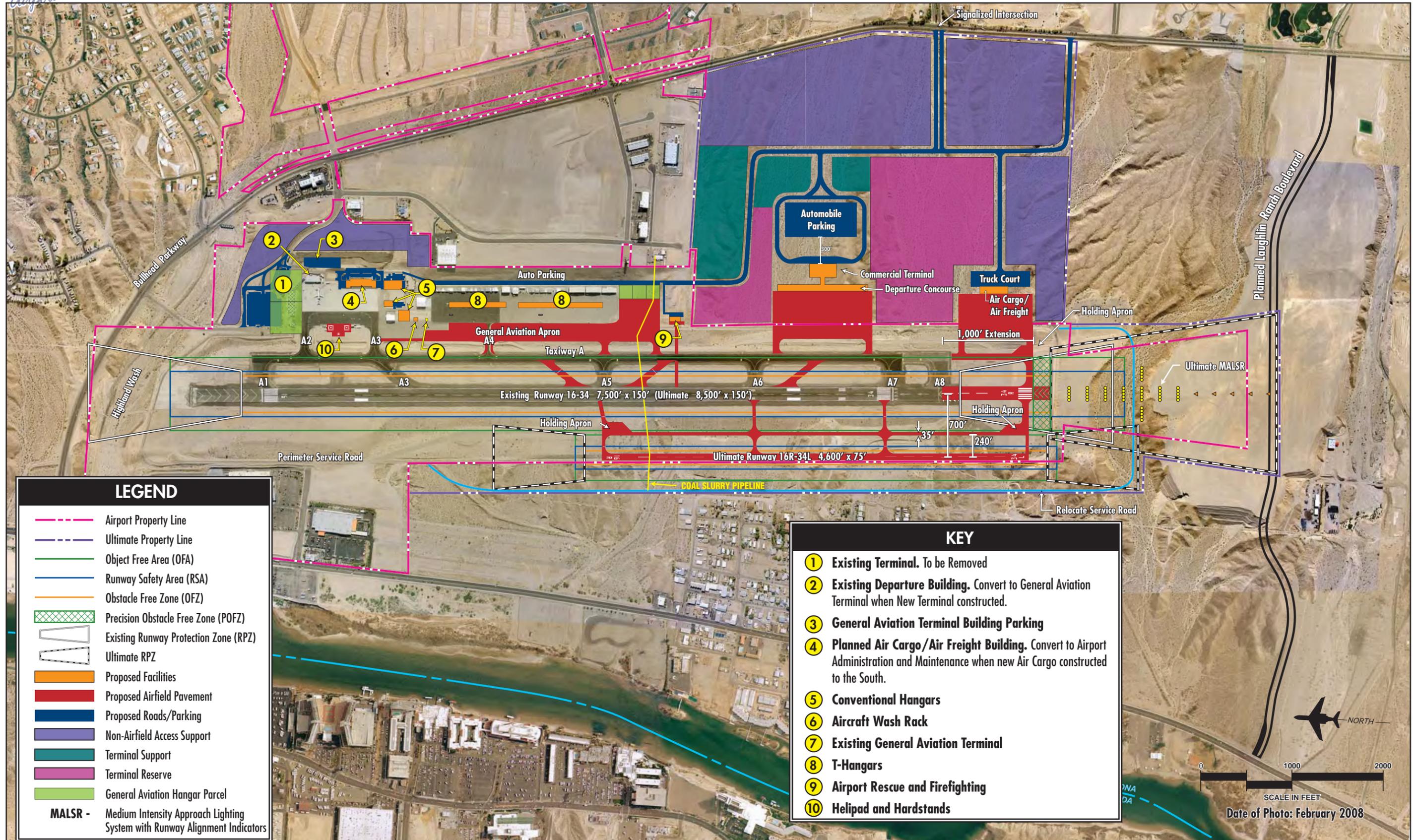
The airside plan is shown on **Exhibit 5A**. Elements of the Airside Plan are more fully explained below. This exhibit depicts the new taxiway designations implemented in 2008.

Runway Extension

The Airside Plan includes an extension of Runway 16-34 and Taxiway A 1,000 feet south to provide a total runway length of 8,500 feet. As detailed in Chapter Three, this additional length is needed by existing airlines serving Laughlin/Bullhead

**Table 5A
PLANNING HORIZON ACTIVITY LEVELS**

	BASE YEAR	PLANNING HORIZONS		
	2007	Short Term	Intermediate Term	Long Term
Airline Activity				
Enplaned Passengers	113,796	145,000	200,000	375,000
Annual Operations	1,944	5,200	7,200	12,600
Cargo Activity				
Enplaned Cargo (pounds)	1,278,400	1,530,000	1,840,000	2,640,000
Annual Operations	1,052	1,200	1,400	2,000
General Aviation Activity				
Based Aircraft	49	80	110	170
Air Taxi Operations	2,139	2,500	2,700	3,100
Annual Operations				
Local	5,638	8,200	12,000	24,600
Itinerant	16,597	22,300	30,500	53,300
Total General Aviation Operations	22,235	30,500	42,500	77,900
Military Activity				
Local	109	100	100	100
Itinerant	216	200	200	200
Total Military Operations	325	300	300	300
Total Airport Operations	27,695	39,700	54,100	95,900
Annual Instrument Approaches	NA	188	252	427



LEGEND

- - - Airport Property Line
- - - Ultimate Property Line
- Object Free Area (OFA)
- Runway Safety Area (RSA)
- Obstacle Free Zone (OFZ)
- ▨ Precision Obstacle Free Zone (POFZ)
- ▨ Existing Runway Protection Zone (RPZ)
- ▨ Ultimate RPZ
- █ Proposed Facilities
- █ Proposed Airfield Pavement
- █ Proposed Roads/Parking
- █ Non-Airfield Access Support
- █ Terminal Support
- █ Terminal Reserve
- █ General Aviation Hangar Parcel
- MALSR** - Medium Intensity Approach Lighting System with Runway Alignment Indicators

KEY

- 1** Existing Terminal. To be Removed
- 2** Existing Departure Building. Convert to General Aviation Terminal when New Terminal constructed.
- 3** General Aviation Terminal Building Parking
- 4** Planned Air Cargo/Air Freight Building. Convert to Airport Administration and Maintenance when new Air Cargo constructed to the South.
- 5** Conventional Hangars
- 6** Aircraft Wash Rack
- 7** Existing General Aviation Terminal
- 8** T-Hangars
- 9** Airport Rescue and Firefighting
- 10** Helipad and Hardstands

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SCALE IN FEET
Date of Photo: February 2008



International Airport to eliminate existing payload restrictions when operating at the airport and to increase range.

A 1,000-foot extension of Runway 16-34 to the south is currently under environmental review. As required by FAA regulations, an Environmental Assessment (EA) is presently being conducted to determine compliance with the *National Environmental Policy Act* (NEPA). The RSA beyond the extended Runway 34 end will cross an unnamed wash south of the airport. A permit from the United States Army Corps of Engineers (USACE), in accordance with Section 404 of the *Clean Water Act*, is being developed for the fill that will be placed in this unnamed wash and the culvert which will maintain storm flow through the wash.

Once extended 1,000 feet south, any further extension of Runway 16-34 is unlikely, given current and planned land uses adjacent to the airport. Primarily, an extension of Runway 16-34 any farther south is limited by the location of the planned Laughlin Ranch Boulevard. (The alignment of Laughlin Ranch Boulevard has been partially graded, but construction was not complete at the end of 2008 when this report was prepared.) The terrain also increases to the south.

The extension of Runway 16-34 south requires a relocation of the perimeter service road as shown on the Airside Plan. The perimeter service road needs to be maintained outside the limits of the Object Free Area (OFA) in accordance with FAA design standards. The acquisition of approximately 13 acres of land is needed to accommodate the relocated perimeter service road and keep the road outside the OFA as required by FAA standards. This relocated service road will impact jurisdictional Waters of the United States as it will cross the unnamed wash south of the airport. Coordination with the United States Army Corps of Engineers (USACE) will be necessary prior to construction.

Exit Taxiways

Airfield capacity and efficiency is enhanced with a sufficient number of properly spaced exit taxiways. The Facility Requirements analysis indicated the need for three additional exit taxiways. The Airfield Plan includes two additional taxiways. Each taxiway is designed as a high speed exit. This design allows the aircraft to exit the runway at a higher speed when compared with a perpendicular (right angle) exit. This reduces runway occupancy time.

Parallel Runway

A parallel runway for small general aviation aircraft maximizes airfield capacity as large and small aircraft are segregated and simultaneous operations can occur at the airport. While the airfield capacity analysis in Chapter Three indicated that a parallel runway may not be needed during the planning period of this Master Plan, a parallel runway will continue to be planned at Laughlin/Bullhead International Airport. This reserves the property south and west of the airport for this ultimate use and also allows the City of Bullhead City to continue to properly plan appropriate land uses adjacent to the airport that are compatible with this ultimate use.

The parallel runway is planned at 4,700 feet long and 75 feet wide and is located 700 feet west of the Runway 16-34 centerline per FAA design standards. This parallel runway would be served by a parallel taxiway located 240 feet east of the parallel runway. The parallel runway will require the acquisition of approximately 70 acres of land on the west and south sides of the airport. This land acquisition is needed to support the actual construction of the runway and protect the RSA, object free area (OFA), and runway protection zone (RPZ) beyond each runway end. Precision approach path indicators (PAPIs) and runway end identifier lights (REILs) are planned for each runway end.



Precision Instrument Approach

As detailed in Chapter Three, Facility Requirements, future facility planning should include lowering approach minimums to the extent practicable. Ultimately, it would be preferable to provide landings to Category I minimums – one-half mile visibility and 200-foot cloud ceilings at Laughlin/Bullhead International Airport. Due to terrain features to the north, a precision approach is most likely only feasible from the south to Runway 34.

A precision instrument approach to Runway 34 could either be developed utilizing the satellite-based Global Positioning System (GPS) or through the installation of the ground-based instrument landing system (ILS) at the airport. In either case, a precision instrument approach utilizing GPS or ILS requires consideration of FAA design standards and the addition of new approach lighting.

The Airfield Plan includes the addition of a medium intensity approach lighting system with runway alignment indicator lights (MALSR). The MALSR is required to lower visibility minimums below three-fourths of a mile. High intensity runway lighting (HIRL) is also planned to replace the existing medium intensity runway lighting (MIRL) as required by FAA

FAA design standards specify that a precision instrument approach has a larger RPZ than currently required for Runway 34. **Exhibit 5A** depicts this larger RPZ beyond Runway 34 and the acquisition of approximately 56 acres of land to protect the RPZ from incompatible development. Portions of this larger RPZ would extend over the current alignment of Laughlin Ranch Boulevard. The current position of the FAA Western-Pacific Region Los Angeles Airports District Office (ADO) is that public roadways should not extend through an RPZ. Therefore, consideration should be given to possibly realigning Laughlin Ranch Boulevard outside the limits of this ultimate RPZ when it is permanently constructed.

The FAA also requires that the precision obstacle free zone (POFZ) remain clear during precision instrument approach operations when the reported cloud ceiling is less than 250 feet and/or visibility is less than three-fourths of a statute mile and an aircraft is on approach within two miles of the runway threshold. The POFZ would be located beyond Runway 34 and is 200 feet long and 800 feet wide centered on the runway centerline. To ensure no aircraft are located within the POFZ, the hold apron at the Runway 34 end would need to be located east of Taxiway A as shown on **Exhibit 5A**.

LANDSIDE PLAN

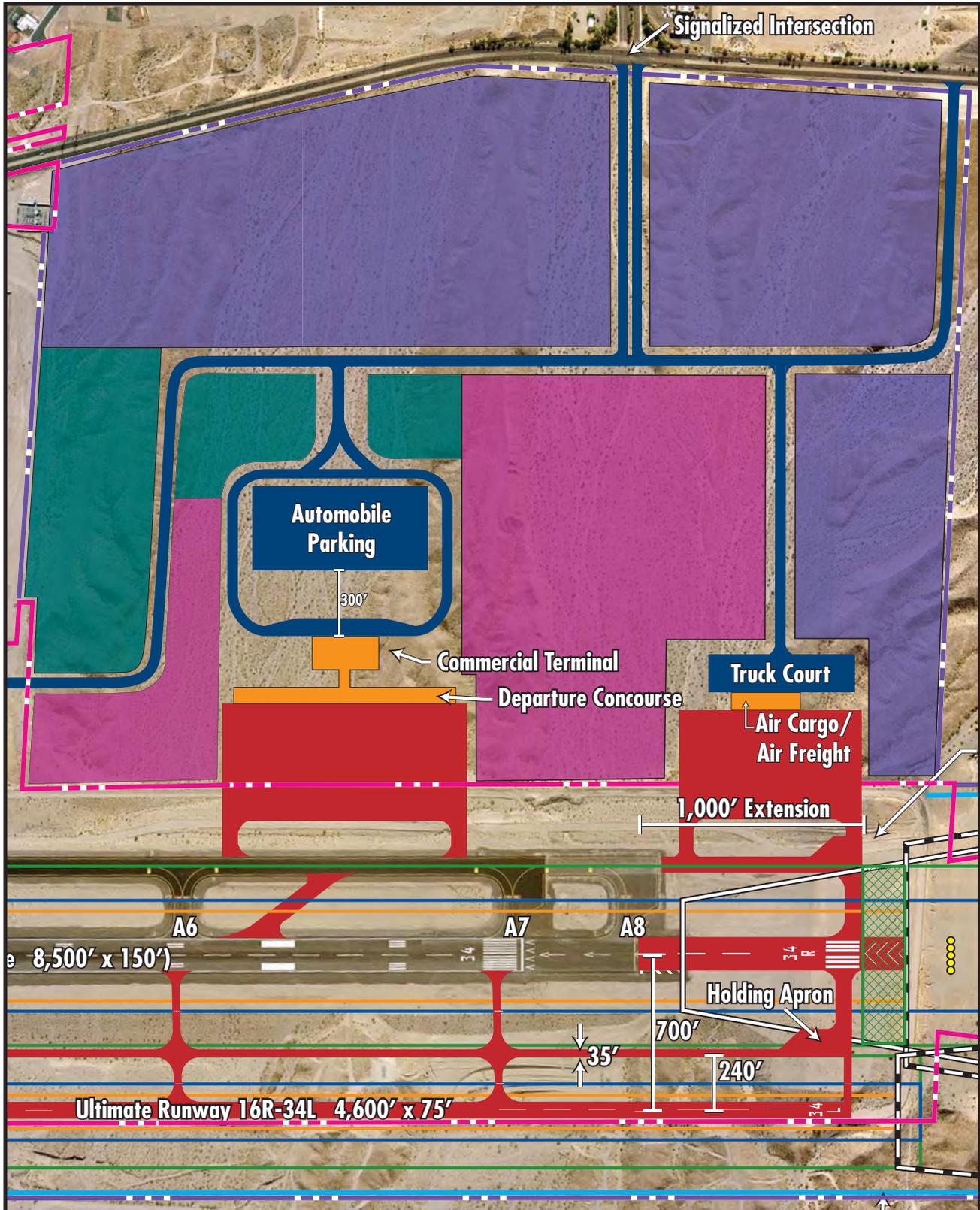
The planned landside development is shown on **Exhibit 5B**. The Landside Plan includes provisions for a new commercial service terminal area to serve projected long term airline needs, a long term segregated air cargo area, redevelopment of the existing airline terminal area for general aviation uses, expanded support/safety facilities, and new areas for commercial/industrial uses to support increased revenue for the airport.

Land Acquisition

The Landside Plan includes the acquisition of approximately 300 acres of land southeast of the airport between existing airport property and Bullhead Parkway as shown on **Exhibit 5B**. This land, currently owned by the Arizona State Land Department (ASLD), will accommodate future commercial airline and air cargo needs. Portions of the property along Bullhead Parkway are slated for industrial/commercial opportunities which can enhance the revenue potential to the MCAA. The area along Bullhead Parkway would be developed in a similar manner to the Airport Center located in the northwest quadrant of the airport.



**Exhibit 5B
RECOMMENDED SOUTHEAST LANDSIDE PLAN**





Commercial Terminal Area

A new commercial service terminal area is planned to replace the existing terminal building. This new area is planned in the southeast quadrant of the airport on land proposed to be acquired from the ASLD. As shown in Chapter Four, the existing terminal area is tightly constrained and has limited ability to accommodate projected growth in airline activity at the airport through the planning period and beyond. Developing in the southeast quadrant of the airport allows sufficient area to expand beyond the planning period of this Master Plan while maintaining the terminal area along Taxiway A for direct airfield access. Once commercial service activities are relocated to the south, the existing terminal area will be converted to general aviation uses. This redevelopment is more fully described below.

The commercial terminal area plan considers providing all terminal functions within a single building. A single linear departure concourse pier with seven second-level boarding gates extending to the north and south is planned. This departure pier concept is used at many commercial service terminal buildings as it allows for expansion as new gates are needed along the north and south sides of the pier. The advantage for Laughlin/Bullhead International Airport is that this terminal design can be constructed closer to the runway which can reduce development costs due to the rising terrain features to the east in this area.

The public parking area is located 300 feet from the terminal building. During periods of high alert in the past, the Transportation Security Administration (TSA) has limited unattended vehicles within 300 feet of the terminal building. Locating the parking area at this distance ensures that, should this rule be enforced once again, portions of the public parking area are not lost or require expensive inspection/surveillance.

Access to the new terminal area will be via Bullhead Parkway. Primary access is planned at the signalized

intersection of Bullhead Parkway and Desert Foot-hills Parkway. Circulation roads would extend to the north and south, which would provide access from the existing airport facilities located to the north.

Construction of the terminal area would require that all primary utilities be extended as this area is without primary utility service. Construction in this area would also impact existing washes which are under the jurisdiction of the USACE and would require permitting under Section 404 of the *Clean Water Act*.

Air Cargo

Current MCAA facility planning includes the development of an air cargo/air freight building south of the existing departure facility. Since air cargo operators are located on the west side of the terminal apron area inside the perimeter security fencing, delivery vehicles as well as the customers of the air cargo/air freight operators, must be escorted through the fence and across the apron area used by airline aircraft. Constructing this facility increases security and safety reasons by moving the air cargo/air freight operations to the east side of the terminal apron where public vehicle access is available via Aston Drive. There is presently no other location on airport property available for the development of the air cargo/air freight facility.

Long term planning includes accommodating air cargo facilities in the southeast quadrant of the airport. As shown on **Exhibit 5B**, a dedicated air cargo apron is planned along with a building for sorting. This area offers a sterile security environment for air cargo activities that is segregated from other uses, such as general aviation, which have different security requirements.

General Aviation

The Landside Plan focuses general aviation facility development south of the terminal apron area until such time as commercial airline activities are



relocated to the southeast quadrant of the airport. A 3,000 square-foot public use general aviation terminal is planned to be constructed in 2008/2009 and operated privately at Laughlin/Bullhead International Airport. This building is planned on the south general aviation apron area as shown on **Exhibit 5C**. An aircraft wash rack is planned north of this terminal building. The aircraft wash rack would allow for the collection of cleaning fluids and debris from the washing of aircraft in a manner that is in compliance with storm water discharge permitting for the airport.

Larger conventional hangars are planned north of the aircraft wash rack and to the east along the southern edge of the northern terminal apron area. These larger conventional hangars could be utilized for aircraft storage or by businesses involved with (but not limited to) aircraft rental and flight training, aircraft charters, aircraft maintenance, line service, and aircraft fueling. These types of operators are commonly referred to as Fixed-Base Operators (FBOs).

Small aircraft T-hangars are planned along the south apron west of the existing row of storage hangars. Essentially, these hangars are constructed over existing tiedowns. This has the advantage of maintaining existing taxilane corridors. Approximately 73 T-hangars can be constructed as shown on **Exhibit 5C**.

The south apron area is expanded to the south and west to replace tiedown areas lost to T-hangar development. FAA design standards specify the apron can extend within 500 feet of the Runway 16-34 centerline at Laughlin/Bullhead International Airport. The southerly extension is planned to accommodate additional general aviation hangar development. Segregated roadway access and automobile parking for the general aviation area extends along the eastern side of the existing general aviation hangars.

Once airline and air cargo/air freight operations are relocated south, the existing passenger terminal area is planned for alternate uses. The existing

departure facility is planned to be converted to the long term general aviation terminal building. Since this building is not currently served by a dedicated parking area, a public parking lot is planned east of Aston Drive. The main terminal building is planned to be removed to allow for airfield access revenue support parcels. These parcels could be utilized for constructing aircraft storage or to provide commercial general aviation (FBO) service. The air cargo/air freight building is planned to be converted to airport maintenance and administration once air cargo activities are relocated to the south.

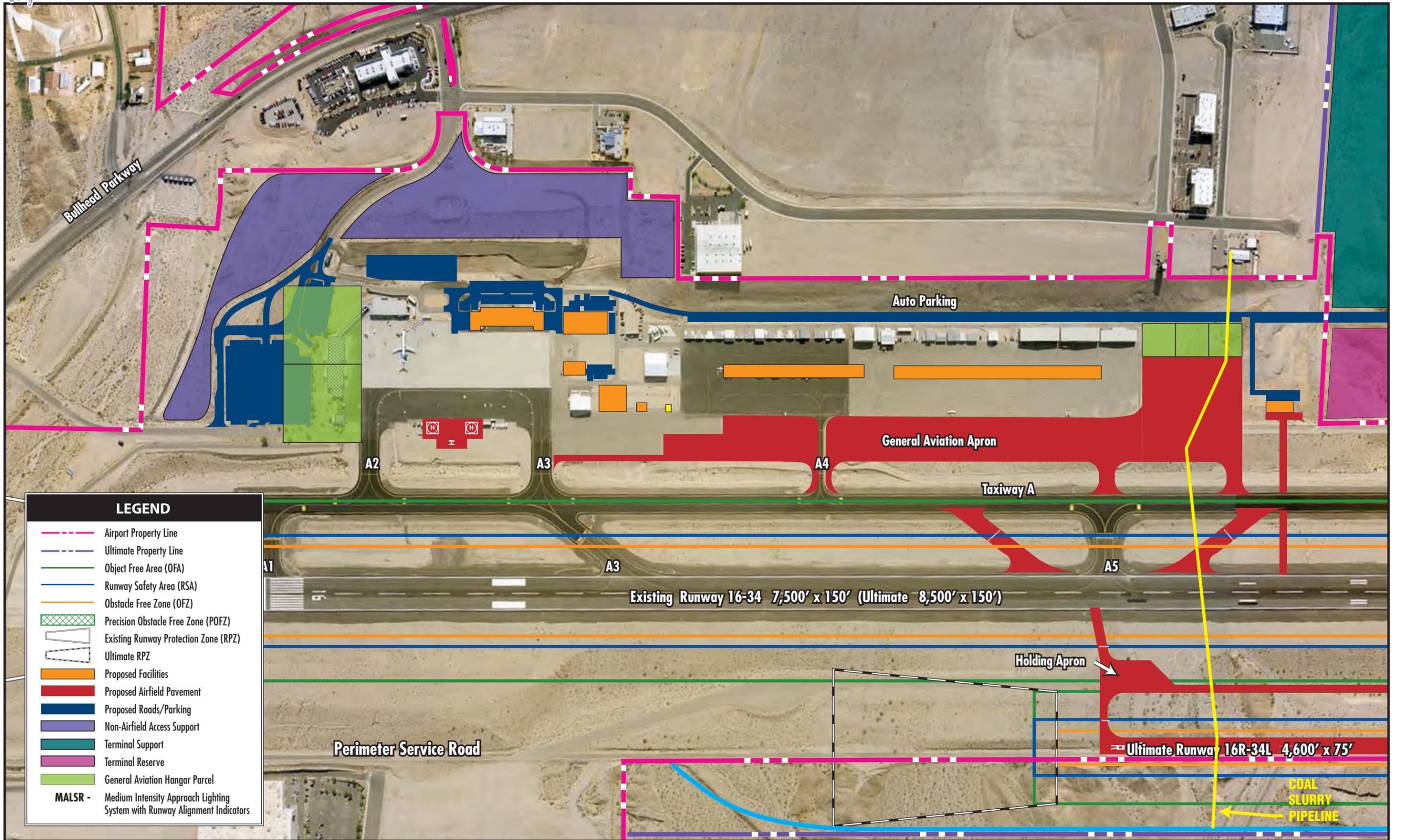
A formal helipad and two helicopter parking pads are planned on the west end of the main terminal area. The helipad would allow for the takeoff and landing of helicopters, while the helicopter parking pads must be accessed via hover taxi operations only.

Support Facilities

A new airport rescue and firefighting (ARFF) facility is planned at the south end of existing airport property along Taxiway A. This location provides direct access to the runway via a service road as shown on **Exhibit 5C**. Public vehicular access is from the roadway extended on the east side of the general aviation area. This will replace the existing ARFF facility located west of the terminal building.

The airfield electrical vault is planned to be relocated to the area east of the new ARFF facility. Placing the electrical vault in this location moves it closer to the airport traffic control tower (ATCT) and could facilitate providing the ATCT with airfield lighting system controls.

The aviation fuel farm is planned to remain in its existing location. This location provides public access via Aston Drive while being conveniently located near the aircraft operations area for access by the on-airport fuel trucks.





Non-Aeronautical Land Uses

Implementation of the Recommended Master Plan Concept may result in portions of obligated airport property being used for non-aeronautical revenue support. As shown on **Exhibit 5A**, this can include areas along Bullhead Parkway and east of the existing terminal area along Laughlin View Drive. These are areas of the airport that do not have airfield access potential; therefore, these areas cannot be readily used for aeronautical purposes. Land uses could include retail, office, or light industrial.

It should be noted that the MCAA does not have the approval to use these portions of airport property for non-aeronautical purposes at this time. This requires specific approval from the FAA. The Master Plan does gain approval for non-aeronautical uses, even if these uses are ultimately shown in the Master Plan. A separate request justifying the use of airport property for non-aeronautical uses will be required once the Master Plan is complete. The Master Plan can be a source for developing that justification.

Federal law obligates an airport sponsor to use all property shown on an Airport Layout Plan (ALP) and/or Property Map for public airport purposes. A distinction is generally not made between property acquired locally and property acquired with federal assistance. However, property acquired with federal assistance or transferred as surplus property from the federal government may have specific covenants or restrictions on its use different from property acquired locally.

These obligations will require that the MCAA formally request from the FAA a release from the terms, conditions, reservations, and restrictions contained in any conveyance deeds and assurances in previous grant agreements. A release is required even if the airport desires to continue to own the land and only lease the land for development. The obligations relate to the use of the land just as much as they do to the ownership of the land.

U.S. Code 47153 authorizes the FAA to release airport land when it is convincingly clear that:

- a. Airport property no longer serves the purpose for which it was conveyed. In other words, the airport does not need the land now or in the future because it has no airport-related or aeronautical use, nor does it serve as approach protection, a compatible land use, or a noise buffer zone.
- b. The release will not prevent the airport from carrying out the purpose for which the land was conveyed. In other words, the airport will not experience any negative impacts from relinquishing the land.
- c. The release is actually necessary to advance the civil aviation interests of the counters. In other words, there is a measurable and tangible benefit for the airport or the airport system.

Ultimately, the ability of the MCAA to use airport property for non-aeronautical revenue production will rest upon a determination by the FAA that portions of the airport property are no longer needed for airport-related or aeronautical uses. To prove that land is not needed for aeronautical purposes, an assessment and determination of the area that will be required for aeronautical purposes will be needed. The Master Plan provides this analysis.

A formal request to the FAA for a release from federal obligations will have several distinct elements. The major elements of the request will include:

1. A description of the obligating conveyance instrument or grant.
2. A complete property description including a legal description of the land to be released.
3. A description of the property condition.



4. A description of federal obligations.
5. The kind of release requested (lease or sale).
6. Purpose of the release.
7. Justification for the release.
8. Disposition and market value of the released land.
9. Reinvestment agreement. A commitment by the airport sponsor to reinvestment any lease revenues exclusively for the improvement, operation, and maintenance of the airport.
10. Draft instrument of release.

An environmental determination will also be required. While FAA Order 1050.1E, *Environmental Policies and Procedures*, states that a release of an airport sponsor from federal obligations is normally categorically excluded and would not normally require an EA, the issuance of a categorical exclusion is not automatic and the FAA must determine that no extraordinary circumstances exist at the airport. Extraordinary circumstances would include a significant environmental impact to any of the environmental resources governed by federal law. An EA may be required if there are extraordinary circumstances.

ENVIRONMENTAL OVERVIEW

A review of the potential environmental impacts associated with proposed airport projects is an essential consideration in the airport master plan process. The primary purpose of this section is to review the proposed improvement program at Laughlin/Bullhead International Airport to determine whether the proposed actions could, individually or collectively, have the potential to significantly affect the quality of the environment. The information contained in this section was obtained from previous studies, various Internet websites, and analysis by the consultant.

Construction of any improvements depicted on the Airport Layout Plan (ALP) will require compliance with the *National Environmental Policy Act (NEPA) of 1969*, as amended. This includes privately funded projects in addition to those projects receiving federal funding. Prior to any development on the airport, the MCAA needs to coordinate with the FAA Western-Pacific Region Airports Division environmental staff.

For projects not “categorically excluded” under FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, compliance with NEPA is generally satisfied through the preparation of an Environmental Assessment (EA). In instances where significant environmental impacts are expected, an Environmental Impact Statement (EIS) may be required.

While this portion of the Master Plan is not designed to satisfy the NEPA requirements for a categorical exclusion, EA, or EIS, it is intended to supply a preliminary review of environmental issues that would need to be analyzed in more detail within the NEPA process. This evaluation considers all environmental categories required for the NEPA process as outlined in FAA Order 1050.1E and Order 5050.4B, *National Environmental Policy Act (NEPA) Implementation Instructions for Airport Actions*.

The following sections provide a description of the environmental resources which could be impacted by the proposed airport development. Of the 20 environmental categories, the following resources are not found within the airport environs:

- Coastal Resources
- Farmland
- Wild and Scenic Rivers

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 PM_{2.5}), and Lead (Pb). Various levels of review apply within both NEPA and permitting requirements. Potentially significant air quality impacts, associated with an FAA project or action, would be demonstrated by the project or action exceeding one or more of the NAAQS for any of the time periods analyzed. Mohave County is in non-attainment for Particulate Matter (PM₁₀ and PM_{2.5}). Further air quality analysis is required to determine potential air quality impacts which could result from proposed airport development projects.

NOISE

Aircraft sound emissions are often the most noticeable environmental impact an airport will produce on a 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 noise-related impacts that the proposed action could have on the environment surrounding the airport, noise exposure patterns based on projected future aviation activity were analyzed.

Aircraft Noise Analysis Methodology

The standard methodology for analyzing noise conditions at airports involves the use of a computer simulation model. The FAA has approved the Integrated Noise Model (INM) for this use.

The INM describes aircraft noise in the Day-Night Noise Level (DNL) metric. 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 for certain land uses such as residential. This means that noise levels below 65 DNL are considered compatible with all underlying land uses. DNL is an accepted metric by the FAA, Environmental Protection Agency (EPA), and Department of Housing and Urban Development (HUD), among others, as an appropriate measure of cumulative noise exposure.

The INM works by defining a network of grid points at ground level around the airport. It then selects the shortest distance from each grid point to each flight track and computes the noise exposure for each aircraft operation by aircraft type and engine thrust level along each flight track. Corrections are applied for air-to-ground acoustical attenuation, acoustical shielding of the aircraft engines by the aircraft itself, and aircraft speed variations. The noise exposure levels for each aircraft are summed at each grid point location. The DNL at all grid points is used to develop noise exposure contours for selected values (e.g., 65, 70, and 75 DNL). Noise contours are then plotted on a base map of the airport environs using the DNL metrics.

In addition to the mathematical procedures defined in the model, the INM has another very important element. This is a database containing





tables correlating noise, thrust settings, and flight profiles for most of the civilian aircraft and many common military aircraft operating in the United States. This database, often referred to as the noise curve data, has been developed under FAA guidance based on rigorous noise monitoring in controlled settings. In fact, the INM database was developed through decades of research, including extensive field measurements. The database also includes performance data for each aircraft to allow for the computation of airport-specific flight profiles (rates of climb and descent). The most recent version of the INM, Version 7.0, was used for modeling the noise condition for the purposes of this Master Plan.

INM Input

A variety of user-supplied input data is required to use the INM. This includes the airport elevation, average annual temperature, airport area terrain, a mathematical definition of the airport runways, the mathematical description of ground tracks above which aircraft fly, and aircraft assignments to individual flight tracks.

- **Activity Data**

Airport activity is defined as the take-offs and landings by aircraft operating at the facility; this is also referred to as aircraft operations. Existing airport activity (i.e., take-offs and landings, or operations by aircraft) was derived from airport-maintained records and counts maintained by the ATCT. **Table 5B** provides a breakdown of operations for the baseline condition as well as the long term (2027) forecasts.

- **Fleet Mix**

The selection of individual aircraft types is important to the modeling process because different

aircraft types generate different noise levels. The aircraft fleet mix was derived from a review of filed flight plans available through AirportIQ, a content provider of completed flight plans and landing fee records maintained by the MCAA. **Table 5B** summarizes the generalized fleet mix data input into the noise analysis.

Because single engine aircraft in the general aviation fleet are consistent in their noise characteristics, the INM utilizes two composite single engine models. The FAA's substitution list indicates that the general aviation single engine variable pitch propeller model, the GASEPV, represents a number of single engine general aviation aircraft such as the Beech Bonanza, Cessna 177 and 180, Piper Cherokee Arrow, Piper PA-32, Cirrus, and Mooney aircraft. The general aviation single engine fixed pitch propeller model, the GASEPF, represents the Cessna 150 and 172, Piper Archer, Piper PA-28-140 and -180, and the Piper Tomahawk, among others.

The FAA recommends the BEC58P, the Beech Baron, to represent the light twin-engine aircraft such as the Piper Navajo, Beech Duke, Cessna 310, and others. The CNA441, typically the Cessna 441, effectively represents the light turbo-prop aircraft such as the Beech King Air, Cessna Conquest, and others. The Bell 206 effectively represents the helicopter activity at Laughlin/Bullhead International Airport.

For the business jet fleet, the CNA500 effectively represents the Cessna Citation I, II, and V series aircraft – or the smaller jets within the fleet such as the Eclipse 500 and the Cessna Mustang. Aircraft such as the Lear 30, 40, 50, and 60 series; the Hawker 800 and 1000; and the Falcon 10, 20, Beechjet 400A, and Raytheon Premier are effectively represented by the LEAR35 designator. The Mitsubishi MU3001 also represents the Cessna Citation 551, 560 (Encore and Ultra), 550, 552, and 560XL (Excel). The Canadair CL600 also represents the Citation 750, and Falcon 900 and 2000. All the above choices conform to the Pre-Approved Substitution List



TABLE 5B
Annual Operations and Fleet Mix

Aircraft Designation	Annual Operations	
	2008	Long Term
Itinerant		
McDonnell-Douglas MD88	900	-
Boeing 737-800	600	2,520
Airbus A318	-	5,620
Embraer EMB-175	-	5,040
Boeing 737-200	50	-
Dornier 328	28	-
Embraer EMB 135	2	-
Embraer EMB 145	10	-
Cessna CNA441	500	10,280
Cessna 208	500	1,000
Cessna Citation III	137	507
Canadair CL600	137	507
Cessna Citation CNA500	916	3,394
Gulfstream GIV	55	203
Gulfstream GV	14	307
Gulfstream IA1125	96	-
LEAR 25	41	-
LEAR 35	478	1,773
Mitsubishi MU3001	410	1,770
Boeing UH60	186	100
C12	186	100
GAPF	5,434	17,963
GAPV	4,822	7,719
Bell 206	1,000	1,400
Beech Baron	1,923	10,998
Subtotal Itinerant	18,423	71,200
Local		
C12	214	100
Bell 206	250	500
GAPF	1,236	11,809
GAPV	1,078	5,061
Beech Baron	742	7,230
Subtotal Local	3,520	24,700
Total Operations	21,943	95,900

Sources: FAA APO Data System, Airport IQ, Master Plan Forecasts
 GAPV- General Aviation Propeller Variable
 GAPF – General Aviation Propeller Fixed

published by the FAA Office of Environment and Energy (AEE) branch in Washington, D.C. The Lear 25 and Gulfstream IA1125 are considered Stage II business jets (built before 1976) and are expected to be retired from the fleet in the coming years. Therefore, these aircraft are not assumed in the long term noise calculations for the airport.

• **Time-of-Day**

The time-of-day at which operations occur is important as input to the INM due to the 10 decibel weighting of nighttime (10:00 p.m. to 7:00 a.m.) flights. In calculating airport noise exposure, one operation at night has the same noise emission



value as 10 operations during the day by the same aircraft. For modeling the noise exposure contours, five percent of operations were assumed to occur at night.

• **Runway Use**

Runway usage data is another essential input to the INM. For modeling purposes, wind data analysis usually determines runway use percentages. Aircraft will normally land and take-off into the wind. However, wind analysis provides only the directional availability of a runway and does not consider pilot selection, primary runway operations, or local operating conventions. With the current single runway configuration, Runway 16 was assumed to be used 61 percent of the time; whereas Runway 34 was assumed to be used 39 percent of the time. The projected long term noise exposure calculation assumes the development of the parallel runway. Since the parallel runway is designed for small aircraft use only, the runway use percentages change based on aircraft type. **Table 5C** summarizes projected long term runway use assumptions.

INM Output

Noise contours were prepared for the baseline (2008) and projected long term (2027) conditions at the airport. As indicated on **Exhibit 5D**, the baseline 65 DNL or higher noise contours do not extend beyond existing airport property. In the projected long term noise conditions, the 65 DNL or higher noise contours remain mostly on existing or ultimate property owned by the MCAA. Therefore, no incompatible land uses are expected to be contained within the baseline or projected long term noise exposure contours for the airport.

COMPATIBLE LAND USE

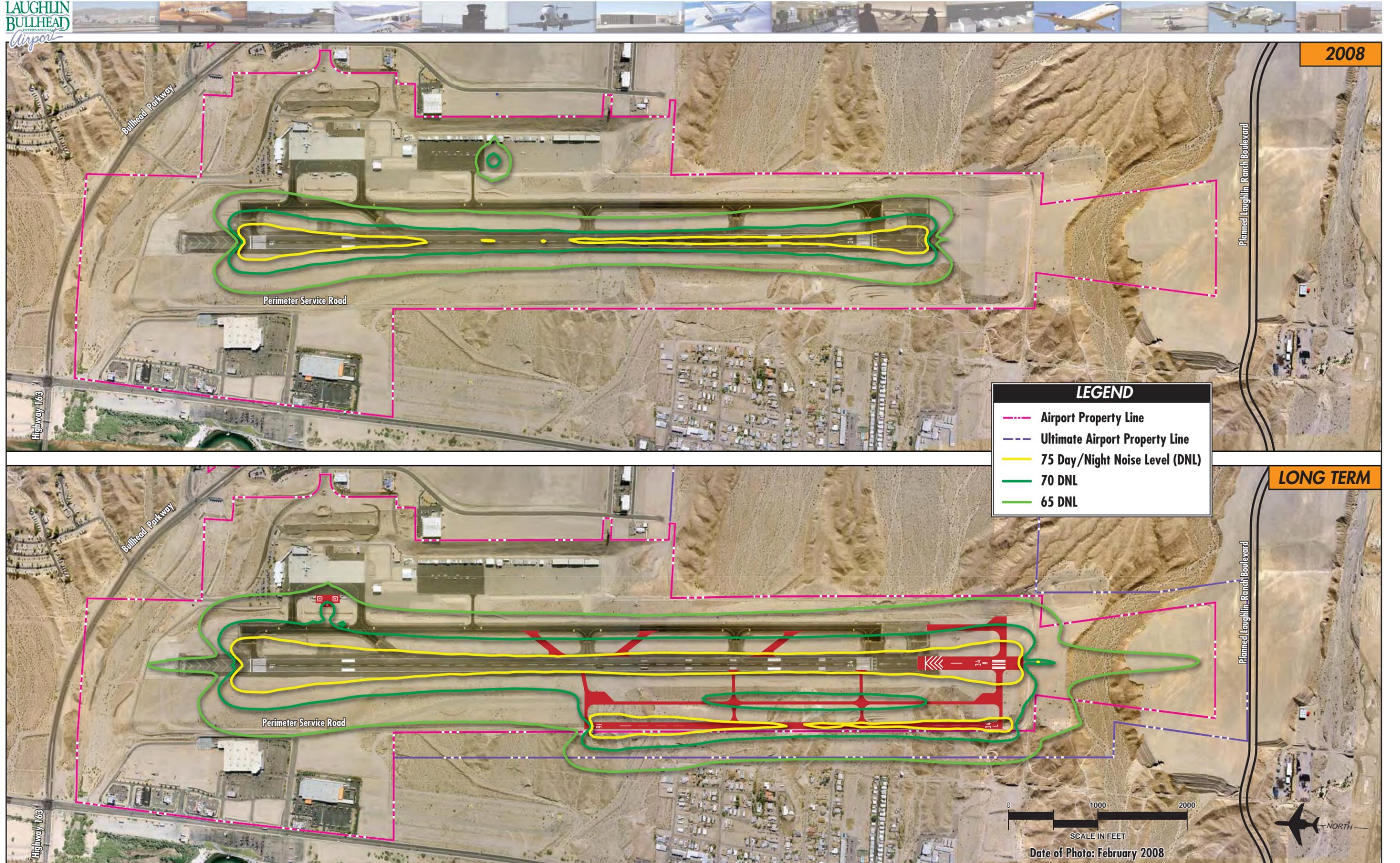
The compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of the airport’s noise impacts. Typically, significant impacts will occur over noise-sensitive areas within the 65 DNL noise contour. As indicated above, no noise-sensitive residential land uses are currently contained within the 65 DNL and higher noise contours.

As discussed in Chapter One of this Master Plan, Chapter 17.34, *Airport Noise and Height Overlay District*, of the City of Bullhead City municipal code provides for land use controls to promote the compatibility of the airport within the community. The MCAA should give consideration to requests that the City of Bullhead City update the existing Noise Overlay District in the municipal code based upon the new noise contours for prepared for this Master Plan.

TABLE 5C
Projected Long Term Runway Use Assumptions

Aircraft Type	16L	34R	16R	34L
McDonnell-Douglas MD88	61%	39%	0	0
Boeing 737-800	61%	39%	0	0
Airbus A318	61%	39%	0	0
Embraer EMB-175	61%	39%	0	0
Cessna CNA441	34%	16%	34%	16%
Cessna 208	34%	16%	34%	16%
Cessna Citation III	61%	39%	0	0
Canadair CL600	61%	39%	0	0
Cessna Citation CNA500	34%	16%	34%	16%
Gulfstream IV	61%	39%	0	0
Gulfstream V	61%	39%	0	0
Lear 35	61%	39%	0	0
Mitsubishi MU3001	61%	39%	0	0
C12	61%	39%	0	0
GAPF	34%	16%	34%	16%
GAPV	34%	16%	34%	16%
Beech Baron	34%	16%	34%	16%

Source: Coffman Associates analysis
 GAPV- General Aviation Propeller Variable
 GAPF – General Aviation Propeller Fixed





CONSTRUCTION IMPACTS

Construction impacts typically relate to the effects on specific impact categories, such as air quality or noise during construction. The use of BMPs during construction is typically a requirement of construction-related permits such as the Arizona Pollutant Discharge Elimination System (AZPDES) General Permit. Use of these measures typically alleviates potential resource impacts.

Short-term construction-related noise impacts could occur with implementation of the proposed project as there are scattered residences in the vicinity. However, these impacts typically do not arise unless construction is being undertaken during early morning, evening, or nighttime hours. Furthermore, the proposed projects will be undertaken on a demand basis and will not be constructed simultaneously.

Construction-related air quality impacts can be expected. Air emissions related to construction activities will be short-term in nature and will be included in the air emissions inventory, if one is requested.

DEPARTMENT OF TRANSPORTATION ACT: SECTION 4(f)

Section 4(f) properties include publicly owned land from a public park, recreational 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. The Lake Mead National Recreation Area is located less than one-half mile north of the airport. Continued coordination will be necessary with the National Park Service.

FISH, WILDLIFE, AND PLANTS

A number of regulations have been established to ensure that projects do not negatively impact protected plants, animals, or their designated habitat.

Section 7 of the *Endangered Species Act* (ESA), as amended, applies to federal agency actions and sets forth requirements for consultation to determine if the proposed action “may affect” a federally endangered or threatened species. The *Sikes Act* and various amendments authorize states to prepare statewide wildlife conservation plans for resources under their jurisdiction. As detailed in Chapter One, recent surveys at the airport did not indicate suitable habitat for any federally listed threatened or endangered species. Additional surveys will be required for project implementation in the future; in particular, to development on land to be acquired and previously undisturbed areas of the airport.

FLOODPLAINS

The 100-year floodplain near Laughlin/Bullhead International Airport was previously depicted on **Exhibit 1A**. Future development within this floodplain area will require additional study to determine the impacts, if any, to the floodplain caused by development.

HAZARDOUS MATERIALS AND POLLUTION PREVENTION

The airport must comply with applicable pollution control statutes and requirements. Impacts may occur when changes to the quantity or type of solid waste generated, or type of disposal, differ greatly from existing conditions. No impaired waters or regulated hazardous material sites are located on or in the vicinity of the airport.

The airport will need to comply with the AZPDES operations permit requirements. With regard to construction activities, the airport and all applicable contractors will need to comply with the requirements and procedures of the construction-related AZPDES General Permit, including the preparation of a *Notice of Intent* and a *Stormwater Pollution Prevention Plan* prior to the initiation of project construction activities.



HISTORICAL, ARCHITECTURAL, AND CULTURAL RESOURCES

Determination of a project's impact to historical and cultural resources is made in compliance with the *National Historic Preservation Act (NHPA) of 1966*, as amended for federal undertakings. Two state acts also require consideration of cultural resources. The NHPA requires that an initial review be made of an undertaking's *Area of Potential Effect (APE)* to determine if any properties in, or eligible for inclusion in, the National Register of Historic Places are present in the area. No known historical or archaeological resources are located on airport property. Prior to development, surveys should be conducted to assist with Section 106 consultation with the State Historic Preservation Officer.

LIGHT EMISSIONS AND VISUAL IMPACTS

Impacts occur when lighting associated with an action will create an annoyance among people in the vicinity or interfere with their normal activities. Aesthetic impacts relate to the extent that the development contrasts with the existing environment and whether the jurisdictional agency considers this contrast objectionable.

New airside lighting includes a medium intensity approach lighting system with runway alignment indicator lights (MALSR), new pavement edge lighting, precision approach path indicators (PAPIs), and runway end identifier lights (REILs) on the proposed parallel runway. Landside development at the airport will create new hangar space, a new terminal building area, additional automobile parking areas, and the potential for new aviation revenue support parcels. No residential development is located adjacent to the airport. However, residential homes north of Bullhead Parkway, which are at a higher elevation than the airport, may experience an increase of annoyance due to light and visual impacts created by new lighting added at the airport. Some

shielding of the MALSR and REILs may be possible to reduce glare from these lighting systems.

NATURAL RESOURCES AND ENERGY SUPPLY

In instances of major proposed actions, power companies or other suppliers of energy will need to be contacted to determine if the proposed project demands can be met by existing or planned facilities.

Increased use of energy and natural resources are anticipated as operations at the airport grow. None of the planned development projects are anticipated to result in significant increases in energy consumption.

SECONDARY (INDUCED) 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 airport development.

Significant shifts in patterns of population movement, growth, or public service demands are not anticipated as a result of the proposed development. It could be expected, however, 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 are anticipated to be primarily positive in nature.



SOCIOECONOMIC IMPACTS, ENVIRONMENTAL JUSTICE, AND CHILDREN’S ENVIRONMENTAL HEALTH AND SAFETY RISKS

Impacts occur when disproportionately high and adverse human health or environmental effects occur to minority and low-income populations; disproportionate health and safety risks occur to children; and extensive relocation of residents, businesses, and disruptive traffic patterns are experienced. Development is expected to occur on the airport or on property to be acquired that is presently undeveloped. These actions will not cause any disproportionate impacts for minority or low income populations. The health and safety risks to children are not expected to be disproportionate with the existing operation of the airport that limits access to the aircraft operational areas and construction areas as a matter of ongoing security and safety compliance with the airport’s certification.

The proposed action includes the development of internal airport roads and new connections to Bullhead Parkway. These roads will provide access to the proposed aviation-related facilities. These roads are not anticipated to disrupt the local transportation patterns.

The Master Plan Concept includes land acquisition. Compliance with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970* (URARPA) will be required during property acquisition. FAA Order 5050.4B provides that where the relocation or purchase of a residence, business, or farmland is involved, the provisions of the URARPA must be met. The Act requires that landowners whose property is to be purchased are compensated fair market value for their property.

SOLID WASTE

As a result of increased operations at the airport, solid waste may slightly increase; however, these increases are not anticipated to be significant.

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.

Construction of the proposed improvements will result in an increase in impermeable surfaces and a resulting increase in stormwater runoff. During the construction phase, the proposed development may result in short-term impacts on water quality. Temporary measures to control water pollution, soil erosion, and siltation through the use of BMPs should be used. The airport will need to continue to comply with its current AZPDES 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 AZPDES General Permit, including the preparation of a *Notice of Intent* and a *Stormwater Pollution Prevention Plan* prior to the initiation of product construction activities.

As development occurs at the airport, the Storm Water Pollution Prevention Plan (SWPPP) will need to be modified to reflect the additional impervious surfaces and any stormwater retention facilities. The addition and removal of impervious surfaces may require modifications to this plan should drainage patterns be modified.

WETLANDS/WATERS OF THE U.S.

The U.S. Army Corps of Engineers regulates the discharge of dredged and/or fill material into waters of the United States, including adjacent wetlands, under Section 404 of the *Clean Water Act*. Based on previous surveys, no wetlands are present on the airport. However, several ephemeral drainage areas are located near the airport. These ephemeral



washes drain directly to the Colorado River and are considered under the jurisdiction of the U.S. Army Corps of Engineers. A permit in compliance with Section 404 of the *Clean Water Act* will be required for any future development proposed in the ephemeral washes adjacent to the airport. This includes the drainage swell that is located on the east side of Taxiway A in between the taxiway and apron areas.

PUBLIC AIRPORT DISCLOSURE MAP

Arizona Revised Statutes (ARS) 28-8486, *Public Airport Disclosure*, provides for a public airport owner to publish a map depicting the “territory in the vicinity of the airport.” The territory in the vicinity of the airport is defined as the traffic pattern airspace and the property that experiences 60 DNL or higher in counties with a population of more than 500,000, and 65 DNL or higher in counties with less than 500,000 residents. The DNL is calculated for the 20-year forecast condition. ARS 28-8486 provides for the State Real Estate Office to prepare a disclosure map in conjunction with the airport owner. The Disclosure Map is recorded with the County Recorder.

Exhibit 5E depicts the Disclosure Map for Laughlin/Bullhead International Airport, considering the requirements of the statute above. Traffic pattern airspace is defined in FAA Order 7400.2D, *Procedures for Handling Airspace Matters*. Traffic pattern airspace is a function of the approach category for the runway. Approach category C is planned for Runway 16-34, while approach category B is planned for the parallel runway.

According to FAA Order 7400.2D, the traffic pattern airspace for approach category C extends three miles beyond each runway end and four miles laterally from the runway centerline to encompass the traffic pattern. For approach category B, the traffic pattern airspace extends 1.5 miles beyond each runway end and 1.5 miles laterally from the runway centerline to encompass the traffic pattern.

The Disclosure Map for Laughlin/Bullhead International Airport extends the limits of public disclosure four nautical miles to the east and four nautical miles west of the Runway 16-34 centerline. The area within 2.25 nautical miles of the runway centerline is also included in the limits of public disclosure. The 65 DNL contour is shown as required by the statute.

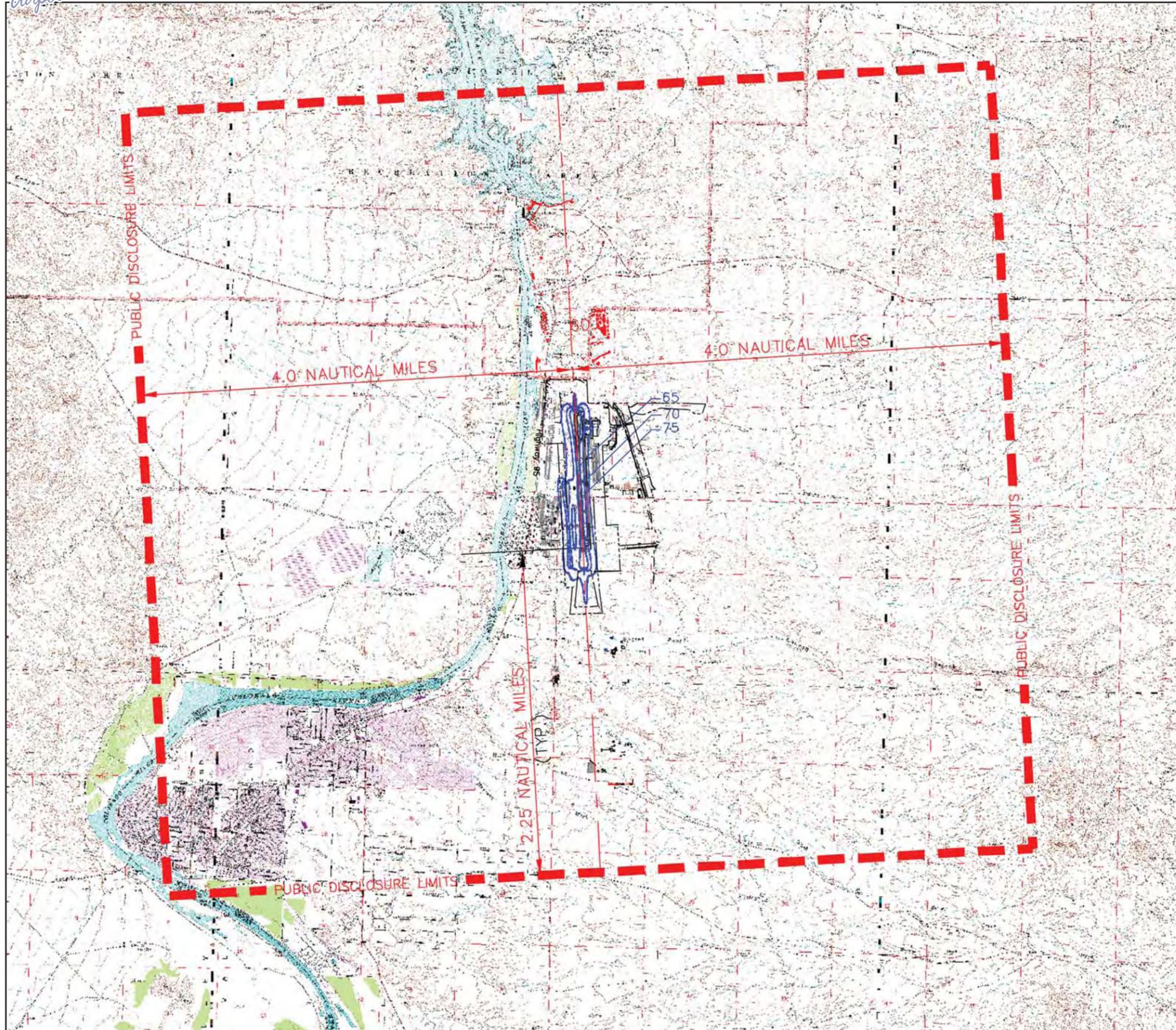
CAPITAL PROGRAM

The previous sections presented the needs of the airport, on both the airside and the landside, over the course of the next 20 years. In this section, a capital program will be presented which identifies the specific development projects recommended for the airport to achieve the master plan vision. The master plan vision is based on the airport achieving specific demand-based triggers such as a growth in enplanements, based aircraft, enplaned cargo, and an overall increase in operations.

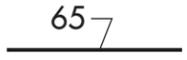
AIRPORT DEVELOPMENT SCHEDULES AND COST SUMMARIES

With the establishment of a recommended master plan concept, the next step is to determine a realistic schedule and the associated costs for implementing the plan. This section will examine the overall cost of each item in the development plan and present a development schedule. This plan assumes hangars will be constructed with private funds, while the MCAA will maximize grant funding for taxiway and infrastructure development. The MCAA will construct the new passenger terminal building, air cargo buildings, and support facilities.

As a master plan is a conceptual document, implementation of these capital projects should only be undertaken after further refinement of their design and costs through architectural and engineering analyses. Moreover, all projects will require further environmental study and documentation for compliance with NEPA.

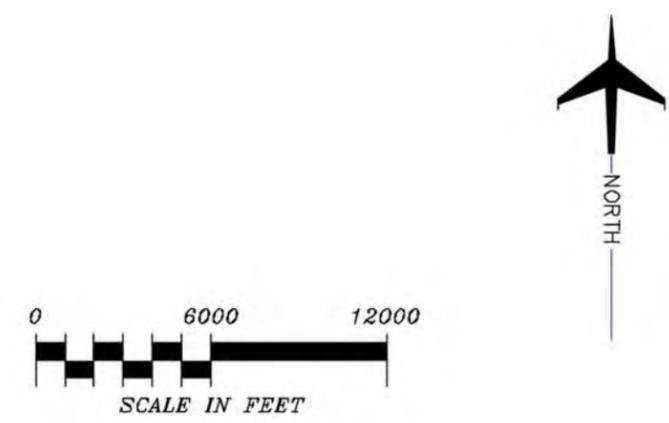


LEGEND

-  TRAFFIC PATTERN AIRSPACE
-  NOISE CONTOURS - DAY NIGHT LEVEL (DNL)
-  EXISTING AIRPORT PROPERTY LINE
-  EXTENDED RUNWAY CENTERLINE

NOTES:

1. This map has been prepared in accordance with the Arizona Revised Statutes, Section 28-8486, relating to Public Airport Disclosure.
2. The Airport Noise Contours have been developed with the Integrated Noise Model (Version 7.0a) and are based on Total Annual Operations (Take-offs and Landings) of 95,900.
3. 1 Nautical mile = 6,080 feet or 1.1516 statute miles.
4. Base map derived from electronic USGS quadrangles Bridge Canyon, Davis Dam, Mt. Manchester and Davis Dam SE.





The cost estimates presented in this chapter have been increased by 20 percent to allow for contingencies that may arise on the project. The cost estimates also include 28 percent for design and engineering, and construction inspection and project management. Capital costs presented here should be viewed only as estimates subject to further refinement during design. Nevertheless, these estimates are considered reasonable for planning purposes. Cost estimates for each of the development projects listed in the capital program are in 2008 dollars.

The proposed capital improvement program (CIP) has been divided into three planning horizons: short, intermediate, and long term. By grouping the projects, airport administration can accelerate projects that become critical or delay projects that are not priorities.

On an annual basis, airports submit a five-year capital improvement plan to the FAA and Arizona Department of Transportation – Aeronautics Division (ADOT). The annual CIP submittal is intended to alert the FAA and ADOT to priority projects for which the airport intends to request grant funding. Items from the most recent airport CIP submittal are included in this 20-year CIP.

SHORT TERM IMPROVEMENTS

Exhibit 5F depicts the proposed airport development needs over the next six fiscal years. The short term planning period is the only planning period separated into years. This is to allow the plan to be coordinated with the five-year planning cycle of the FAA and ADOT-Aeronautics programs. In later planning periods, actual demand levels will dictate implementation.

Fiscal year (FY) 2009 is focused on designing both the ARFF building and the bag claim enclosure for the terminal building. Presently, the baggage claim display is outside the main terminal building on a

covered patio. This project would enclose this area and allow for climate control. This project would be constructed in FY 2010. The ARFF building replaces the existing ARFF building and allows more area for vehicle storage and maintenance while locating the ARFF station near the midpoint of the runway. Construction of the ARFF station would occur in two phases in FY 2010 and FY 2011. Extensive earthwork is necessary as this building is located in an area of rising terrain that also requires all primary utility extensions.

Equipment acquisitions in FY 2010 include a new ARFF vehicle and a high speed pavement sweeper. Both pieces of equipment allow the airport to meet its airport certification requirements. Additional projects in FY 2010 include an Environmental Assessment (EA) to acquire 300 acres of land from the ASLD at the southeast corner of the airport. This property would be acquired in four phases over FY 2011 through FY 2014. As discussed previously, this property would ultimately be used for a replacement commercial airline terminal building, air cargo area, and land for commercial/industrial uses.

The extension of Runway 16-34 and Taxiway A 1,000 feet south is programmed over three fiscal years. Design is programmed for FY 2010 with site preparation occurring in FY 2011 and actual construction occurring in FY 2012 including the addition of pavement edge lighting on the runway and taxiway.

The rehabilitation of Taxiway A is programmed in FY 2013 along with runway safety area (RSA) erosion protection and drainage improvements. The construction of T-hangar infrastructure and the completion of RSA erosion protection and drainage improvements is programmed in FY 2014. The RSA erosion protection and drainage improvements are intended to reduce the maintenance of the existing RSA along both sides of the runway which erodes during storm events. The MCAA must groom the RSA frequently to maintain the RSA in compliance with certification requirements.



**Exhibit 5F
SHORT TERM DEVELOPMENT PROGRAM**

		TOTAL COST	FEDERALLY ELIGIBLE	STATE ELIGIBLE	LOCAL SHARE
SHORT TERM PLANNING HORIZON					
FY2009					
09-1	ARFF Building - Phase I (Design Only)	\$ 472,000	\$ 448,400	\$ 11,800	\$ 11,800
09-2	Terminal Bag Claim Area Enclosure (Design Only)	75,000	71,250	1,875	1,875
Subtotal (FY 2009)		\$ 547,000	\$ 519,650	\$ 13,675	\$ 13,675
FY2010					
10-1	ARFF Building - Phase II (Site Prep/Drainage/Infrastructure/Generator)	\$ 1,170,000	\$ 1,111,500	\$ 29,250	\$ 29,250
10-2	Acquire ARFF Vehicle	850,000	807,500	21,250	21,250
10-3	Acquire High-Speed Sweeper	185,000	175,750	4,625	4,625
10-4	Terminal Bag Claim Enclosure	1,025,000	973,750	25,625	25,625
10-5	Environmental Assessment	300,000	285,000	7,500	7,500
10-6	Extend Runway 16-34 (Design Only)	1,000,000	950,000	25,000	25,000
10-7	Airport Drainage/Safety Area Improvements	947,368	900,000	23,684	23,684
Subtotal (FY 2010)		\$ 5,477,368	\$ 5,203,500	\$ 136,934	\$ 136,934
FY2011					
11-1	ARFF Building - Phase II (Construct Building)	\$ 2,400,000	\$ 2,280,000	\$ 60,000	\$ 60,000
11-2	Acquire ASLD Land - Phase I (75 acres)	3,750,000	3,562,500	93,750	93,750
11-3	Extend Runway 16-34 (Site Preparation)	5,000,000	4,750,000	125,000	125,000
Subtotal (FY 2011)		\$ 11,150,000	\$ 10,592,500	\$ 278,750	\$ 278,750
FY2012					
12-1	Acquire ASLD Land - Phase II (75 acres)	\$ 3,750,000	\$ 3,562,500	\$ 93,750	\$ 93,750
12-2	Extend Runway 16-34 (1,000'x150')	5,500,000	5,225,000	137,500	137,500
12-3	Extend Taxiway A (1,000'x75')	2,900,000	2,755,000	72,500	72,500
12-4	Install Medium Intensity Runway Lighting (MIRL)	500,000	475,000	12,500	12,500
12-5	Install Medium Intensity Taxiway Lighting (MITL)	500,000	475,000	12,500	12,500
Subtotal (FY 2012)		\$ 13,150,000	\$ 12,492,500	\$ 328,750	\$ 328,750
FY2013					
13-1	Acquire ASLD Land - Phase III (75 acres)	\$ 3,750,000	\$ 3,562,500	\$ 93,750	\$ 93,750
13-2	Pavement Rehabilitation - Taxiway A	450,000	427,500	11,250	11,250
13-3	RSA Erosion Protection/Drainage	1,000,000	950,000	25,000	25,000
Subtotal (FY 2013)		\$ 5,200,000	\$ 4,940,000	\$ 130,000	\$ 130,000
FY2014					
14-1	Acquire ASLD Land - Phase IV (75 acres)	\$ 3,750,000	\$ 3,562,500	\$ 93,750	\$ 93,750
14-2	Construct T-Hangar Infrastructure	750,000	712,500	18,750	18,750
14-3	RSA Erosion Protection/Drainage	1,000,000	950,000	25,000	25,000
Subtotal (FY 2014)		\$ 5,500,000	\$ 5,225,000	\$ 137,500	\$ 137,500
SUBTOTAL SHORT TERM PLANNING HORIZON		\$ 41,024,368	\$ 38,973,150	\$ 1,025,609	\$ 1,025,609

ARFF - Airport Rescue and Firefighting
 RSA - Runway Safety Area
 ASLD - Arizona State Land Department





**Exhibit 5G
INTERMEDIATE TERM DEVELOPMENT PROGRAM**

		TOTAL COST	FEDERALLY ELIGIBLE	STATE ELIGIBLE	LOCAL SHARE
INTERMEDIATE TERM PLANNING HORIZON (6-10 YEARS)					
1	New Electric Vault, Extend Airfield Lighting Controls to ATCT	\$ 908,000	\$ 862,600	\$ 22,700	\$ 22,700
2	Environmental Assessment for Projects in the Intermediate Term	750,000	712,500	18,750	18,750
3	Land Acquisition to Relocate Service Road (1 acre)	70,000	66,500	1,750	1,750
4	Service Road Relocation	677,000	643,150	16,925	16,925
5	Construct Segregated Access for General Aviation and 175 Parking Spaces	1,934,000	1,837,300	48,350	48,350
6	Construct Segregated Access to ARFF Building	225,000	213,750	5,625	5,625
7	Construct Aircraft Wash Rack	945,000	897,750	23,625	23,625
8	Construct Access Roadway to South Terminal/Extend Utilities	19,586,000	18,606,700	489,650	489,650
9	Construct South Terminal - Phase I	17,747,000	16,859,650	443,675	443,675
10	Construct South Terminal - Phase I	39,584,000	37,604,800	989,600	989,600
11	Construct South Terminal Automobile Parking - Phase I	2,296,000	2,181,200	57,400	57,400
12	Construct South Terminal Roadway/Extend Utilities	13,366,000	12,697,700	334,150	334,150
13	RPZ Land Acquisition (50 acres)	2,800,000	2,660,000	70,000	70,000
14	Install MALSR Runway 34	1,026,000	974,700	25,650	25,650
15	Install Instrument Landing System (ILS) Runway 34	2,835,000	2,693,250	70,875	70,875
16	Install High Intensity Runway Lighting (HIRL) on Runway 16-34	2,940,000	2,793,000	73,500	73,500
17	Expand General Aviation Apron West - Phase I	1,598,000	1,518,000	39,950	39,950
18	Construct Helipad and Hardstands	743,000	705,850	18,575	18,575
19	Existing Terminal Apron Pavement Maintenance/Rehabilitation	100,000	95,000	2,500	2,500
20	Existing GA Apron Pavement Maintenance/Rehabilitation	2,000,000	1,900,000	50,000	50,000
SUBTOTAL INTERMEDIATE TERM PLANNING HORIZON (6-10 YEARS)		\$ 112,130,000	\$ 106,523,500	\$ 2,803,250	\$ 2,803,250

ATCT - Airport Traffic Control Tower

MALSR - Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights

RPZ - Runway Protection Zone

ARFF - Airport Rescue and Firefighting

The total investment necessary for the short term capital improvement program is approximately \$41,024,368. Of this total, \$38,973,150 is eligible for FAA grant and/or PFC funding and approximately \$1,025,609 is eligible for state funding. The remaining \$1,025,609 would be the responsibility of the MCAA.

INTERMEDIATE TERM IMPROVEMENTS

The intermediate term planning horizon capital needs are shown on **Exhibit 5G**. Support facility improvements programmed for this planning horizon include relocating and expanding the electrical vault from near the existing commercial service terminal to east of the ARFF station. This location will allow

the extension of airfield lighting controls to the ATCT. The relocation of the perimeter service road around the extended Runway 34 end is programmed. This requires land acquisition and an EA since this roadway crosses jurisdictional Waters of the U.S.

Segregated vehicular access for the south apron general aviation facilities and parking areas are programmed. Presently, all vehicles must cross the apron to access the general aviation facilities on this south apron area. This roadway and parking will increase security and safety for the south apron by segregating vehicles from aircraft operational areas. Segregated access to the ARFF building is programmed. In the short term, access to the ARFF building will only be available via the existing perimeter service road.



Construction of the new south terminal area is programmed for this planning horizon. Projects include the construction of the terminal building, departure concourse, vehicular parking, aircraft apron, and vehicular access roads.

Establishing a precision approach to Runway 34 is included in this planning horizon. This includes the acquisition of 56 acres of land to protect the runway protection zone (RPZ), installation of the medium intensity approach lighting system with runway alignment indicator lights (MALSR), and high intensity runway edge lights as necessary to achieve one-half statute mile visibility minimums. The construction of a helipad and helicopter parking, as well as expansion of the general aviation apron, is also programmed. Maintenance projects include rehabilitation of the south general aviation apron and existing terminal apron area.

The total investment necessary for the intermediate term capital improvement program is approximately \$112.1 million. Of this total, \$106.2 million is eligible for FAA grant funding and approximately \$2.8 million is eligible for state funding. The remaining \$2.8 million would be the responsibility of the MCAA.

LONG TERM IMPROVEMENTS

As shown on **Exhibit 5H**, the long term planning horizon capital needs focuses on redeveloping the existing terminal area for general aviation uses. This includes converting the departure facility to serve as a new general aviation terminal and the construction of automobile parking for this facility. Exit taxiways are planned for Runway 16-34 to reduce runway occupancy time. The expansion of

**Exhibit 5H
LONG TERM DEVELOPMENT PROGRAM**

		TOTAL COST	FEDERALLY ELIGIBLE	STATE ELIGIBLE	LOCAL SHARE
LONG TERM PLANNING HORIZON (11-20YEARS)					
1	Convert Existing Departure Facility to General Aviation Terminal	\$ 971,000	\$ 922,450	\$ 24,275	\$ 24,275
2	EA for Exit Taxiway, Apron Expansion, Air Cargo Development, Terminal Expansion	500,000	475,000	12,500	12,500
3	Construct General Aviation Automobile Parking at Converted Terminal	5,745,000	5,457,750	143,625	143,625
4	Construct Exit Taxiways	1,540,000	1,463,000	38,500	38,500
5	Expand General Aviation Apron West - Phase II	6,155,000	5,847,250	153,875	153,875
6	Expand General Aviation Apron South	12,078,000	11,474,100	301,950	301,950
7	Construct Air Cargo Building, Access, Parking, and Apron	27,025,000	25,673,750	675,625	675,625
8	Construct South Terminal - Phase II	22,833,000	21,691,350	570,825	570,825
9	Construct South Terminal Apron - Phase II	13,560,000	12,882,000	339,000	339,000
10	Construct South Terminal Automobile Parking - Phase II	2,114,000	2,008,300	52,850	52,850
11	Pavement Maintenance/Rehabilitation	10,000,000	9,500,000	250,000	250,000
12	EA for Parallel Runway	350,000	332,500	8,750	8,750
13	Land Acquisition for Parallel Runway (56 acres)	3,108,000	2,952,600	77,700	77,700
14	Relocate Western Portion of Service Road	1,261,000	1,197,950	31,525	31,525
15	Construct Parallel Runway with Parallel Taxiway and Connecting Taxiways	25,600,000	24,320,000	640,000	640,000
16	Install REILs Each End of Parallel Runway	465,000	441,750	11,625	11,625
17	Install PAPIs Each End of Parallel Runway	408,000	387,600	10,200	10,200
SUBTOTAL LONG TERM PLANNING HORIZON (11-20 YEARS)		\$ 133,713,000	\$ 127,027,350	\$ 3,342,825	\$ 3,342,825

REIL - Runway End Identifier Lights
PAPI - Precision Approach Path Indicator



the south general aviation apron to the south and west is planned to accommodate additional aircraft storage and movement needs. The construction of the south air cargo area is programmed, as well as the expansion of the passenger terminal area, to meet projected long term passenger enplanement needs. The construction of the parallel runway including land acquisition is also included in this planning horizon. Provisions for long term pavement maintenance/rehabilitation are also included in this planning horizon. This could include pavement overlays, reconstruction, or maintenance projects such as slurry seals.

The total investment for the long term capital needs program is approximately \$133.7 million. Of this total, \$127.0 million is eligible for FAA grant funding and approximately \$3.3 million is eligible for state funding. The remaining \$3.3 million would be the responsibility of the MCAA.

TOTAL DEVELOPMENT PROGRAM SUMMARY

Exhibit 5J summarizes the total development program over the long term planning horizon for Laughlin/Bullhead International Airport. The total investment for the capital needs program is approximately \$286.8 million. Of this total, \$272.5 million is eligible for FAA grant funding and approximately \$7.1 million is eligible for state funding. The remaining \$7.1 million would be the responsibility of the MCAA. **Exhibit 5K** presents development staging over the three planning horizons.

CAPITAL IMPROVEMENT FUNDING SOURCES

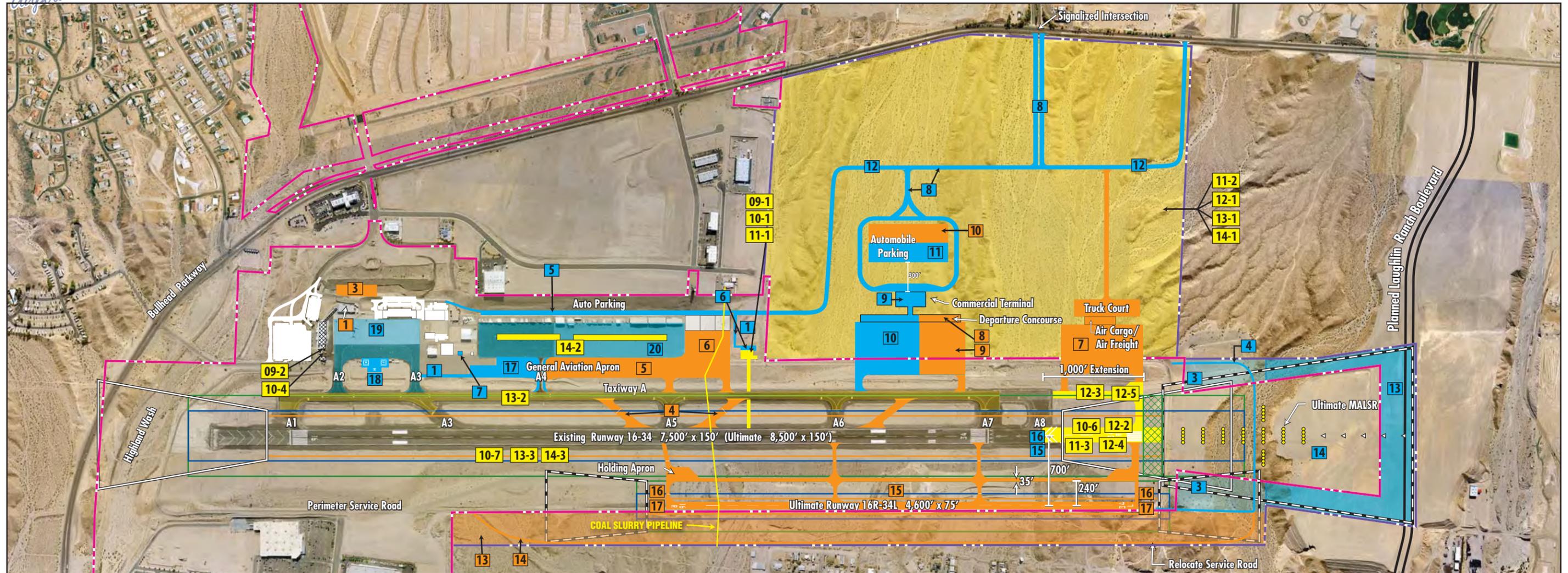
Financing capital improvements at the airport will not rely solely on the financial resources of the airport. Capital improvement funding is available through various grant-in-aid programs on both the state and federal levels. The following discussion outlines key sources of funding potentially available for capital improvements at Laughlin/Bullhead International Airport.

FEDERAL GRANTS

Through federal legislation over the years, various grant-in-aid programs have been established to develop and maintain a system of public airports across the United States. The purpose of this system and its federally based funding is to maintain national defense and to promote interstate commerce. The most recent legislation affecting federal funding was enacted in late 2003 and was titled, *Century of Aviation Re-authorization Act*, or Vision 100. The four-year bill covered FAA fiscal years 2004, 2005, 2006, and 2007. Vision 100 expired at the end of fiscal year 2007. In December 2007, AIP was included in the omnibus appropriation act and authorized \$3.5 billion in 2008 for airport improvements. However, full authorization was never granted. A series of continuing resolutions were passed in order to carry the program through September 2008, the end of the federal fiscal year. The *FAA Extension Act of 2008, Part II* authorizes the Airport Improvement Program (AIP) through March 31, 2009; however, the Continuing Resolution provides funds only through March 6, 2009. It directs the FAA to calculate the AIP formulas as though the

**Exhibit 5J
TOTAL DEVELOPMENT PROGRAM SUMMARY**

	TOTAL COST	FEDERALLY ELIGIBLE	STATE ELIGIBLE	LOCAL SHARE
Short Term Planning Horizon (First Five Years)	\$ 41,024,368	\$ 38,973,150	\$ 1,025,609	\$ 1,025,609
Intermediate Term Planning Horizon (6-10 years)	\$ 112,130,000	\$ 106,523,500	\$ 2,803,250	\$ 2,803,250
Long Term Planning Horizon (11-20 years)	\$ 133,713,000	\$ 127,027,350	\$ 3,342,825	\$ 3,342,825
Total All Development	\$ 286,867,368	\$ 272,524,000	\$ 7,171,684	\$ 7,171,684



SHORT TERM

- 2009**
- 09-1 ARFF Building - Phase I (Design Only)
- 09-2 Terminal Bag Claim Area Enclosure (Design Only)
- 2010**
- 10-1 ARFF Building - Phase II (Site Prep/Drainage/Infrastructure/Generator)
- 10-2 Acquire ARFF Vehicle (Not Pictured)
- 10-3 Acquire High-Speed Sweeper (Not Pictured)
- 10-4 Terminal Bag Claim Enclosure
- 10-5 Environmental Assessment (Not Pictured)
- 10-6 Extend Runway 16-34 (Design Only)
- 10-7 Airport Drainage/Safety Area Improvements
- 2011**
- 11-1 ARFF Building - Phase II (Construct Building)
- 11-2 Acquire ASLD Land - Phase I (75 acres)
- 11-3 Extend Runway 16-34 (Site Preparation)

- 2012**
- 12-1 Acquire ASLD Land - Phase II (75 acres)
- 12-2 Extend Runway 16-34 (1,000'x150')
- 12-3 Extend Taxiway A (1,000'x75')
- 12-4 Install Medium Intensity Runway Lighting (MIRL)
- 12-5 Install Medium Intensity Taxiway Lighting (MITL)
- 2013**
- 13-1 Acquire ASLD Land - Phase III (75 acres)
- 13-2 Pavement Rehabilitation - Taxiway A
- 13-3 RSA Erosion Protection/Drainage
- 2014**
- 14-1 Acquire ASLD Land - Phase IV (75 acres)
- 14-2 Construct T-Hangar Infrastructure
- 14-3 RSA Erosion Protection/Drainage

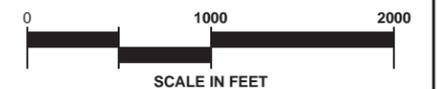
INTERMEDIATE TERM

- 1 New Electric Vault, Extend Airfield Lighting Controls to ATCT
- 2 Environmental Assessment for Projects in the Intermediate Term (Not Pictured)
- 3 Land Acquisition to Relocate Service Road (1 acre)
- 4 Service Road Relocation
- 5 Construct Segregated Access for General Aviation and 175 Parking Spaces
- 6 Construct Segregated Access to ARFF Building
- 7 Construct Aircraft Wash Rack
- 8 Construct Access Roadway to South Terminal/Extend Utilities
- 9 Construct South Terminal - Phase I
- 10 Construct South Terminal Apron - Phase I
- 11 Construct South Terminal Automobile Parking - Phase I
- 12 Construct South Terminal Roadway/Extend Utilities
- 13 RPZ Land Acquisition (50 acres)
- 14 Install MALSR Runway 34
- 15 Install Instrument Landing System (ILS) Runway 34
- 16 Install High Intensity Runway Lighting (HIRL) on Runway 16-34
- 17 Expand General Aviation Apron West - Phase I
- 18 Construct Helipad and Hardstands
- 19 Existing Terminal Apron Pavement Maintenance/Rehabilitation
- 20 Existing GA Apron Pavement Maintenance/Rehabilitation

LONG TERM

- 1 Convert Existing Departure Facility to General Aviation Terminal
- 2 EA for Exit Taxiway, Apron Expansion, Air Cargo Development, Terminal Expansion (Not Pictured)
- 3 Construct General Aviation Automobile Parking at Converted Terminal
- 4 Construct Exit Taxiways
- 5 Expand General Aviation Apron West - Phase II
- 6 Expand General Aviation Apron South
- 7 Construct Air Cargo Building, Access, Parking, and Apron
- 8 Construct South Terminal - Phase II
- 8 Construct South Terminal Apron - Phase II
- 10 Construct South Terminal Automobile Parking - Phase II
- 11 Pavement Maintenance/Rehabilitation (Not Pictured)
- 12 EA for Parallel Runway (Not Pictured)
- 13 Land Acquisition for Parallel Runway (56 acres)
- 14 Relocate Western Portion of Service Road
- 15 Construct Parallel Runway with Parallel Taxiway and Connecting Taxiways
- 16 Install REILs Each End of Parallel Runway
- 17 Install PAPIs Each End of Parallel Runway

KEY	ARFF - Airport Rescue and Firefighting	EA - Environmental Assessment
	ASLD - Arizona State Land Department	RPZ - Runway Protection Zone
	RSA - Runway Safety Area	ATCT - Airport Traffic Control Tower
	MALSR - Medium Intensity Approach Lighting System with Runway Alignment Indicators	



Date of Photo: February 2008



AIP level is \$3.9 billion for the full fiscal year. Further action by the United States Congress will be necessary to provide funding for the full FY 2009. As of December 2008, a new multi-year AIP authorization and authority bill had not been passed.

The source for airport improvement funds from the federal government is the Aviation Trust Fund. The Aviation Trust Fund was established in 1970 to provide funding for aviation capital investment programs (aviation development, facilities and equipment, and research and development). The Aviation Trust Fund also finances the operation of the FAA. It is funded by user fees, including taxes on airline tickets, aviation fuel, and various aircraft parts. Under the AIP program, examples of eligible development projects include the airfield, public aprons, and access roads.

Entitlement Funds

AIP provides funding for eligible projects at airports through an entitlement program. Primary commercial service airports receive a guaranteed minimum of federal assistance each year, based on their enplaned passenger levels and Congressional appropriation levels. A primary airport is defined as any commercial service airport enplaning at least 10,000 passengers annually. AIR 21, and now Vision 100, adjusted allocation formulas to increase entitlements over previous levels and to establish special set-asides for noise programs, general aviation airports, non-primary airports, and other special programs.

Under the entitlement formula, airports enplaning 10,000 or more passengers annually will receive the higher of \$1.0 million or an amount based upon the entitlement formula. The entitlement formula is based upon \$15.60 per enplaned passenger for the first 50,000 enplanements, and \$10.40 per enplanement for the next 50,000 boardings. The next 400,000 enplanements provide \$5.20 each, and an airport receives \$1.30 for the next 500,000 boardings. For each annual enplanement above one

million, the airport will receive \$1.00. A primary airport will receive the minimum entitlement level until annual boardings exceed 71,154.

Another entitlement program available to airports is associated with air cargo operations. Airports that have over 100 million pounds of landed weight by all-cargo carriers receive a cargo entitlement. The national cargo entitlement fund is established at three percent of the annual AIP appropriation. The airport cargo entitlement is based upon the airport's percentage of total landed weight at all eligible airports. Laughlin/Bullhead International Airport does not have, nor is it expected to have, sufficient air cargo activities to qualify for cargo entitlements.

Discretionary Funds

In a number of cases, airports face major projects that will require funds in excess of the airport's annual entitlements. Thus, additional funds from discretionary apportionments under AIP become desirable. The primary feature about discretionary funds is that they are distributed on a priority basis. These priorities are established by the FAA, utilizing a priority code system. Under this system, projects are ranked by their purpose. Projects ensuring airport safety and security are ranked as the most important priorities, followed by maintaining current infrastructure development, mitigating noise and other environmental impacts, meeting standards, and increasing system capacity.

Whereas entitlement monies are guaranteed on an annual basis, discretionary funds are not assured. If the combination of entitlement and discretionary funding does not provide enough capital for planned development, projects would either be delayed or require funding from the airport's revenues or other authorized sources.

It is important to note that competition for discretionary funding is not limited to airports in the State of Arizona or those within the FAA Western-Pacific Region. The funds are distributed to all airports in the country and, as such, are more difficult to obtain.



High priority projects will often fare favorably, while lower priority projects many times may not receive discretionary grants.

Passenger Facility Charges

The *Aviation Safety and Capacity Expansion Act of 1990* contained a provision for airports to levy passenger facility charges (PFCs) for the purposes of enhancing airport safety, capacity, security, or to reduce noise or enhance competition.

14 CFR Part 158 of May 29, 1991, establishes the regulations that must be followed by airports choosing to levy PFCs. Passenger facility charges may be imposed by public agencies controlling a commercial service airport with at least 2,500 annual passengers with scheduled service. Authorized agencies were allowed to impose a charge of \$1.00, \$2.00, or \$3.00 per enplaned passenger. Legislation (AIR-21) passed in 2000 allowed the cap to increase to \$4.50, which remains the current cap level under Vision 100. It should be noted that Congress has worked in the past to produce a new FAA spending Bill which could increase PFC levels up to \$7 per enplanement. At the end of the 110th Congress, the Bill had stalled; however, a new Bill and potentially higher PFC level could be enacted by the 111th Congress in 2009.

Prior approval is required from the Department of Transportation (DOT) before an airport is allowed to levy a PFC. The DOT must find that the projected revenues are needed for specific, approved projects. Any AIP-eligible project, whether development or planning related, is eligible for PFC funding. Gates and related areas for the movement of passengers and baggage are eligible, as are on-airport ground access projects. Any project approved must preserve or enhance safety, security, or capacity; reduce/ mitigate noise impacts; or enhance competition among carriers.

PFCs may be used only on approved projects. However, PFCs can be utilized to fund 100 percent of a project. They may also be used as matching funds for AIP grants or to augment AIP-funded projects. PFCs can be used for debt service and financing costs of bonds for eligible airport development. These funds may also be commingled with general revenue for bond debt service. Before submitting a PFC application, the airport must give notice and an opportunity for consultation with airlines operating at the airport.

PFCs are to be treated similar to other airport improvement grants, rather than as airport revenues, and are administered by the FAA. Airlines retain up to 11 cents per passenger for collecting PFCs. It should also be noted that only revenue passengers pay PFCs. Non-revenue passengers, such as those using frequent flier rewards or airline personnel, are counted as enplanements but do not generate PFCs.

A \$2.00 PFC is currently imposed at Laughlin/Bullhead International Airport. This PFC is currently in effect from May 1, 2008 through July 1, 2012.

Projected Entitlements and PFCs

Table 5D estimates the potential total entitlements for each planning horizon based upon the current entitlement formula. This assumes that the short term horizon activity level of 145,000 enplanements would be attained in five years. Similarly, the intermediate horizon would be reached in another five years, and the long term, ten years after that. A slower rate of growth would not result in fewer entitlement funds, unless enplanements fall below 10,000. PFC funds were projected based at the maximum rate of \$4.50 per enplanement for the intermediate and long term periods. The current PFC of \$2.00 was assumed through the short term planning period. Obviously, this could increase if the new FAA funding legislation increases PFC collection rates. A faster rate of growth would produce



TABLE 5D
Projected Entitlements and PFCs for Each Planning Horizon

Planning Period	Passenger Enplanements	Total Potential AIP Entitlements During Planning Horizon	Total Potential PFCs During Planning Horizon	Total PFCs & Entitlements
Short Term (5 years)	145,000	\$7,345,200	\$1,252,200	\$8,597,400
Intermediate (5 years)	200,000	\$8,528,000	\$3,907,100	\$12,435,100
Long Term (10 years)	375,000	\$23,205,000	\$13,005,400	\$36,210,400

a higher level of entitlement funding and PFCs, but may also require an acceleration of projects.

Based on **Table 5D**, the airport could expect to generate \$8.5 million in entitlement and PFC funds to offset the costs of projects listed in the short term program. The total short term program costs are estimated at approximately \$41 million. As a result, the airport will need to attract discretionary or other state and local funds to fully implement the projects programmed for the short term. Similarly, the projects proposed for the intermediate and long term exceed the entitlement and PFC funds which can be potentially generated by the entitlement and PFC programs. As such, the airport will need to attract discretionary grants or other local or state funds to fully implement the program.

FAA Facilities and Equipment (F&E) Program

The Air Traffic Organization (ATO) of the FAA administers the Facilities and Equipment (F&E) Program. This program provides funding for the installation and maintenance of various navigational aids and equipment of the national airspace system. Under the F&E program, funding is provided for FAA airport traffic control towers (ATCTs), en route navigational aids, on-airport navigational aids, and approach lighting systems. Projects which could be funded through F&E include: installing a MALSR on Runway 34 and the PAPIs and REILs on the future parallel runway.

STATE FUNDING PROGRAM

In support of the state airport system, the State of Arizona also participates in airport improvement projects. The source for state airport improvement funds is the Arizona Aviation Fund. Taxes levied by the state on aviation fuel, flight property, aircraft registration tax, and registration fees (as well as interest on these funds) are deposited in the Arizona Aviation Fund. The Transportation Board establishes the policies for distribution of these state funds.

Under the State of Arizona grant program, an airport can receive funding for one-half (currently 2.5 percent) of the local share of projects receiving federal AIP funding. The state also provides 90 percent funding for projects which are typically not eligible for federal AIP funding or have not received federal funding.

State Airport Loan Program

The Arizona Department of Transportation-Aeronautics Division’s (ADOT) Airport Loan Program was established to enhance the utilization of state funds and provide a flexible funding mechanism to assist airports in funding improvement projects. Eligible projects include runway, taxiway, and apron improvements; land acquisition, planning studies, and the preparation of plans and specifications for airport construction projects; as well as revenue-generating improvements such as hangars and fuel storage facilities. Projects which are not currently eligible for the State Airport Loan Program



are considered if the project would enhance the airport's ability to be financially self-sufficient.

Pavement Maintenance Program

The airport system in Arizona is a multi-million dollar investment of public and private funds that must be protected and preserved. State aviation fund dollars are limited and the State Transportation Board recognizes the need to protect and extend to the maximum amount the useful life of the airport system's pavement. This program, Arizona Pavement Preservation Program (APPP), is established to assist in the preservation of the Arizona airport system infrastructure.

Public Law 103-305 requires that airports requesting Federal AIP funding for pavement rehabilitation or reconstruction have an effective pavement maintenance management system. To this end, ADOT-Aeronautics has completed and is maintaining an Airport Pavement Management System (APMS) which, coupled with monthly pavement evaluations by the airport sponsors, fulfills this requirement.

The Arizona Airport Pavement Management System uses the Army Corps of Engineers' "Micropaver" program as a basis for generating a Five-Year Airport Pavement Preservation Program (APPP). The APMS consists of visual inspections of all airport pavements. Evaluations are made of the types and severities observed and entered into a computer program database. Pavement Condition Index (PCI) values are determined through the visual assessment of pavement condition in accordance with the most recent FAA Advisory Circular 150/5380-6, and range from 0 (failed) to 100 (excellent). Every three years, a complete database update with new visual observations is conducted. Individual airport reports from the update are shared with all participating system airports. The Aeronautics Division ensures that the APMS database is kept current, in compliance with FAA requirements.

Every year, the Aeronautics Division, utilizing the APMS, will identify airport pavement maintenance projects eligible for funding for the upcoming five years. These projects will appear in the State's Five-Year Airport Development Program. Once a project has been identified and approved for funding by the State Transportation Board, the airport sponsor may elect to accept a state grant for the project and not participate in the Airport Pavement Preservation Program (APPP), or the airport sponsor may sign an Inter-Government Agreement (IGA) with the Aeronautics Division to participate in the APPP.

LOCAL FUNDING

The balance of project costs, after consideration has been given to grants, must be funded through local resources. There are several alternatives for local financing options for future development at the airport, including airport revenues, direct funding from the MCAA, loans, bonding, and leasehold financing. These strategies could be used to fund the local matching share or complete the project if grant funding cannot be arranged.

Local funding options may also include the solicitation of private developers to construct and manage hangar facilities. The airport has, in the past, supported private development of hangars. Private hangar development should only be allowed within the definition of the airport master plan and within the rules and regulations of the airport in order to maintain an efficient airport facility layout.

SUMMARY

The best means to begin implementation of the recommendations in this master plan is to first recognize that planning is a continuous process that does not end with completion and approval of this document. Rather, the ability to continuously monitor the existing and forecast status of airport activity must be provided and maintained. The issues upon



which this master plan is based will remain valid for a number of years. The primary goal is for the airport to best serve the air transportation needs of the region, while continuing to be economically self-sufficient.

The actual need for facilities is most appropriately established by airport activity levels rather than a specified date. For example, projections have been made as to when additional hangars may be needed at the airport. In reality, however, the timeframe in which the development is needed may be substantially different. Actual demand may be slower to develop than expected. On the other hand, high levels of demand may establish the need to accelerate development. Although every effort has been made in this master planning process to conservatively estimate

when facility development may be needed, aviation demand will dictate when facility improvements need to be delayed or accelerated.

The real value of a usable master plan is in keeping the issues and objectives in the minds of the managers, decision-makers, and the community, so that they are better able to recognize change and its effects. In addition to adjustments in aviation demand, decisions made as to when to undertake the improvements recommended in this master plan will impact the period that the plan remains valid. The format used in this plan is intended to reduce the need for formal and costly updates by simply adjusting the timing. Updating can be done by the manager, thereby improving the plan's effectiveness.