

Yolo County Airport ALP Narrative Report April 2016



Prepared by Mead & Hunt, Inc. for the County of Yolo, California



Yolo County Airport

ALP Narrative Report



Prepared for the
County of Yolo
Mindi Nunes, Airport Manager
625 Court Street, Room 202
Woodland, CA 95695

**Mead
& Hunt**

Prepared by
Mead & Hunt, Inc.
133 Aviation Boulevard, Suite 100
Santa Rosa, CA 95403
Corbett.smith@meadhunt.com

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Introduction

This document details the changes to the Airport Layout Plan (ALP) for the Yolo County Airport (Airport) since the previous ALP was approved by the Federal Aviation Administration (FAA) in 2011. An approved plan is necessary for an airport to receive grant funding for eligible capital improvements under the terms of the FAA's Airport Improvement Program. An ALP creates a blueprint for airport development by depicting proposed facility improvements. Typically updated every 5 to 10 years, the ALP incorporates recent construction, recent obstructions removed, reflects new documentation requirements and illustrates future projects anticipated to occur over the next 20 years. The principal purpose for this update to the ALP set is to add recently-designed stormwater detention basins. This will make it possible for Yolo County (County) to receive FAA funding for the construction of these facilities. Other purposes of the update are to reflect new FAA airfield design standards and refine the layout for future hangar development.

This ALP was prepared in accordance with the applicable elements specified in FAA Advisory Circulars 150/5070-6B, *Airport Master Plans* and 150/5300-13A, *Airport Design*.

Airport Role and Existing Conditions

Publicly-owned and operated by the County, the Airport is located in unincorporated Yolo County six miles northeast of Winters, five miles northwest of Davis and five miles southwest of Woodland. A location map for the Airport and its surrounding vicinity is illustrated in **Figure 1**.



Figure 1 – Airport Location

The Airport is a public-use, general aviation (GA) airport serving the communities west of Sacramento. The Airport is expected to retain this role throughout the 20-year planning horizon. Although this plan update did not include a forecasting element, it is expected that the Airport will experience continued growth in GA activity. The changes proposed on this ALP would allow the Airport to continue to adequately serve the GA users while continuing to meet FAA safety and design standards.

The Airport has one asphalt runway, Runway 16-34 which is currently 6,000 feet in length and 100 feet in width. The Airport has two instrument approach

procedures:

- RNAV(GPS) Runway 16: as low as 1 mile visibility minimums.
- RNAV(GPS) Runway 34: as low as 1 mile visibility minimums.
- Circling procedures: as low as 1 mile visibility minimums.

The existing Airport Reference Code (ARC) at the Airport is B-II. The ARC is based on the largest aircraft that operates at least 500 times per year at the Airport. For the Airport, the aircraft currently meeting that requirement is the Beechcraft Super King Air. The Airport's existing layout satisfies safety standards for a B-II airport.

Ultimately the Airport's ARC may be redesignated to C-II as business jet traffic continues to increase. Previous Airport Master Plan and ALP efforts have contained this long-term recognition of the redesignation potential and reflected the safety and design standard changes associated with such a requirement.

The Runway Design Code (RDC) consists of the Airport Approach Category, Aircraft Design Group, and the approach visibility minimums. For the Airport, the current RDC is B-II-5000 with the potential to be redesignated to C-II-5000.

PROJECTS AND DESCRIPTIONS

Detention Basins and Related Drainage Facilities

In order for airport development projects to be eligible for a Federal Grant, they must be shown on the ALP. This is the primary reason for the inclusion of the future detention basins and related drainage facilities on the ALP (see **Figure 2**).

The Yolo County Airport Drainage Plan Update prepared in 2005 indicated that a range of drainage improvements are needed to alleviate the shallow flooding that currently occurs on the airfield during winter months. These improvements include stormwater detention basins on the east side of the Airport. A preliminary design of these basins was completed in 2004 and identified the sizes and location of the detention basins as shown on the ALP. The basins have been designed in accordance with AC 150/5200-33B, *Wildlife Attractants On or Near Airports*. Addressing the frequent ponding that occurs on the Airport today will reduce existing wildlife concerns.

The first phase of drainage improvements is to address an immediate need and resolve current flooding issues. It is not in response to forecast demand or growth of the Airport. Future phases of the drainage improvement project will address additional impervious surfaces and the resultant runoff as airfield improvements are made.

All of the detention basins, outflow pipes and related facilities are designed to be hydraulically separate from the agriculture irrigation systems which serve croplands near the Airport.

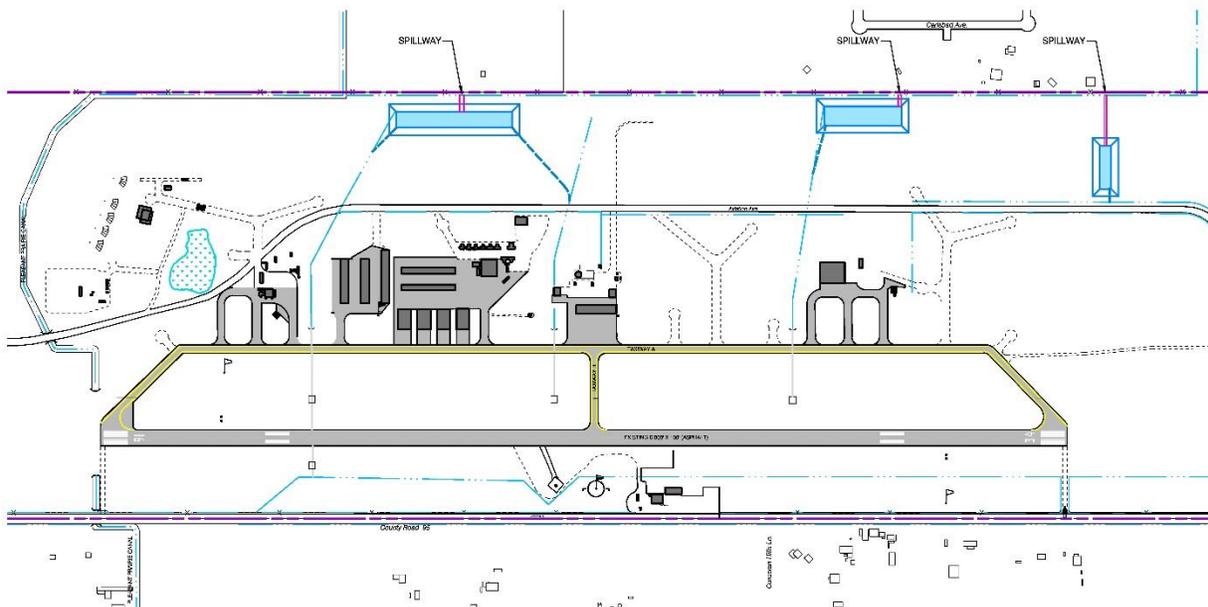


Figure 2 – Detention Basins

Relocation of Lillard Hall and West Plainfield Fire District Fire House

One of the functions of ALP sets is to identify objects that may be obstructions to flight. FAA design standards include a number of setbacks and vertical clearances that must be maintained free of objects. The prior ALP identified Lillard Hall and the West Plainfield Fire District fire house (and nearby accessory structures) as obstructions due to their location and height. FAA standards mandate that these structures be identified for relocation; however, their location is not so sensitive that we anticipate that there will be a near-term need to relocate the structures. It is appropriate to designate a potential site or sites where these facilities could be relocated. Investigations beyond the scope of this ALP update would be needed to identify and validate a specific site. Therefore, as part of this ALP update, three possible sites on Airport property have been identified. One or more off-airport sites may subsequently be identified. **Figure 3** illustrates the location of the existing facilities and the three alternative relocation sites. The table below summarizes the key factors that would need to be considered in evaluating the sites. There is the potential that FAA grant funds could be used to relocate these buildings.

Site	Key Factors
1	<ul style="list-style-type: none"> • Has the potential for a direct connection to County Road 29 which would aid a quick response by fire trucks. • Most visible and easiest to find by visitors to hall. • Although outside of the FEMA 100-year flood zone, area residents indicate that flooding has occurred on the site. • Site is immediately beyond berm surrounding an active pistol-rifle range. This site would not be considered viable if this range is in still in operation. There appears to be limited potential

	<p>for relocation of the range.</p> <ul style="list-style-type: none"> The site is not accessible by future aviation uses due to Airport Road.
2	<ul style="list-style-type: none"> Access to adjacent county roads is simple, it is not quite as direct as either the existing site or Alternative Site 1. Site remains convenient to area residents who use the hall. Although outside of the FEMA 100-year flood zone, area residents indicate that flooding has occurred on the site. The site is not accessible by future aviation uses due to Airport Road.
3	<ul style="list-style-type: none"> Access to adjacent county roads is simple, it is not quite as direct as either the existing site or Alternative Site 1. Site remains convenient to area residents who use the hall. This site is out of the FEMA 100-year flood zone and area residents indicate that the site has not flooded within recent memory. The site is potentially accessible by future aviation uses, it is in an area designated for future aviation or nonaviation uses on this ALP.

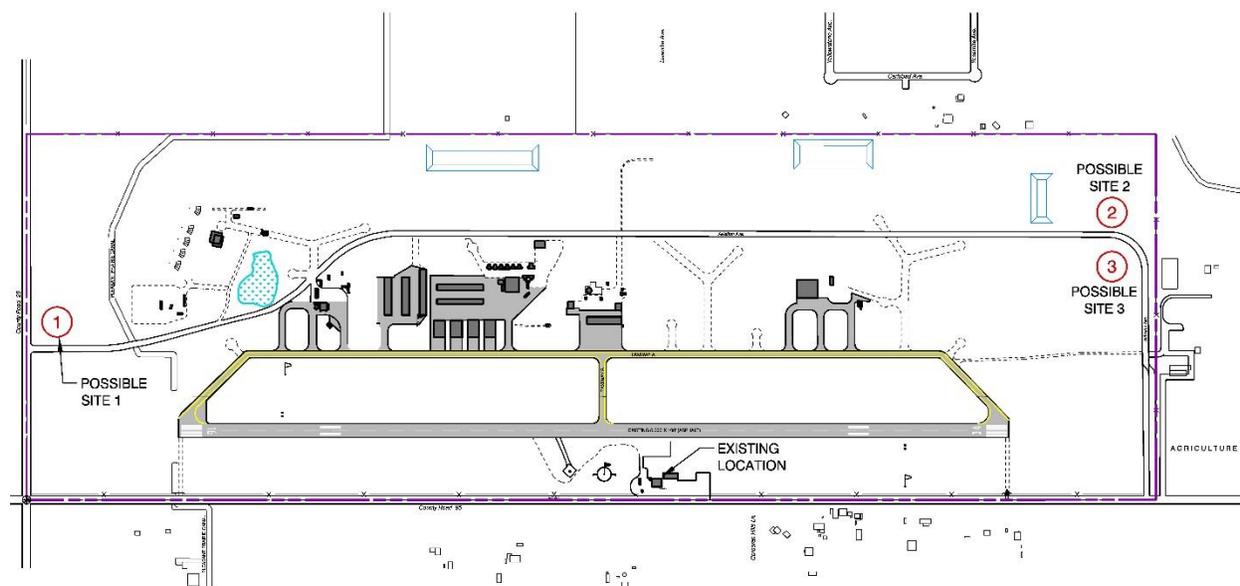


Figure 3 – Possible Relocation Sites for Lillard Hall and Fire House

Revision to Hangar Layout

In order to accommodate potential future growth in an orderly fashion, the hangar area layout was revised to include locations for 52 potential future hangars (see **Figure 4**). The revised hangar layout designates where the County can accommodate a range of aircraft types in a configuration which allows for the orderly flow of aircraft. The revised hangar area also includes expanded parking and access to the Airport Park.

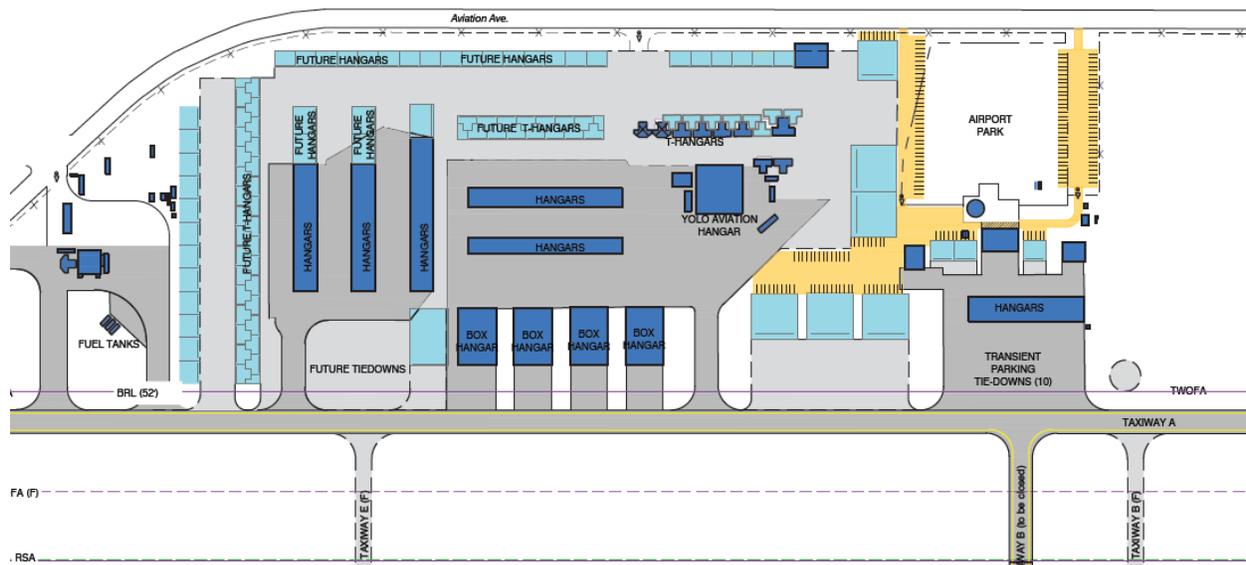


Figure 4 – Hangar Layout

Transient Parking Area

An area near Davis Flight Support (DFS) was identified by airport management as a potential area for apron expansion. Aircraft currently using DFS area are not provided an apron to park on and must park on the taxilane in front of the hangar. This creates a single taxilane with one-way traffic. If three or more aircraft wish to park in front of DFS, the middle aircraft may be trapped.

The proposed solution to the limited amount of apron space in front of DFS is to infill the existing taxilane area with pavement suitable for the ultimate design aircraft weight. This will create an apron with room to park multiple aircraft with varying wingspans. The specific layout of apron parking area is presented in **Figure 5**.



The edges of the painted parking area represent the taxilane object free areas (OFA). The distance from OFA to the centerline of Taxiway A is 65 feet and 58 feet the centerline of the taxilanes. Aircraft would enter the parking areas from one of the three taxilanes and park anywhere inside the painted box. After use of the DFS facilities, aircraft will be able to pull through the parking area and turn onto a taxilane and then onto Taxiway A. This allows for the efficient flow of traffic through the apron area.

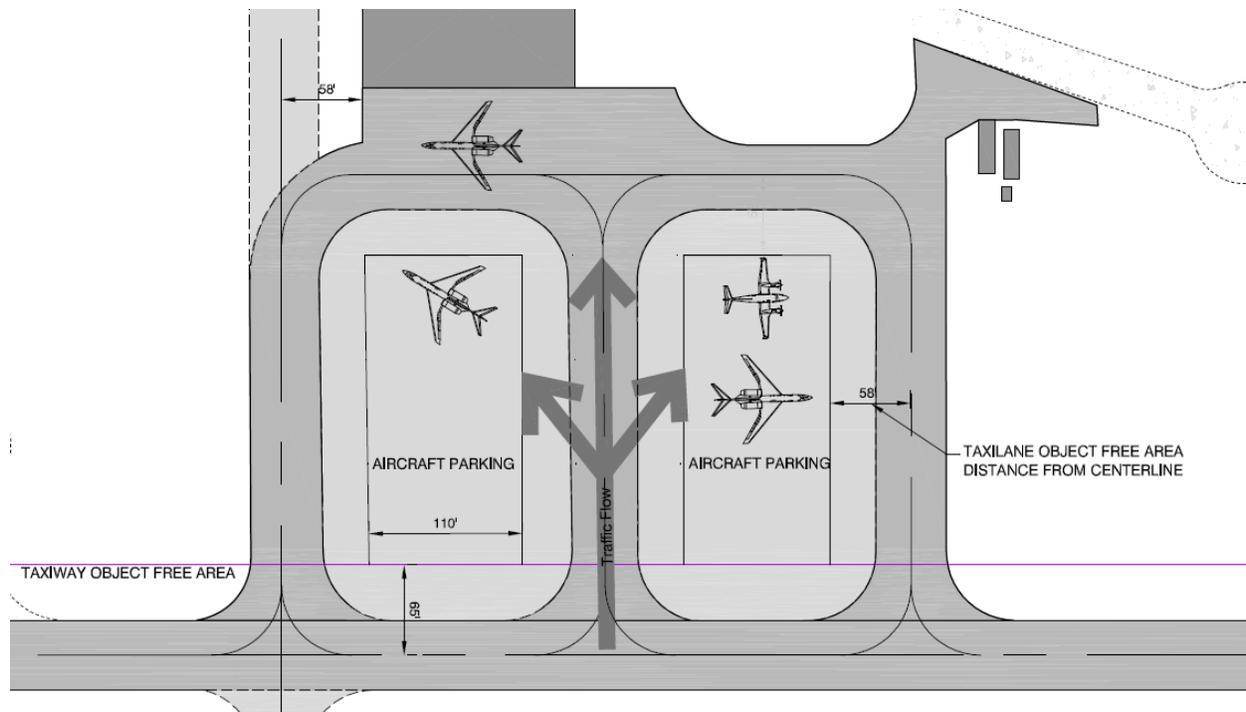


Figure 5 – Future Transient Parking Area

Modification of Future Taxiway Configuration

Several areas of the taxiway system have been modified slightly from the last ALP. The FAA has placed a high level of importance on reducing the chance for a runway incursion through physical design changes in the taxiway system. These changes in design guidance lead to a taxiway system which requires pilots to make a series of distinct and intentional directional changes before reaching a runway. This reduces the chances that a pilot will accidentally taxi an aircraft from an apron or parking position directly onto an active runway. Specifically on the ALP, Taxiway B is being shown as shifted to the south as to prevent direct taxi access from the transient parking tie-downs and hangar area to the runway. Future Taxiways E and D are also located in positions which prevent direct access from the apron to the runway. See **Figure 6**.

Historically, a future full length parallel taxiway has been shown on the ALP between Taxiway A and the runway. After consultation with County staff it was decided that this future taxiway was not necessary and has been removed from the plans.

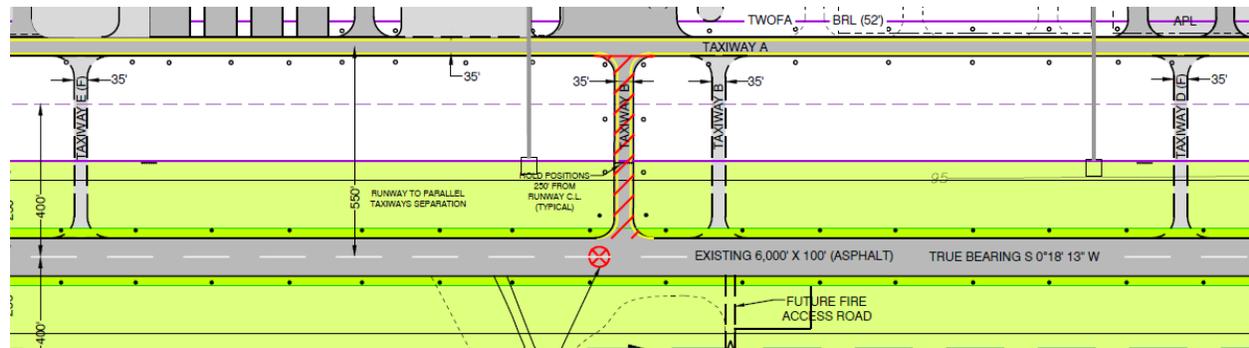


Figure 6 – Taxiway Layout

Future Shift of Aviation Avenue

As mentioned in the “Airport Reference Code B-II versus C-II Designation” section of this report, one of the implications of redesignation from a B-II airport to a C-II airport is the change in the size of the Runway Safety Area (RSA). The RSA enhances the safety of aircraft which undershoot, overrun, or veer off the runway, and it provides greater accessibility for fire-fighting and rescue equipment during such incidents. The shift from B-II to C-II will increase the length of the RSA beyond the runway end from 300 feet to 1,000 feet, and the width from 150 feet to 500 feet. The change in length beyond the runway end has the effect of putting a portion of Aviation Avenue within the RSA. A public road within an RSA is prohibited by FAA standards.

The ALP update process looked at various alternatives for resolving this incompatibility including shifting the runway 45 feet to the north. It was concluded that shifting Aviation Avenue to the south was the most feasible solution to resolve this future RSA incompatibility (see **Figure 7**). It is important to note that this road shift would only be required if/when the Airport achieves a C-II designation. At that point the road relocation project would be eligible for FAA grant funds.

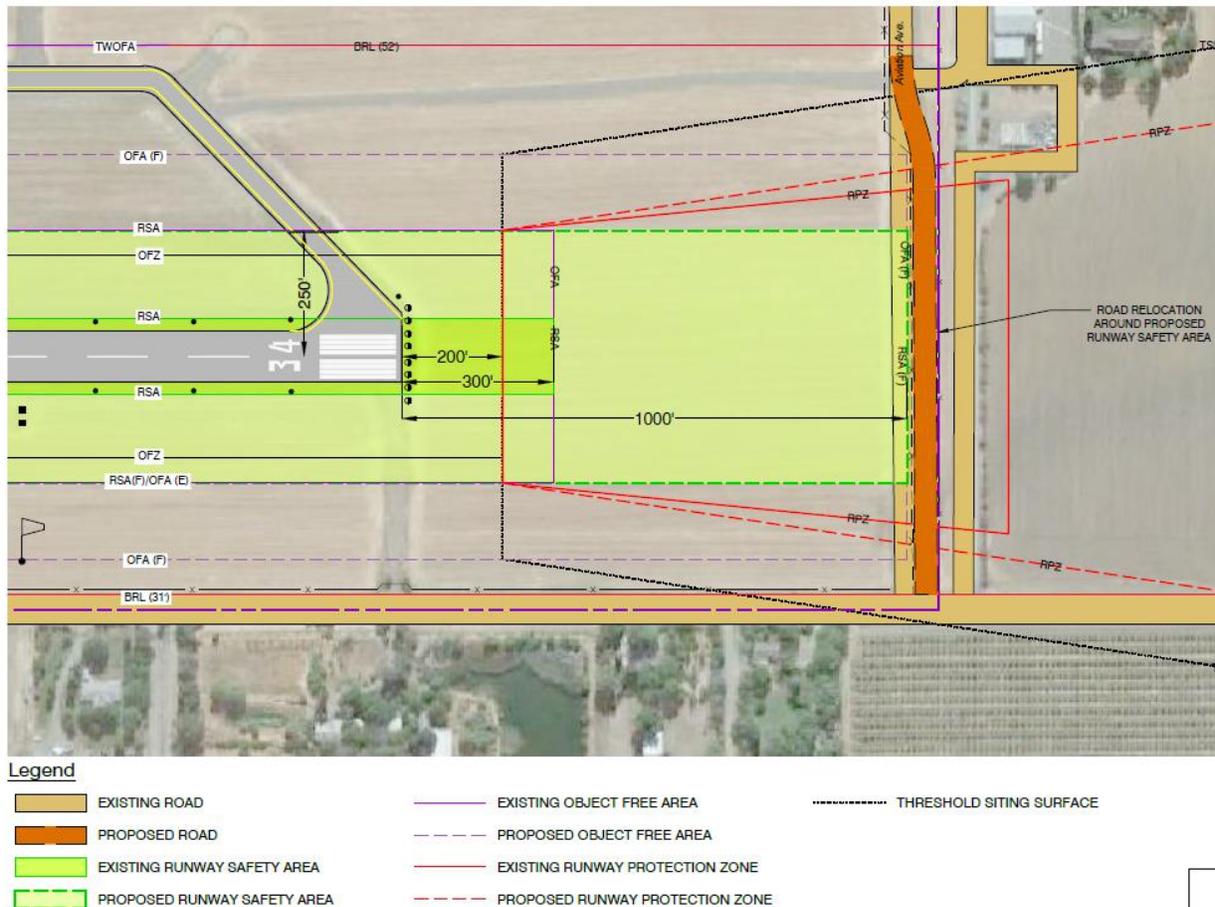


Figure 7 – Shift of Aviation Avenue

KEY AIRPORT PLANNING ISSUES

Airport Reference Code B-II versus C-II Designation

The FAA ties many airfield design standards to the ARC. An ARC is based upon the approach speed and wingspan of the critical aircraft. The Airport’s current ARC is B-II. The current critical aircraft is a Beech Super King Air. This twin-engine turboprop has a maximum take-off weight of 12,500 pounds and can carry up to 13 passengers (see **Figure 8**). For many years the ALP has included design features to enable the Airport to meet FAA design standards for ARC C-II. The critical aircraft designated on the ALP for ARC C-II is the Gulfstream III. This twin-engine jet has a maximum take-off weight of 69,700 pounds and carries 19 passengers in its standard seating configuration (see **Figure 9**). It should be noted that the ARC designation is based on the actual number of operations occurring at the Airport by the critical aircraft, not the County decision to designate its airport a certain ARC category.



Figure 8 – Super King Air B200

The FAA uses ARCs to define design standards needed to safely accommodate the critical aircraft. ARCs are not operational standards. Any aircraft that can safely use an airport are permitted to do so regardless of the ARC at the Airport. Eliminating the future ARC C-II from the ALP would not in any way restrict use of the Airport by jets. At the Airport, the principal change that shifting to ARC C-II would bring is the need for larger runway safety areas. An RSA is a graded area that surround the runway. Neither the runway's length nor pavement strength would be changed as a result of changing to ARC C-II.

Discouraging Use of the Airport by Jets

One of the questions that was a major concern at the public workshop was: how could the County discourage use of the Airport by jets? Should it wish to, the ability to directly limit use of the Airport by jets is limited by the grant assurances that the County agreed to. Each FAA grant that the County has accepted includes language which prohibits the County from discriminating against classes of aircraft. That is, the County cannot directly exclude aircraft that are capable of safely using the Airport; therefore, the County is not free to exclude jets directly, should it wish to.



Figure 9 – Gulfstream III

However, it may be possible to discourage use of the Airport by jets. Any actions with this purpose would have to be carefully implemented. If the FAA believed that a pattern of actions by the County was intended to exclude jets the agency could find the County in noncompliance with grant assurances and withhold grant funds. This would make it financially challenging to maintain airfield pavement and other facilities.

It might be possible for the County to discourage jet use at its Airport through the following means:

- Stop providing fuel for jets (Jet A).
- Do not provide parking positions for large aircraft.
- Do not provide new leaseholds for hangars sized to serve large aircraft.
- Charge landing fees for aircraft with gross weights over 12,500 pounds.

There would be one additional complication to implementing these measures. The County has granted a lease to a fixed base operator (Davis Flight Support) that provides the full range of facilities and services to serve larger aircraft, including jets. County actions to discourage use of the Airport by jets could conflict with the lease agreement with the fixed base operator. Consultant cannot offer a legal opinion on this matter but there is an apparent conflict. The supervisors would need to consult their legal counsel for a legal opinion. Consultation with the FAA prior to implementing any of these actions is recommended.

List of Upcoming Projects

Projects in the Airport's current Airport Capital Improvement Plan are listed below in chronological order:

- **Update of the Airfield Pavement Management System** – Update the data on the Airport's pavement and will provide Pavement Condition Index and Pavement Condition Index numbers.

- **Design of Phase 1 Drainage Improvements** – Engineering design for the first two detention basins and associated storm drain pipes and ditches.
- **Construction of Phase 1 Drainage Improvements** – Construction of the drainage improvements previously designed.
- **Construction of Run-up Aprons** – Construction of previously designed run-up apron at both runway ends.
- **Update of Runway Markings and Signage** – Update runway markings and signage to reflect the change in the runway number due to declination.

Pavement Condition

Pavement Condition Index numbers will not be available until the Airfield Pavement Management System is updated. This task is currently underway and results are expected in May 2016.