

Airport Master Plan

Draft Alternatives

Development and Evaluation



Pinal Airpark
Marana, Arizona



P I N A L ♦ C O U N T Y
wide open opportunity

November 2014

Submitted by



Airport Master Plan Update

Alternatives Development and Evaluation

Prepared for
Pinal Airpark

By
C&S Engineers, Inc.
2020 Camino del Rio North, Suite 1000
San Diego, CA 92108

November 2014

ADOT No. E3S3R

[THIS PAGE INTENTIONALLY LEFT BLANK]

TABLE OF CONTENTS

CHAPTER 5 - ALTERNATIVES	5-1
5.01 INTRODUCTION	5-1
5.02 OBJECTIVES	5-1
5.03 ALTERNATIVES ELEMENTS	5-1
5.03-1 <i>Primary Elements</i>	5-1
5.03-2 <i>Secondary Elements</i>	5-2
5.03-3 <i>Ancillary Elements</i>	5-2
5.04 ALTERNATIVES	5-2
5.04-1 <i>Runway and Taxiway System</i>	5-2
5.04-2 <i>Land Use Planning</i>	5-16
5.05 ALTERNATIVES EVALUATION CRITERIA	5-25
5.05-1 <i>Operational Performance</i>	5-25
5.05-2 <i>Best Planning Tenets</i>	5-26
5.05-3 <i>Environmental Implications</i>	5-26
5.05-4 <i>Financial Feasibility</i>	5-27
5.06 ALTERNATIVES EVALUATION SUMMARY	5-28
5.07 PREFERRED ALTERNATIVE	5-36

TABLES

TABLE 5-1 ALTERNATIVE 4 – PROPOSED DECLARED DISTANCES.....	5-12
TABLE 5-2 ASSOCIATED PROJECTS	5-15
TABLE 5-3 ASSOCIATED PROJECTS	5-24
TABLE 5-4 ENVIRONMENTAL IMPACTS EVALUATION CRITERIA.....	5-27
TABLE 5-5 RUNWAY AND TAXIWAY SYSTEM ALTERNATIVES EVALUATION.....	5-29
TABLE 5-6 LAND USE PLANNING ALTERNATIVES EVALUATION.....	5-31
TABLE 5-7 ALTERNATIVE EVALUATION/SCORING.....	5-33
TABLE 5-8 RUNWAY AND TAXIWAY SYSTEM ALTERNATIVES EVALUATION SUMMARY.....	5-34
TABLE 5-9 LAND USE PLANNING ALTERNATIVES EVALUATION SUMMARY	5-35

FIGURES

FIGURE 5-1 ALTERNATIVE 1 – NO ACTION.....	5-3
FIGURE 5-2 ALTERNATIVE 2 – MEETING STANDARDS.....	5-7
FIGURE 5-3 ALTERNATIVE 3 – INSTRUMENTATION	5-9
FIGURE 5-4 ALTERNATIVE 4 – WITHIN BOUNDS.....	5-13
FIGURE 5-5 ALTERNATIVE A – NO ACTION.....	5-17
FIGURE 5-6 ALTERNATIVE B – SMOOTH TRANSITION	5-20
FIGURE 5-7 ALTERNATIVE C – FRESH LOOK	5-22

CHAPTER 5 - ALTERNATIVES

5.01 Introduction

In this chapter, alternative plans for proposed development at Pinal Airpark are described and evaluated. The traditional Airport Master Plan approach identifies alternatives that accommodate Federal Aviation Administration (FAA) approved forecasts identified in Chapter 3 and facility requirements identified in Chapter 4. In addition, this section focuses on ensuring that the Airport is available for public use with the objective of accommodating both existing and future users.

5.02 Objectives

In addition to meeting the requirements determined by FAA standards and described in Chapter 4, there are several operational and economic objectives of the Airport:

- Increase operational efficiency of the Airport
- Generate additional revenue from existing facilities
- Attract additional businesses
- Attract additional General Aviation (GA) activity
- Ensure the coexistence of existing and future users
- Minimize potential airspace conflicts due to the diversity of airport users and proximity of adjacent airports and heliports

These objectives are considered in the development and evaluation of alternatives.

5.03 Alternatives Elements

The identification of alternatives begins with primary elements that require large, contiguous areas of land as directed by FAA guidance (e.g., runways, aircraft parking, etc.). Once these are addressed, secondary elements are considered that have greater flexibility in planning, may be able to be subdivided, and can fill gaps around primary elements (e.g., navigational aids [NAVAIDs], perimeter roads, etc.). Below is a list of primary and secondary elements.

5.03-1 Primary Elements

The following primary elements are the focus of the alternatives:

1. Runway and taxiway system (including safety areas)
2. Land use planning – Identification and delineation of apron space and associated facilities for:
 - a. General Aviation users including the Fixed Base Operator (FBO)

- b. Maintenance, Repair and Overhaul (MRO) operations including teardown, storage, and maintenance
- c. Military users including those related to the adjacent Parachute Training and Testing Facility (PTTF, operated by the U.S. Special operations Command [USSOCOM]) and the Silver Bell Army Heliport (SBAH)

Alternatives have been developed for Numbers 1 and 2 above. Due to the common use of facilities by all users (i.e., there are not separate aprons or taxiway systems), alternatives for Number 2 consider the needs of all users and the interrelations among these.

5.03-2 Secondary Elements

The following secondary elements are included on the alternatives for the runway and taxiway system:

- 1. Control of land uses within safety areas
- 2. Relocation of segmented circle and wind cone outside of the Runway Safety Area (RSA), Runway Object Free Area (ROFA) and Runway Obstacle Free Zone (ROFZ)
- 3. Runway and taxiway improvements to meet standards
- 4. Run-up ramps for maintenance run-ups
- 5. Relocation of hold lines
- 6. Replacement and relocation of wind cones
- 7. Installation of Visual Glide Slope Indicators (VGSIs)

The alternatives for land use planning consist of several secondary elements including perimeter roads, apron reconstruction, and access/circulation.

5.03-3 Ancillary Elements

There are a number of facility requirements that do not have alternatives associated with them and will be incorporated into the preferred alternative once selected. These include the following (refer to Chapter 4 for background information):

Runway:

- Runway reconstruction
- Addressing drainage issues within the RSA
- Mitigation of on-airport obstructions

Taxiway:

- Addressing deteriorating condition
- Renaming of taxiways
- Grading and addressing drainage within the Taxiway Safety Area

Lighting, Signage, Marking and
NAVAIDs:

- Installation of Runway End Identifier Lights (REILs)
- Upgrading to High Intensity Runway Lights (HIRLs) and relocation of lighting
- Upgrading to Medium Intensity Taxiway Lights (MITLs)
- Repositioning of distance remaining signs
- Replacement of signage
- Remarketing runway and taxiway

Landside:

- Replacement of electrical vault
- Rehabilitation of roadways and paved parking lots
- Replacement of utility infrastructure
- Purchasing of landside and airside equipment
- Self-service aircraft fueling (incorporated into one alternative due to new location)
- Fencing

These are not discussed in the alternatives evaluation process but will be identified in the capital improvement plan and Airport Layout Plan.

5.04 Alternatives

5.04-1 Runway and Taxiway System

Although additional runway length was not justified under existing or forecasted conditions within this Airport Master Plan, an extension was evaluated due to its inclusion in the previous, 1991 Airport Master Plan. This analysis was intended to determine if there is a feasible option for runway lengthening that would avoid significant and long-term impacts to on-airport and surrounding operations. Based on this review and feedback from the Steering Committee, it was determined that the extent of potential impacts associated with a runway extension (on either or both runway ends) and the lack of justification makes this unworthy of further analysis. While there was support for a northern extension by several Steering Committee members, this was negated by others that would be directly impacted. However, if activity increases beyond what is forecasted and/or the fleet mix changes resulting in justification for an extension, this should be reconsidered. Therefore, this planning effort maintains future flexibility by avoiding any development that would preclude a runway extension.¹

Also discussed with the Steering Committee was the potential to change the runway designators for Pinal Airpark's runway (currently 12-30) to avoid confusion by visiting pilots to the area. Due to the very close proximity to other facilities such as Marana Regional Airport (only eight nautical miles), the frequency of identical runway designations, and the lack of an Air Traffic Control Tower (ATCT), there have been several instances of aircraft intended for Pinal Airpark, including wide-

¹ Perimeter roads are not considered prohibitive to a runway extension.

body commercial aircraft, mistakenly landing elsewhere. Due to the operational demands of the aircraft that fly into Pinal Airpark, specifically those related to the MRO services, this is an undesirable situation. In order to prevent future issues, it was recommended to consider renumbering the runway ends at Pinal Airpark.

The magnetic variation of an airport is assigned and then evaluated every five years (on an epoch-year basis) by the FAA. When it has changed enough to require renumbering of the runway, the FAA Flight Procedures branch initiates an update. Based on the current magnetic declination and rate of declination, Runway 12-30 is designated correctly and it would be over a decade before renumbering is necessary. The FAA was contacted regarding the concerns at Pinal Airpark and responded that “pilot confusion would not be an adequate justification to change runway numbers.”

In addition to the nearby airports, representatives from the tenant organizations at the adjacent SBAH have expressed concern regarding the projected increases in activity and congestion in the airspace. A potential solution may be the establishment of an ATCT. This would not only benefit pilots operating at Pinal Airpark and the SBAH, but also parachute training activities associated with the USSOCOM and nearby airports such as Marana Regional Airport. Because it is unlikely that the FAA would fund the construction² or operation of a tower at Pinal Airpark due to activity levels, other avenues would need to be pursued. This may include the Arizona National Guard facilitating the establishment and operation of an ATCT. This could be explored further regardless of the alternative selected.

Based on the above, the major objectives associated with alternatives for the runway and taxiway system focus on the following:

1. Gaining control of land uses and activities within Runway Protection Zones (RPZs) that extend off property.
2. Gaining control of the RSA and ROFA that extend off property in order to ensure compliance with FAA design standards.
3. Meeting runway and taxiway design standards.
4. Increasing operational capabilities by implementing non-precision instrument approach capabilities to Runway 12.
5. Minimizing airspace conflicts with nearby airports and the adjacent activities.

Four alternatives have been presented.

ALTERNATIVE 1 – NO ACTION

This alternative involves taking no action to address the issues described above and is considered for comparison purposes. Refer to **Figure 5-1**.

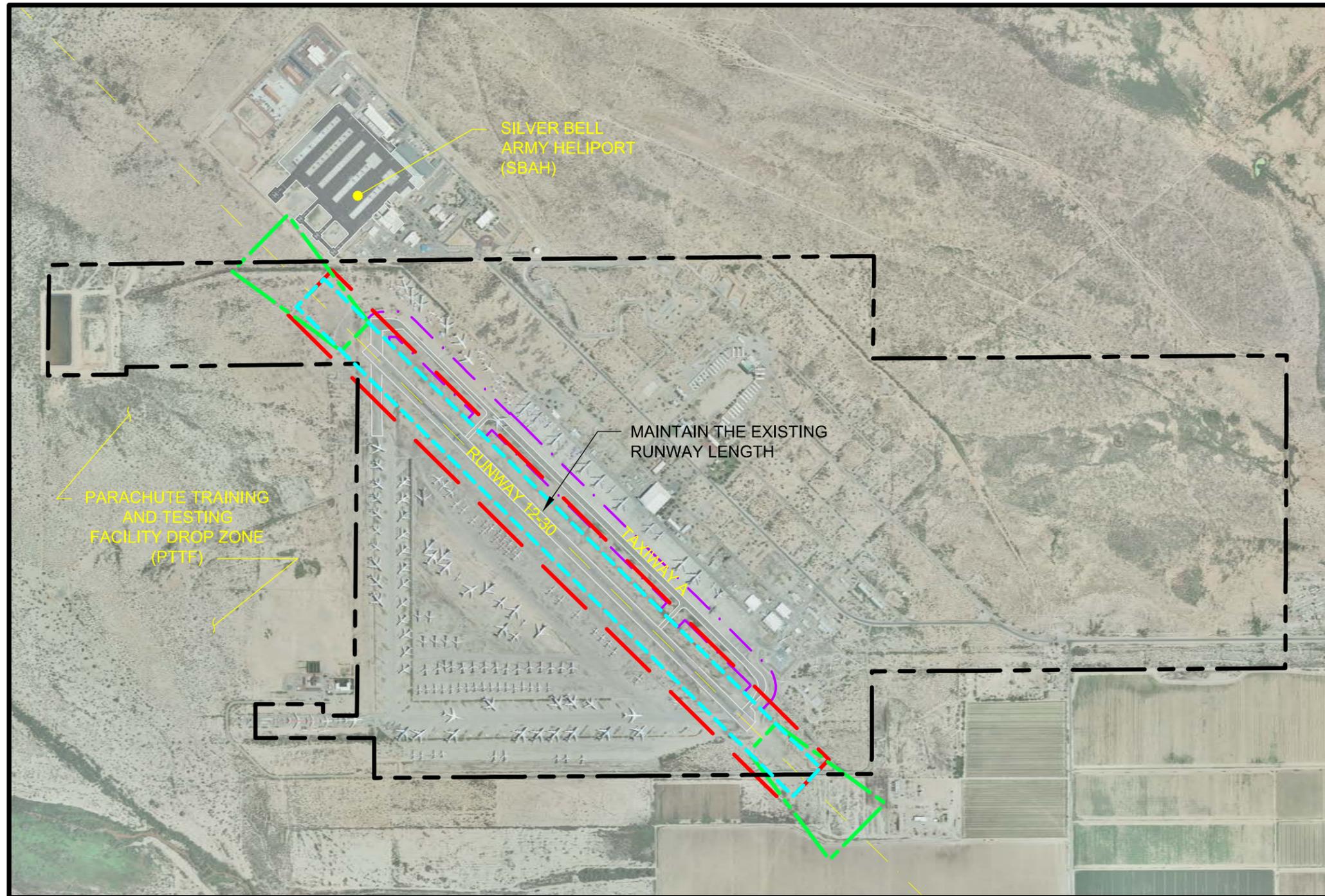
² Although there is an antiquated ATCT at Pinal Airpark, its age and deterioration would prevent reuse without significant improvements.



PINAL COUNTY
wide open opportunity

LEGEND

- EXISTING AIRPORT PROPERTY LINE
- RUNWAY OBJECT FREE AREA (ROFA)
- RUNWAY SAFETY AREA (RSA)
- RUNWAY PROTECTION ZONE (RPZ)
- TAXIWAY OBJECT FREE AREA (TOFA)



SCALE: 1" = 1500'



Airside Projects

Maintain the existing runway length



PINAL AIRPARK
ALTERNATIVE 1:
NO ACTION
FIGURE 5-1

[THIS PAGE INTENTIONALLY LEFT BLANK]

ALTERNATIVE 2 – MEETING STANDARDS

This alternative involves acquiring the land within the RSA and ROFA (including privately owned land to the south and a small area of the PTF drop zone),³ in fee simple *and* obtaining avigation easements over the land within the RPZs that extend off airport property (see **Figure 5-2**). This alternative helps the Airport meet design standards without negatively impacting the current operational capabilities of the runway.

ALTERNATIVE 3 – INSTRUMENTATION

Under Alternative 3, a similar approach to Alternative 2 is taken in order to obtain control over the land uses and activities within the RPZ, ROFA, and RSA, but includes implementing non-precision instrument approach capabilities to Runway 12. This increases the size of the RPZ and thus increases the extent to which this extends off airport property. Improved operational capability enabled by non-precision approach instrumentation could increase accessibility to and utilization of the Airport during Instrument Meteorological Conditions (IMC). (See previous chapters for additional information.) This alternative is presented on **Figure 5-3**.

³A modification of standards may be available for the ROFA, though the FAA does not permit such allowances for the RSA.

[THIS PAGE INTENTIONALLY LEFT BLANK]



PINAL COUNTY
wide open opportunity

LEGEND

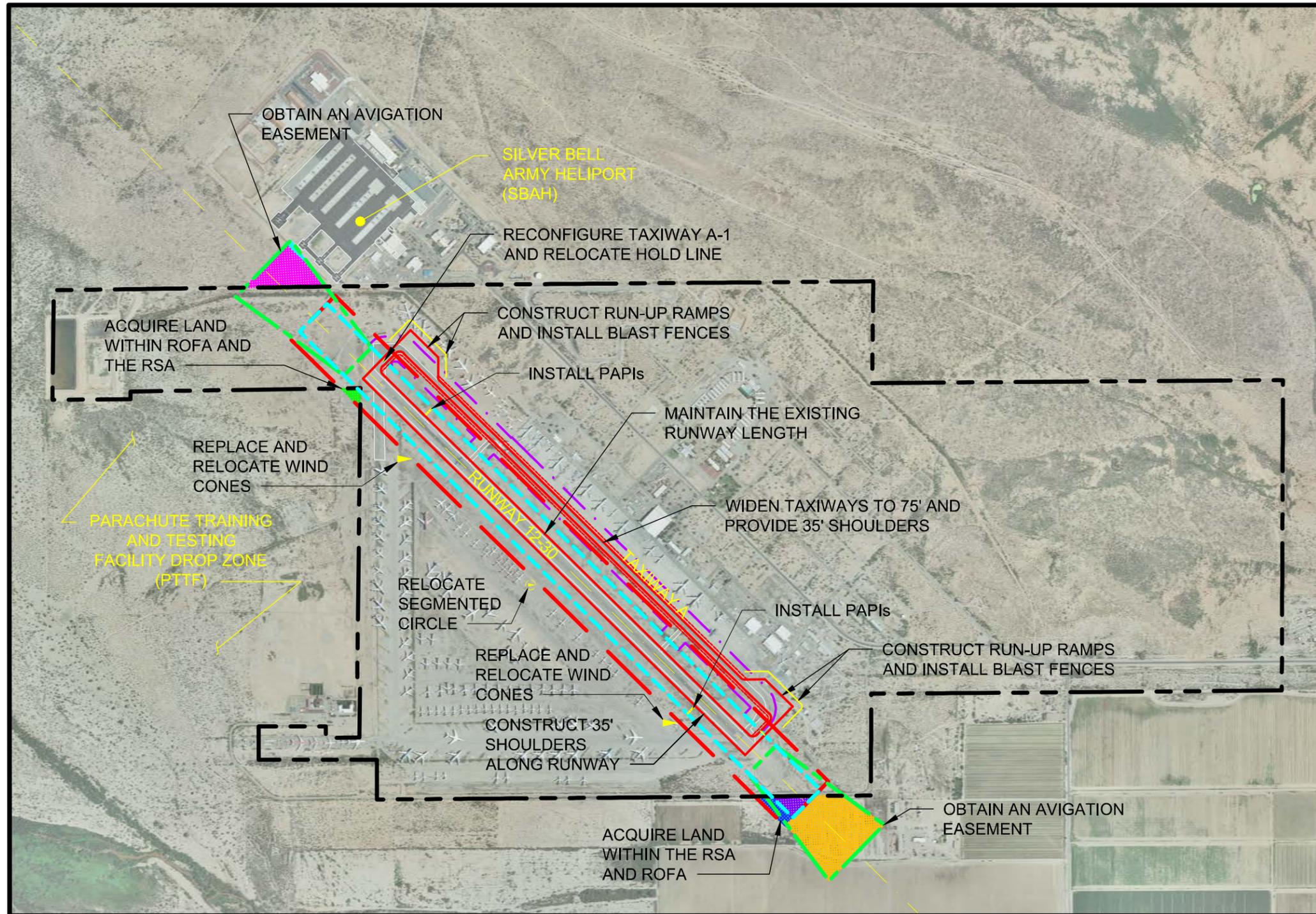
-  EXISTING AIRPORT PROPERTY LINE
-  RUNWAY OBJECT FREE AREA (ROFA)
-  RUNWAY SAFETY AREA (RSA)
-  RUNWAY PROTECTION ZONE (RPZ)
-  TAXIWAY OBJECT FREE AREA (TOFA)
-  LAND OFF PROPERTY WITHIN RUNWAY 30 RSA; 1.72 ACRES
-  LAND OFF PROPERTY WITHIN RUNWAY 30 RPZ; 17.34 ACRES
-  LAND OFF PROPERTY WITHIN RUNWAY 12 RSA; 0.02 ACRES
-  LAND OFF PROPERTY WITHIN RUNWAY 12 ROFA; 0.71 ACRES
-  LAND WITHIN RUNWAY 12 RPZ ON SBAH; 0.48 ACRES
-  LAND OFF PROPERTY WITHIN RUNWAY 12 RPZ; 6.64 ACRES
-  LAND OFF PROPERTY WITHIN RUNWAY 30 ROFA; 1.59 ACRES



SCALE: 1" = 1500'



PINAL AIRPARK ALTERNATIVE 2: MEETING STANDARDS FIGURE 5-2



Property Acquisition and Easements

- Acquire land within the ROFA and the RSA that extends onto the PTTF
- Acquire land within the Runway 30 RSA and ROFA that extend off airport onto private land
- Obtain an avigation easement for the portion of the Runway 30 RPZ that extends off airport property
- Obtain an avigation easement for the portion of the Runway 12 RPZ that extends off airport property

Airside Projects

- Maintain the existing runway length
- Construct 35-foot shoulders along the runway
- Widen taxiways to 75 feet and provide 35-foot shoulders
- Reconfigure Taxiway A-1 and relocate the hold line
- Construct run-up ramps and install blast fences
- Install PAPIs
- Replace and relocate wind cones
- Relocate segmented circle

Note: Project list does not include ancillary elements, which will be identified on ALP

[THIS PAGE INTENTIONALLY LEFT BLANK]



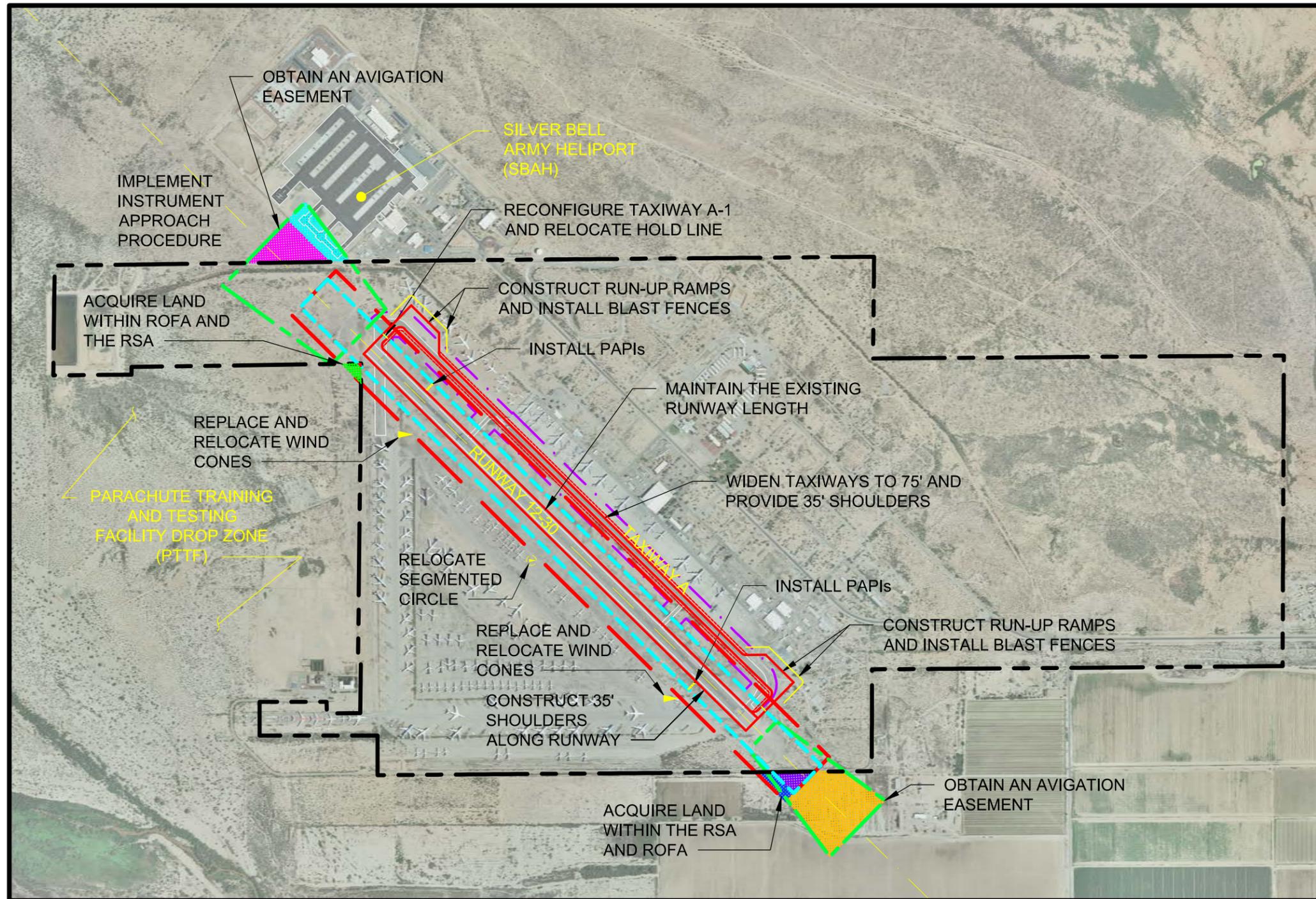
PINAL COUNTY
wide open opportunity

LEGEND

- EXISTING AIRPORT PROPERTY LINE
- RUNWAY OBJECT FREE AREA (ROFA)
- RUNWAY SAFETY AREA (RSA)
- RUNWAY PROTECTION ZONE (RPZ)
- TAXIWAY OBJECT FREE AREA (TOFA)
- LAND OFF PROPERTY WITHIN RUNWAY 30 RSA; 1.72 ACRES
- LAND OFF PROPERTY WITHIN RUNWAY 30 RPZ; 17.34 ACRES
- LAND OFF PROPERTY WITHIN RUNWAY 12 RSA; 0.02 ACRES
- LAND OFF PROPERTY WITHIN RUNWAY 12 ROFA; 0.71 ACRES
- LAND WITHIN RUNWAY 12 RPZ ON SBAH; 5.16 ACRES
- LAND OFF PROPERTY WITHIN RUNWAY 12 RPZ; 6.76 ACRES
- LAND OFF PROPERTY WITHIN RUNWAY 30 ROFA; 1.59 ACRES

1500 0 1500 3000FT.

SCALE: 1" = 1500'



Property Acquisition and Easements

- Acquire land within the ROFA and the RSA that extends onto the PTTF
- Acquire land within the Runway 30 RSA and ROFA that extend off airport onto private land
- Obtain an avigation easement for the portion of the Runway 30 RPZ that extends off airport property
- Obtain an avigation easement for the portion of the Runway 12 RPZ that extends off airport property

Airside Projects

- Maintain the existing runway length
- Implement a non-precision Instrument Approach Procedure to Runway 12
- Construct 35-foot shoulders along the runway
- Widen taxiways to 75 feet and provide 35-foot shoulders
- Reconfigure Taxiway A-1 and relocate the hold line
- Construct run-up ramps and install blast fences
- Install PAPIs
- Replace and relocate wind cones
- Relocate segmented circle

Note: Project list does not include ancillary elements, which will be identified on ALP



PINAL AIRPARK
ALTERNATIVE 3:
INSTRUMENTATION
FIGURE 5-3

[THIS PAGE INTENTIONALLY LEFT BLANK]

ALTERNATIVE 4 – *WITHIN BOUNDS*

This alternative involves the establishment of declared distances in order to achieve compliance with FAA design standards for the ROFA and RSA. As discussed in FAA AC 150/5300-13A, declared distances represent the maximum runway length available and suitable for aircraft activities according to each runway end. These include the following:

- Takeoff Run Available (TORA) – The runway length declared available and suitable for the ground run of an aircraft taking off.
- Takeoff Distance Available (TODA) – The TORA plus the length of any remaining runway beyond the far end of the TORA. This would also include the length of a clearway, which is not available or proposed at Pinal Airpark.
- Accelerate-Stop Distance Available (ASDA) – The runway declared available and suitable for the acceleration and deceleration of an aircraft aborting a takeoff. This would also include the length of a stopway, which is not available or proposed at Pinal Airpark.
- Landing Distance Available (LDA) – The runway length declared available and suitable for landing an aircraft.⁴

Declared distances can be used to achieve compliance with design standards such as the RSA when there are no feasible alternatives. Because the alternatives in this case require acquisition of privately owned land, declared distances are considered and evaluated. There are no physical changes to the runway associated with declared distances; these distances are published for pilots to use when making flight calculations.

As shown on **Figure 5-4**, in order to achieve additional RSA and ROFA prior to the Runway 30 threshold (to meet the 600-foot standard⁵), the threshold is relocated 136 feet in from the pavement end. This brings the RSA and ROFA onto airport property but reduces the Runway 30 LDA to 6,713 feet.

In order to achieve additional RSA and ROFA beyond the departure end of Runway 30 (to meet the 1,000-foot standard), the ends of the Runway 12 ASDA and LDA are relocated 536 feet in from the pavement end. The resultant declared distances are presented in the table below and shown on **Figure 5-4**.

⁴ All definitions are sourced from FAA AC 150/5300-13A, February 26, 2014.

⁵ In order to be eligible to use the reduced standard of length prior to threshold, the runway end must be equipped with visual approach slope guidance; Precision Approach Path Indicators (PAPIs) are proposed in accordance with the recommendations of the 2008 Arizona State Airports System Plan (SASP).

TABLE 5-1 ALTERNATIVE 4 – PROPOSED DECLARED DISTANCES

<i>Runway End ID</i>	TORA	TODA	ASDA	LDA
12	6,849	6,849	6,313	6,313
30	6,849	6,849	6,849	6,713

Source: C&S Engineers, Inc.

This alternative also involves acquiring the land (less than an acre) of the ROFA and RSA that extends onto the drop zone, *and* obtaining avigation easements over the land within the RPZs that extend off airport property. By relocating the Runway 30 threshold to achieve additional RSA, the approach RPZ is relocated to 200 feet from the proposed threshold. The County should gain control over the land within both the approach and departure RPZs (see **Figure 5-4**).

By bringing the RSA and ROFA within the property boundary, this alternative mitigates the noncompliance issue with FAA design standards and minimizes the impacts on surrounding property owners (since acquisition is not required).



PINAL COUNTY
wide open opportunity

LEGEND

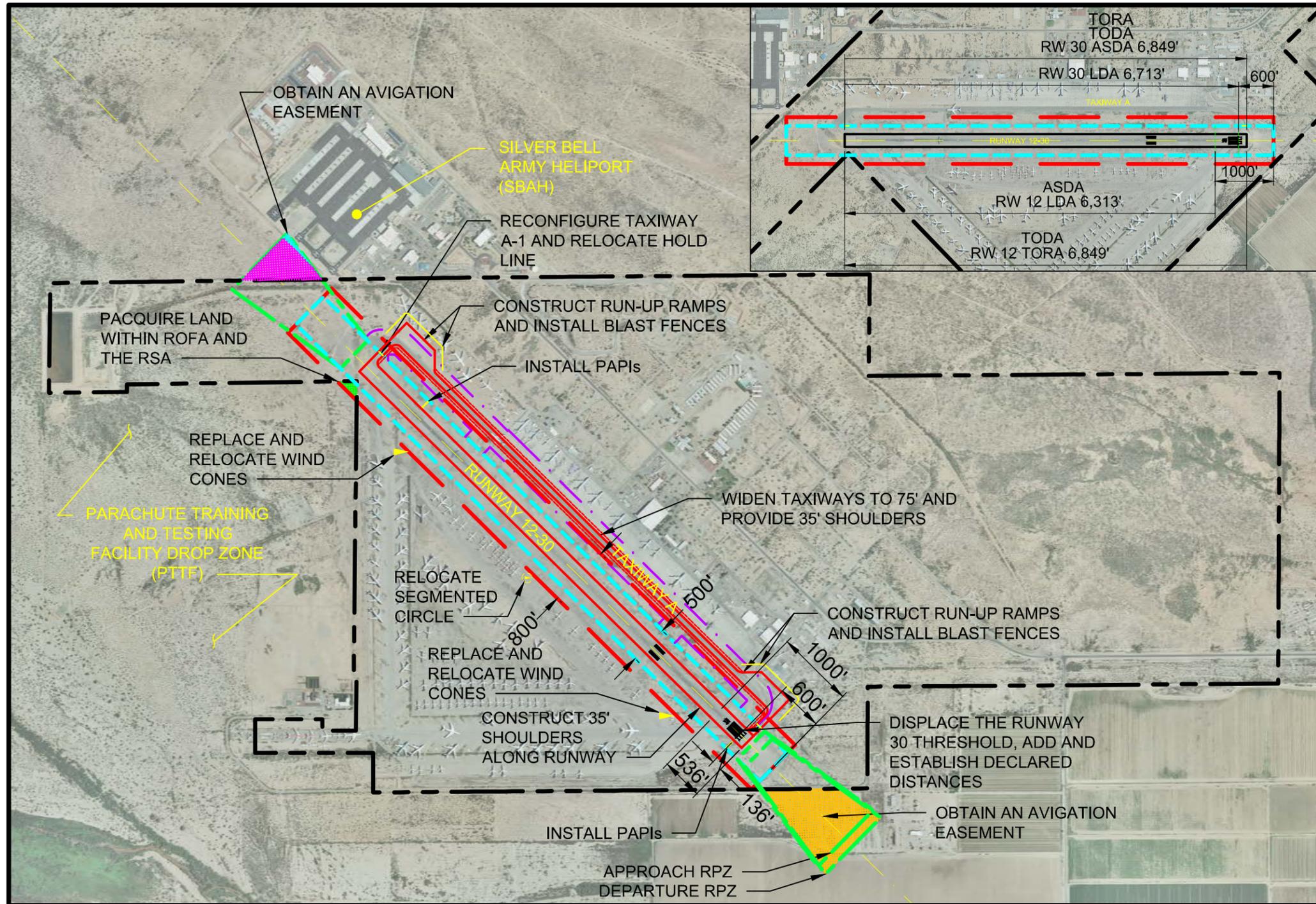
-  EXISTING AIRPORT PROPERTY LINE
-  RUNWAY OBJECT FREE AREA (ROFA)
-  RUNWAY SAFETY AREA (RSA)
-  RUNWAY PROTECTION ZONE (RPZ)
-  TAXIWAY OBJECT FREE AREA (TOFA)
-  LAND OFF PROPERTY WITHIN RUNWAY 30 RPZ; 20.70 ACRES
-  LAND OFF PROPERTY WITHIN RUNWAY 12 RSA; 0.02 ACRES
-  LAND OFF PROPERTY WITHIN RUNWAY 12 ROFA; 0.71 ACRES
-  LAND WITHIN RUNWAY 12 RPZ ON SBAH; 0.48 ACRES
-  LAND OFF PROPERTY WITHIN RUNWAY 12 RPZ; 6.64 ACRES



SCALE: 1" = 1500'



PINAL AIRPARK ALTERNATIVE 4: WITHIN BOUNDS FIGURE 5-4



Property Acquisition and Easements

- Acquire land within the ROFA and the RSA that extends onto the PTF
- Obtain an avigation easement for the portion of the Runway 30 RPZ that extends off airport property
- Obtain an avigation easement for the portion of the Runway 12 RPZ that extends off airport property

Airside Projects

- Displace the Runway 30 threshold, add and establish declared distances
- Construct 35-foot shoulders along the runway
- Widen taxiways to 75 feet and provide 35-foot shoulders
- Reconfigure Taxiway A-1 and relocate the hold line
- Construct run-up ramps and install blast fences
- Install PAPIs
- Replace and relocate wind cones
- Relocate segmented circle

Note: Project list does not include ancillary elements, which will be identified on ALP

[THIS PAGE INTENTIONALLY LEFT BLANK]

Although the instrument approach capabilities described above are not represented on **Figure 5-4**, these could be incorporated into Alternative 4.

ASSOCIATED PROJECTS

A number of projects were identified that are necessary to meet each of the alternative’s objectives. Due to the overlaps across alternatives, codes for each project have been identified and their inclusion in each alternative is presented in **Table 5-2**. (This coding system is also presented on the alternatives figures.) Descriptions of the projects by code are provided on the following pages.

TABLE 5-2 ASSOCIATED PROJECTS

<i>Project</i>	No-Action	Meeting Standards	Instrumentation	Within Bounds
<i>Property Acquisition and Easements</i>				
Acquire land within ROFA and RSA that extends onto the USSOCOM PTF (0.7 acres)		X	X	X
Acquire land within Runway 30 RSA and ROFA that extends off airport onto private land (3.3 acres)		X	X	
Obtain avigation easement for portion of Runway 30 RPZ that extends off airport to gain control over land uses and activities within RPZ (17.3 acres for Alternatives 2 and 3, and 20.7 acres for Alternative 4)		X	X	X
Obtain avigation easement for portion of Runway 12 RPZ that extends off airport (6.6 acres for Alternatives 2 and 4, and 6.8 acres for Alternative 3)*		X	X	X
<i>Airside Projects</i>				
Maintain existing runway length for landings and takeoffs	X	X	X	
Implement non-precision instrument approach capabilities to Runway 12			X	
Displace Runway 30 threshold and implement declared distances to bring RSA and ROFA entirely on airport property				X
Construct 35-foot shoulders along runway edges		X	X	X
Widen taxiways to 75 feet where this width is not currently met and provide 35-foot shoulders		X	X	X
Reconfigure Taxiway A-1 to achieve standard, 90-degree turn and establish hold line 250 feet from runway centerline		X	X	X
Construct run-up ramps and install blast fences		X	X	X
Install PAPIs		X	X	X
Replace and relocate wind cones outside of ROFA		X	X	X
Relocate segmented circle		X	X	X

Notes: All areas are approximate. *It is assumed that the land uses within the small portion of RPZ that extends onto the SBAH is protected given the location of the heliports.

Source: C&S Engineers, Inc.

5.04-2 Land Use Planning

The delineation of areas at the Airport for varied uses by multiple tenants, current and future, is key to enhancing the operational efficiency, ensuring the coexistence of these entities, and protecting the revenue generating opportunities that exist for the County. Users/activities to be considered include the MRO, Fixed Base Operator (FBO), based aircraft storage and transient aircraft parking for GA users, and military operators. Considering the location and relation of these users/activities in the planning process will enhance the operational efficiency and safety of the Airport. This may also allow certain areas and facilities to be “right sized” to standards greater or less than those for the existing design aircraft depending on the types of activity anticipated to occur there.

In addition to the associated needs determined in the facility requirements, the following recommendations were identified based on stakeholder coordination and feedback in order to meet the Airport’s objectives:

- Realign the existing access road and/or consider adding an additional access road from the north
- Provide direct access to the SBAH for hovering helicopters and potentially arrange for Arizona Army National Guard (AZARNG, one of the tenant organization at the SBAH) aircraft storage at Pinal Airpark due to space constraints at their facility
- Designate additional areas for aircraft maintenance, storage and teardown by new companies
- Maintain access to the USSOCOM facility

These are considered in the development of alternatives. Because the coexisting of users was expressed as a key objective of this master planning process, alternatives were not evaluated that focused exclusively on any single user.

Three alternatives have been developed for consideration, recognizing that certain components of each may be combined or modified to determine a preferred alternative.

ALTERNATIVE A – NO ACTION

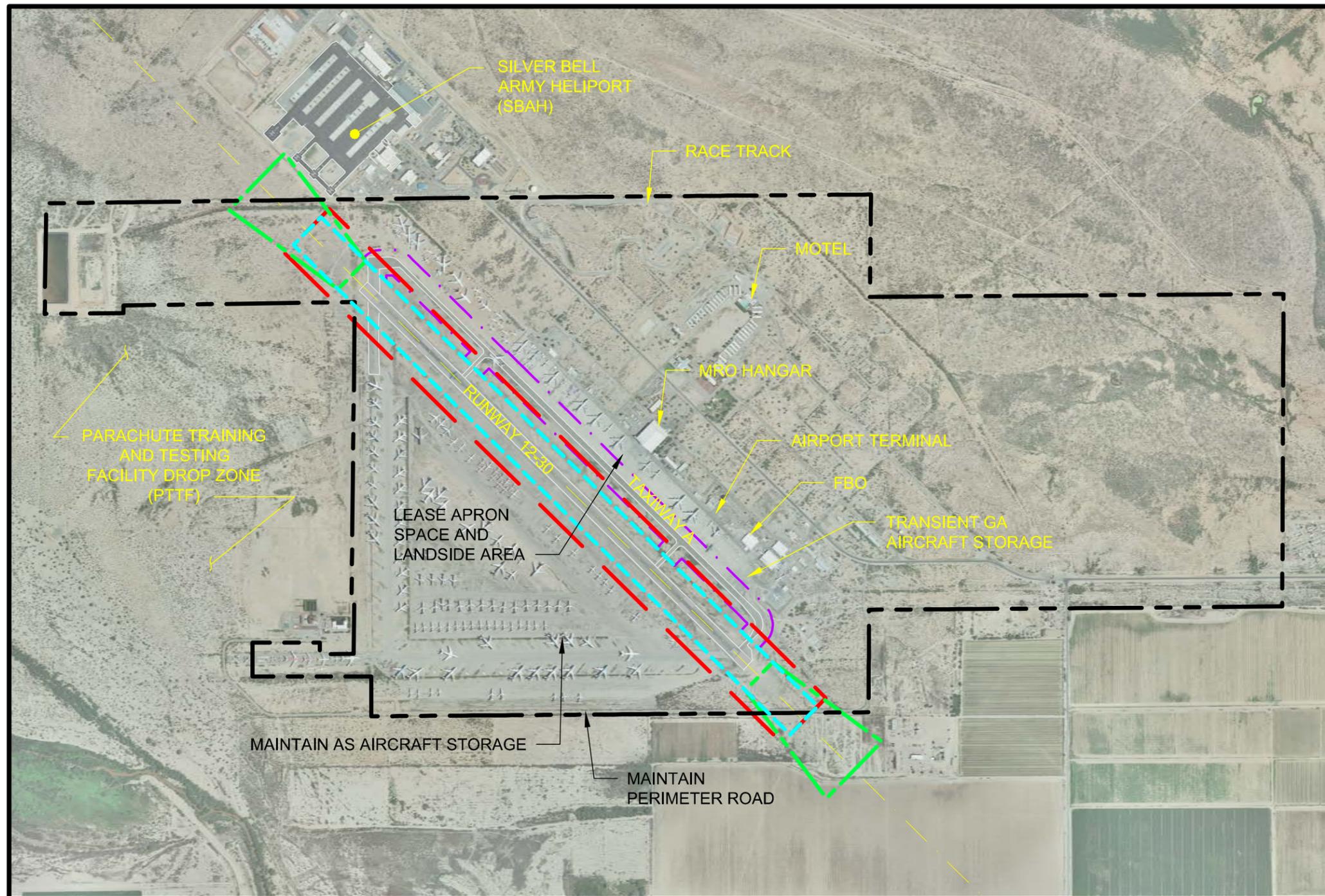
This alternative involves improving existing facilities and conducting preventative maintenance, but maintaining the existing layout and flow of operations. (See **Figure 5-5**).



PINAL COUNTY
wide open opportunity

LEGEND

-  EXISTING AIRPORT PROPERTY LINE
-  RUNWAY OBJECT FREE AREA (ROFA)
-  RUNWAY SAFETY AREA (RSA)
-  RUNWAY PROTECTION ZONE (RPZ)
-  TAXIWAY OBJECT FREE AREA (TOFA)



SCALE: 1" = 1500'



Property Leases and Delineation of Activities

Lease apron space and landside area for MRO maintenance and repair activities
 Maintain as aircraft storage

Landside Projects

Maintain perimeter road providing access to PTTF



PINAL AIRPARK
 ALTERNATIVE A:
 NO ACTION
 FIGURE 5-5

[THIS PAGE INTENTIONALLY LEFT BLANK]

ALTERNATIVE B – *SMOOTH TRANSITION*

This alternative delineates areas for use by various operational types, considering the locations of existing facilities (such as the terminal building, FBO, MRO hangar, etc.) and immediate plans of the County to minimize potential impacts. However, it does include new development areas (for General Aviation and AZARNG) to meet the needs and objectives identified above (see **Figure 5-6**). The GA T-hangars are shown in an optimal orientation for daylighting and/or potential roof-top solar photovoltaic installations. In addition, Alternative B depicts a taxiway extending perpendicular from the existing parallel taxiway to provide access to additional aircraft storage.

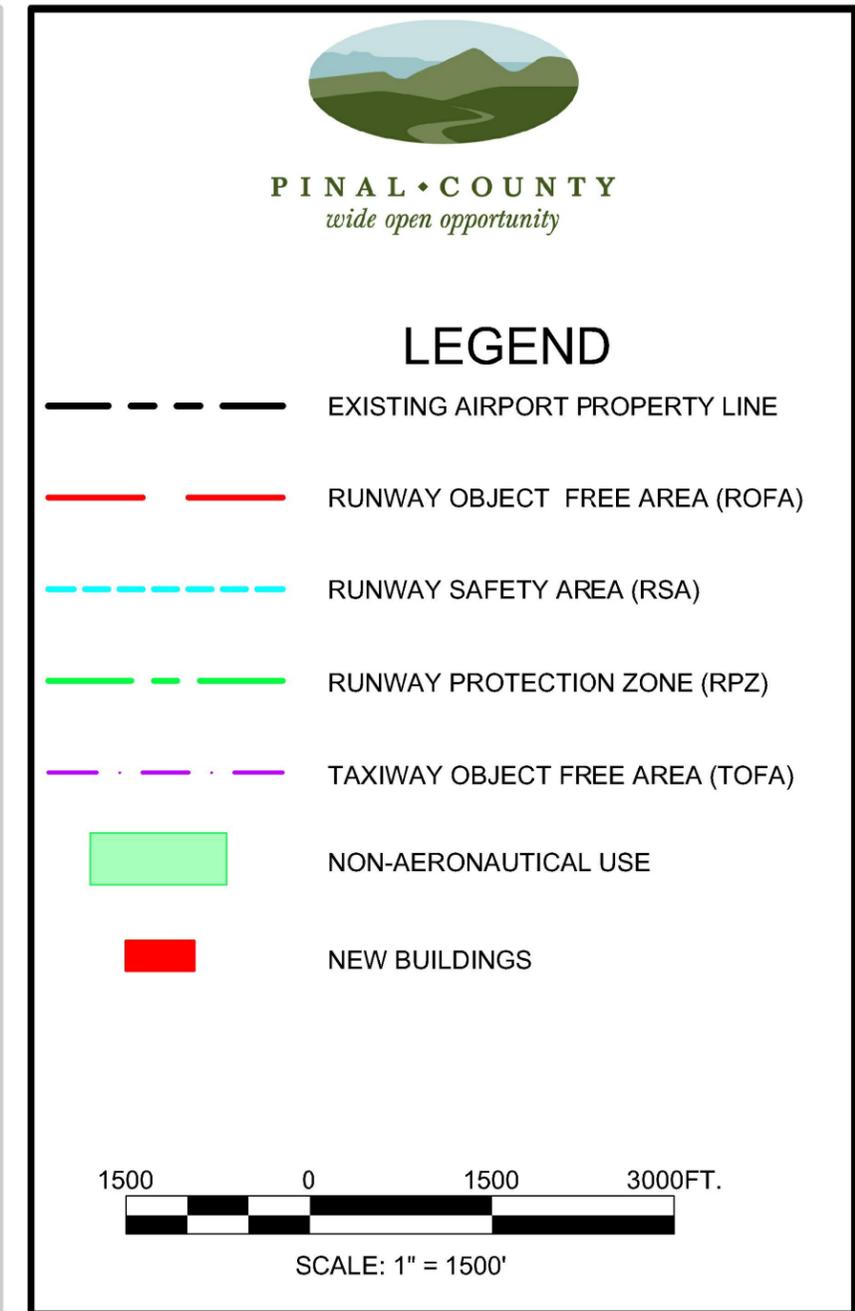
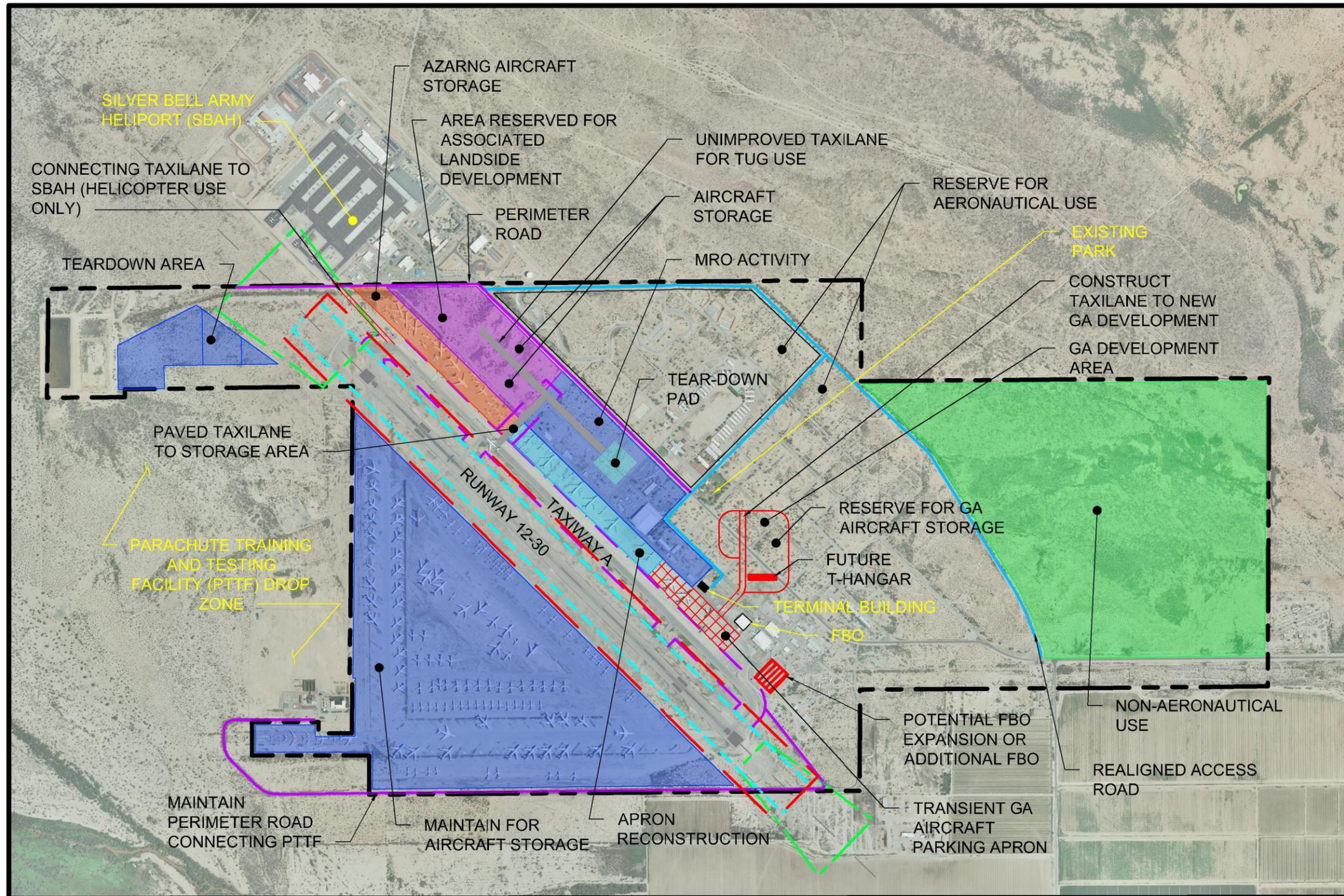
Although the Airport's critical aircraft is a Boeing 747-400 due to the activity associated with the MRO, the GA development area could be constructed to a lower level of design standards. "Right-sizing" of facilities helps conserve both financial and material resources.

ALTERNATIVE C – *FRESH LOOK*

This alternative involves reevaluating the existing Airport layout to determine the most operationally efficient layout, with limited consideration of constraints by existing facilities. Although it is desirable to minimize impacts, this planning effort is intended to provide the best path forward for the County, recognizing that this may involve significant changes to the existing layout.

This alternative proposes the AZARNG support area in the northern portion of the airport property due to its proximity to the SBAH, over which the County does not have control. The GA development and support areas are located mid-field with direct access from the realigned roadway to facilitate public access and activities, and includes the FBO facility as well as self-service fueling. A small portion of apron space and adjacent area for landside facilities are preserved for the MRO on the north side of the runway; this is intended to support active maintenance and repairs. All teardown activities are relocated to the existing aircraft storage triangle. This would likely require some construction such as aircraft parking pads and associated facilities; however, it segregates these activities from the GA area and visiting pilots thus contributing to the goal of increasing GA activity.

This alternative is presented on **Figure 5-7**.



Property Leases and Delineation of Activities

- Designate area for GA development
- Designate apron for GA transient aircraft storage and activities
- Continue to lease apron space and landside area for MRO activities
- Lease apron space and adjacent landside area to AZARNG for aircraft storage and associated facilities
- Lease northwestern space for aircraft teardown
- Reserve area for aeronautical use
- Designate entrance area as non-aeronautical use
- Maintain storage triangle for aircraft storage

Airside Projects

- Reconstruct apron
- Establish taxilane connecting to SBAH
- Construct taxilane to new GA development
- Construct taxilane to new aircraft storage area
- Establish unpaved taxilane for tug use through new storage area
- Construct new tear-down pad

Landside Projects

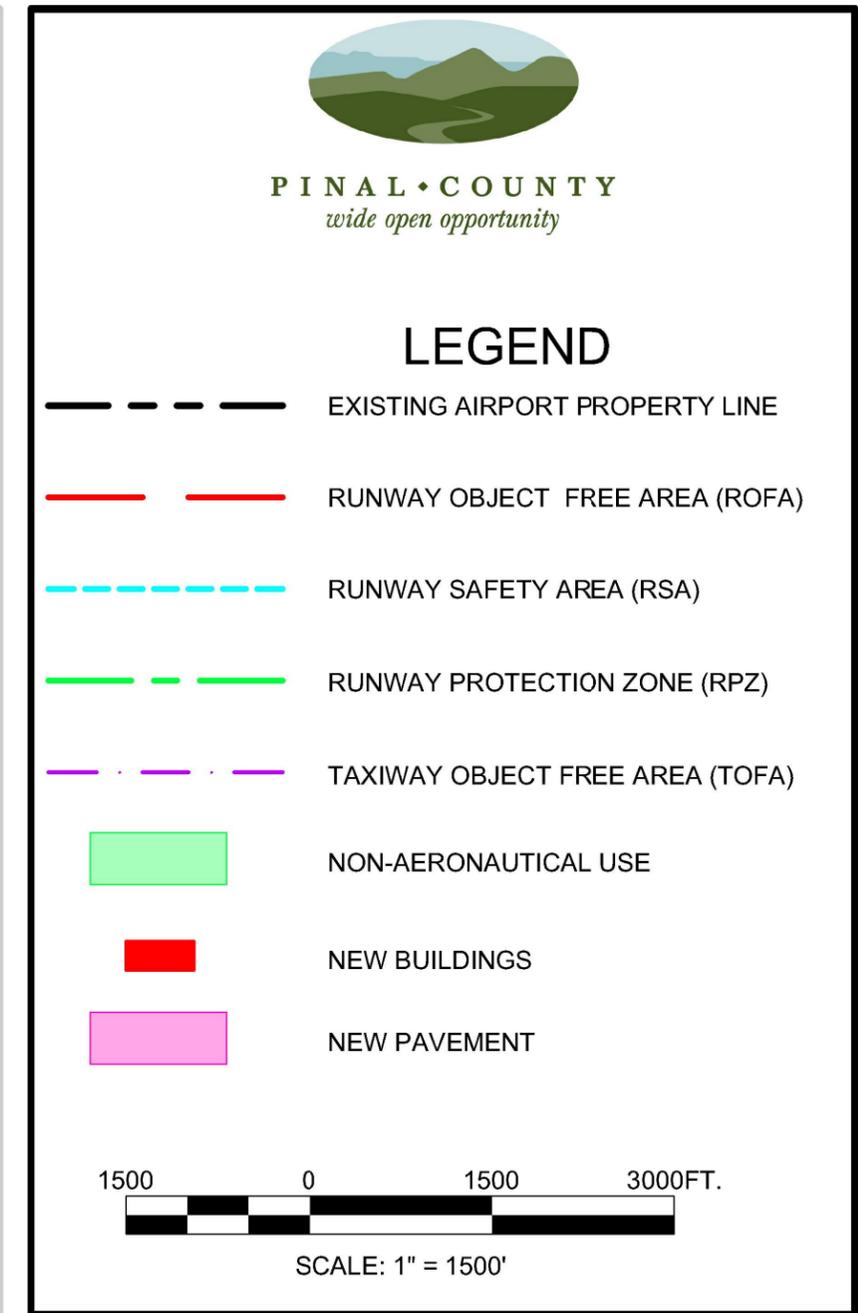
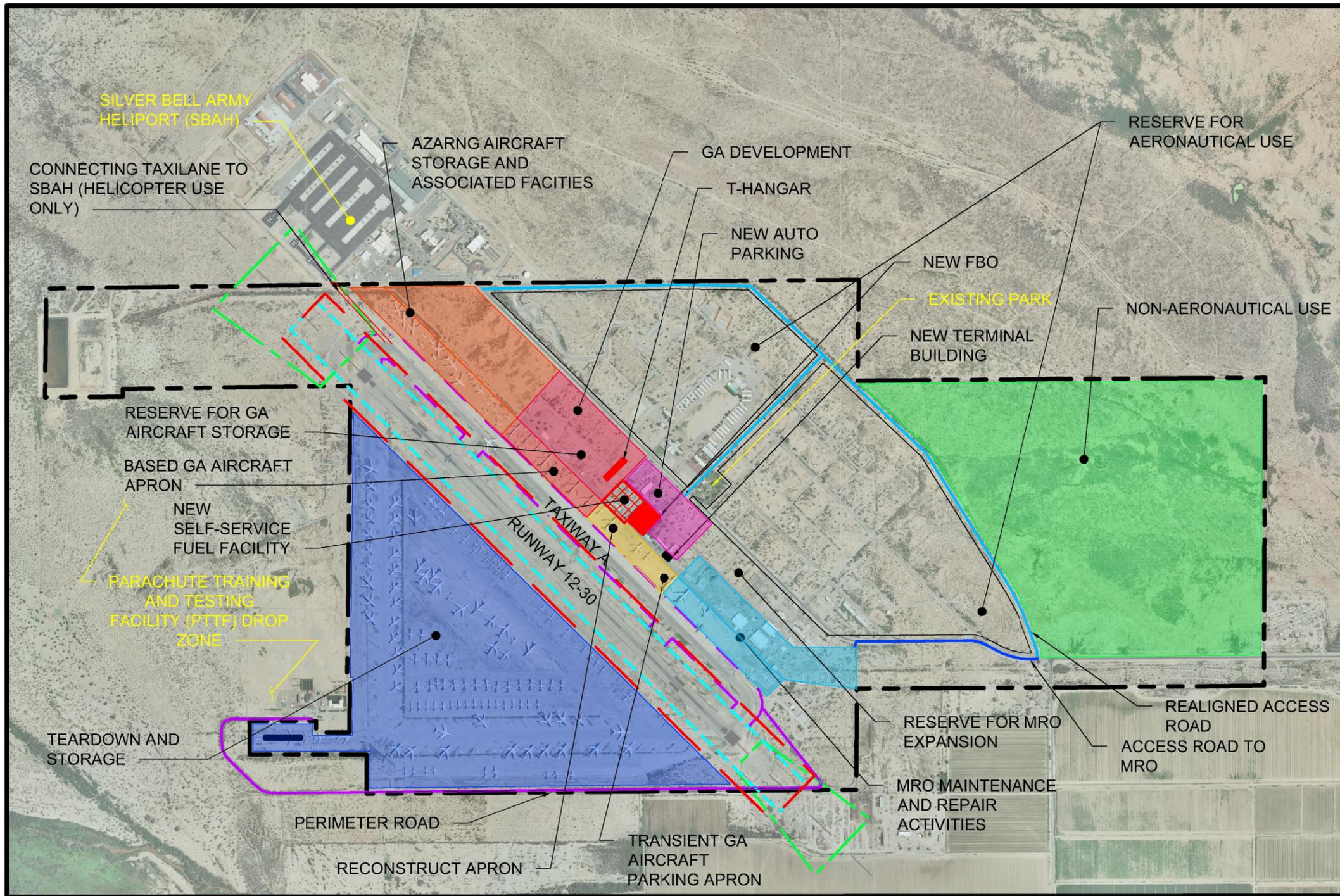
- Construct T-hangar for GA aircraft storage
- Construct perimeter road connecting MRO area to proposed teardown area
- Maintain perimeter road to PTTF

Note: Project list does not include ancillary elements, which will be identified on ALP



**PINAL AIRPARK
ALTERNATIVE B:
SMOOTH TRANSITION
FIGURE 5-6**

[THIS PAGE INTENTIONALLY LEFT BLANK]



Property Leases and Delineation of Activities

- Designate area for GA development
- Designate apron for GA transient aircraft storage and activities
- Designate apron for based GA aircraft
- Lease area for MRO maintenance and repair activities
- Lease apron space and adjacent landside area to AZARNG for aircraft storage and associated facilities
- Lease storage triangle for aircraft teardown and storage
- Reserve area for aeronautical use
- Designate entrance area as non-aeronautical use

Airside Projects

- Reconstruct apron
- Establish taxilane connecting to SBAH

Landside Projects

- Construct T-hangar
- Maintain perimeter road to PTTF and teardown and storage area
- Construct new terminal or relocate existing building to mid-field
- Construct new FBO building or retrofit existing hangar
- Install self-service fuel facility mid-field
- Construct parking
- Rehabilitate and designate the access road to the MRO area for specific use

Note: Project list does not include ancillary elements, which will be identified on ALP



**PINAL AIRPARK
ALTERNATIVE C:
FRESH LOOK
FIGURE 5-7**

[THIS PAGE INTENTIONALLY LEFT BLANK]

ASSOCIATED PROJECTS

A number of projects were identified that are necessary to meet each of the alternative’s objectives. Similar to the runway and taxiway alternatives discussion, codes for each project have been identified and their inclusion in each alternative is presented in **Table 5-3**. (This coding system is also presented on the alternatives figures.) Descriptions of the projects by code are provided on the following pages.

TABLE 5-3 ASSOCIATED PROJECTS

<i>Project</i>	No Action	Smooth Transition	Fresh Look
<i>Property Leases and Delineation of Activities</i>			
Designate area for GA development (19 acres shown on Alternative B and 29 acres on Alternative C)		X	X
Designate apron for GA transient aircraft storage and activities (9.5 acres shown on Alternatives B and C, which far exceeds projected demand according to the forecast [less than an acre needed])		X	X
Designate apron for storage and miscellaneous activities by GA aircraft based at Airport (10 acres shown on Alternative C, which far exceeds projected demand according to the forecast [approximately half of an acre])			X
Continue to lease apron space and landside area for MRO activities (49 acres)		X	
Lease apron space and landside area for MRO maintenance and repair activities (38 acres for Alternative C)	X		X
Lease apron space and adjacent landside area to AZARNG for aircraft storage and construction of associated facilities (56 acres shown; desired dimensions currently unknown)		X	X
Lease northwest area for aircraft teardown activities (26 acres)		X	
Maintain storage triangle for aircraft storage (280 acres)	X	X	
Lease storage triangle for aircraft teardown activities and storage (280 acres)			X
Reserve for expansion of aeronautical facilities if justified in the future (325 acres)		X	X
Designate entrance area as Non-Aeronautical Use for a potential business park, industrial use, or renewable energy generation (310 acres)		X	X
<i>Airside Projects</i>			
Reconstruct apron; consider differing strengths based on delineation of use (e.g., GA aircraft storage area may be eligible for 20,000 pounds while MRO apron should be constructed to exceed 100,000 pounds; requires visual boundary)		X	X

<i>Project</i>	No Action	Smooth Transition	Fresh Look
Establish taxiway connecting Pinal Airpark to the SBAH (for hovering helicopters)		X	X
Construct taxiway to new GA development area		X	
Construct taxiway to new aircraft storage area		X	
Establish unpaved taxiway for tug use through new storage area		X	
Construct new tear-down pad		X	
<i>Landside Projects</i>			
Construct T-hangars for GA aircraft storage and reserve space for additional aircraft storage if justified in the future		X	X
Construct perimeter road connecting MRO area to proposed teardown area in western block near evaporation ponds		X	X
Maintain perimeter road providing access to PTF	X	X	
Construct new terminal or relocate existing building to mid-field			X
Construct new FBO building or retrofit existing hangar to serve as FBO at mid-field			X
Install self-service fuel facility mid-field adjacent to new FBO			X
Construct parking to accommodate users/visitors of new terminal, FBO, and T-hangars (14 acres, which far exceeds projected demand according to the forecast [less than an acre for GA users])			X
Rehabilitate and designate access road to MRO maintenance and service area for exclusive use by MRO			X

Notes: All areas are approximate. **Acres represent layouts depicted on figures; feedback is requested from Steering Committee on specific needs of existing users.**

Source: C&S Engineers, Inc.

5.05 Alternatives Evaluation Criteria

The alternatives are evaluated according to the following criteria per FAA recommendations and feedback by the Airport Master Plan Steering Committee:

- Operational Performance
- Best Planning Tenets
- Environmental Implications
- Financial Feasibility

5.05-1 Operational Performance

An airport's ability to function as a system can be determined based on several factors:

- Capacity – Ability to accommodate future demand as determined in the facility requirements.
- Capability – Ability to meet airport design standards and ensure a safe operating environment.
- Operational Efficiency – How well the alternatives work as a system to avoid delays, inefficiencies, airspace conflicts, etc. This also considers the coexistence of existing and future users.

5.05-2 Best Planning Tenets

Several best planning tenets were selected that help select a responsible and implementable preferred alternative within this Airport Master Plan. These include:

- Flexibility to accommodate unforeseen change (e.g., increases or decreases in activity levels, changes to fleet mix, new users, etc.).
- Technically feasible (e.g., considers site constraints and other limitations).
- Conforms to the County’s goal of creating a more attractive experience/Airport for GA pilots.

5.05-3 Environmental Implications

As discussed in the Existing Conditions and Needs Report, there are a number of environmental categories with potential to be negatively impacted as a result of airport development. These are therefore considered in the evaluation. Where possible, quantitative metrics have been provided.

TABLE 5-4 ENVIRONMENTAL IMPACTS EVALUATION CRITERIA

<i>Environmental Category</i>	<i>Metric</i>
<i>Air Quality</i>	Anticipated change in emissions (ordinal data provided only)
<i>Construction Impacts</i>	Because specific impacts are covered under other categories, this evaluates the level of construction
<i>Fish, Wildlife & Plants</i>	Potential effect on fish, wildlife and plants, particularly as it relates to changes in habitat
<i>Floodplains</i>	Acres of 100-year floodplain impacted
<i>Hazardous Materials, Pollution Prevention, and Solid Waste</i>	Potential for increased risk of exposure/spill, increase in pollutants, and impacts to solid waste generation
<i>Historic, Architectural, Archeological, And Cultural Resources</i>	Extent of potential impacts
<i>Noise</i>	Change in number of residential units within 65-decibel Day Night Average Level (DNL) noise contour
<i>Land Use Compatibility</i>	Partially covered above; also considers anticipated land acquisition/easements (acres affected)
<i>Secondary (Induced) Impacts</i>	Potential impacts on local economy
<i>Water Quality/Management</i>	Anticipated change (square yards) in the impervious surface area
<i>Wetlands</i>	Acres of wetlands impacted by alternative

Source: C&S Engineers, Inc.

Alternatives with fewer impacts to the environment are considered preferable over those with greater impacts.

5.05-4 Financial Feasibility

This analysis considers the estimated development costs associated with the various alternatives. As recommended in FAA guidance, prospective funding sources are also considered. This is especially important to Pinal Airpark’s evaluation of alternatives given the potential for funding sources other than the County, FAA and ADOT. These may include the AZARNG (specifically considering the depicted areas for their aircraft storage on airport property as shown on the land use planning alternatives); aircraft recycling, MRO and FBO companies (including the existing provider); and private developers interested in constructing aircraft storage facilities.

In addition to evaluating the financial feasibility of alternatives, it is important to consider the Airport’s economic viability as well as that of the surrounding community to fully understand the impacts of a particular alternative. Therefore, the following is assessed:

- Development costs – Anticipated costs of development, considering potential alternative funding sources.

- Economic impact to the community – Employment, economic development, etc.
- Revenue generation – Anticipated opportunities for revenue generation including increased activity, new businesses, etc.

5.06 Alternatives Evaluation Summary

Detailed descriptions of each alternatives evaluation (divided by the runway and taxiway system alternatives and the land use planning alternatives) are provided below.

TABLE 5-5 RUNWAY AND TAXIWAY SYSTEM ALTERNATIVES EVALUATION

Comparative Features	Runway and Taxiway System Alternatives	1: No Action	2: Meeting Standards	3: Instrumentation	4: Within Bounds
		No changes to airfield configuration or infrastructure.	Acquire the land within the RSA and ROFA in fee simple and obtain avigation easements over the land within the RPZs that extend off airport property to meet design standards without impacting the operational capabilities of the runway.	Implement an instrument approach to Runway 12, acquire the land within the RSA and ROFA in fee simple, and obtain avigation easements over the land within the RPZs that extend off airport property to meet design standards without impacting the operational capabilities of the runway.	Implement declared distances and displace the Runway 30 threshold to meet FAA design standards without land acquisition.
FINANCIAL FEASIBILITY					
<i>Development Costs</i>	Anticipated costs of development, considering potential alternative funding sources	No change.	Over \$18,000,000 without acquisition and easement costs (would depend on potential land exchange).	Over \$18,000,000 without acquisition and easement costs (would depend on potential land exchange).	Over \$18,000,000 without and easement costs; no acquisition required.
<i>Economic Impact to the Community</i>	Employment, economic development, etc.	No change.	Requires acquisition of adjacent properties without extending the runway length, which would have potential to bring in additional activity.	May draw additional activity to the Airport that could include businesses. While this alternative depicts acquisition of adjacent properties, an instrument approach procedure could be combined with the declared distances approach included in Alternative 4. This is considered in the evaluation.	Would slightly limit operational capabilities but unlikely to have a significant impact on the MRO's capabilities or the type of aircraft coming to the Airport.
<i>Revenue Generation</i>	Anticipated opportunities for revenue generation including increased activity, new businesses, etc.	No change.	No change.	May draw additional activity to the Airport that could increase fuel sales and other revenue generation.	Would slightly limit operational capabilities but unlikely to have a significant impact on the MRO's capabilities or the type of aircraft coming to the Airport.
OPERATIONAL PERFORMANCE					
<i>Capacity</i>	Ability to accommodate future demand as determined in the facility requirements	Does not accommodate future demand.	Accommodates future demand.	Accommodates future demand.	Accommodates future demand.
<i>Capability</i>	Ability to meet airport design standards and ensure a safe operating environment	Design standards not being met.	Meets design standards and enhances safety of operating environment.	Meets design standards and efforts to gain control of the safety areas and protection zones would enhance the safety of the operating environment. However, there are concerns from adjacent operators regarding implementation of an approach procedure and the ability to maintain a safe aircraft operating environment. While the Master Plan analysis found that this would be possible if designed appropriately, this feedback is considered in the evaluation.	Would involve declared distances to meet design standards, which is not preferred by the FAA.
<i>Operational Efficiency</i>	How well the alternatives work as a system to avoid delays, inefficiencies, airspace conflicts, etc.; this would also consider the coexistence of existing and future users	No change. Airspace congestion is a concern from adjacent operating entities.	No change. Airspace congestion is a concern from adjacent operating entities.	Implementation of the instrument approach would put the SBAH in the obstacle free zone and therefore require significant coordination with CTAF or would limit the instrument approach. However, based on our analysis this is feasible to design the approach to avoid conflicts. The instrument approach itself would increase the operational capabilities of pilots at the Airport.	No change. Airspace congestion is a concern from adjacent operating entities.
ENVIRONMENTAL IMPLICATIONS					
<i>Air Quality</i>	Anticipated change in emissions (ordinal data provided only)	No change.	No change.	No change (large aircraft are already operating at the Airport).	No change.
<i>Construction Impacts</i>	Because specific impacts will be covered under other categories, this will evaluate the level of construction associated with the alternative	No impacts.	Minimal.	Minimal.	Minimal.
<i>Fish, Wildlife & Plants</i>	Potential effect on fish, wildlife and plants, particularly as it relates to changes in habitat	No change.	Minimal due to minimal construction.	Minimal due to minimal construction.	Minimal due to minimal construction.
<i>Floodplains</i>	Acres of 100-year floodplain impacted	No change.	No change.	No change.	No change.

TABLE 5-5 RUNWAY AND TAXIWAY SYSTEM ALTERNATIVES EVALUATION

Comparative Features	Runway and Taxiway System Alternatives	1: No Action	2: Meeting Standards	3: Instrumentation	4: Within Bounds
		No changes to airfield configuration or infrastructure.	Acquire the land within the RSA and ROFA in fee simple and obtain avigation easements over the land within the RPZs that extend off airport property to meet design standards without impacting the operational capabilities of the runway.	Implement an instrument approach to Runway 12, acquire the land within the RSA and ROFA in fee simple, and obtain avigation easements over the land within the RPZs that extend off airport property to meet design standards without impacting the operational capabilities of the runway.	Implement declared distances and displace the Runway 30 threshold to meet FAA design standards without land acquisition.
<i>Hazardous Materials, Pollution Prevention, and Solid Waste</i>	Potential for increased risk of exposure/spill, increase in pollutants, and impacts to solid waste generation	No change.	No significant change (minimal construction, which would temporarily increase waste generation).	No significant change (minimal construction, which would temporarily increase waste generation).	No significant change (minimal construction, which would temporarily increase waste generation).
<i>Historic, Architectural, Archeological, And Cultural Resources</i>	Extent of potential impacts	No change.	No change.	No change.	No change.
<i>Noise</i>	Change in number of residential units within 65-decibel Day Night Average Level (DNL) noise contour	None.	None.	None.	None. (Would bring landing aircraft to Runway 30 closer in to the Airport, slightly reducing noise off-site but only nominally.)
<i>Land Use Compatibility</i>	Partially covered above; will also consider anticipated land acquisition/easements (acres affected)	RPZ, ROFA, and RSA extend off property.	4.0 acres acquired, 24.0 in avigation easements. Southern land owner has expressed potential to exchange their land for a parcel of the County's that not being used for aeronautical purposes.	4.0 acres acquired, 24.0 in avigation easements. Southern land owner has expressed potential to exchange their land for a parcel of the County's that not being used for aeronautical purposes. Additional RPZ extends onto SBAH.	Would enhance land use compatibility by bringing the RSA on airport property and requiring no acquisition. May enable minor changes to the Pima County Airports Environs Zone because the ROFA and RSA will not be on property. However, significant changes would not be recommended since the RPZs will still extend off property.
<i>Secondary (induced) Impacts</i>	Potential impacts on local economy	No change.	No change.	IAP may attract additional businesses.	No change.
<i>Water Quality Management</i>	Anticipated change (square yards) in the impervious surface area	No change.	32.5 acres of impervious surface added.	32.5 acres of impervious surface added.	32.5 acres of impervious surface added.
<i>Wetlands</i>	Acres of wetlands impacted by alternative	No change.	No change.	No change.	No change.
BEST PLANNING TENETS					
<i>Flexibility</i>	Accommodates unforeseen change (e.g., increases or decreases in activity levels, changes to fleet mix, new users, etc.)	No change.	No structures or development that would prohibit an ultimate extension.	Once IAP is implemented it may make it more difficult to extend the runway if deemed justified in the future.	No configuration changes that would impact flexibility.
<i>Technically Feasible</i>	Considers site constraints and other limitations	No change.	Feasible based on coordination with adjacent land owners.	Although determined to be feasible, there are concerns with adjacent operators.	Feasible but not typically a preferred solution by the FAA.
<i>Conforms to the County's goals</i>	Creates a more attractive experience/Airport for GA pilots	No change.	Helps meet design standards, gaining FAA support.	IAP could entice additional GA pilots.	Declared distances are unlikely to have an impact on activity.

TABLE 5-6 LAND USE PLANNING ALTERNATIVES EVALUATION

Comparative Features	Land Use Planning Alternatives	A: No Action	B: Smooth Transition	C: Fresh Look
		No changes to landside configuration or uses.	Delineates areas for use by various operational types, considering the locations of existing facilities and immediate plans of the County to minimize potential impacts.	Reevaluates the existing layout to determine the most operationally efficient layout, with limited consideration of constraints by existing facilities.
FINANCIAL FEASIBILITY				
<i>Development Costs</i>	Anticipated costs of development, considering potential alternative funding sources	No change.	Over \$42 million for apron reconstruction (assuming different loads) and \$340,000 for perimeter road. Initial T-hangar and infrastructure is nearly \$3 million. Other facilities anticipate external funding (AZARNG for aircraft storage, MRO area, etc.).	Over \$42 million for apron reconstruction (assuming different loads) and \$340,000 for perimeter road. Initial T-hangar and infrastructure is nearly \$4 million. Parking lot would be nearly \$4.5 million. Other facilities anticipate external funding (AZARNG for aircraft storage, MRO area, etc.).
<i>Economic Impact to the Community</i>	Employment, economic development, etc.	Condition of facility would eventually impact businesses that currently operate there and may result in departures from Pinal Airpark.	Employment of MRO and military operations provides economic benefit to community; opportunity for non-aeronautical sites; and GA focus could bring in additional businesses.	Employment of MRO and military operations provides economic benefit to community; opportunity for non-aeronautical sites; and GA focus could bring in additional businesses.
<i>Revenue Generation</i>	Anticipated opportunities for revenue generation including increased activity, new businesses, etc.	Condition of facility would eventually impact businesses that currently operate there and may result in departures from Pinal Airpark.	Opportunities to continue existing and initiate new leases; additional GA activity could increase fuel sales, though this benefits the FBO more directly.	Opportunities to continue existing and initiate new leases; additional GA activity could increase fuel sales, though this benefits the FBO more directly.
OPERATIONAL PERFORMANCE				
<i>Capacity</i>	Ability to accommodate future demand as determined in the facility requirements	Lack of aircraft hangar storage.	Meets projected demand.	Meets projected demand.
<i>Capability</i>	Ability to meet airport design standards and ensure a safe operating environment	No change.	Delineation of areas enhances safety.	Delineation of areas enhances safety.
<i>Operational Efficiency</i>	How well the alternatives work as a system to avoid delays, inefficiencies, airspace conflicts, etc. This would also consider the coexistence of existing and future users.	No change.	Moderate improvement to operational efficiency.	Strong improvement to operational efficiency (e.g., centralized facilities).
ENVIRONMENTAL IMPLICATIONS				
<i>Air Quality</i>	Anticipated change in emissions (ordinal data provided only)	No change.	Increase in construction emissions.	Increase in construction emissions. Increased efficiency of operations would decrease transportation emissions.
<i>Construction Impacts</i>	Because specific impacts will be covered under other categories, this will evaluate the level of construction associated with the alternative	No change.	Moderate construction needs.	Significant construction needs.
<i>Fish, Wildlife & Plants</i>	Potential effect on fish, wildlife and plants, particularly as it relates to changes in habitat	No change.	Nearly all land is previously disturbed.	Nearly all land is previously disturbed.
<i>Floodplains</i>	Acres of 100-year floodplain impacted	No change.	Construction within floodplain.	Construction within floodplain.

TABLE 5-6 LAND USE PLANNING ALTERNATIVES EVALUATION

Comparative Features	Land Use Planning Alternatives	A: No Action	B: Smooth Transition	C: Fresh Look
		No changes to landside configuration or uses.	Delineates areas for use by various operational types, considering the locations of existing facilities and immediate plans of the County to minimize potential impacts.	Reevaluates the existing layout to determine the most operationally efficient layout, with limited consideration of constraints by existing facilities.
<i>Hazardous Materials, Pollution Prevention, and Solid Waste</i>	Potential for increased risk of exposure/spill, increase in pollutants, and impacts to solid waste generation	No change.	Construction would result in increased waste generation and pollutants temporarily.	Relocation of fuel facility but would adhere to standards. Construction would result in increased waste generation and pollutants temporarily.
<i>Historic, Architectural, Archeological, And Cultural Resources</i>	Extent of potential impacts	No change.	Nearly all land is previously disturbed.	Nearly all land is previously disturbed.
<i>Noise</i>	Change in number of residential units within 65-decibel Day Night Average Level (DNL) noise contour	No change.	No significant change anticipated.	No significant change anticipated.
<i>Land Use Compatibility</i>	Partially covered above; will also consider anticipated land acquisition/easements (acres affected)	No change.	Land use alternatives don't require acquisition.	Land use alternatives don't require acquisition.
<i>Secondary (induced) Impacts</i>	Potential impacts on local economy	No change.	Employment of MRO and military operations provides economic benefit to community; opportunity for non-aeronautical sites; and GA focus could bring in additional businesses.	Employment of MRO and military operations provides economic benefit to community; opportunity for non-aeronautical sites; and GA focus could bring in additional businesses.
<i>Water Quality Management</i>	Anticipated change in the impervious surface area	No change.	Significant change in impervious area.	Significant change in impervious area.
<i>Wetlands</i>	Acres of wetlands impacted by alternative	No change.	Proposed teardown area would be adjacent to designated wetland.	No impact.
BEST PLANNING TENANTS				
<i>Flexibility</i>	Accommodates unforeseen change (e.g., increases or decreases in activity levels, changes to fleet mix, new users, etc.)	No change.	Considers potential for growth outside of forecast.	Considers potential for growth outside of forecast.
<i>Technically Feasible</i>	Considers site constraints and other limitations	No change.	Would be a "smooth transition" based on existing configuration.	Would require increased coordination and changes in layout.
<i>Conforms to the County's goals</i>	Creates a more attractive experience/Airport for GA pilots	Not currently attractive to GA users (no aircraft hangar storage, self-service fueling, etc.)	Improves GA experience.	Maximizes GA experience by centralizing facilities, offering convenience self-service fueling, and relocating MRO activities.

Based on the qualitative and quantitative assessments presented, each evaluation criterion was assigned a comparative rating. Similar to the Consumer Reports system, the rating system uses a modified circle to visually communicate the qualitative assessment. The ratings correlate to a simplified non-weighted score:

TABLE 5-7 ALTERNATIVE EVALUATION/SCORING

<i>Rating</i>	<i>Evaluation of Impact</i>	<i>Score</i>
●	Positive	2
◐	Neutral	1
○	Negative	0

Source: C&S Engineers, Inc.

Alternatives with a higher summary score have an overall positive impact based on the evaluation criteria. The alternatives' evaluation scorings are presented in **Tables 5-8** and **5-9**.

TABLE 5-8 RUNWAY AND TAXIWAY ALTERNATIVES EVALUATION SUMMARY

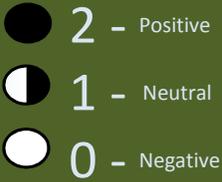
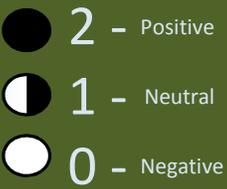
Runway and Taxiway System Alternatives		1: No Action	2: Meeting Standards	3: Instrumentation	4: Within Bounds
		No changes to airfield configuration or infrastructure.	Acquire the land within the RSA and ROFA in fee simple and obtain aviation easements over the land within the RPZs that extend off airport property to meet design standards without impacting the operational capabilities of the runway.	Implement an instrument approach to Runway 12, acquire the land within the RSA and ROFA in fee simple, and obtain aviation easements over the land within the RPZs that extend off airport property to meet design standards without impacting the operational capabilities of the runway.	Implement declared distances and displace the Runway 30 threshold to meet FAA design standards without land acquisition.
	Comparative Features				
FINANCIAL FEASIBILITY					
<i>Development Costs</i>	Anticipated costs of development, considering potential alternative funding sources				
<i>Economic Impact to the Community</i>	Employment, economic development, etc.				
<i>Revenue Generation</i>	Anticipated opportunities for revenue generation including increased activity, new businesses, etc.				
OPERATIONAL PERFORMANCE					
<i>Capacity</i>	Ability to accommodate future demand as determined in the facility requirements				
<i>Capability</i>	Ability to meet airport design standards and ensure a safe operating environment				
<i>Operational Efficiency</i>	How well the alternatives work as a system to avoid delays, inefficiencies, airspace conflicts, etc.; this would also consider the coexistence of existing and future users				
ENVIRONMENTAL IMPLICATIONS					
<i>Air Quality</i>	Anticipated change in emissions (ordinal data provided only)				
<i>Construction Impacts</i>	Because specific impacts will be covered under other categories, this will evaluate the level of construction associated with the alternative				
<i>Fish, Wildlife & Plants</i>	Potential effect on fish, wildlife and plants, particularly as it relates to changes in habitat				
<i>Floodplains</i>	Acres of 100-year floodplain impacted				
<i>Hazardous Materials, Pollution Prevention, and Solid Waste</i>	Potential for increased risk of exposure/spill, increase in pollutants, and impacts to solid waste generation				
<i>Historic, Architectural, Archeological, And Cultural Resources</i>	Extent of potential impacts				
<i>Noise</i>	Change in number of residential units within 65-decibel Day Night Average Level (DNL) noise contour				
<i>Land Use Compatibility</i>	Partially covered above; will also consider anticipated land acquisition/easements (acres affected)				
<i>Secondary (induced) Impacts</i>	Potential impacts on local economy				
<i>Water Quality Management</i>	Anticipated change (square yards) in the impervious surface area				
<i>Wetlands</i>	Acres of wetlands impacted by alternative				
BEST PLANNING TENETS					
<i>Flexibility</i>	Accommodates unforeseen change				
<i>Technically Feasible</i>	Considers site constraints and other limitations				
<i>Conforms to the County's goals</i>	Creates a more attractive experience/Airport for GA pilots				
SUMMARY SCORE					
SUMMARY SCORE		17	17	16	18
RANKING					
RANKING		2	2	3	1

TABLE 5-9 LAND USE PLANNING ALTERNATIVES EVALUATION SUMMARY

Comparative Features	Land Use Planning Alternatives	1: No Action	B: Smooth Transition	C: Fresh Look
		No changes to landside configuration or uses.	Delineates areas for use by various operational types, considering the locations of existing facilities and immediate plans of the County to minimize potential impacts.	Reevaluates the existing layout to determine the most operationally efficient layout, with limited consideration of constraints by existing facilities.
				
FINANCIAL FEASIBILITY				
<i>Development Costs</i>	Anticipated costs of development, considering potential alternative funding sources			
<i>Economic Impact to the Community</i>	Employment, economic development, etc.			
<i>Revenue Generation</i>	Anticipated opportunities for revenue generation including increased activity, new businesses, etc.			
OPERATIONAL PERFORMANCE				
<i>Capacity</i>	Ability to accommodate future demand as determined in the facility requirements			
<i>Capability</i>	Ability to meet airport design standards and ensure a safe operating environment			
<i>Operational Efficiency</i>	How well the alternatives work as a system to avoid delays, inefficiencies, airspace conflicts, etc.; this would also consider the coexistence of existing and future users			
ENVIRONMENTAL IMPLICATIONS				
<i>Air Quality</i>	Anticipated change in emissions (ordinal data provided only)			
<i>Construction Impacts</i>	Because specific impacts will be covered under other categories, this will evaluate the level of construction associated with the alternative			
<i>Fish, Wildlife & Plants</i>	Potential effect on fish, wildlife and plants, particularly as it relates to changes in habitat			
<i>Floodplains</i>	Acres of 100-year floodplain impacted			
<i>Hazardous Materials, Pollution Prevention, and Solid Waste</i>	Potential for increased risk of exposure/spill, increase in pollutants, and impacts to solid waste generation			
<i>Historic, Architectural, Archeological, And Cultural Resources</i>	Extent of potential impacts			
<i>Noise</i>	Change in number of residential units within 65-decibel Day Night Average Level (DNL) noise contour			
<i>Land Use Compatibility</i>	Partially covered above; will also consider anticipated land acquisition/easements (acres affected)			
<i>Secondary (induced) Impacts</i>	Potential impacts on local economy			
<i>Water Quality Management</i>	Anticipated change (square yards) in the impervious surface area			
<i>Wetlands</i>	Acres of wetlands impacted by alternative			
BEST PLANNING TENETS				
<i>Flexibility</i>	Accommodates unforeseen change			
<i>Technically Feasible</i>	Considers site constraints and other limitations			
<i>Conforms to the County's goals</i>	Creates a more attractive experience/Airport for GA pilots			
SUMMARY SCORE				
SUMMARY SCORE		16	23	22
RANKING				
RANKING		3	1	2

5.07 Preferred Alternative

As shown in the tables above, Alternative 4 (Within Bounds) received the highest summary score of the runway and taxiway system alternatives. Alternative B (Smooth Transition) received the highest summary score of the land use planning alternatives. Therefore, the Preferred Alternative will involve a combination of the strategies and proposed development depicted on Alternative 4 and Alternative B.