

Airport Master Plan

*Draft Existing Conditions
and Needs Report Appendices*



Pinal Airpark
Marana, Arizona



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June 2014

Submitted by



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APPENDIX A

Airport Master Plan Update Outreach Efforts





Pinal Airpark – Airport Master Plan
 Steering Committee Meeting
 August 7, 2013 – 9:30 AM
 Pinal Airpark, Marana Aerospace Solutions

Committee Attendees	
Name	Organization
Curt Woody	Town of Marana – Economic Development
Danny Owen	PRI
Doug Hansen	Pinal County – Transportation Planning
Jerry Stabley	Pinal County – Planning
Jim Petty	Pinal County – Pinal Airpark
LTC Greg Bush	Silverbell
Mike Michels	Marana Aerospace Solutions
Nelson Miller	PTFF
Sandy Mallach	DEMA FMO
Scott Driver	Arizona Department of Transportation
Stefanie Spencer	Arizona Pilots Association
Tim Kanavel	Pinal County – Economic Development

Observers	
Name	Organization
Bob Moscarello	DEMA FMO
Chris Webb	PRI (Rose Law Group)
Gary Jones	
Michael Ostermeyer	AZ ARNG
Mike Hathorne	PRI
Randy Cochran	Silverbell
Steve Miller	Town of Marana – Marana Airport

Consultant Staff	
Name	Organization
Michael Hotaling	C&S Companies
Carly Shannon	C&S Companies
Ralph Napolitano	C&S Companies
Ralph Redman	C&S Companies
Tony Basile	C&S Companies
Kelly Phelps	PSM ²



Discussion Topics:

- I. Welcome – *Jim Petty, Pinal Airpark Director*
- II. Introductions of the Steering Committee
- III. Steering Committee Ground Rules – Presented by *Michael Hotaling, C&S Companies*
 - Share the Air Time
 - Speak for Yourself
 - Silence Electronics
 - Suspend Your Disbelief
- IV. PowerPoint Presentation – Presented by *Michael Hotaling, C&S Companies*
 - Meeting Agenda Overview
 - Project Team Introductions and Roles
 - Review of the Master Plan Process
- V. As a Member of the Steering Committee My Most Important Contribution will be:
 - Provide information on the Military's role (*Committee Member LTC Bush*)
 - Provide conduit between Pinal Airpark Plan and other County plans and processes including the fleet mobility study (*Committee Member Hansen*)
 - Provide information on how Pinal Airpark will fit into the County's comprehensive plan (*Committee Member Stabley*)
 - Provide a regional aspect and perspective (*Committee Member Woody*)
 - Provide historical airpark information along with the tenant strategic plan going into the future (*Committee Member Michels*)
 - Aviation safety input (*Committee Observer Ostermeyer*)
- VI. What is the Committee Most Concerned about Related to the Master Plan Process?
 - Maintaining co-existence and operations of five distinct entities (including the public) on the airpark (*Committee Member Jim Petty*)
 - Public use perception – Currently pilots do not utilize the facility as it is perceived as not permitted (*Committee Member Spencer*)
 - Positive control for the air space (*Committee Observer Jones*)
 - Airspace concerns with possible increase of air traffic at Pinal Airpark (*Committee Member LTC Bush*)
 - Relationship between airpark and private land owners (compatibility) – Would like to see a plan for future uses of the airpark to align with economic benefits and maximize the use of land surrounding the airpark (*Committee Member Owens*)
 - County will establish offices at Pinal Airpark beginning next month (*Committee Member Jim Petty*)
 - Would like to see communication between airpark users to foster the sharing of information (*Committee Member Jim Petty*)
 - Would like to see opportunity for cargo and intermodal operations at airpark (*Committee Member Hansen*)
 - As interaction with public users at the airpark increases there are concerns regarding security (*Committee Member Michels*)
 - Utility infrastructure coordination and potential impacts on approaches, departures and air traffic patterns (*Committee Member Ostermeyer*)



- Surface access and circulation – Roadways through the airpark to the military facility to accommodate larger equipment (*Committee Observer Moscarello*)
- Airside infrastructure (*Consultant Staff Member Redman*)

Additional issues and concerns can be communicated throughout the process to Michael Hotaling at (619) 296-9373 or mhotaling@cscos.com

VII. Committee concurred email is the best method of communication for members and PDF attachments for document distribution

VIII. Public Involvement Process

- Date and timeline for the public involvement will be determined and communicated to the committee
- Marana Aerospace Solutions is willing to provide their airpark facility for the public meetings (*Committee Member Michels*)
- Silverbell is willing to provide their airpark facility for the next public meeting (*Committee Member LTC Bush*)

IX. Questions and Comments

- What is the scale of the budget for this Master Plan and what is the funding source? (*Committee Member LTC Bush*)
 - The funding includes a grant from the Arizona Department of Transportation (ADOT), which is matched by Pinal County funding
 - The plan is budgeted for \$277,000
 - Plans resulting from the master plan will determine future funding (*Consultant Staff Member Hotaling*)
- There are ways the master plan can be adjusted to accommodate changes (*Consultant Staff Member Napolitano*)
- In response to *Committee Member Jim Petty's* concern regarding airpark communication, it is suggested that the airpark establish a management council including airpark tenants who regularly meets to discuss issues and coordination needs (*Consultant Staff Member Basile*)
- *Committee Member Hansen* requested consultant project team contact information to be transmitted to a different consultant team working on a study within Pinal County
- The next meeting will be held approximately two to three months from now (*Consultant Staff Member Hotaling*)

X. Meeting concludes



Pinal Airpark Master Plan Fact Sheet



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What does Pinal Airpark mean to our community?

- As a general aviation (GA) airport, Pinal Airpark accommodates all types of private aircraft, serving the needs of the flying public and helping connect Pinal County to the rest of the state and the country.
- Pinal County is a public use airport with services including fuel service and aircraft storage space for visiting pilots. The airport is eligible for federal and state grant funding for development projects.
- The airport is a key contributor to the local economy. Marana Aerospace Solutions, Inc., has approximately 150 full-time staff and, at peak times, has up to 475 employees including contracted positions.
- Both the Arizona Army National Guard and Department of Defense's Active Duty Special Operations Command use the airport for training. The former operates the Silver Bell Heliport and employs about 600 full-time and 1,100 part-time employees.

What is the history of Pinal Airpark?

Like many GA airports, Pinal Airpark (originally known as the Marana Army Air Field) was constructed in the early 1940s for Army Air Corps pilot training. When the Army Air Corps discarded most of the facilities in 1948 through the War Assets Administration, Pinal County accepted a deed to the property, agreeing that the entire airport would remain

open and maintained for the public, and that no entity would receive “exclusive right” to the airport. Following this agreement, the County initiated facility and land leases with a variety of tenants. In 1951, the entire property was leased to Darr Aero Tech, Inc., who reconstructed all facilities. Over the next 50 years, several companies held agreements with the County. The cycle of temporary lease holders ended when Evergreen Air Center purchased Marana Air Park, Inc., (the previous leaseholder) and, in 1982, received a 25-year extension to Marana's original 10-year agreement.

A master plan undertaken in 1991 described the major improvements needed, estimating that it would cost around \$35 million to enhance the economic value of the airport. The master plan recommended that the County renegotiate its lease with Evergreen to remove barriers to federal funding and correct existing violations to Pinal County's agreement with the War Assets Administration. The recommendations were not implemented, and in 1992, Evergreen's lease was extended until 2032.

In 2003, the FAA issued a letter to the County identifying several noncompliance issues. The County has made great strides in addressing the concerns, including renegotiating the lease agreement with the current tenant, constructing a building on airport property for County staff, and initiating a fencing plan that will allow for public use while maintaining the secu-



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rity of the airfield. The master plan will further assist the County in ensuring ongoing compliance with federal guidelines and standards.

What is an Airport Master Plan?

The primary goal of an airport master plan is to determine the extent, type, and schedule of development needed to accommodate existing needs and future aviation demand. The recommended development program must satisfy aviation demand and be compatible with the environment, community development, and other transportation modes. Above all, the plan must be technically sound, practical, and economically feasible. Many objectives guide the preparation of a master plan:

- Considering the impact of recent national and local aviation trends on the airport's activity levels and projected forecast.
- Understanding the potential impacts of airport capital projects.
- Identifying the existing capacity of airport infrastructure and determining when new construction or expansion will be required.
- Estimating costs, identifying potential funding sources, and developing a schedule for implementation of proposed projects.
- Complying with federal, state, and local regulations.

- Working with the public and other stakeholders to gain input on airport development issues and plans.

Specific outcomes of the study will include:

- A concise, descriptive report that discusses the recommendations and is easily understood by local residents and public agencies.
- An airport layout plan showing the recommendations.
- A schedule of priorities and funding sources for proposed improvements.

Why is a new master plan needed?

1. Most recommendations from the 1991 master plan were not implemented, resulting in deteriorated facilities and infrastructure. Significant improvements are needed to comply with current FAA design standards and enable the airport to accommodate existing and projected demand and ensure a safe operating environment.
2. Several compliance issues with FAA design standards and federal requirements must be addressed.
3. An FAA-approved airport layout plan is required to receive the federal funding needed to improve and maintain airport facilities.

Questions or Comments?

If you have questions regarding the Pinal Airpark master plan, please contact Carly Shannon of the C&S Companies at (602) 997-7536, toll-free at (877) 277-6583, or at cshannon@cscos.com.



Pinal Airpark – Airport Master Plan
 Steering Committee Meeting 2
 December 10, 2013 – 1 P.M.
 Silver Bell Army Heliport

Committee Attendees and Observers	
Name	Organization
Jim Petty	Pinal County – Pinal Airpark
Archie Carreon	Pinal County – Engineering
Curt Woody	Town of Marana – Economic Development
David Petersen	Pima County – Planning
Fausto Burriel	Pinal County
Jerry Stabley	Pinal County – Planning
Jordan Feld	Arizona Airports Association (AzAA) / Tucson International Airport – Planning
Kyler Erhard	FAA
LTC Greg Bush	Silver Bell Army Heliport (SBAH)
Louis Andersen	Pinal County – Public Works
Mike Michels	Marana Aerospace Solutions
Nelson Miller	Parachute Training and Testing Facility (PTFF)
Sandy Mallach	Department of Emergency & Military Affairs (DEMA) Facilities Management Office (FMO)
Scott Driver	Arizona Department of Transportation (ADOT)
Tim Bolton	Arizona State Land Department – Planning & Engineering
Tim Kanavel	Pinal County – Economic Development
Brad Davis	FAA
Chris Webb	PRI (Rose Law Group)
Michael Ostermeyer	Arizona Army National Guard (AZ ARNG)
Mike Hathorne	PRI
Steve Miller	Town of Marana – Marana Airport

Consultant Staff	
Name	Organization
Michael Hotaling	C&S Companies
Carly Shannon	C&S Companies
Ralph Napolitano	C&S Companies
Kelly Phelps	PSM ²



- I. Welcome – Conducted by Jim Petty, Pinal Airpark Director (Committee Member Petty). Committee Member Petty reported that Pinal County now has offices on the Airpark and, beginning in September, fencing is being installed throughout the Airpark to separate the landside and airside areas.
- II. Presentation on the SBAH – Conducted by LTC Greg Bush (Committee Member LTC Bush). Committee Member LTC Bush explained the different tenant organizations operating at the SBAH including the Western Army Aviation Training Site (WAATS). Committee Member LTC Bush discussed the current WAATS mission, which is to provide graduate-level pilot training. Committee Member LTC Bush also reviewed the courses, activities and aircraft provided by WAATS to fulfill this mission and provided an overview of the other SBAH tenants.
 - **Question:** Sandy Mallach of DEMO FMO (Committee Member Mallach) asked if the 1st Attack Reconnaissance Battalion, 285th Regiment, (one of the tenant organizations) were still using Apache helicopters.
 - **Response:** Committee Member LTC Bush confirmed Apaches were still being used.
 - **Question:** Michael Hotaling of C&S Companies (Consultant Staff Member Hotaling) asked how many sites there are across the nation similar to SBAH.
 - **Response:** Committee Member LTC Bush responded that there are four Army aviation training sites; however, none have the same capabilities as SBAH.
 - **Question:** Ralph Napolitano of C&S Companies (Consultant Staff Member Napolitano) asked if there was potential for unmanned aircraft system (UAS) training at SBAH.
 - **Response:** Committee Member LTC Bush responded that SBAH has UAS training capabilities and the potential is being considered (perhaps at a different site).
- III. Master Plan PowerPoint Presentation – Presented by Consultant Staff Member Hotaling and covering the following topics (presentation attached):
 - ✓ Process Progress
 - ✓ Existing Conditions
 - ✓ County Efforts and Progress
 - ✓ Historical/Current Activity
 - ✓ Critical Aircraft
 - ✓ Forecast Process
 - ✓ Facility Requirements and Design Standards
 - ✓ Questions/Answers
 - ✓ Next Steps



- **Comment:** Committee Member Petty announced that Dibble Engineering has been selected to provide design services for the Runway 12-30 Mill and Overlay project.
- **Comment:** Michael Ostermeyer of the AZ ARNG (Committee Observer Ostermeyer) suggested that infrastructure be added as a key issue to the Master Plan. The Department of Defense (DOD) is currently developing an environmental compliance document that considers the impacts of upgrading the transmission power line from Southline Transmission Power Lines. Committee Observer Ostermeyer will assist the project team to obtain the completed environmental document.
- **Question:** Committee Member Mallach inquired about the estimated date for the Master Plan Phase 1 Report to be submitted to the Steering Committee for review.
- **Response:** Consultant Staff Member Hotaling responded that the Master Plan Phase 1 Report is a few months out and contingent upon the FAA review time of the forecast.
- **Comment:** Kyler Erhard of the FAA (Committee Member Erhard) commented that the FAA should provide comments in approximately four weeks.
- **Question:** Committee Member LTC Bush asked what criteria was considered to obtain the “critical aircraft” documented for the Master Plan.
- **Response:** Consultant Staff Member Hotaling answered that the most demanding aircraft utilizing Pinal Airpark set the criteria for critical aircraft for the purpose of the Master Plan.
- **Question:** Committee Member LTC Bush asked if this aircraft was based on Marana Aerospace Solutions operations.
- **Response:** Consultant Staff Member Hotaling confirmed this.
- **Comment:** Committee Observer Ostermeyer suggested that the number of air movements be confirmed (this has been completed and the numbers have been slightly decreased for SBAH activity).
- **Response:** Carly Shannon of C&S Companies (Consultant Staff Member Shannon) commented that the air movements estimates were based on conversations with Committee Member LTC Bush and the DOD as part of the inventory process and observations from Marana Aerospace Solutions. The project team welcomes any additional information to assist in providing accurate inventory information.
- **Question:** Mike Michels of Marana Aerospace Solutions (Committee Member Michels) asked if Phase 1 would include any noise contouring or noise study.
- **Response:** Consultant Staff Member Hotaling confirmed that noise contours and existing noise would be included in the environmental overview portion of the study.
- **Comment:** Consultant Staff Member Hotaling reiterated the importance of obtaining realistic forecast numbers to be submitted to the FAA and asked



all committee members to assist the project team in gaining this information.

- **Comment:** Committee Member Mallach suggested that the naming convention for SBAH and its tenants be consistent throughout the planning process and documentation. “Silver Bell Army Heliport” should be used when referring to the entire area and its tenants.
- **Closing Comments by Committee Member Petty**

IV. Meeting concludes



Pinal Airpark – Airport Master Plan
Public Meeting
December 10, 2013 – 7:00 PM
Pinal Airpark, Pinal County Offices

Project Overview

Pinal County (County) is in the process of preparing a Master Plan for Pinal Airpark (Airport). A Master Plan is a planning study required by the Federal Aviation Administration (FAA) and the Arizona Department of Transportation (ADOT). The Master Plan will provide important data useful to the County in determining the future role the Airport will play in the community and the region. It will also serve as a funding tool to guide future Airport development.

As part of the Master Plan process, Pinal County will host two Public Meetings to gather community comments and input to potentially be incorporated into the development plan. The first Public Meeting was held December 10, 2013, to offer an overview of the master planning process and explain how the community can be involved to provide valuable insight and ideas.

Public Meeting Overview

The first Public Meeting was held on December 10, 2013, at Pinal Airpark within the Pinal County Offices with staff representatives from the C&S Companies consultant team and Pinal Airpark. The meeting consisted of a presentation describing the purpose and process of a master plan followed by a question and answer session. The information gathered at the public meeting will be used to assist the master plan process.

Outreach and Advertising

The Pinal Airpark – Airport Master Plan project team conducted a variety of outreach to the County community in order to inform community members of the Airport Master Plan project and upcoming public meeting.

- A press release summarizing the project objectives along with information regarding the upcoming public meeting was submitted to the County Communications Director for release.
- Postcards with the project overview and public meeting information were mailed to the landowners surrounding the Airport. Flyers were mailed to each county library to be set out for public distribution.
- A variety of informational project materials including a fact sheet, master plan milestone graphic, press release and public meeting details were submitted to the County Communications Director for posting on the County website.



- The public meeting was posted to all Chamber of Commerce calendars within the County. Meeting information was also submitted to cities and towns surrounding the Airport to be posted to their individual websites to ensure widespread awareness.
- The project team reached out to the Arizona Association of Community Managers to notify County Home Owners Associations and Community Managers of the upcoming public meeting. Email notifications were also distributed to the Ak-Chin Indian Community, Gila River Indian Community and Tohono O’odham Nation representatives along with Regional Economic Development Organizations identified by the County.

Comments and Questions Expressed by Meeting Attendees

Attendees asked when the next public meeting will be held. The project team responded that they estimate the next public meeting to be approximately five months away and will provide the same outreach including direct notification to those attending today’s meeting to ensure they are aware of their next opportunity to participate.

A meeting attendee asked how the master plan was being funded. The project team answered that the State of Arizona is the primary funding entity, funding approximately 90 percent of the project and Pinal County is funding the remaining 10 percent.

Attendees expressed concern over the responsibility for improvements that may be made following the Master Plan. Since Evergreen Maintenance Center (and now MAS) has historically controlled the infrastructure and has not invested heavily in maintenance, some members of the public believe the tenants should be liable for the necessary improvements. The public was notified that the lease with MAS was recently amended, dramatically reducing their control over the Airport. Additionally, new companies will be permitted to provide business at the Airport.

A meeting attendee asked what prevents a new guard shack being installed again at the airport entrance once the FAA grant money has been used. The public was notified that the FAA would not permit this activity and the County will be obligated to comply with FAA standards once grant money is obtained and used to fund improvements.

A meeting attendee asked if the amended contract with Evergreen is available to the public. Airport Director Petty confirmed it is available to the public.

The project team commented that Pinal County is moving toward transparency and open communication with community members. Public involvement is not required by the FAA during the master plan process; however, the County has elected to provide involvement opportunities to the community in order to engage county stakeholders.



Director Petty invites community members to make an appointment with him at any time to discuss Airport improvements and future use of the Airport.

Attendees communicated concern that funds for airport improvements would be used to accommodate existing tenants and asked if the current tenant is pressuring the County to improve the runway. The project team stated that grant money from the FAA for improvements can only be used on non-revenue generating areas, which include the runway as this is a public airfield. The improvements not only benefit current tenants but also attract future businesses. MAS commented that the number of flights projected in the Master Plan are higher for General Aviation (GA) activities unrelated to the MRO.

An attendee asked if the current tenant has a long-term lease or if they are able to relocate/vacate at any time. It was confirmed that a notice of vacancy is required by tenants.

An attendee commented that most of the public is not aware Pinal Airpark is a County-owned airport and believe that no one can access the Airport unless one has a meeting with someone onsite.

Community members attending the public meeting expressed various concerns with transit access in the area especially related to Red Rock. It was clarified that the project team at the meeting can only speak to Airport-related concerns.

An attendee asked if other businesses will be permitted to operate on the Airport. It was confirmed that additional entities will be allowed. The County is preparing Minimum Standards concurrently with the Master Plan that will create a "level playing field" for businesses interested in Pinal Airpark.

An attendee asked if environmental concerns will be addressed in the Master Plan. The project team confirmed that an environmental overview will be conducted.

An attendee inquired about the anticipated increases in air traffic following the facility improvements. The County responded that significant increases are not anticipated in the short term but levels could change if a new business begins operations at the Airport.

Attendees communicated that helicopter operations seem to cause the most noise impacts.

An attendee asked what is the extent of the County-owned portion of the Airport and if the County's landownership extends past the gate. Airport Director Petty responded the County owns 1,500 acres of the Airport and it does own land past the gate.



Attendees inquired when improvements will begin to take place at the Airport. Airport Director Petty informed attendees that the County anticipates to obtain FAA grant funding and begin improvement projects within the 2015 timeframe.

Public Meeting Follow-up

Public Meeting attendees were mailed or emailed copies of the presentation shown at the December 10, 2013, public meeting. These attendees have also been added to the outreach contact list to directly receive notification of future public meetings.

APPENDIX B

Background Documentation



FAA Letter of Non-Compliance





U.S. Department
Of Transportation
Federal Aviation
Administration

Western-Pacific Region
Airports Division

Federal Aviation Administration
P.O. Box 92007
Los Angeles, CA 90009-2007

November 14, 2003

Mr. Stanley D. Griffis
County Manager
Pinal County
P.O. Box 827
31 N. Pinal Street
Florence, AZ 85232

Dear Mr. Griffis:

Thank you for meeting with us on November 7, 2003 to discuss Pinal Airpark (MZJ) and the County's compliance with its existing federal obligations. As agreed at the meeting, this letter is to clarify the Federal Aviation Administration's concerns and to provide a *roadmap* of issues that need to be addressed/resolved as soon as possible.

Please provide a written response to our office addressing each of the following topics. Each response should include:

- a. Background.
- b. Current status/circumstances/conditions.
- c. County's position.
- d. County's proposed approach/proposal to address any deficiency and a timeline/schedule of actions to implement. Please include interim actions and milestones.

Concerns/Issues to Address:

1. **Airfield Safety:** We are concerned about pavement conditions and proper airspace clearances/surfaces consistent with Federal Aviation Regulation Part 77. Areas of concern include runway, taxiway and apron pavement conditions, standard safety areas and airfield marking and lighting. In addition, aircraft parked close to the runway may penetrate the primary surface of the runway. These conditions may be in violation of the 1948 Surplus Property agreement which states that the County is required to preserve the airport in good and serviceable condition in accordance with the minimum standards as prescribed by the FAA.

2. **Exclusive Rights:** The existing lease agreement between Evergreen Air Center (EAC) and Pinal County grants an exclusive right to EAC. This is in violation of the 1948 Surplus property agreement and 49 U.S.C. § 40103(e).

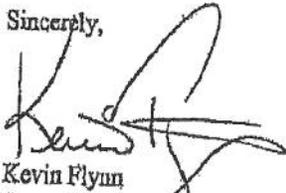
3. **Non-aeronautical Land Use:** The existing EAC lease allows a portion of the airport be used for certain nonaeronautical purposes. The nonaeronautical use of aviation facilities such as the 1.2-mile racetrack and the firing range, may be contrary to 1948 Surplus Property agreement unless expressly approved by the FAA.

4. **Release and Sale of Obligated Airport Land:** In July 1992, Pinal County disposed of approximately 500 acres of federally obligated airport land to the Department of Defense (DOD). The transaction took place without FAA concurrence which was in violation of the 1948 Surplus Property agreement. In addition to the land disposal issue, the FAA takes the position that the conveyance of revenue-producing property obligates the airport owner to use the net sale proceeds for the operation, maintenance or development of the airport. As such, the revenue Pinal County received from the disposal of airport property must be accounted for as airport revenue and used for public airport purposes.

Please note that the four issues identified above are the most pressing topics to address and resolve regarding the County's compliance with existing federal obligations at MZJ. These do not address recommended practices to ensure ongoing compliance or eligibility for future federal aid. Enclosed for your use, correction and input, please find additional information on these topics and other considerations.

Please provide your written response no later than December 12, 2003. If you have any questions, please contact me at (310) 725-3632 or Mr. Anthony Garcia at (310) 725-3634.

Sincerely,



Kevin Flynn
Supervisor, Arizona Standards Section

Enclosure

Additional Information and Clarification

Background: Located on 2080 acres, Pinal Airpark with its single 6,850-foot runway is owned by Pinal County, Arizona. MZI is listed in the National Plan of Integrated Airport Systems (NPIAS) and is located approximately 7 miles from the city of Marana, Arizona.

Construction of the Marana Army Air Field began in 1942 after the United States entered WWII. During the war, the base was primarily used for basic flight training conducted by the USAAF's Training Command. After the end of hostilities in 1945, the Army Air Force deactivated Marana Air Field. The property was declared surplus and was assigned to the War Assets Administration (WAA) for disposal. This took place under the terms of Section 13 of the Surplus Property Act of 1944 (SPA), as amended, 49 USC § 47151-153, the Reorganization Plan One of 1947 and applicable rules, regulations and orders. FAA records show that in June 1948, the base was transferred from the United States to Pinal County by a Quitclaim Deed under the SPA. Therefore, MZI is a federally obligated airport by the restrictive deed covenants.

From 1961 until 1975, the entire airport was leased to a private company, Marana Air Park, Inc. In 1975, Evergreen Helicopters, Inc, a subsidiary of Evergreen International Aviation, Inc., was assigned Marana Air Park's lease and agreed to perform all duties and obligations there under. In August 1982, Pinal County leased the whole airport to Evergreen Air Center, inc. (EAC). Today, EAC's facilities include maintenance hangars, maintenance flight line, and extensive aircraft storage facilities.

EAC is a commercial aircraft storage, paint and maintenance facility with 20 million square feet of ramp and storage area to accommodate 300 aircraft. EAC is also an FAA-approved 14 CFR Part 145 repair station with an FAA Class IV Airframe Rating. Also located at the airport is the Western Army National Guard Aviation Training Site, (WAATS). The WAATS is the premier training site for combat helicopter training for the Army National Guard. Co-located at the heliport is an Apache Helicopter Attack Battalion belonging to the Arizona Army National Guard.

The 1982 lease agreement between EAC and Pinal County was for 25 years through August 2007. In June 1992, Pinal County extended the lease for an additional 40 years along with a 25-year extension option. EAC now compensates Pinal County roughly \$360,000 in annual rent for a leasehold comprising nearly 1,600 acres.

Surplus Property Transfers and Obligations: Surplus property instruments of disposal were issued under Section 13 of the SPA of 1944. The Act authorized conveyance of property surplus to the needs of the Federal Government. Surplus property instruments of transfer were, and are, issued by the WAA and its successor, the General Services Administration (GSA). Public Law (P.L.) 81-311 specifically imposes upon FAA the sole responsibility for determining and enforcing compliance with the terms and conditions of all instruments of transfer by which surplus airport property is or has been conveyed to non-Federal public agencies pursuant to the SPA.

Instruments conveying real and related personal property contain provisions obligating the grantees to operate and maintain the entire airport where the property is located, regardless of the amount of property conveyed by the instrument. Under each surplus property conveyance the airport sponsor assumes certain obligations, reservations and conditions. These usually occur in the form of restrictive covenants in the property deeds and conveyance instruments, to keep and operate its airport facilities safely, efficiently, and under mentioned conditions.

On acceptance of surplus property conveyance by an airport sponsor, the obligations in the instrument of disposal become a binding and enforceable contractual obligation between the airport sponsor and the Federal government. Commitments assumed by airport sponsors in property conveyance are important reasons in preserving a high degree of safety and efficiency in airport design, construction, operation, and maintenance as well as ensuring the public reasonable access to the airport.

The Prohibition Against Exclusive Rights: The 1948 transfer executed between Pinal County and the U.S. Government was subject to several obligations. One of which stated that all property transferred shall be used for public airport purposes, and only for such purposes, on reasonable terms and without unjust discrimination. Another obligation is that no exclusive right for the use of the airport within the meaning of Section 303 of the Civil Aeronautics Act of 1938 be granted. Title 49 USC § 40103(e), in which Congress recodified and adopted substantially unchanged the exclusive rights prohibition prescribed in Section 303 of the Civil Aeronautics Act of 1938 and in Section 308(a) of the Federal Aviation Act of 1958, as amended, prohibits exclusive rights at certain facilities and states. In relevant part, it states that "[a] person does not have an exclusive right to use an air navigation facility on which Government money has been expended."

An exclusive right is defined as a power, privilege, or other right excluding or debaring another from enjoying or exercising a like power, privilege, or right. An exclusive right can be conferred either by express agreement, by imposing unreasonable standards or requirements, or by any other means. Such a right conferred on one or more parties, but excluding others from enjoying or exercising a similar right or rights, would be an exclusive right. Therefore, it is FAA's policy the sponsor of a federally obligated airport will allow no exclusive right for the use of the airport by any person providing, or intending to provide, aeronautical services to the public. The sponsor will not, either directly or indirectly, grant or allow any person, firm, or corporation, the exclusive right at the airport to conduct any aeronautical activities. The exclusive rights prohibition remains in effect as long as the airport is operated as an airport.

FAA takes the position that the grant of an exclusive right for the conduct of any aeronautical activity on such airports is regarded as contrary to the requirements of the applicable laws. This is true whether such exclusive right results from an express agreement, from imposing unreasonable standards or requirements, or by any other means, such as leasing on excess land to a single service provider. Thus, the application of any unreasonable or unjustly discriminatory requirement or standard to proposed aeronautical use of such airports will be considered to be a constructive grant of an exclusive right contrary to applicable law and FAA regulations.

The FAA has concluded that the existence of exclusive right to conduct any aeronautical activity at an airport limits the usefulness of the airport and deprives the using public of the benefits of a competitive enterprise. Apart from legal considerations, the FAA considers it inappropriate to provide Federal funds for improvements to airports where the benefits of such improvements will not be fully realized due to the inherent restrictions of an exclusive monopoly on aeronautical activities. Once any Federal funds have been expended at an airport, including a surplus property conveyance, the exclusive rights prohibition is applicable for as long as it is operated as an airport.

The presence on an airport of only one enterprise engaged in any aeronautical activity will not necessarily be considered a violation of FAA policy if there is no understanding, commitment, express agreement, or apparent intent to exclude other reasonably qualified enterprises. In many instances, the volume of business may not be sufficient to attract more than one such enterprise. As long as the opportunity to engage in an aeronautical activity is available to those meeting reasonable qualifications and standards relevant to such activity, the fact that only one enterprise takes advantage of the opportunity does not constitute the grant of an exclusive right.

Underutilized Land: FAA expects sponsors to prudently consider future aeronautical development, planned and carried out to assure the public interest in aviation is being served at this airport.

It is the FAA's policy that leasing all available airport land and improvements planned for aeronautical activities to one enterprise will be construed as evidence of an intent to grant an exclusive right. This is true unless it can be demonstrated the entire leased area is presently required and will be immediately used to conduct the activities expected by the lease. Within this context, sponsors should only lease enough airport property for which the lease has a demonstrable need. Having said this, if a prospective tenant were to present an acceptable proposal to the County that meets set commercial minimum standards, the County must consider such a proposal. This is especially true because the fact there is land available at the airport. In addition and as an aid to uniformity in conditions, rates, and charges applicable to aeronautical activities on the Airport, the County should consider setting up minimum standards to be met as a condition for conducting aeronautical activity on the Airport.

Therefore, we expect a significant part of the undeveloped land at the airport to be made available for other aeronautical purposes than those taking place at the airport today.

Airfield Safety: As mentioned in the 1948 Surplus Property agreement, the County is required to preserve the airport in good and serviceable condition in accordance with the minimum standards as prescribed by the FAA. Pinal County is also required to adequately clear and protect the aerial approaches to the airport. This is to be done by removing, lowering, relocating, marking and lighting or otherwise mitigating the problem.

On the Issue of the Use of Airport Property for Nonaeronautical Activities: The current lease allows that a portion of the airport be used for certain nonaeronautical purposes. Change of the dedicated airport land to nonaeronautical use requires FAA approval based on a determination the land is no longer needed for airport purpose. The nonaeronautical use of aviation facilities such as the 1.2-mile racetrack and the firing range, is contrary to 1948 Surplus Property agreement unless expressly approved by the FAA under certain conditions.

EAC has subleases and collects rents from nonaviation subleases. Among its subtenants is a U.S. Forest Service's National Advanced Resource Technology Center facility. There are residential facilities that include rooms and apartments. There is also a restaurant and a pool. Since there is no history of FAA approval of any of these nonaviation uses, nonaeronautical uses of aviation facilities cannot be tolerated or considered to be efficient use of airport property. Racetracks and firing ranges at a public-use airport are not considered the highest and best use of airport property, because of its inherent nonaeronautical purpose.

On the Issue of the Disposal of Airport Property Without FAA Concurrence: Today, the Department of Defense (DOD) owns land West of the airport. This property was part of the airport as originally transferred to the County in 1948. It appears that EAC no longer leases parcels 3, 5 and part of parcel 2 because the land was ceded to DOD by eminent domain. In July 1992, Pinal County transferred approximately 500 acres to the DOD as a result of condemnation. This took place despite the fact that such condemnation is not valid against the U.S. Government since the United States holds reversionary interest in the property. DOD paid about \$1 million in compensation for the eminent domain takeover and retains an easement through the airport along parcel 2 for entrance and exit. EAC and the County split the \$1 million with the estimated division being 70% for the County and 30% for EAC.

The FAA was never consulted about the condemnation and the disposition of the property. All unauthorized disposal of airport property must be corrected.

The provision in Public Law 80-289 that includes among the types of airport property, property needed to develop sources of revenue from nonaviation businesses at a public airport, constitutes specific authorization for the transfer of such properties. This is authorized where it has been determined that they are needed and will be used as sources of revenue to defray the cost of operation, maintenance and development of the airport.

The FAA takes the position that each conveyance of revenue-producing property obligates the transferees to use the revenues derived from nonairport use of the property for operation, maintenance or development of the airport. If the land has been identified and agreed upon by the FAA as revenue-producing property (even if it was not so identified on the transfer document) then the revenue must be used on the airport or put into the airport fund.

All surplus property conveyances provide the covenants assumed by the sponsor about the use, operation and maintenance of the airport and the property transferred will be considered to be covenants running in perpetuity. As such, the revenue Pinal County

received from the disposal of airport property must be accounted for as airport revenue and used accordingly.

Other Airfield Operating and Lease Negotiation Considerations

Minimum Standards: It is strongly recommended that the County set up minimum standards to be met as a condition for conducting aeronautical activity on the Airport. As discussed in FAA Advisory Circular AC 150/5190-5, "Exclusive Rights and Minimum Standards for Commercial Aeronautical Activities," the FAA encourages airport management to establish minimum standards. These minimum standards are to be met by all who would engage in a commercial aeronautical activity at the airport.

It is the prerogative of the airport owner to impose conditions on users of the airport to ensure its safe and efficient operation. Such conditions must, however, be fair, equal, and not unjustly discriminatory. They must be relevant to the proposed activity, reasonably attainable, and uniformly applied.

On the Issue of a Separate Airfield Management Agreement: If Pinal County was to contemplate a separate airfield management agreement with EAC or any other private entity, any tenant or FBO leases should only include those properties for which there is a demonstrable need and all aspects of airfield management should be removed. The management agreement should include sufficient safeguards to ensure the preservation of the rights and powers of Pinal County as the airport sponsor and recipient of Federal aid.

It should be made consistently clear to all concerned that the FAA will at all times look to Pinal County for effecting such actions as may be required to conform to all applicable Federal obligations and policies.

49 USC § 47131: As you may be aware, Section 737 of AIR-21 entitled "Land Use Compliance Report," now codified under 49 USC § 47131, requires the FAA to report to Congress "a detailed statement listing airports that are not in compliance with grant assurances or other requirements with respect to airport lands and including the circumstances of such noncompliance, the timelines for corrective action, and the corrective action the Secretary intends to take to bring the airport sponsor into compliance."¹

¹ See 49 USC § 47131 (E).

Recommended Actions for Consideration

- a- Take action to modify/renege/terminate existing leases and subleases that provide exclusive use rights inconsistent with the Surplus Property Agreement.
- b- Seek FAA concurrence regarding disposal of land and document/ensure airport account was compensated with the proceeds from the disposal of airport property.
- c- Dedicate an acceptable amount of property to future and nonexclusive aviation development.
- d- Prohibit unauthorized nonaeronautical activities on airport property.
- e- Provide an updated Airport Layout Plan and Exhibit A Property Map. Also recommend that the County initiate a Master Plan study.
- f- Repair pavement, markings, and lighting as soon as possible, but no later than December 15, 2003.
- g- Take proper action to identify and correct any penetrations of the obstruction surfaces in accordance with 14 CFR Part 77.
- h- Establish minimum standards under FAA Advisory Circular AC 150/5190-5, *"Exclusive Rights and Minimum Standards for Commercial Aeronautical Activities."*
- i- Address other FAA concerns dealing with the issue of AIP grant compliance.
- j- Ensure that all new leases or proposed leases are submitted to FAA for review.
- k- Establish and implement a fee structure based on fair market value and rates and charges.

***4th Amendment Lease between
Pinal County and Marana Aerospace Solutions***



**FOURTH AMENDMENT TO AMENDED LEASE BETWEEN PINAL COUNTY AND
MARANA AEROSPACE SOLUTIONS, INC., AS LAST AMENDED ON
FEBRUARY 17, 2007**

This Fourth Amendment (this "Fourth Amendment") is entered into as of this 1st day of January, 2013 (the "Effective Date") by and between PINAL COUNTY, a political subdivision of the State of Arizona acting by and through its Board of Supervisors (hereinafter sometimes referred to as "Lessor" or "Pinal") and MARANA AEROSPACE SOLUTIONS, INC., an Oregon corporation, formerly known as Evergreen Air Center, Inc. (hereinafter referred to as "Tenant" or "MAS").

WHEREAS, Pinal and Tenant desire to modify and amend the terms, covenants, agreements and conditions of the Amended Lease entered into on June 12, 1992, as last amended on February 17, 2007 (the "Lease") involving portions of the real property known as the Pinal Airpark (the "Airport" or the "Airpark");

WHEREAS, Pinal and Tenant wish to modify the Lease to be in compliance with FAA regulations and expectations and to encourage participation of the FAA in the rehabilitation of portions of the Airport;

WHEREAS, Pinal is in the process of developing an Airport master plan ("Master Plan"), which is anticipated to be completed in eighteen to twenty-four months, and the parties intend that this Fourth Amendment will be an interim agreement, and that the parties will negotiate an amended lease to be effective upon publication of the Master Plan;

WHEREAS, Pinal, as the airport sponsor, is currently in the process of requesting funding from the Arizona Department of Transportation for a Mill and Overlay project at the Airpark which is anticipated to be completed in approximately 2015;

WHEREAS, Pinal and Tenant do not by this Fourth Amendment waive any claims by either of them of default or damages that may exist under the Lease or any defenses thereto with respect to matters arising prior to the Effective Date;

WHEREAS, Pinal and Tenant have entered into a Forbearance and Tolling Agreement dated July 25, 2012 (the "Forbearance Agreement"), which Forbearance Agreement is not affected by this Fourth Amendment; and

THEREFORE, in consideration of the mutual covenants and agreements hereinafter contained, Pinal and Tenant hereby mutually agree:

1. This Fourth Amendment is intended to be an interim agreement pending the completion of the Master Plan. The parties agree that the Lease, as amended by this Fourth Amendment, will be replaced by a new amended lease, which the parties will negotiate and complete within a timeframe that will allow such amended lease to become effective upon publication of the Master Plan. The amended lease will address issues such as relocation of facilities, costs of relocation, runway maintenance and other Airport maintenance, responsibility for costs of



improvements to the Airport, and responsibility for Airport components going forward. The amended lease will meet the requirements of Arizona procurement law and Federal Aviation Administration requirements for a public airport. This paragraph is not intended to alter the terms of the Forbearance Agreement, nor is it intended to alter any of the obligations or responsibilities of the parties for any alleged breaches of the Lease that may exist or may occur in the future. In the event that the parties are unable to timely negotiate an amended lease, both parties retain their respective remedies and defenses as they exist on the Effective Date.

2. As of the Effective Date, the definition of Leased Premises in Section 1 of the Lease is amended as follows. Unless specified to the contrary, the Leased Premises shall be leased through the end of the Lease term:

1. LEASED PREMISES. Pinal does by these presents lease unto Tenant and Tenant does hereby accept such lease of portions of the Airpark together with all buildings, facilities, and improvements situated thereon (Leased Premises) which shall include:

- a. That certain real property described in Exhibit A [the business areas], together with all buildings, fixtures and improvements located thereon.
- b. That certain real property described in Exhibit B [the triangle], together with all buildings, fixtures and improvements located thereon.
- c. That certain real property described in Exhibit C [the active work area], together with all buildings, fixtures and improvements located thereon. This area may be reconfigured as suggested by the Master Plan.
- d. That certain real property described in Exhibit D [the south runway area], together with all buildings, fixtures and improvements located thereon. This area may be relocated as suggested by the Master Plan.
- e. For a period of three years the real property described in Exhibit E [the hotel], together with all buildings, fixtures and improvements located thereon.
- f. For a period of one year the real property described in Exhibit F [the track and range], together with all buildings, fixtures and improvements located thereon.
- g. For a period of two years the real property described in Exhibit G [the flight line area], together with all buildings, fixtures and improvements located thereon.



h. For a period of two years the real property described in Exhibit H [Albatross storage area], together with all buildings, fixtures and improvements located thereon.

i. For a period ending on May 31, 2016, that certain real property described in Exhibit I [the ETI areas], together with all buildings, fixtures and improvements located thereon. This area may be relocated as suggested by the Master Plan, subject to the rights of the subtenant under the sublease regarding such property.

Notwithstanding the foregoing, upon the written request of Pinal, and with the consent of MAS, such consent not to be unreasonably withheld, the current MAS sublease to Evergreen Trade, Inc. shall be assigned by MAS without additional consideration to Pinal, and the area described as Exhibit I shall be deleted from this Lease. In the event that Pinal obtains an assignment of the sublease Pinal shall release Tenant from liability for environmental issues related only to the area described in Exhibit I.

j. For a period ending on May 31, 2016, that certain real property described in Exhibit J [the EIA areas], together with all buildings, fixtures and improvements located thereon. This area may be relocated as suggested by the Master Plan, subject to the rights of the subtenant under the sublease regarding such property.

Notwithstanding the foregoing, upon the written request of Pinal, and with the consent of MAS, such consent not to be unreasonably withheld, the current MAS sublease to Evergreen International Airlines, Inc. shall be assigned by MAS without additional consideration to Pinal, and the area described as Exhibit J shall be deleted from this Lease. In the event that Pinal obtains an assignment of the sublease Pinal shall release Tenant from liability for environmental issues related only to the area described in Exhibit J.

Tenant agrees that the use restrictions set forth in Section 3 of the Lease shall survive, to the extent applicable to the revised Leased Premises. In this Fourth Amendment the revised Leased Premises shall be referred to as the "2013 Leased Premises." The Leased Premises in the 1992 Lease shall be referred to as the "1992 Leased Premises."

Rental fees omitted from master plan report.

Rental fees omitted from master plan report.



Handwritten signature or initials in the bottom left corner, appearing to be 'BY'.

4.10 Annual Rent shall be payable each year in quarterly installments beginning on the Effective Date. The Rent for the 2013 Leased Premises described in Exhibits A, E, F, G and H shall be payable in advance in equal quarterly installments. The Rent for each quarter for the 2013 Leased Premises described in Exhibits B and C, and the Rent for each month for the 2013 Leased Premises described in Exhibit D all shall be paid quarterly in arrears and shall be the rental amount actually calculated for the quarter or months within a given quarter, as applicable. The portion of the Rent that is payable in arrears shall be paid on or before the first day of the second month immediately following the end of the applicable quarter for which payment is due (e.g., Rent for the quarter ending on March 30 shall be due and payable on or before the immediately following May 1.) With respect to payments of Annual Rent for the 2013 Leased Premises described in Exhibits I and J, Tenant only shall be obligated to make such payments following each receipt by Tenant of a sublease Rent payment that triggers an obligation hereunder to pay Annual Rent, and in such event, Tenant shall make its payment toward Annual Rent hereunder within thirty (30) days following its receipt of the applicable payment of sublease Rent.

4.11 The rents for the entire 2013 Leased Premises shall be subject to annual adjustment as defined in 4.3 of the Lease, which provision is incorporated by reference; provided, however, that the annual adjustment shall never exceed 3%.

4. In addition to the 2013 Leased Premises, until such time as Pinal assumes responsibility for the maintenance of any of the following components, Tenant will continue to be responsible for the maintenance, upkeep and operations of these components of the Airpark that are a part of the 1992 Leased Premises (the "Additional Maintenance Components"):

- a. The runway and taxiway and ramp space
- b. The electrical systems
- c. The water systems
- d. The natural gas systems
- e. The sewage systems
- f. Any environmental issues or environmental remediation

Additionally Tenant will provide the following FBO services to the public:

- a. Fuel
- b. Parking and tiedowns, to the extent that space is available.

5. MAS may impose to Pinal and other tenants a reasonable fee for use of the utility systems (water, electric, gas and sewer), which fees shall be based on the actual direct and indirect (administrative) costs incurred by MAS (and subject to audit) and other Airport tenants will install meters to track utility usage. MAS shall have the right to discontinue providing use of the utility systems to Pinal or other tenants if there is any failure to make a payment for use of the utility systems.



6. Section 21 of the Lease is deleted and replaced with the following.

MAS shall continue to maintain its fire area and emergency equipment areas, but shall have no obligation to maintain fire protection for any areas other than the 2013 Leased Premises. Although MAS is not obligated to provide service to other tenants, MAS shall endeavor to assist Pinal or other tenants where reasonably possible; provided, however, that MAS shall have no obligation or liability with respect to its providing (or failure to provide) any fire protection services to or for the benefit of Pinal or other tenants, and Pinal, hereby releases MAS from any and all claims of any nature arising in connection therewith. Pinal shall require that other tenants who do not make separate arrangements for fire protection shall provide to MAS a similar release.

7. Notwithstanding the provisions of Section 3 of the Lease, from and after the Effective Date, Pinal shall have operational authority over the Airport, and shall operate the Airport as a public airport consistent with responsibilities outlined in the FAA Grant Assurances, as they may develop from time to time. Tenant shall be fully responsible for maintaining the runway, taxiways and ramp space until such time as Pinal, in its sole discretion assumes responsibility for the part or all of the maintenance of the runway.

8. Other than the newly defined 2013 Leased Premises, the Airport will be open to the public. Tenant shall not restrict public access to any part of the Airport other than the 2013 Leased Premises.

9. As of the Effective Date, Pinal will assume control of the Airport other than the 2013 Leased Premises. Tenant shall be solely responsible for security at the 2013 Leased Premises. Tenant shall pay for any fencing required for the 2013 Leased Premises or that Tenant reasonably deems as appropriate for the 2013 Leased Premises. To the extent FAA AIP (or other federal or state) funds become available and Pinal is paid for the cost of this fencing (to the extent eligible for reimbursement under AIP or other applicable funding programs), Pinal shall pay to Tenant such amounts. The control by Pinal shall not relieve Tenant of its maintenance obligations with respect to the 2013 Leased Premises, as set forth in the Lease and with respect to the Additional Maintenance Components, as set forth in this Fourth Amendment. Property leased by Pinal to EIA, ETI and any other party is excluded from the maintenance obligation.

10. Section 10.2 of the lease is deleted in its entirety and substituted with the following new Section 10.2:

10.2. Tenant shall have no right to enter into subleases, except as may be approved by Pinal, and except that Tenant may, without Pinal's consent, enter into any sublease with an entity that is an affiliate of Tenant (i.e., an entity that is owned or controlled by, or under common ownership or control with, Tenant).

11. Pinal and Tenant do not by this Fourth Amendment waive any claims by either of them of default or damages that may exist under the Lease or any defenses thereto with respect to matters arising on or prior to the Effective Date. Without limiting the foregoing, this Fourth Amendment shall in no sense waive or alter any existing defaults or claims of default alleged by Pinal against Tenant, known or unknown, nor shall this Fourth Amendment waive any defenses that Tenant may have against such claims. Alleged claims of default with respect to matters in existence prior to the Effective Date include without limitation:

Maintenance of the Runway
Payment of Rent

Notwithstanding the foregoing, however, and without waiving the terms of the Forbearance Agreement and the terms of Section 1 of this Fourth Amendment, the parties do acknowledge that it is their intent by establishing a new Rent moving forward from and after the Effective Date to fix the time period for their disputes relating to Rent pursuant to the terms of the Lease prior to this Fourth Amendment to the period prior to the Effective Date.

12. This Fourth Amendment shall be subject to the Forbearance Agreement.

13. Section 15 of the Lease is deleted and substituted with the following:

15. AIRPARK MASTER PLAN.

Tenant shall pay one-half of the sponsor's share cost of developing the Master Plan, upon the occurrence of the costs, but not to exceed \$12,500.00.

14. Section 20 of the Lease is deleted.

15. Section 8 of the Lease is hereby modified to exclude any obligation of Tenant to insure any portions of the Airpark other than the 2013 Leased Premises and the Additional Maintenance Components (but only for so long as Tenant is maintaining the Additional Maintenance Components). Further, Section 8 of the Lease is also hereby modified to exclude any obligation of Tenant to indemnify Pinal with respect to the operation of any portions of the Airport other than the 2013 Leased Premises.

16. Tenant shall be subject to the following rights and obligations:

a. To facilitate Tenant's ability to comply with Tenant's maintenance and upkeep obligations with respect to the Additional Maintenance Components, and to ensure Tenant's ability to access the Airport as needed in connection with the operation of Tenant's business, Pinal hereby grants to Tenant, at no additional Rent or cost to Tenant, the right of reasonable access to and from the 2013 Leased Premises and to and from the Additional Maintenance Components via such portions of the Airport

as are or may be reasonably necessary to allow Tenant to conduct its business operations permitted herein at and on the 2013 Leased Premises and to fulfill its maintenance obligations with respect to the Additional Maintenance Components. The right of ingress and egress is subject to the present and future rules and regulation of the Airport. Pinal may, at any time, temporarily or permanently close or relocate the means of ingress and egress, so long as reasonable and not unduly burdensome alternative means of ingress and egress are available to the Tenant.

b. Further, Tenant, at no additional Rent or cost to Tenant, shall have the right to utilize the Airport runway, taxiways, ramps, aprons, roadways, streets, parking lots and sidewalks. The use shall be limited to normal transient uses of these areas, including daily parking. Tenant shall not use any of these areas for storage or business operations. Pinal is free to relocate or close any common area, so long as the relocation or closure does not materially affect the operation of the Airport. Tenant shall not do or permit anything to be done which will interfere with the free access and passage of others to space adjacent to the Leased Premises or in any streets or roadways near the Leased Premises, or use of the Airport.

c. Pinal reserves unto itself for the use and benefit of the public a right of flight for the passage of aircraft in the airspace above the surface of the Leased Premises together with the right to cause in said airspace such sound as may be inherent in the operation of aircraft, now known or hereafter used for the navigation of or flight in said airspace, together with the emission of fumes or particles incidental to aircraft navigation, and for the use of said airspace for the landing on, taking off from or operating on the Airport.

d. Tenant agrees to use commercially reasonable efforts to prevent the use of the premises for purposes which will create or result in hazards to flight such as, but not limited to, purposes which will (a) produce electrical interference with radio communications, (b) make it difficult for pilots to distinguish between airport lights and others, (c) project glare in the eyes of pilots, (d) impair visibility in the vicinity of the airport, or (e) otherwise endanger the landing, take-off or maneuvering of aircraft.

e. Pinal retains the continuing right in the Leased Premises to prevent the erection or growth of any building, structure, tree, or other object extending into the controlled airspace and to remove from said airspace, at Tenant's expense (if caused by Tenant) or at the sole option of Pinal, as an alternative, to mark and light as obstructions to air navigation, any such building, structure, tree, or other object now upon, or which in the future may be upon the property together with the right of ingress to, passage over, and egress from the Leased Premises for the above purposes. Pinal acknowledges and agrees that it is not currently aware of issues with any existing buildings, structures, trees or other objects on the Airpark.

17. The additional terms set forth in this Section 17 all have been requested by the Federal Aviation Administration (FAA) and are incorporated into this Fourth Amendment. When used below in this Section 17, the term "Lessee" shall in all



cases refer to Tenant, and the term "Premises" shall in all cases refer to the 2013 Leased Premises.

17.1 Pinal and MAS covenant and agree that the uses of the Premises shall be limited to aeronautic uses, except for the current uses of the test track, the shooting range and the hotel, and for office uses ancillary to and directly related to any of the foregoing.

17.2 MAS will have no exclusive rights relating to the Airpark, other than the right to use the Premises leased herein and the Airpark common areas in the manner allowed herein.

17.3 The following language is deleted from paragraph 3.2.10 of the Lease:

If Pinal elects to enter such an agreement which subordinates this Lease and materially affects the value of the Leasehold, then Tenant may at its sole option elect to cancel this Lease at that time.

17.4 Paragraph 3.2.12 of the Lease is amended as follows:

Tenant agrees to comply with the notification and review requirements covered in Part 77 of the Federal Aviation Regulations in the event of any construction planned for the Airpark, or in the event of any planned modification or alteration of any present or future facility on the Airpark.

17.5 Paragraph 3.2.15 of the Lease is deleted.

17.6 Paragraph 4.5 of the Lease is deleted. [The foregoing sentence shall not limit the amendments to Section 4 of the Lease that are contained in Section 3 of this Fourth Amendment. The foregoing sentence merely serves as confirmation that Paragraph 4.5 of the original Lease, as in effect immediately prior to this Fourth Amendment, has been deleted.]

17.7 The language in paragraph 6 of the Lease is deleted following the first sentence.

17.8 The second sentence of paragraph 7 of the Lease is deleted.

17.9 The first sentence of paragraph 8 of the Lease is modified to read as follows:

Tenant shall insure that a comprehensive all risk insurance policy is maintained throughout the term of this Lease with commercially reasonable and appropriate limits.

17.10 Delete paragraph 9 of the Lease and replace with the following:

9.1 General Provisions. Except as provided in this Section 9, Lessee shall not engage in any financing or other transaction creating any mortgage or

deed of trust upon the Premises, place or suffer to be placed upon the Premises any lien or other encumbrance, or suffer any levy or attachment to be made on Lessee's interest in the Premises. Any such mortgage or deed of trust, encumbrance, or lien shall be deemed to be a violation of this Section, constituting a failure to comply with the terms of the Lease, on the date of its execution or filing of record regardless of whether or when it is foreclosed or otherwise enforced.

9.1.1 Notwithstanding anything to the contrary in Section 9 herein, Lessee shall be entitled from time to time during the Term to mortgage, collaterally assign, or otherwise encumber its leasehold interest under this Lease to secure indebtedness, including, without limitation, a loan to finance construction of improvements and other development on the Premises, and refinancings thereof, subject to the restrictions of Subsection 9.1.2, and provided, however, that the language of such mortgage or deed of trust and of all related documents that require the execution, approval, or consent of Pinal shall be subject to the prior review and approval of legal counsel for Pinal, and that all legal fees incurred by Pinal in connection with such legal counsel review and approval shall be paid by Lessee. Any such encumbrance is referred to as a "Mortgage" and the holder thereof a "Mortgagee". Any such Mortgagee shall be a recognized lending institution - commercial bank, savings bank, trust company, pension fund, insurance company real estate investment trust, or similar organization. The Mortgagee, upon taking possession or upon foreclosure or taking an assignment in lieu thereof, shall be liable for all future rents and obligations hereunder and shall attorn to Pinal. No Mortgage shall encumber Pinal's interest in the Premises or the improvements thereon. No personal liability or money judgment shall ever attach to or be obtained against Pinal or its fee interest by reason of any joinder of Pinal in such Mortgage. Further and promptly after Lessee assigns or encumbers any portion of the Premises or the improvements thereon, Lessee shall furnish Pinal with a written notice setting forth the name and address of such Mortgagee or trustee.

9.1.2 No Mortgage or deed of trust shall extend to or affect the fee, the reversionary interest or the estate of Pinal in the Premises. No Mortgage or deed of trust shall be binding upon Pinal in the enforcement of its rights and remedies under this Lease and by law provided, unless and until a copy thereof shall have been delivered to Pinal and such Mortgage or deed of trust is authorized in accordance with provisions of this Section 9.

9.2 Pinal Agreement. With respect to Mortgagees of the Premises, Pinal agrees that:

9.2.1 If requested by a Mortgagee which shall have duly registered in writing with Pinal its name and address, and if Pinal shall give any notice,

demand, election or other communication required hereunder (hereafter collectively "Notices") to Lessee, Pinal shall concurrently give a copy of each such Notice to the Mortgagee at the address designated by it. Notices shall be sent (a) by registered or certified mail, return receipt requested, and shall be deemed given two (2) days after the time they are deposited in a United States Post Office with postage charges prepaid, addressed to the Mortgagee, or (b) sent by telecopy or electronic mail, with a copy sent by U.S. First Class mail prepaid, and shall be deemed given one (1) day after telecopy or electronic mail transmission. No Notice given by Pinal to Lessee shall be binding upon or affect Lessee or the Mortgagee unless a copy of the Notice shall be given to the Mortgagee pursuant to this Subsection 9.2.1.

9.2.2 Such Mortgagee entitled to such Notices, as specified above, shall have any and all rights of Lessee with respect to the curing of any default hereunder by Lessee.

9.2.3 If Pinal shall elect to terminate this Lease by reason of any default by Lessee with respect to the Premises, the Mortgagee that shall have become entitled to notice as provided in this Section 9.2 shall have any and all rights of Lessee with respect to curing of any default with respect to the Premises.

9.3.4 Nothing herein contained shall be deemed to impose any obligation on the part of Pinal to deliver physical possession of the Premises to such holder of a Mortgage. To the extent the physical possession of the Premises by a secured creditor is not inconsistent with the terms of this Lease or incompatible with the Pinal's selection of available remedies in the event of default, Pinal shall not prevent such physical possession.

9.2.5 If more than one Mortgagee shall seek to exercise any of the rights provided for in this Section 9, the holder of the Mortgage having priority of lien over the other Mortgagees shall be entitled, as against the others, to exercise such rights. Should a dispute arise among Mortgagees regarding the priority of lien, the Mortgagees shall prove to the satisfaction of Pinal that they have settled that dispute.

9.3 Protection of Mortgagee(s). Until the time, if any, that an approved Mortgage shall be satisfied and released of record:

9.3.1 A Mortgagee shall have the right, for a period equal to the period afforded Lessee to perform any term, covenant, or condition and to remedy any default by Lessee hereunder, and Pinal shall accept such performance with the same force and effect as if furnished by Lessee, and

the Mortgagee shall thereby and hereby be subrogated to the rights of Pinal. Such Mortgagee cure period shall begin on the later of: (i) the date Mortgagee receives notice pursuant to Section 9.2, or (ii) the date that Lessee's cure period expires under the Lease (but not more than ten (10) days after Lessee receives notice of such default). During such Mortgagee cure period, Pinal will not disturb possession, interest or quiet enjoyment by the Lessee or Mortgagee in the Premises, subject to the terms of this Lease, until such Mortgagee cure period has expired. The Mortgagee shall have the right to enter upon the Premises to give such performance.

9.3.2 In case of a default by Lessee in the performance or observance of any non-monetary term, covenant or condition to be performed by it hereunder, if such default cannot practicably be cured by the Mortgagee without taking possession of the Premises, in such Mortgagee's reasonable opinion, or if such default is not susceptible of being cured by the Mortgagee, then Pinal shall not serve a notice of lease termination if and so long as:

9.3.2.1 The Mortgagee shall proceed diligently to obtain possession of the Premises (including possession by a receiver), and, upon obtaining such possession, shall proceed diligently to cure such defaults as are reasonably susceptible of cure (subject to any order by a court of competent jurisdiction staying or otherwise precluding such Mortgagee from obtaining such possession); or

9.3.2.2 The Mortgagee shall institute foreclosure proceedings and diligently prosecute the same to completion (unless in the meantime it shall acquire Lessee's estate hereunder, either in its own name or through a nominee, by assignment in lieu of foreclosure), subject to any order by a court of competent jurisdiction staying or otherwise precluding such Mortgagee from obtaining such possession.

9.3.2.3 The Mortgagee shall not be required to obtain possession or to continue in possession of the Premises, if and when such default shall be cured. If a Mortgagee, its nominee, or a purchaser at a foreclosure sale shall acquire title to Lessee's leasehold estate hereunder, a default that is not reasonably susceptible to cure by the person succeeding to the leasehold interest shall no longer be deemed a default under this Lease.

9.3.2.4 If any Mortgagee is prohibited from commencing or prosecuting foreclosure or other appropriate proceedings in the nature thereof by any process or injunction issued by any court or by reason of any action by any court having jurisdiction of any bankruptcy or insolvency proceeding involving Lessee, the times for commencing or prosecuting

BM

foreclosure or other proceedings, including proceedings to obtain possession, shall be extended for the period of the prohibition.

17.11 Revise paragraph 10.1 of the Lease as follows:

10.1 Written Assignment. This lease is assignable by Tenant only upon the written approval by Pinal, such approval not to be unreasonably withheld.

17.12 Paragraph 10.2 of the Lease is deleted. [The foregoing sentence shall not limit the amendments to Section 10.2 of the Lease that are contained in Section 10 of this Fourth Amendment. The foregoing sentence merely serves as confirmation that Paragraph 10.2 of the original Lease, as in effect immediately prior to this Fourth Amendment, has been deleted.]

17.13 Paragraph 10.3 of the Lease is deleted.

17.14 Paragraph 10.4 of the Lease is deleted.

17.15 Paragraph 11 of the Lease is replaced with this language:

11. Indemnification. To the fullest extent permitted by law, subject to the following paragraph, Lessee hereby agrees to defend, indemnify and hold harmless Pinal and its members, elected or appointed officials, agents, contractors, subcontractors, boards, commissions and employees (hereinafter referred to collectively as the "Pinal" for purposes of this Section 11) for, from and against any and all claims, causes of action, liability, suits, litigation (including reasonable attorney's fees and other costs of investigation and litigation), actions, losses, damages or claims of any nature whatsoever which arise out of or in connection with (i) any accident, injury or damages occurring in, on, or around the Premises, or (ii) any negligent act or omission of Lessee or its agents, employees, contractors, or subcontractors (hereinafter referred to collectively as "Lessee" for purposes of this Section 11) in connection with Lessee's actions or omissions in, on, or around, the Premises or the Airport, Lessee's operations hereunder, and which result directly or indirectly in the injury to or death of any persons or the damage to or loss of any property, or (iii) the failure of Lessee to comply with any provisions of this Lease.

It is the specific intention of the Parties that Pinal shall, in all instances, except for claims arising solely from the gross negligence or willful misconduct of Pinal, be indemnified by Lessee from and against all claims and losses. Lessee shall be responsible for primary loss investigation, defenses and judgment costs where this indemnification is applicable. Lessee waives all rights of subrogation against Pinal, its officers, officials, agents and employees for all claims and losses arising from the use, occupancy or condition of the Premises or Airport.

17.16 Paragraph 12 of the Lease is deleted in its entirety.

17.17 Paragraph 13 of the Lease is replaced with this language:

13 Environmental Protection.

13.1 Definitions. Unless the context shall clearly require otherwise, the terms defined in this section shall, for all purposes of this Lease and of any agreement amendatory hereof or supplemental hereto, have the meanings herein specified, with the following definitions to be equally applicable to both the single and plural forms of any of the following:

13.1.1 *Environmental Laws.* The term "Environmental Laws" shall mean any one or all of the following, as the same are amended from time to time: the Comprehensive Environmental Response, Compensation, and Liability Act, 42 USC Section 9601 et seq.; the Resource Conservation and Recovery Act, 42 USC Section 6901, et seq.; the Toxic Substances Control Act, 15 USC Section 2601 et seq.; the Safe Drinking Water Act, 42 USC Section 300h et seq.; the Clean Water Act, 33 USC Section 1251 et seq.; the Clean Air Act, 42 USC Section 7401 et seq.; the Arizona Hazardous Waste Management Act, A.R.S. Section 49-921 et seq. the Arizona Environmental Quality Act, Title 49 of the Arizona Revised Statutes, as amended; and all regulations thereunder and any other laws, regulations and ordinances (whether enacted by the local, state or federal government) now in effect or hereafter enacted that deal with the regulation or protection of the environment, including the ambient air, ground water, surface water, and land use, including substrata land, or that govern the use of hazardous materials, hazardous waste and hazardous substances and petroleum products.

13.1.2 *Hazardous Material.* The term "Hazardous Material" shall mean any toxic or hazardous material, substance or waste, or any pollutant or contaminant as defined or regulated pursuant to any Environmental law and petroleum products. For purposes of this definition, petroleum includes petroleum-based substances comprised of a complex blend of hydrocarbons derived from crude oil through processes of separation, conversion, upgrading and finishing (e.g., distillate fuel oils, petroleum solvents and used oils).

13.2 Lessee Compliance.

13.2.1 Lessee has been operating on and maintaining the Premises since 1982 and, accordingly, Lessee is fully and completely knowledgeable of the condition of the Premises. The period from commencement of such occupancy in 1982 through the Effective Date is referred to as the "Prior Occupancy Period." Under the 1992 Lease, all conditions in violation or threatened or suspected violation of any Environmental Law were to have been remediated. Lessee, after having occupied the Premises during the Prior Occupancy Period, is unaware of

condition in violation or threatened or suspected violation of any Environmental Law on the Premises. Lessee hereby accepts the Premises in an "as is, where is" condition without any warranty or representation from Pinal, either express or implied, of any kind or nature whatsoever with respect to the Premises, including, but not limited to, any warranty of compliance with Environmental Laws, building structure, merchantability, habitability, or fitness for any particular or specific purpose, and all such warranties are hereby disclaimed. Lessee has had the opportunity to obtain any inspection report, environmental assessment, survey, drainage report, or any similar study, that Lessee desired to obtain.

13.2.2 Lessee shall, at the Lessee's own expense, comply with all present and hereafter enacted Environmental Laws, and any amendments thereto, affecting the Premises or Lessee's operation of the Premises which are discovered or arise during the term of this Lease or the Prior Occupancy Period.

13.2.3 Lessee shall not cause or permit any Hazardous Material to be brought upon, kept or used in or about the Airport by Lessee, its agents, employees, contractors or invitees in violation or threatened or suspected violation of any Environmental Law. The Parties recognize and agree that Lessee may bring on the Premises and use Hazardous Materials that are ordinarily and customarily used in aircraft servicing and maintenance, provided that such use shall fully comply with all applicable Environmental Laws.

13.2.4 Under the 1992 Lease, all underground storage tanks (USTs) were to be closed in accordance with all applicable Environmental Laws. Lessee warrants that all UST's located on the Premises have been closed. If Lessee desires to install upon the Premises, any new USTs, Lessee shall submit the plans for such new USTs to Pinal for prior approval and shall comply with all applicable Environmental Laws related thereto, including Title 40, Code of Federal Regulations, Part 280, as adopted by the State of Arizona ("Part 280"), and Lessee shall be the owner of such new USTs for statutory purposes. Installation of USTs shall comply with the "code of practice" set forth in Part 280. Lessee is solely responsible for the design, construction, installation, operation, monitoring, inspection, repair and maintenance of any and all new USTs, including any connected piping and/or dispensing apparatus. Lessee shall provide to Pinal a copy of the Arizona Department of Environmental Quality Notification of Underground Storage Tank Registration that Lessee submits to the state. If Lessee installs any new USTs on the Premises, such shall meet or exceed all current and applicable tank performance standards, including corrosion protection, leak detection and spill/overflow protection. Any new UST that stores flammable and combustible liquids shall meet the provisions of NFPA 30, Flammable and Combustible Liquids Code. Records demonstrating compliance with Release detection requirements, including product inventories, calibration and

maintenance, sampling, tightness testing and any other records, fees and taxes required by the state or federal governments shall be the responsibility of Lessee. Upon the expiration of this Lease, Lessee shall remove all new USTs in compliance with all UST closure requirements under all applicable Environmental Laws in effect at that time unless otherwise allowed by Pinal.

13.3 Indemnification. To the fullest extent permitted by law, Lessee shall indemnify, defend (with counsel reasonably acceptable to Pinal), protect and hold harmless Pinal and its employees and agents for, from and against any and all liability, loss, damage, expense, penalties and legal and investigation fees or costs, arising from or related to any claim or action for injury, liability, or damage to persons or property and any and all claims or actions brought by any person, entity or governmental body, alleging or arising in connection with contamination of the environment or violation of any Environmental Law or other statute, ordinance, rule, regulation, judgment or order of any government or judicial entity which are incurred or assessed as a result of any of Lessee's activities or operations on or discharged on or from the Premises or the Airport during the Term of this Lease or the Prior Occupancy Period; provided, however, that the foregoing indemnity shall not include any obligation of Lessee to indemnify, defend, protect or hold harmless Pinal for any liability, loss, damage, expense, penalties and legal and investigation fees or costs, to the extent arising from (a) gross negligence or willful misconduct of Pinal or Pinal's employees, agents, invitees or contractors, or (b) the failure of Pinal to meet its obligations to assist in the removal of any USTs pursuant to the terms of the 1992 Lease.. This obligation includes, but is not limited to, all costs and expenses related to cleaning up the property, land, soil and underground or surface water as required under the law. Lessee's obligations and liabilities under this Section 13.3 shall survive the termination of this Lease or any prior lease. The indemnification of Pinal by Lessee as described above includes, without limitation, costs incurred in connection with any investigation of site conditions or any cleanup, remedial, removal or restoration work required by any federal, state or local governmental agency or political subdivision because of Hazardous Material located on the Airport or present in the soil or ground water on or under the Airport. If Pinal's right to enforce Lessee's promise to indemnify is not an adequate remedy at law for Lessee's failure to abide by the provision of this Section 13.3, Pinal shall have the right to injunctive relief in the event of any violation or threatened violation by Lessee.

13.4 Remediation. Without limiting the foregoing, if the presence of any Hazardous Material caused or permitted by Lessee results in any Release on the Airport in violation or potential violation of any Environmental Law, Lessee shall promptly take action to remediate the affected property at its sole expense as is necessary to return the Airport to the condition existing prior to the introduction of any such Hazardous Material to the Airport; provided that Pinal's approval of such actions shall first be obtained, except



in emergency, which approval shall not be unreasonably withheld so long as such actions would not potentially have any material adverse long-term effect on the Airport and Lessee is not under administrative or court order related to such remediation action. Notwithstanding Pinal's approval pursuant to this Section 13.4, Pinal is not responsible for directing or managing any remediation action. For purposes of this Section 13.4, the term "Release" means any releasing, spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, disposing, or dumping.

13.5 Governmental Submittals. Lessee shall, at Lessee's own expense, make all submissions to, provide all information to, and comply with all requirements of the appropriate governmental authority (the "Government") under the Environmental Laws that are required with respect to the Premises or Lessee's activities within the Airport. Should the Government determine that a Site Characterization, site assessment and/or cleanup plan should be prepared and/or that a cleanup should be undertaken because of any spills or discharges of Hazardous Materials by reasons of Lessee's operations or actions at the Airport which occur during the Term of this Lease or the Prior Occupancy Period, then Lessee shall, at the Lessee's own expense, prepare and submit the required plans and financial assurances, and carry out the approved plans.

13.6 Information Sharing.

13.6.1 Lessee shall immediately notify Pinal, in writing, of any of the following: (i) Lessee's receipt of any notification from any governmental entity either charging or informing Lessee that it will be charged with a violation of Environmental Laws, and (ii) any significant change in Lessee's operation on the Premises that is reasonably likely to adversely change Lessee's or Pinal's obligations or liabilities under the Environmental Laws. In addition, upon receipt or upon creation, Lessee agrees to provide Pinal with copies of documents reflecting the physical condition of the Premises, including but not limited to, environmental testing of soils and groundwater, or to respond to any governmental investigation or claim of liability by third parties which is related to environmental contamination of the Premises or the Airport, or Lessee's operation thereon. Further, Lessee agrees to provide to Pinal copies of documents and information requested by Pinal to determine the applicability of the Environmental Laws to the Premises or the Airport.

13.6.2 Any new UST that Lessee installs on the Premises pursuant to Subsection 13.2.4 shall incorporate a method or a combination of methods, in compliance with industry standards for such, for Release detection that can detect a Release from any portion of the new UST and the connected underground piping. Lessee shall immediately notify Pinal upon discovering a Release or Suspected Release of any amount of material that is stored inside the new UST. For purposes of this Subsection 13.6.2, a "Suspected Release" is any discovery of released Hazardous Material at the UST site or surrounding area, erratic behavior of Hazardous Material

dispensing equipment, the sudden loss of a Hazardous Material, an unexplained presence of water in the new UST, or when monitoring indicates that a Release has occurred. In the case of inventory control, Lessee shall notify Pinal when the second consecutive month of inventory reconciliation data indicates that there is a discrepancy in the figures recorded.

13.7 Sublease. Lessee shall insert provisions substantially identical to the provisions of this Section 13 in any sublease agreement or contract by which it grants a right or privilege to any person, firm or corporation under this Lease.

13.8 Actions of Lessee. The activities or actions of Lessee under this Section 13 shall include the activities or actions of Lessee's officers, directors, employees, agents, contractors, invitees and successors.

13.9 Clean Water Act; NPDES Permits and SWPPPs. Without in any way limiting the foregoing, Lessee shall comply with all Environmental Laws regarding discharges to water and land, including, without limitation, obtaining and complying with an individual National Pollutant Discharge Elimination System ("NPDES") permit, or requesting coverage under and complying with any applicable multi-sector permit obtained by Pinal. If applicable, Lessee shall also prepare and comply with a site-specific Storm Water Pollution Prevention Plan ("SWPPP") or any revisions to an SWPPP, with respect to Lessee's operations or activities on the Premises. At Lessee's discretion, Lessee may chose to be added to Pinal's Storm Water Permit, at the time that Pinal obtains a permit.

13.10 Environmental Assessments.

13.10.1 If, during the Term of this Lease, any of Lessee's USTs are suspected of or known to be leaking, Lessee shall perform, or cause to be performed, a site characterization of the Premises using all appropriate sections of the LUST Site Characterization Manual dated January 15, 1999, or the most current edition, including tables 1 through 6, as applicable (a "Site Characterization").

13.10.2 If, during the Term of this Lease, Lessee determines that there is any condition in violation or threatened or suspected violation of Environmental Law or any other condition indicating a known or potential liability, including, but not limited to, a known or potential violation of any Environmental Law or a past, present, or material threat of a future release of a hazardous substance into the environment, Lessee shall immediately notify Pinal, in writing of such condition and shall perform, or cause to be performed, an environmental assessment of such condition, to the satisfaction of Pinal. Within thirty (30) days immediately preceding the expiration of this Lease or within thirty (30) days of any earlier termination of the Lease, Lessee shall:

Deliver to Pinal: (i) a Phase I environmental site assessment of the Premises and any other portions of the Airport utilized by Lessee under this Lease that conforms to the standards set forth in 42 USC § 9601(35)(B), as amended by Pub. L. 107-118 (Jan. 11, 2002), section 223(2), and as may be further amended, and any regulations thereunder; (ii) in the event that such Phase I environmental site assessment recommends any further action or study, then such further action or study as recommended by such Phase I environmental site assessment or as determined appropriate by Pinal; and (iii) an environmental compliance audit assessing the status of regulatory compliance of the Premises and Airport and all Lessee's operations and activities thereon; all prepared by a qualified engineer licensed by the State of Arizona; and

In the event Lessee installs upon the Premises any new USTs, perform or cause to be performed a Site Characterization of the Premises in the event there is evidence that there has been or may be a leak or Release of the new UST contents; and

If either the Site Characterization or the assessment described above in this Subsection 13.10 identifies any "recognized environmental condition" or any other condition indicating a known or potential liability, including, but not limited to, a known or potential violation of any Environmental Law or a past, present, or material threat of a future release of a hazardous substance or a petroleum product into the environment, Pinal reserves the right, at Pinal's sole discretion, to require Lessee to conduct, at Lessee's sole expense and with a scope of work subject to Pinal's approval, further reasonable investigations and reasonable remediation.

13.11 Protective Devices and Plans. If Lessee is required by Pinal (or other governmental authority) to estimate the possible constituents of sanitary sewer discharges in order that Pinal (or other governmental authority) may define certain discharge limitations for the Premises, Lessee shall complete and return an Industrial Wastewater Discharge Questionnaire (the "Questionnaire") to Pinal and promptly provide Pinal with updates to the Questionnaire as they arise. Also, if Pinal (or other governmental authority) so requires, Lessee shall install and maintain appropriate protective devices to prevent accidental discharge of any Hazardous Materials into domestic or industrial drains on the Premises, and for any other material for which a slug load discharge could pollute the Airport's storm water discharge or disrupt operations at the sewage treatment plant serving the Premises. Lessee shall at all times post a notice in a prominent place on the Premises advising employees what actions to take and whom to call in the event of said discharge, and shall ensure that all employees of Lessee are trained with regard to the spill protection plan hereinafter referenced. Lessee also shall provide Pinal with immediate notice of any spill.

13.12 Right to Enter Premises. Pinal's rights under this Lease specifically include the right of Pinal, the United States Government, the Environmental Protection Agency (the EPA), the Arizona Department of Environmental Quality (ADEQ) and the Arizona Department of Occupational Safety and Health (ADOSH) to enter the Premises upon reasonable notice to Lessee for purposes of: (i) inspecting Lessee's compliance with environmental, occupational safety and health laws and regulations, whether or not such party is responsible for enforcing such laws; (ii) conducting environmental investigation or remediation, including, without limitation, performing tests and surveys, drillings, test-pitting, borings, compiling data and/or records, and other activities related to environmental investigation; and (iii) carrying out remedial or removal actions as required or necessary under applicable laws, including, without limitation, installing monitoring wells, pumping wells and/or treatment facilities. Pinal shall give Lessee twenty-four (24) hours prior notice of its intention to enter the Premises unless it determines the entry is required for safety, environmental, operations, or security purposes. Lessee shall have no claim against the United States, EPA, ADEQ, the Arizona ADOSH or Pinal, or any officer, agent, employee, or contractor thereof on account of any such entries.

13.13 United States Use and Remedial Action. Notwithstanding the foregoing, the Parties assume no liability or responsibility for environmental impacts and damage caused by the United States of America's use of the Airport, including the Premises, prior to 1982. However, based upon Lessee's operations under this Lease and during the Prior Occupancy Period, Lessee shall be responsible for establishing that the United States of America is solely responsible for demonstrating that any such environmental impacts or damage to the Airport or the Premises were caused by the United States of America and were not caused by Lessee. In the event that Lessee establishes that the United States of America was solely responsible for such environmental impacts or damage and the United States of America agrees, in writing, to accept full responsibility for remediating the condition, then Lessee shall have no obligation under this Lease to undertake any defense or environmental response, remediation, or cleanup relating to such use or release. In the event that Lessee is unable to establish that the United States of America was responsible for such environmental impacts or damage and/or the United States of America does not agree, in writing, to accept full responsibility for such condition, then Lessee shall undertake such defense or environmental response, remediation, or cleanup relating to such use or release. In any event, Pinal shall have no obligation to undertake any defense or environmental response, remediation, or cleanup relating to such use or release, unless Lessee establishes with clear and convincing evidence that Pinal was solely responsible for such environmental impacts or damage. For purposes of this Section 13.13, "defense" or "environmental response, remediation, or cleanup," include liability and responsibility for the costs of damage, penalties, legal and investigative services relating to such use or release.

13.14 Cleanup Requirements. Lessee agrees that Pinal assumes no liability to Lessee should Hazardous Materials cleanup or related requirements, whether imposed by law, regulatory agencies, the United States of America or Department of Defense interfere with Lessee's use of the Premises. Lessee shall have no claim against Pinal or the United States of America or any officer, agent, employee or contractor thereof on account of any such interference whether due to entry, performance of remedial or removal investigations, or exercise of any right with respect to the Federal Facilities Agreement (FFA) or the Installation Restoration Program (IRP) or under this Lease or otherwise. Lessee agrees to comply with the provisions of any health or safety plan in effect under the IRP or any hazardous substance remediation or response agreement with environmental regulatory authorities during the course of any of the above described response or remedial actions. Any inspection, survey, investigation, or other response or remedial action shall, to the extent practicable, be coordinated with representatives designated by Lessee. Lessee shall have no claim on account of such entries against the United States of America or any officer, agent, employee, contractor, or subcontractor thereof.

13.15 Spill Protection Plan. In the event Lessee undertakes any type of manufacturing, maintenance or other activities on the Premises involving the use or generation of any Hazardous Materials regulated by Hazardous Materials Laws, Lessee shall have an approved plan for responding to Hazardous Materials, fuel, and other chemical spills prior to commencement of operations on the Premises. Such plan shall comply with all applicable requirements and shall be updated from time to time as may be required to comply with changes in site conditions or applicable requirements, and shall be approved by all agencies having regulatory jurisdiction over such plan. Such plan shall be independent of Pinal's spill prevention and response plans, if any. Lessee shall not rely on use of Pinal or Pinal personnel or equipment in execution of its plan. Lessee shall file a copy of the approved plan and approved amendments thereto with Pinal's Environmental Coordinator (or other applicable governmental authority). Notwithstanding the foregoing, should Pinal (or other applicable governmental authority) provide any personnel or equipment, whether for initial fire response and/or spill containment, on the request of Lessee, or because Lessee was not, in the opinion of Pinal (or other applicable governmental authority), conducting fire fighting, containment or timely cleanup actions, Lessee agrees to reimburse Pinal (or other applicable governmental authority) for its actual costs in accordance with all applicable laws and regulations.

13.16 Wells. Lessee shall not install any new drinking water or other wells in any location on the Premises without the prior written approval of Pinal.

13.17 Construction Activities and Surface Disturbances.

During construction of Lessee's improvements on the Premises, Lessee agrees that in the event any hazardous substances, pollutants, contaminants, petroleum or petroleum derivatives are found, Lessee shall

promptly notify Pinal of such discovery and shall immediately cease said construction pending investigation and remedial action, if necessary, by Pinal or the appropriate regulatory agency. After construction of Lessee's improvements on the Premises, Lessee shall not conduct any subsurface excavation, digging, drilling or other disturbance of the surface without the prior written approval of Pinal, which shall not be unreasonably withheld.

17.18 Paragraph 14.1 of the Lease is amended as follows:

14.1 Tenant is not obligated to construct any additional buildings or improvements on the Airpark or any portion thereof while Airport maintenance is a Tenant obligation.

17.19 Paragraph 14.2.4 of the Lease is amended as follows:

Notwithstanding anything herein contained, the Parties hereto agree that the approval of Pinal is required prior to the construction of any buildings, improvements or other structures on parcel 1, provided that each of the following conditions is met: (1) The Construction is designed to be used for the purpose set forth in Paragraph 3 hereinabove; (2) The Construction is consistent with the Airpark Master Plan; (3) Tenant has obtained appropriate building permits, licenses, and any other permits required from any governmental authority; (4) Tenant notified Pinal in writing 30 days prior to any new construction or structural modification of any existing structures; and (5) Pinal shall not bear any cost associated with the buildings or improvements to be constructed.

17.20 The entire paragraph 14.3 of the Lease, including its subparts, is deleted.

17.21 The following paragraphs of the Lease are deleted: 14.4, 14.5, 14.6, and 14.7.

17.21 The entire paragraph 15 of the Lease, including its subparts, is deleted. [The foregoing sentence shall not limit the amendment to Section 15 of the Lease that is contained in Section 13 of this Fourth Amendment. The foregoing sentence merely serves as confirmation that Paragraph 15 of the Lease, as in effect immediately prior to this Fourth Amendment, has been deleted.]

17.22 The entire paragraph 18 of the Lease is deleted.

17.23 The entire paragraph 19 of the Lease is deleted and is replaced with the following:

Tenant shall have no obligation to pay any real property taxes for the Airport or any of the Premises. All real property taxes, to the extent any such taxes are assessed, shall be the sole responsibility of Pinal with no pass through to Tenant.

17.24 The entire paragraph 20 of the Lease is deleted.

17.25 The entire paragraph 21 of the Lease is deleted. [The foregoing sentence shall not limit the amendment to Section 21 of the Lease that is contained in Section 6 of this Fourth Amendment. The foregoing sentence merely serves as confirmation that Paragraph 21 of the original Lease, as in effect immediately prior to this Fourth Amendment, has been deleted.]

18. Except to the extent modified by this Fourth Amendment, all terms of the Lease shall continue in full force and effect.

19. The Lease as amended by this Fourth Amendment and the Forbearance Agreement represents the entire agreement of the parties.

20. This Agreement shall not become effective until signed by both parties and approved by the Pinal County Board of Supervisors; provided, however, that once so signed and approved, this Agreement shall be deemed to be effective as of the Effective Date set forth above.

[Signatures appear on following page.]

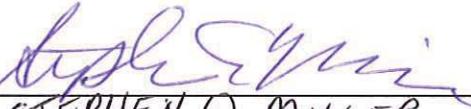


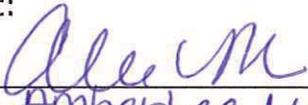
This Fourth Amendment is entered into on the 18 day of July, 2013.

MARANA AEROSPACE SOLUTIONS

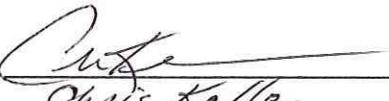
By: 
Crystal Bella
Its: VP FINANCE

PINAL COUNTY, a political subdivision of the State of Arizona,
Acting by and through its Board of Supervisors

By: 
STEPHEN Q MILLER
Its: Chairman

Attest:
By: 
AmberLee Mudd
Its Clerk of the Board, Deputy

APPROVED AS TO FORM
LANDO VOYLES
COUNTY ATTORNEY

By: 
Chris Keller
Deputy County Attorney



MS



Exhibit C

Active Work Area

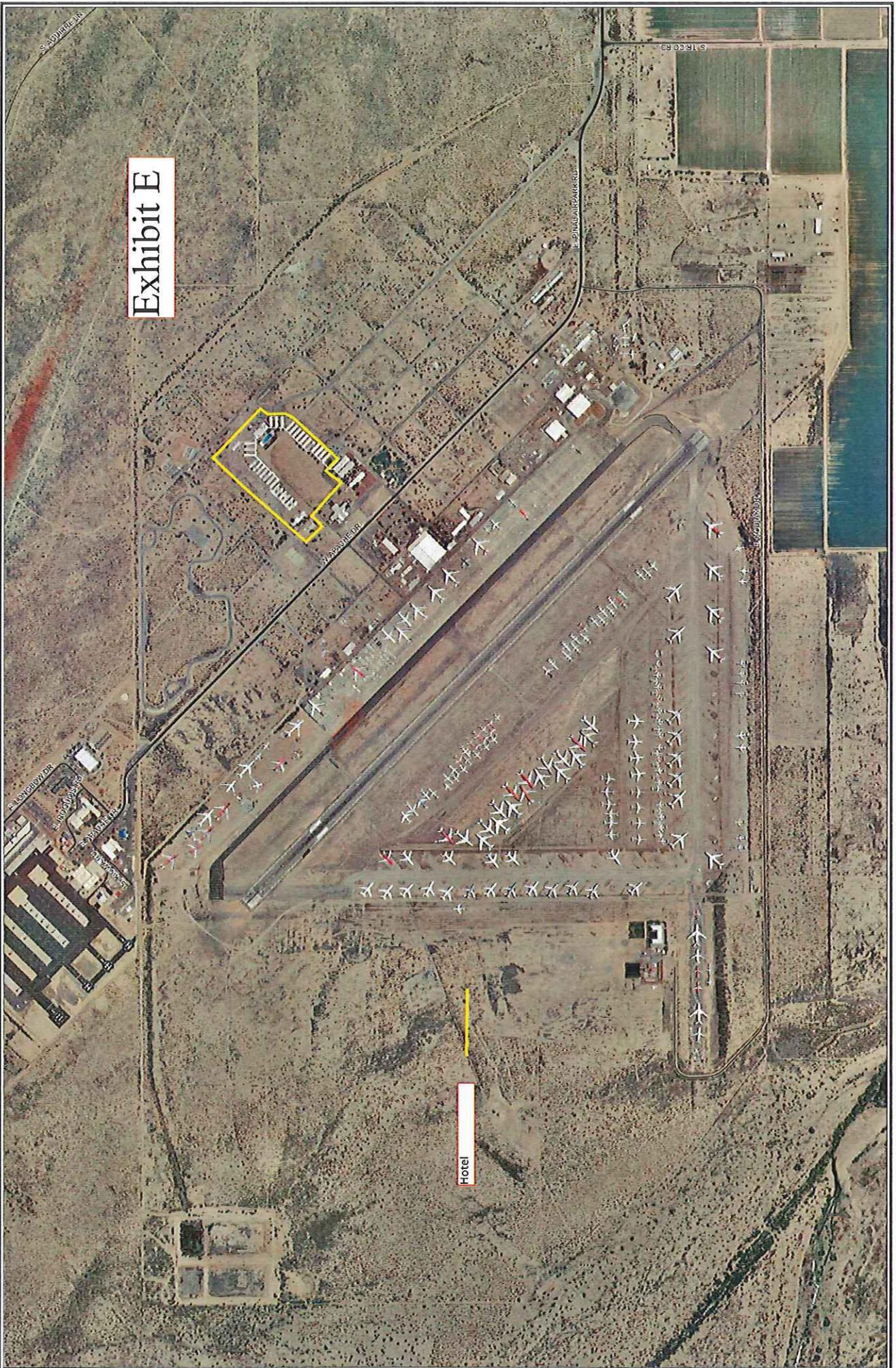
Exhibit D



South Runway Area

82

Exhibit E



82

Exhibit F



Test Track

Shooting Range

SR

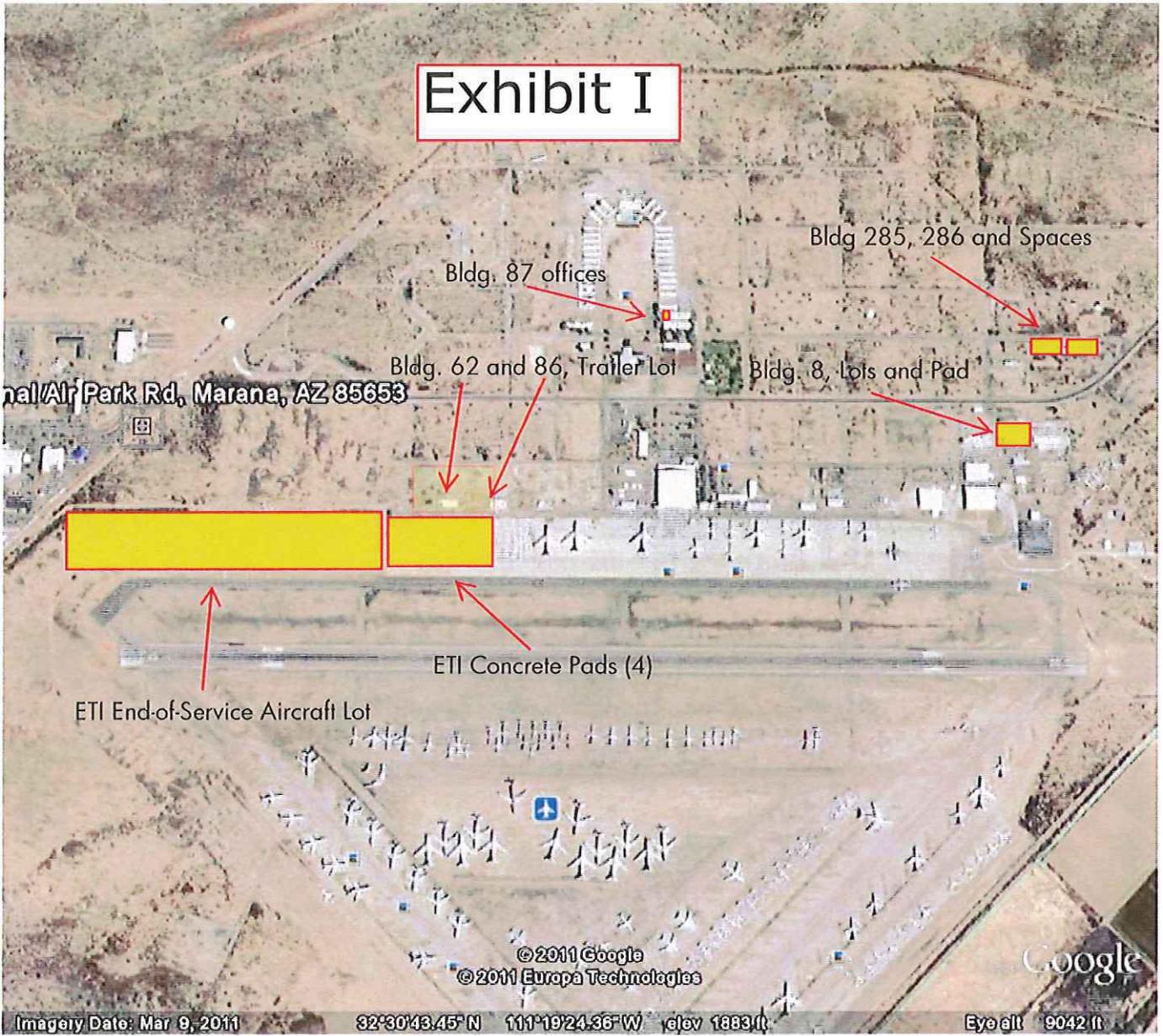
Exhibit H



Albatross Aircraft
Temporary
Parking Area

Handwritten signature or initials.

Exhibit I



8/1

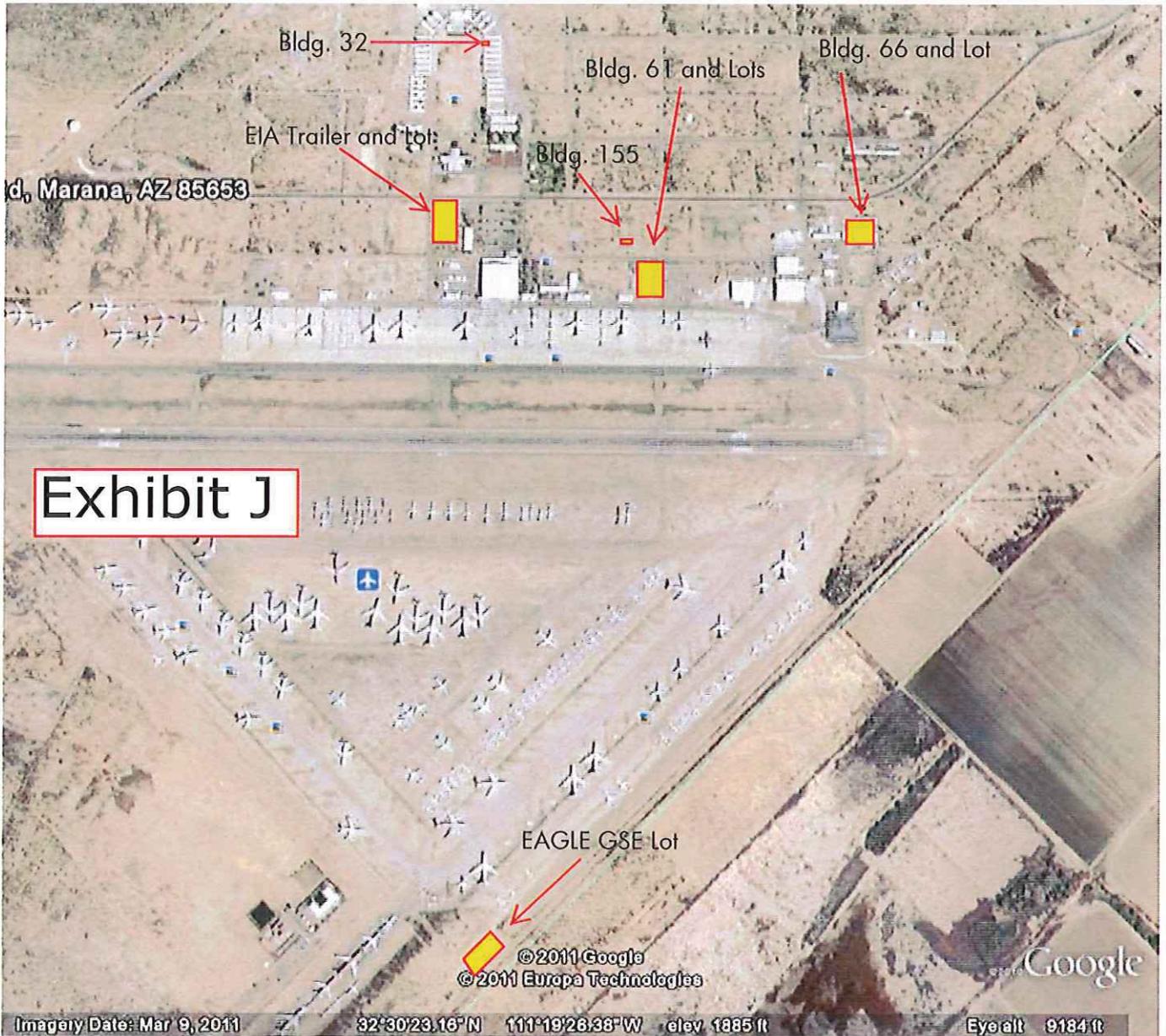


Exhibit J

A handwritten signature or set of initials in the bottom left corner of the page.

Department of Defense Declaration of Taking





OFFICIAL RECORDS OF
PINAL COUNTY RECORDER
KATHLEEN C. FELIX

DATE: 11/27/96 TIME: 1108
FEE : 12.50
PAGES: 16
FEE NO: 1996-039480

1996-039480

JANET NAPOLITANO
United States Attorney
District of Arizona

SUE A. KLEIN
Assistant United States Attorney
Arizona State Bar No. 11253
4000 United States Courthouse
230 North First Avenue
Phoenix, Arizona 85025
Telephone: (602) 514-7500

FILED _____ LODGED _____
RECEIVED _____ COPY _____
NOV 14 1996
CLERK U.S. DISTRICT COURT
DISTRICT OF ARIZONA
BY _____ DEPUTY

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF ARIZONA

UNITED STATES OF AMERICA,

Plaintiff,

vs.

502.67 ACRES OF LAND, more or
less, situated in the County of
Pinal, State of Arizona, and
COUNTY OF PINAL, ET AL,

Defendants

DECLARATION
OF
TAKING

CIV 96-2544 PHXROS
CIVIL NO. _____

TO THE HONORABLE,
THE UNITED STATES DISTRICT COURT:

I, the undersigned, Togo P. West, Jr.,

Secretary of the Army, do hereby declare that:

1. The land hereinafter described is taken under and in
accordance with the authority set forth in Schedule "A" annexed
hereto and made a part hereof.

2. The public uses for which said land is taken are also
set forth in said Schedule "A".

3. A general description of the tracts of land being
taken, the estimated just compensation therefor, and the estates

1996-039480

taken for said public uses are set forth in Schedule "B" annexed hereto and made a part hereof.

4. A plan showing the land taken is annexed hereto as Schedule "C" and made a part hereof.

5. The gross sum estimated by me as just compensation for the said land, which aggregates 502.67 acres, more or less, with all buildings and improvements thereon and all appurtenances thereto and including any and all interests hereby taken in said land is SIX HUNDRED AND SIX THOUSAND AND NO/100 DOLLARS (\$606,000.00), which sum I cause to be deposited herewithin the registry of the court for the use and benefit of the persons entitled thereto. I am of the the opinion that the ultimate award for said land probably will be within any limits prescribed by law on the price to be paid therefor.

IN WITNESS WHEREOF, the United States of America, by its Secretary of the Army, thereunto authorized, has caused this declaration to be signed in its name by said Togo D. West, Jr., Secretary of the Army, this 25TH day of SEPTEMBER, A.D., 1996, in the City of Washington, District of Columbia.



Secretary of the Army

0717
I hereby attest and certify on 11-14-96
that the foregoing document is a full, true and correct
copy of the original on file in my office and in my cus-
tody.
CLERK, U.S. DISTRICT COURT
DISTRICT OF ARIZONA
By Dolly A. Butler Deputy

SCHEDULE "A"

AUTHORITY FOR THE TAKING:

The authority for the taking of the land is under and in accordance with the Act of Congress approved February 26, 1931 (46 Stat. 1421, 40 U.S.C. 258a), and acts supplementary thereto and amendatory thereof, and under further authority of the act of Congress approved August 1, 1888 (25 Stat. 357, 40 U.S.C. 257); Section 2663 of Title 10, United States Code, which authorizes the acquisition of land for military purposes; the Act of Congress approved November 5, 1990 (Division B of Public Law 101-510; 104 Stat. 1776), which act authorizes acquisition of the land, and the FY-92 Conference Report 162-311, Section 2410, dated 13 November 1991, National Defense Authorization Act for FY 92-93.

PUBLIC USES:

The public uses for which said land is taken are as follows: The said land is necessary to provide for the establishment of facilities for the use of the Department of the Army and for other military uses incident thereto. The land has been for acquisition by the United States for use in connection with USSOCOM Parachute Training and Testing Facility, Pinal County, State of Arizona, and for such other uses as may be authorized by Congress or by Executive Order.

SCHEDULE "A"

DESCRIPTIONS:

TRACT NO. 101

A PORTION OF SECTION 32, TOWNSHIP 10 SOUTH, RANGE 10 EAST, GILA AND SALT RIVER MERIDIAN, PINAL COUNTY, ARIZONA, DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 32;

THENCE S 89°57'37" W ALONG THE SOUTH LINE OF SAID SECTION 32, A DISTANCE OF 1088.01 FEET TO THE POINT OF BEGINNING;

THENCE CONTINUING S 89°57'37" ALONG SAID SOUTH LINE, A DISTANCE OF 4,228.97 FEET TO THE SOUTHWEST CORNER OF SAID SECTION 32;

THENCE N 00°07'13" E ALONG THE WEST LINE OF SAID SECTION 32, A DISTANCE OF 5,173.31 FEET;

THENCE N 89°59'17" E ALONG A LINE PARALLEL WITH AND 110.00 FEET SOUTH OF THE NORTH LINE OF SAID SECTION 32, A DISTANCE OF 1,000.00 FEET;

THENCE N 00°07'13" E, A DISTANCE OF 110.00 FEET TO A POINT ON THE NORTH LINE OF SAID SECTION 32;

THENCE N 89°59'17" E ALONG SAID NORTH LINE, A DISTANCE OF 2,945.25 FEET;

THENCE S 00°02'44" E ALONG A LINE PARALLEL WITH AND 1,356.44 FEET WEST OF THE EAST LINE OF SAID SECTION 32, A DISTANCE OF 3,791.38 FEET;

THENCE N 89°57'37" E, A DISTANCE OF 35.00 FEET;

THENCE S 00°02'44" E ALONG A LINE PARALLEL WITH AND 1,321.44 FEET WEST OF THE EAST LINE OF SAID SECTION 32, A DISTANCE OF 670.00 FEET;

THENCE S 89°57'37" W, A DISTANCE OF 430.41 FEET;

THENCE N 00°02'23" W, A DISTANCE OF 147.00 FEET;

THENCE S 89°57'37" W, A DISTANCE OF 860.98 FEET;

THENCE S 00°02'23" E, A DISTANCE OF 431.00 FEET;

THENCE N 89°57'37" E, A DISTANCE OF 1,524.90 FEET;

THENCE S 00°02'23" E, A DISTANCE OF 536.00 FEET TO THE POINT OF BEGINNING;

CONTAINING 469.57 ACRES OR 20,454,481 SQUARE FEET MORE OR LESS.

SCHEDULE "B"

1996-039480

SCHEDULE "B"

TRACT NO. 101E1

A PORTION OF SECTIONS 32 AND 33, TOWNSHIP 10 SOUTH, RANGE 10 EAST, GILA AND SALT RIVER MERIDIAN, PINAL COUNTY, ARIZONA, FOR ACCESS PURPOSES DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 32;

THENCE N 00°02'44" W ALONG THE LINE COMMON TO SAID SECTIONS 32 AND 33, A DISTANCE OF 675.81 FEET TO THE POINT OF BEGINNING;

THENCE S 89°57'37" W ALONG A LINE PARALLEL WITH THE SOUTH LINE OF SAID SECTION 32, A DISTANCE OF 1,596.98 FEET;

THENCE N 00°02'44" W, A DISTANCE OF 144.19 FEET;

THENCE N 89°57'37" E, A DISTANCE OF 1,596.98 FEET TO A POINT ON THE WEST LINE OF SAID SECTION 33;

THENCE N 89°59'16" E ALONG A LINE PARALLEL WITH THE SOUTH LINE OF SAID SECTION 33, A DISTANCE OF 3,390.32 FEET TO ITS INTERSECTION WITH THE SOUTHWESTERLY EDGE OF THE PINAL AIR PARK RUNWAY AS IT PRESENTLY EXISTS;

THENCE S 44°55'13" E ALONG SAID SOUTHWESTERLY EDGE, A DISTANCE OF 203.60 FEET;

THENCE S 89°59'16" W ALONG A LINE PARALLEL WITH THE SOUTH LINE OF SAID SECTION 33, A DISTANCE OF 3,533.97 FEET TO THE POINT OF BEGINNING;

CONTAINING 16.75 ACRES OR 729,500 SQUARE FEET MORE OR LESS.

SCHEDULE "B"

SCHEDULE "B"TRACT NO. 101E2

A PORTION OF THE SOUTHEAST QUARTER OF SECTION 32, TOWNSHIP 10 SOUTH, RANGE 10 EAST, GILA AND SALT RIVER MERIDIAN, PINAL COUNTY, ARIZONA, FOR ACCESS PURPOSES, DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 32;

THENCE S 89°57'37" W ALONG THE SOUTH LINE OF SAID SECTION 32, A DISTANCE OF 1,088.01 FEET TO ITS INTERSECTION WITH THE EASTERNMOST PROPERTY LINE OF THE PARACHUTE TRAINING FACILITY;

THENCE N 00°02'23" W ALONG SAID EASTERN MOST PROPERTY LINE, A DISTANCE OF 48.55 FEET TO ITS INTERSECTION WITH THE NORTH EDGE OF AN EXISTING PAVED ROAD, SAID INTERSECTION BEING THE POINT OF BEGINNING;

THENCE N 00°02'23" W, A DISTANCE OF 627.26 FEET;

THENCE N 89°57'37" E, A DISTANCE OF 40.00 FEET;

THENCE S 00°02'23" E ALONG A LINE PARALLEL WITH SAID EASTERN MOST PROPERTY LINE, A DISTANCE OF 627.26 FEET TO ITS INTERSECTION WITH THE NORTH EDGE OF SAID EXISTING PAVED ROAD;

THENCE S 89°57'37" W ALONG SAID NORTH EDGE, A DISTANCE OF 40.00 FEET TO THE POINT OF BEGINNING;

CONTAINING 0.58 ACRES OR 25,090 SQUARE FEET MORE OR LESS.

SCHEDULE "B"

SCHEDULE "B"TRACT NO. 101E3

A 20 FOOT WIDE UTILITY EASEMENT OVER A PORTION OF THE SOUTHEAST QUARTER OF SECTION 32, TOWNSHIP 10 SOUTH, RANGE 10 EAST, GILA AND SALT RIVER MERIDIAN, PINAL COUNTY, ARIZONA, THE CENTERLINE OF WHICH IS DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 32;

THENCE S 89°57'37" W, ALONG THE SOUTHLINE OF SAID SECTION 32, A DISTANCE OF 1,088.01 FEET;

THENCE N 00°02'23" W, A DISTANCE OF 536.00 FEET;

THENCE S 89°57'37" W, A DISTANCE OF 114.97 FEET TO A POINT ON A SOUTHERN EAST/WEST PROPERTY LINE OF THE PARACHUTE TRAINING FACILITY, SAID POINT BEING THE POINT OF BEGINNING;

THENCE N 55°09'29" W, A DISTANCE OF 61.40 FEET;

THENCE S 88°57'08" W, A DISTANCE OF 321.92 FEET;

THENCE N 05°40'49" W, A DISTANCE OF 113.70 FEET;

THENCE N 00°14'10" E, A DISTANCE OF 141.40 FEET TO A POINT ON A SECOND SOUTHERN EAST/WEST PROPERTY LINE OF SAID TRAINING FACILITY, SAID POINT BEING THE POINT OF TERMINATION.

THE SIDE LINES OF SAID 20 FOOT UTILITY EASEMENT TO BE EXTENDED OR SHORTENED TO MEET AT ANGLE POINTS AND TO TERMINATE ON SAID SOUTHERN PROPERTY LINES.

CONTAINING 0.29 ACRES OF 12,768 SQUARE FEET MORE OR LESS.

SCHEDULE "B"

1250-039400
SCHEDULE "B"

TRACT NO. 101E4

A 20 FOOT WIDE UTILITY EASEMENT OVER A PORTION OF THE EAST HALF OF SECTION 32, TOWNSHIP 10 SOUTH, RANGE 10 EAST, GILA AND SALT RIVER MERIDIAN, PINAL COUNTY, ARIZONA, THE CENTERLINE OF WHICH IS DESCRIBED AS FOLLOWS:

COMMENCING AT THE S. THEAST CORNER OF SAID SECTION 32;

THENCE N 00°02'44" W ALONG THE EAST LINE OF SAID SECTION 32, A DISTANCE OF 820.00 FEET;

THENCE S 89°57'37" W ALONG A LINE PARALLEL WITH THE SOUTH LINE OF SAID SECTION 32, A DISTANCE OF 1,321.44 FEET TO ITS INTERSECTION WITH THE EASTERN PROPERTY LINE OF THE PARACHUTE TRAINING FACILITY;

THENCE N 00°02'44" ALONG SAID EASTERN PROPERTY LINE, A DISTANCE OF 289.28 FEET TO THE POINT OF BEGINNING;

THENCE N 88°50'29" E, A DISTANCE OF 117.38 FEET;

THENCE N 00°08'29" E, A DISTANCE OF 889.23 FEET;

THENCE N 00°00'25" W, A DISTANCE OF 1,699.24 FEET;

THENCE N 00°01'35" E, A DISTANCE OF 728.24 FEET;

THENCE N 45°00'57" W, A DISTANCE OF 222.60 FEET TO A POINT ON THE SAID EASTERN PROPERTY LINE, SAID POINT BEING THE POINT OF TERMINATION.

THE SIDELINES OF SAID 20 FOOT UTILITY EASEMENT TO BE EXTENDED OR SHORTENED TO MEET AT ANGLE POINTS AND TO TERMINATE ON THE SAID EASTERN PROPERTY LINE.

CONTAINING 1.68 ACRES OR 73,134 SQUARE FEET MORE OR LESS.

SCHEDULE "B"

1996-039480

SCHEDULE "B"

TRACT NO. 101E5

A 20 FOOT WIDE UTILITY EASEMENT OVER A PORTION OF THE SOUTH HALF OF THE SOUTHEAST QUARTER OF SECTION 29 AND THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 28, TOWNSHIP 10 SOUTH, RANGE 10 EAST, GILA AND SALT RIVER MERIDIAN, PINAL COUNTY, ARIZONA, THE CENTERLINE OF WHICH IS DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 29;

THENCE S 89°59'17" W ALONG THE SOUTH LINE OF SAID SECTION 29, A DISTANCE OF 1,728.18 FEET TO THE POINT OF BEGINNING;

THENCE N 45°14'27" E, A DISTANCE OF 1,837.03 FEET;

THENCE N 89°59'42" E, A DISTANCE OF 422.73 FEET TO A POINT ON THE WEST LINE OF SAID SECTION 28;

THENCE N 89°59'51" E, A DISTANCE OF 353.00 FEET;

THENCE S 45°00'09" E, A DISTANCE OF 47.00 FEET TO THE POINT OF TERMINATION;

THE SIDELINES OF SAID 20 FOOT UTILITY EASEMENT TO BE EXTENDED OR SHORTENED TO MEET AT ANGLE POINTS, TO TERMINATE ON SAID SOUTH LINE OF SAID SECTION 29 AND TO TERMINATE AT RIGHT ANGLES TO THE POINT OF TERMINATION;

CONTAINING 1.72 ACRES OR 53,195 SQUARE FEET MORE OR LESS.

SCHEDULE "B"

1996-039480

SCHEDULE "B"

TRACT NO. 101E6

A 40 FOOT WIDE SEWER EASEMENT OVER A PORTION OF THE SOUTH HALF OF THE SOUTH HALF OF SECTION 29, TOWNSHIP 10 SOUTH, RANGE 10 EAST, GILA AND SALT RIVER MERIDIAN, PINAL COUNTY, ARIZONA, THE CENTERLINE OF WHICH IS DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 29;

THENCE S 89°59'17" W ALONG THE SOUTH LINE OF SAID SECTION 29, A DISTANCE OF 1,856.44 FEET TO THE POINT OF BEGINNING;

THENCE N 00°02'44" W ALONG A LINE PARALLEL WITH THE EAST LINE OF SAID SECTION 29, A DISTANCE OF 1,270.91 FEET TO A POINT ON THE CENTERLINE OF AN EXISTING SEWER LINE, SAID POINT BEING THE POINT OF TERMINATION.

THE SIDELINES OF SAID 40 FOOT EASEMENT TO BE EXTENDED OR SHORTENED TO TERMINATE ON SAID SOUTH LINE OF SAID SECTION 29 AND SAID EXISTING SEWER CENTERLINE.

CONTAINING 1.17 ACRES OR 50,836 SQUARE FEET MORE OR LESS.

SCHEDULE "B"

1996-039480

SCHEDULE "B"

TRACT NO. 101E7

BEGINNING AT A POINT S 89°57'37" W 1088.01 FEET AND N 0°02'23" W
ROUGHLY 430 FEET OF THE SE CORNER OF SECTION 32 T10S R10E AT THE
INTERSECTION OF THE AFORESAID LINE RUNNING N 0°02'23" W WITH AN
EXISTING BURIED COMMUNICATION LINE; THENCE, ALONG SAID
COMMUNICATION LINE IN A GENERALLY EASTERLY DIRECTION
THROUGH THE SOUTH 1/8TH OF SECTIONS 32, 33, AND 34
APPROXIMATELY A MILE AND A HALF; THENCE, CONTINUING ALONG
SAID COMMUNICATION LINE IN A GENERAL NORTHEASTERLY AND
NORTHWESTERLY DIRECTION ABOUT A HALF MILE THROUGH SECTION
34 TO THE POINT OF ENDING AT THE PHONE CABINET FACILITY.
CONTAINING 3.64 ACRES MORE OR LESS.

SCHEDULE "B"

SCHEDULE "B"TRACT NO. 101E8

BEGINNING AT A POINT S 89°57'37" W 1088.01 FEET AND N 0°02'23" W
ROUGHLY 50 FEET OF THE SE CORNER OF SECTION 32 T10S R10E AT THE
INTERSECTION OF THE AFORESAID LINE RUNNING N 0°02'23" W WITH AN
EXISTING ROAD; THENCE, ALONG SAID ROAD IN A GENERALLY
EASTERLY DIRECTION THROUGH THE SOUTH 1/16TH OF SECTIONS 32, 33,
AND 34 AND ROUGHLY PARALLEL TO THE SOUTH LINES THEREOF
APPROXIMATELY A MILE AND A HALF; THENCE CONTINUING ALONG
SAID ROAD IN A GENERALLY, NORTHEASTERLY DIRECTION ABOUT A
HALF A MILE TO ITS INTERSECTION WITH THE MARANA AIR PARK ROAD.
CONTAINING 7.27 ACRES MORE OR LESS.

SCHEDULE "B"

SCHEDULE "B"

NAMES AND ADDRESSES OF PURPORTED OWNERS:

COUNTY OF PINAL

c/o County Manager

P.O. Box 827, 31 North Pinal Avenue

Florence, Arizona 85232

COUNTY OF PINAL

c/o County Assessor

P.O. Box 827, 31 North Pinal Avenue

Florence, Arizona 85232

EVERGREEN AIR CENTER, INC.

c/o Wally Flannery

Pinal Air Park

Marana, Arizona 85653

BANK ONE OF ARIZONA

P.O. Box 311, K-240

Tucson, Arizona 85702

UNITED STATES NATIONAL BANK OF OREGON

Commercial Banking Division

P.O. Box 4412

Portland, Oregon 97208

ESTIMATED COMPENSATION DEPOSITED IN THE REGISTRY OF THE COURT FOR
THE ESTATES TAKEN IN TRACT NOS. 101, 101E1 THRU 101E8: \$606,000.00

SCHEDULE "B"

SCHEDULE "B"

ESTATES TAKEN:

TRACT NO. 101
FEE

The fee simple title to the land described in Schedule B, Tract No. 101, subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines.

TRACT NOS. 101E1 and 101E2
ACCESS EASEMENT

A perpetual and assignable easement and right-of-way in, on, over and across the land described in Schedule B, Tract Nos. 101E1 and 101E2, for the location, construction, operation, maintenance, alteration and replacement of the taxiway located in the Aircraft Storage Area and appurtenances thereto; together with the right to trim, cut, fell and remove therefrom all trees, underbrush, obstructions and other vegetation, structures, or obstacles within the limits of the right-of-way; subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines.

TRACT NOS. 101E3, 101E4 101E5, and 101E7
UTILITY EASEMENT

A perpetual and assignable easement and right-of-way in, on, over and across the land described in Schedule B, Tract Nos. 101E3, 101E4, 101E5, and 101E7 for the location, construction, operation, maintenance, alteration, repair and patrol of underground electric and communications lines; together with the right to trim, cut, fell and remove therefrom all trees, underbrush, obstructions and other vegetation, structures, or obstacles within the limits of the right-of-way; reserving, however, to the landowners, their heirs and assigns, all such rights and privileges as may be used without interfering with or abridging the rights and easement hereby acquired; subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines.

TRACT NO. 101E6
SEWAGE EASEMENT

A perpetual and assignable easement and right-of-way in, on, over and across the land described in Schedule B, Tract No. 101E6, for the location, construction, operation, maintenance, alteration, repair and patrol of underground sewage lines, together with the right to trim, cut, fell and remove therefrom all trees, underbrush, obstructions and other vegetation,

SCHEDULE "B"

SCHEDULE "B"

structures, or obstacles within the limits of the right-of-way; reserving, however, to the landowners, their heirs and assigns, all such rights and privileges as may be used without interfering with or abridging the rights and easement hereby acquired; subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines.

TRACT NO. 101E8
ROAD EASEMENT

A perpetual and assignable easement and right-of-way in, on, over and across the land described in Schedule B, Tract No. 101E8, for the location, construction, operation, maintenance, alteration and replacement of a road and appurtenances thereto; together with the right to trim, cut, fell and remove therefrom all trees, underbrush, obstructions and other vegetation, structures, or obstacles within the limits of the right-of-way; subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines.

SCHEDULE "B"

Schedule "C"

084680-9661

ZONE A

SUBJECT

101

101E5

101E6

101E2

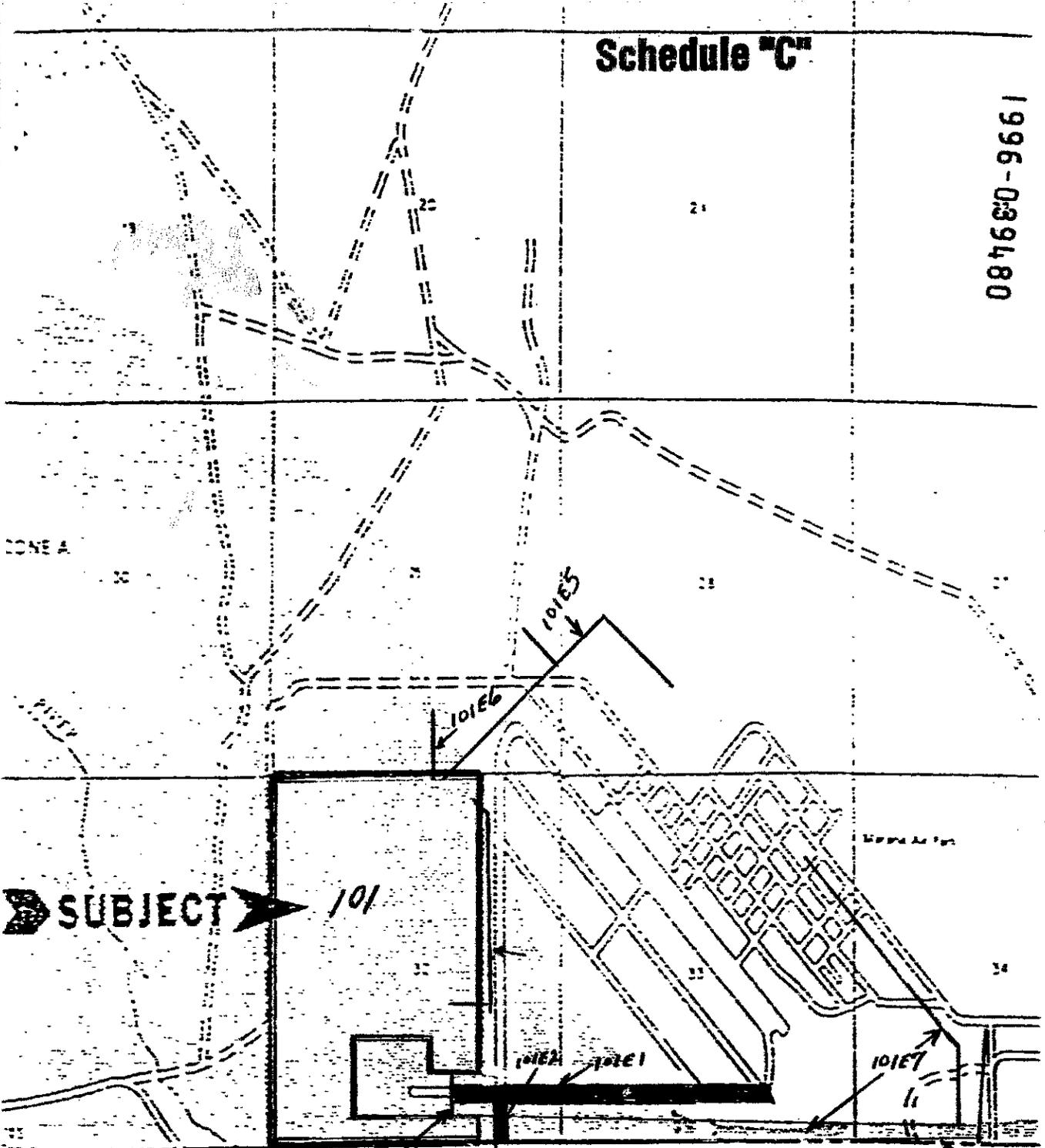
101E1

101E7

101E3

101E8

Schedule "C"



Inventory of Airport Buildings and Facilities



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BUILDING AND STRUCTURE INVENTORY

Code	Use	Year Built	Composition	Stories	Square Feet	Condition*
N/A	County Building	2013	Steel perimeter frame with wood construction	1	1,440	Excellent
001	Office	1970	Wood with asphalt shingles	1	352	Average
002A	Storage	1980	Wood frames, metal sidings	1	571	Average
002B	Equipment Storage	1980	Pre-engineered Steel	1	894	Average
006	Shop	1995	Pre-engineered Steel	1	8,000	Average
007	Warehouse	2005	Pre-engineered Steel	1	5,681	Good
008	Warehouse	1970	Pre-engineered Steel	1	6,000	Average
009	Maintenance Hangar	1988	Pre-engineered Steel	1	86,759	Average
010	Office	1995	Wood (Portable Office)	1	11,456	Average
011	Office	2005	Wood (Portable Office)	1	2,160	Average
012	Office	2005	Wood (Portable Office)	1	2,160	Average
013	Office	2008	Wood (Portable Office)	1	1,839	Average
015	Control Tower	1945	Pre-engineered Steel	1	196	Average
017	Storage	1950	Concrete Block	1	5,412	Fair
018	Office	1950	Concrete Block	1	15,546	Average
019	Office	1950	Stucco on Masonry	1	7,160	Average
020	Office	1950	Concrete Block	1	6,800	Average
021	Office	1950	Concrete Block	1	2,280	Average
023	Motel	1950	Concrete Block	1	2,290	Average
024	Motel	1950	Concrete Block	1	2,290	Average
025	Motel	1950	Concrete Block	1	2,290	Average
026	Classroom	1950	Concrete Block	1	2,290	Average
027	Storage	1950	Concrete Block	1	2,290	Average
028	Classroom	1950	Concrete Block	1	2,290	Average
029	Classroom	1950	Concrete Block	1	2,290	Average
030	Storage	1950	Concrete Block	1	2,290	Average
031	Storage	1950	Concrete Block	1	2,290	Average
032	Storage	1950	Concrete Block	1	2,290	Average
033	Apartments	1950	Concrete Block	1	2,290	Average
034	Apartments	1950	Concrete Block	1	2,290	Average
035	Apartments	1950	Concrete Block	1	2,290	Average
036	Apartments	1950	Concrete Block	1	2,290	Average

Building 001 – Office



Building 018 – Office



037	Dormitory (13 rooms, lounge)	1950	Wood Siding, Concrete Block	1	2,290	Average
038	Dormitory (16 rooms)	1950	Wood Siding, Concrete Block	1	2,290	Average
039	Dormitory (13 rooms, lounge)	1950	Wood Siding, Concrete Block	1	2,290	Average
040	Dormitory (16 rooms)	1950	Wood Siding, Concrete Block	1	2,290	Average
041	Gameroom/Laundry	1950	Concrete Block	1	2,290	Average
042	Dormitory (16 rooms)	1950	Wood Siding, Concrete Block	1	2,290	Average
043	Dormitory (13 rooms, lounge)	1950	Wood Siding, Concrete Block	1	2,290	Average
044	Dormitory (16 rooms)	1950	Wood Siding, Concrete Block	1	2,290	Average
045	Dormitory (13 rooms, lounge)	1950	Wood Siding, Concrete Block	1	2,290	Average
046	Dormitory (16 rooms)	1950	Wood Siding, Concrete Block	1	2,290	Average
047	Residence (3 bedrooms)	1950	Concrete Block, Brick on Studs	1	2,290	Average
048	Residence (4 bedrooms)	1950	Wood Siding, Stucco on Masonry	1	2,650	Average
049	Residence (3 bedrooms)	1950	Concrete Block, Brick on Studs	1	2,290	Average
050	Residence (4 bedrooms)	1950	Wood Siding, Stucco on Masonry	1	2,650	Average
051	Residence (3 bedrooms)	1950	Concrete Block, Brick on Studs	1	2,290	Average
052	Residence (4 bedrooms)	1950	Wood Siding, Stucco on Masonry	1	2,650	Average
053	Cafeteria	1950	Concrete Block	1	9,861	Average
054	Residence (5 bedrooms)	1960	Stucco on Masonry	1	1,224	Average
055	Residence (6 bedrooms)	1960	Stucco on Masonry	1	1,904	Average
058	Office/Shop	1950	Concrete Block	1	4,000	Average

Building 045 – Dormitory



Building 048 – Residence



059	Office	1950	Concrete Block	1	4,000	Average
060	Office/Storage	1950	Wood Siding, Concrete Block	1	4,820	Average
061	Storage/Warehouse	1990	Pre-engineered Steel	1	6,120	Average
062	Office/Garage	1960	Concrete Block	1	3,997	Average
063	Maintenance Hangar	1950	Pre-engineered Steel	2	31,200	Average
064	Carpentry/Wood Shop	1950	Metal Siding on Wood	1	20,582	Average
066	Maintenance Garage	1950	Wood	1	8,930	Average
068	Water Plant	1955	Wood, Asphalt Shingles	1	966	Average
074	Maintenance Hangar	1950	Pre-engineered Steel	1	24,829	Average
075	Wellhouse 1	1990	Metal siding on wood, metal roof	1	156	Average
076	Wellhouse 2	1970	Wood	1	180	Fair
077	Maintenance Garage	1960	Wood	1	2,544	Average
079	Paint Shop	1960	Metal siding on wood, metal roof	1	1,340	Average
082	Transformer Building	1950	Concrete Block	1	173	Average
084	Guardhouse (removed)	1960	Stucco on Masonry	1	158	Average
085	Shop	1950	Concrete Block	1	4,800	Average
086	Office/Storage	1950	Concrete Block	1	6,620	Average
087	Office	1950	Concrete Block	1	7,920	Average
088	Transformer Bldg	1950	Stucco on Masonry	1	131	Average
091	Storage/Pavilion	1950	Concrete Block	1	702	Fair
092	Pool Dressing/Shower	1950	Concrete Block	1	410	Average
093	Transformer Bldg	1950	Concrete Block	1	76	Average
096	Storage	1950	Poured Concrete	1	64	Average
097	Cooler Storage	1980	Wood	1	578	Fair
098	Maintenance Garage	1950	Pre-engineered Steel	1	4,800	Average
099	Office/Gym	1950	Concrete Block	1	2,592	Average
101	Storage	1950	Poured Concrete	1	80	Fair
155	Storage	1980	Wood	1	1,240	Fair
280	Maintenance	1950	Pre-engineered Steel	1	2,400	Average
285	Storage	1950	Pre-engineered Steel	1	8,550	Good
286	Storage	1950	Pre-engineered Steel	1	8,550	Good

Building 066 – Maintenance Garage



Building 085 – Shop



543	Storage	1950	Pre-engineered Steel	2	2,180	Average
544	Storage	2006	Pre-engineered Steel	1	1,680	Good
545	Office Fuel Farm	1980	Pre-engineered Steel	1	196	Average
546	Fuel Farm Shelter	2000	Pre-engineered Steel	1	9,181	Average
547	Restroom Building	1995	Wood	1	240	Average
548	Office	2002	Wood (Portable Office)	1	500	Average
549	Office	2005	Wood (Portable Office)	1	476	Average
550	Equipment Shelter	2000	Pre-engineered Steel	1	960	Average
551	Andco Process – Waste Treatment Plant	1980	Pre-engineered Steel	1	3,844	Average
552	Waste Oil Shelter	1990	Pre-engineered Steel	1	2,000	Fair
553	Waste Electronics Shelter	1990	Pre-engineered Steel	1	374	Fair
554	Laundry/Storage	1950	Wood Siding, Concrete Block	1	2,500	Average
555	Swimming Pool	1950	N/A	1	4,640	Average
556	Pavilion 1	1995	Pre-engineered Steel	1	1,380	Average
557	Pavilion 2	1995	Pre-engineered Steel	1	1,274	Average
559	Firing Range	1980	Wood	1	2,038	Average
560	Firing Range Shelter	1980	Wood Frame, Metal Roof	1	1,523	Fair
561	Racetrack Shelter 1	2008	Pre-engineered Steel	1	200	Average
562	Racetrack Shelter 2	2008	Pre-engineered Steel	1	100	Average
563	Racetrack Lookout Tower	2005	Wood Frame, Metal Roofing	1	400	Average

Building 280 – Maintenance



Building 285 – Storage



*Condition assessments according to Appraisal Report (excluding the new County building which was not constructed yet); according to the County, the majority of the facilities are actually in poor to fair condition.

Source: Appraisal Report for Pinal County, Insurance as of February 29, 2012, Produced by Asset Works Appraisal; Pinal County; and C&S Engineers, Inc.

Pinal County Comprehensive Plan Excerpts



Appendix D: Glossary

The terms defined in this glossary are done so for purposes of the Pinal County Comprehensive Plan only and may not be relevant or accurate for use outside of this plan.

Acre foot (ac/ft) is equivalent to the volume of water required to cover 1 acre to a depth of 1 foot.

Agriculture includes areas where agri-business activities are permitted, including traditional farming and ranching operations.

Alluvial plain is fairly flat, gently sloping landform found at the base of mountain ranges. The geography requires careful planning so that drainage patterns are preserved.

Airport Reserve surrounds existing airports to allow for adequate buffering of surrounding land uses, buffering of surrounding land uses, expansion of airport operations and facilities and employment uses compatible with the airport.

Aviation-Based Commerce Center is a facility served by passenger service and air freight providers; it should be buffered from incompatible uses and may have surrounding employment-related uses that take advantage of aviation services and allow for expansion of airport operations and facilities.

Bajadas are shallow slopes that lie at the base of rocky hills, where materials accumulate from the weathering of the rocks. They typically have a mixture of boulders, stones, gravel, sand and silt particles, creating a deep and complex soil structure that retains water and supports a rich vegetation.

Basic activities bring new dollars into the community.

Biome is a major regional or global biotic community, such as a grassland or desert, characterized chiefly by the dominant forms of plant life and the prevailing climate.

Buildout is defined as the ultimate development of land in Pinal County with appropriate land uses based on a series of assumptions, including land ownership patterns, topographic and environmental constraints and opportunities, development potential, infrastructure support, and private property rights.

The **Certified Local Government Program** is a preservation partnership between local, state and national governments focused on promoting historic preservation at the grass roots level.

Community Commercial is intended to be mid-scale (approximately 20 to 40 acres) of retail, service, and professional office.

Compendium is a concise, yet comprehensive, compilation of a body of knowledge.

Context Sensitive is defined as an approach by which development fits its physical setting and preserves scenic, aesthetic, historic and environmental resources.

Density is the number of housing units per acre developed or allowed to develop.

Density Bonus or Incentive is allowing higher density residential as a trade-off for including in a project a desired need such as open space or affordable housing unit.

Design charrette is a workshop in which participants work together, collaborating or building off of others work, and present their findings in a public forum.

Eco-tourism is about creating and satisfying a hunger for nature, about exploiting tourism's potential for conservation and development, and about averting its negative impact on ecology, culture and aesthetics.

Employment is defined as areas that can support a variety of employment-generating business activities such as industrial, office, business park, and warehousing and distribution.

Endangered species are those in immediate danger of becoming extinct and in need of protection in order to survive.

ENERGY STAR is a joint program of the EPA and the U.S. Department of Energy helping to save Americans money and protect the environment through energy efficient products and practices.

Floor Area Ratio (FAR) is a formula for determining volume of building as a multiple of the lot area.

General Commercial provides locations for commercial development included in adopted municipal general plans. The Pinal County Comprehensive Plan does not make any changes to these locations. This category allows uses in unincorporated areas.

General Public Facilities/Services includes large public facilities that require significant space such as landfills, wastewater facilities, water campuses, and concentrations of public buildings.

Goals represent the desired outcomes or results that the County hopes to realize over time. Goals will align with Pinal County's Vision.

High Intensity Activity Centers are approximately 1,000 or more acres with a mix of professional office, business parks, and industrial often in a campus-like setting, as well as high and medium density residential.

Hohokam is a term derived from an O'odham word "Huhugam" that is often used to reference people and things that have gone before.

Horizontal Mixed Use combines residential, commercial and employment-type uses on the same site, but in separate buildings.

Indian Community indicates a sovereign nation, operating under its own tribal government laws.

Land use transition is defined as a gradual change in land use intensities to ensure compatibility.

Low Intensity Activity Centers are approximately 100 acres with a mix of professional office, commercial, tourism and hospitality uses, as well as medium to high density residential.

Major Open Space indicates lands preserved for recreational purposes or lands protected for cultural or ecological reasons.

Mid Intensity Activity Centers are approximately 500 acres with a mix of clustered professional office, commercial, tourism and hospitality uses, medical, and medium to high density residential.

Military represents the Florence Military Reservation, Silver Bell Army Heliport (SBAH) and other ancillary facilities.

Mining/Extraction identifies those areas where mineral resources have been identified or are likely to be identified in the future. The intent of this designation is to protect the mineral resources by minimizing conflicts with surrounding land uses. This designation recognizes the rights of exploration, mining, and processing of mineral resources. Copper mining is currently occurring around Superior and Kearny. All mining operations conducted by whatever techniques and technologies employed are required to comply with all applicable federal, state, and local laws providing for the protection of environmental resources.

Municipal Planning Areas (MPAs) are defined as the geographic areas around an incorporated city or town that is influenced by the city's land use pattern and may be incorporated into the jurisdiction at some point in the future.

Neighborhood Commercial is defined as less than 20 acres and is not shown on the Land Use Plan, but may be included in all land use designations if it addresses the Comprehensive Plan planning guidelines. Neighborhood commercial includes commercial goods and services and typically serves a surrounding residential population.

Noise Sensitive areas include properties that are adjacent to or within the flight path of airports, including Casa Grande, Eloy, Superior, San Manuel, and Coolidge Airports, Pinal Air Park, and Phoenix-Mesa Gateway Airport. The area is subject to high noise levels resulting from aircraft arrival and departures. The intent is to encourage land use compatibility with airport activities. The Noise Sensitive Area designation is an overlay designation with additional stipulations to the underlying designations.

Non-basic activities, in most cases, circulate existing dollars within the community.

Objectives are broad statements of intent to implement the goals and provide framework for the policies.

Policies address how the goals will be achieved. Policies should be read as if it is preceded by the words “It is the County’s general policy to...” Some policies may appear to conflict with one another.

Primary Airport are those airports that have 10 or more based aircraft and have 2,000 or more annual aircraft operations. These airports offer future economic development opportunities as they grow and expand.

Private and Public Shared Responsibilities, all entities, private and public, share the responsibilities of implementing these Policies.

Public Responsibilities are primarily incumbent on the County to implement through its policy development and planning.

Recreation/Conservation identifies areas under an extra layer of federal protection, meaning that any infrastructure planned to traverse these lands will have to go through a federal permitting process and environmental review.

Regional Commercial is intended to be large-scale (over 40 acre) retail centers that draw from a large regional market area. These centers might include malls, power centers, big box retail centers, and auto dealerships.

Riparian areas are habitat zones found immediately adjacent to streams and lakes.

Scenic vista is a view of an area that is visually or aesthetically pleasing.

Secondary Airport is an airport that does not qualify as a Primary Airport. These airports offer future economic development opportunities as they grow and expand.

State Shared Revenues is a portion of revenues Arizona shares with local governments.

Threatened species are defined as those likely to become endangered if not protected.

Time Tax is the price paid sitting in long commutes that cuts into what we value most – our time with family, friends, home, and community.

Transit-Oriented Development is pedestrian-oriented development designed to facilitate access and use of transit facilities including buses, bus stops and light rail stations.

Vertical Mixed Use is typified by residential use over commercial uses in the same building or any other potential diversity of land uses within a building.

Viewshed is the entire area an individual can see from a given point.

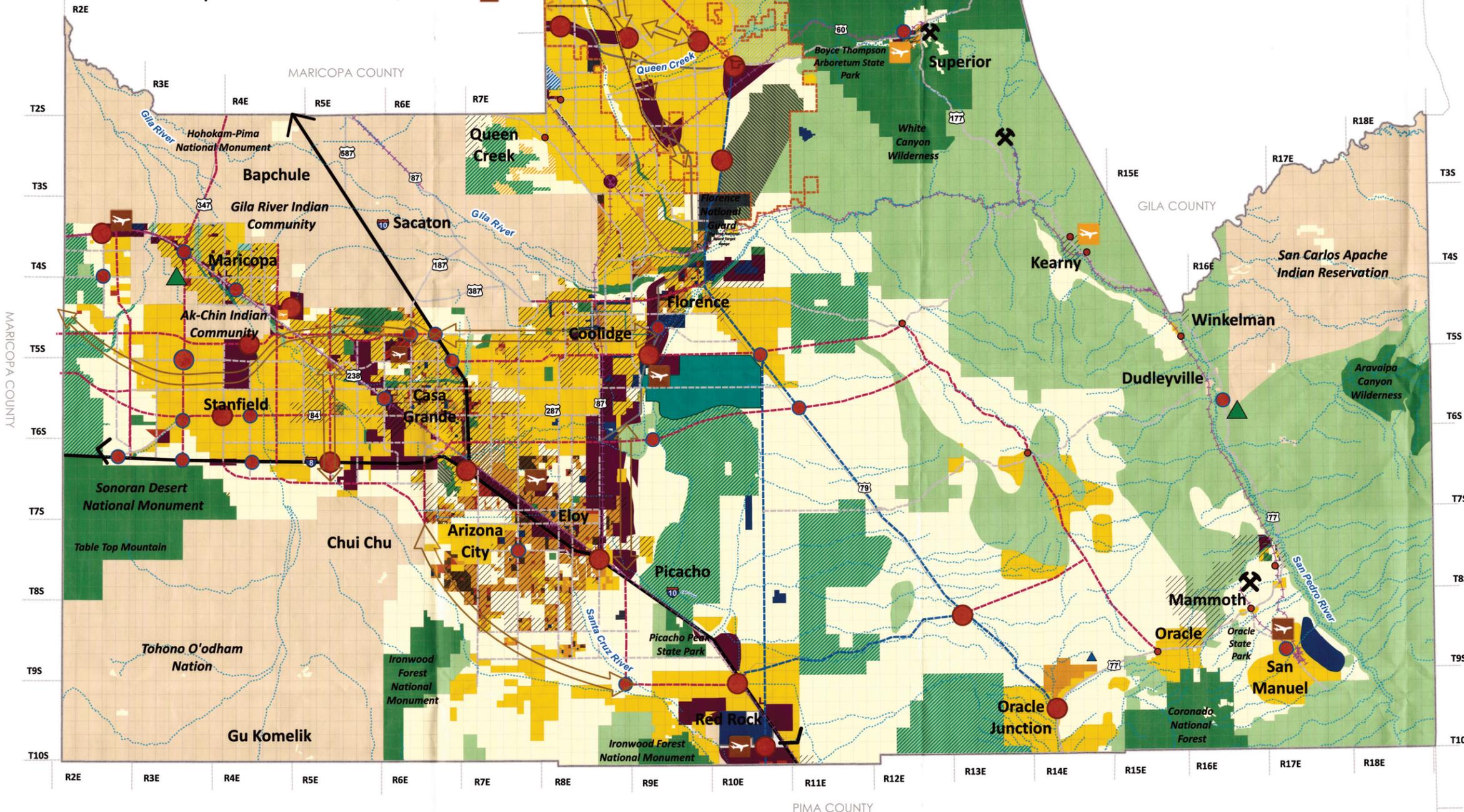
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PINAL COUNTY
Wide open opportunity

Land Use Plan

Adopted November 18, 2009



Legend

Residential

- Ranchette Residential (0-0.3 du/ac)
- Rural Residential (0-0.5 du/ac)
- Very Low Density Residential (0-1 du/ac)
- Low Density Residential (0-2 du/ac)
- Moderate Low Density Residential (1-3.5 du/ac)
- Medium Density Residential (3.5-8 du/ac)
- High Density Residential (8-24 du/ac)
- Mixed Use-Residential Focused

Commercial

- General Commercial

Employment

- Agriculture
- Employment
- Aviation Based Commerce Center
- Airport Reserve
- Noise Sensitive Area
- Mining/Extraction
- Primary Airport
- Secondary Airport

Natural Infrastructure

- Recreation/Conservation
- Major Open Space (or 1 du/ac)
- Restricted Use Open Space
- Existing/Planned or Proposed Regional Park
- Major Open Space SVPA (or 1 du/ac)

Public Facilities and Services

- Military
- General Public Facilities/Services
- Page-Trowbridge Landfill

Mixed Use Activity Center

- Low Intensity Activity Center
- Mid Intensity Activity Center
- High Intensity Activity Center
- Hospitality/Tourism Activity Center

Roadways

- Enhanced Parkway
- Parkway
- Principal Arterial
- High Capacity Roads (Under Study)
- Interstate Highway
- Incorporated Area
- Native American Community
- Superstition Vistas Planning Area
- Public Land Survey System Sections (PLSS)
- Railroad

Notes:

- The Pinal County Comprehensive Plan does not change zone classifications, adopted development agreements, or planned area development overlay districts that exist on private property as of the effective date of the Plan. If any changes are made to land uses or planned developments existing at the time this Comprehensive Plan is effective, such changes should conform to the Pinal County Comprehensive Plan.
- The land use designation boundaries are located along significant natural or man-made features, wherever possible. Boundary lines are to be considered approximate and discretion may be used in determining them.
- While every effort has been made to ensure the accuracy of the information shown, Pinal County makes no warranty, expressed or implied, as to its accuracy and therefore, expressly disclaims liability for any errors.
- The General Plans for cities and towns within Pinal County should be used to determine land used within incorporated boundaries. Generalized future land use plans (as of 2008, based on information provided by the municipalities) for incorporated cities and towns are illustrated for planning purposes.
- The Pinal County Open Space and Trails Master Plan (adopted 2007 and readopted as part of this effort) provides the base open space network.

- Designations of private State Trust, or Bureau of Land Management lands as open space or regional park has no regulatory impact. The designation represents Pinal County's desired future management of the lands if they were acquired or otherwise considered for management as open space or regional park. These lands may be developed subject to applicable planning and zoning regulations.
- The land use and transportation networks depicted for Superstition Vistas are preliminary and conceptual in nature and will be refined through the Superstition Vistas visioning process. When this visioning process is complete, the vision will be considered in the form of an amendment to the Comprehensive Plan.
- Future roadway corridors reflect general locations where facilities may be located. Actual alignments will be determined by future studies with the results of these studies reflected in Comprehensive Plan updates.
- Roadway classifications shown may change due to the status of potential High Capacity Corridors.



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Draft Pima County Comprehensive Plan Excerpts





PIMA COUNTY COMPREHENSIVE PLAN UPDATE



Land Use Intensity Legend

Adopted by the
Pima County Board of Supervisors
December 2001

Development Services Department
Planning Division
201 North Stone Avenue
Tucson, Arizona 85701-1317
(520) 740-6800

As Amended
June 2012

This document, ***Land Use Intensity Legend***, is one of three working documents of the Pima County Comprehensive Plan; see also ***Regional Plan Policies*** and ***Rezoning and Special Area Plan Policies***. The complete Comprehensive Plan is available in the office of the Planning Division, Pima County Development Services Department.

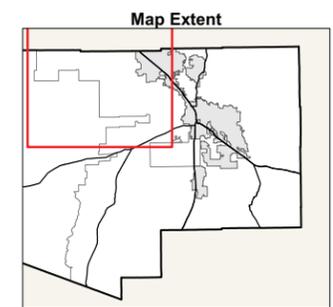
Planning Area 1 Planned Land Use

Note: All mapping designations and land under Special Area and Rezoning policies are as adopted in the 2001 Pima County Comprehensive Plan, as amended. "Potential for Land Use Change" means change is under consideration, subject to further analysis. It does not yet include any recommended special requests from property owners or others. Also, minor corrections of land use boundaries and designations, alignments of planned land use change with existing development or publicly acquired land, if any, will be shown in the Second Draft of the maps.

Note: Land Use Special Area Policies and Rezoning Policies (designated with an "S" and "RP" respectively) will be reviewed, possibly for deletion, addition or renumbering in the Second Draft of the maps.

F I R S T
D R A F T
May 9, 2014

- Activity Centers
- Medium/High Intensity Urban
- Low Intensity Urban
- Rural Activity Centers
- Medium Intensity Rural
- Low Intensity Rural
- Resource Transition
- Resource Productive / Extraction
- Industrial
- Other
- Potential for Land Use Change
- Highways
- Major Streets
- Railroads
- CAP Canal
- The Loop Trail
- Airport Runways
- Airports
- Community Development Target Areas
- Community Development Revitalization Opportunity Development Corridors
- Economic Development Corridors
- Specific Plans
- Rezoning Policies (RP-#)
- Special Area Policies (S-#)
- Growth Areas
- Parcels
- State-Owned Lands
- County Grazing Leases
- County-Owned Preserves
- Incorporated Municipalities
- Indian Nations
- Other Administrative Boundaries
- Planning Area Boundaries



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**2001 Pima County Comprehensive Plan Update
Land Use Intensity Legend
As Amended June 2012**

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2001 Pima County Comprehensive Plan Update Land Use Intensity Legend

PREFACE

The following planned land use intensity categories are designated on the Pima County Comprehensive Plan Update (Plan), which was adopted by the Pima County Board of Supervisors on December 18, 2001.

The designation of land use intensity categories on the Plan and its linkage to the Zoning Code (Chapter 18.89) provides a mechanism to assure that rezoning and specific plan approvals are consistent with the Plan. Rezoning (Section 18.91.040C) and specific plans (Section 18.90.030E) must comply with the Plan.

The Land Use Intensity Legend is comprised of a number of “urban” and “rural” land use categories, within each of which resides a prescribed list of “permitted” zoning districts. To be in compliance, applications for rezonings must select from the zoning districts listed as “permitted” and comply with the gross density limitation (RAC, or residences per acre) for the land use intensity category in which the property is located.

An amendment to the Plan is necessitated when a rezoning or specific plan application does not comply with the Plan. Amendments to the Plan are processed annually, where applications are accepted only between the first regular working day of February and the last regular working day of April (Section 18.89.040B).

A. **URBAN INTENSITY CATEGORIES**

The following land use intensity categories shall be applied to designate planned land use within urban areas only:

1. **Regional Activity Center**

'REAC' on the Land Use Plan Maps

- a. Purpose: To designate high-intensity mixed-use areas designed to provide the fullest range of goods and services and compatible multiple residential housing.
- b. Objective: Goods and services are provided that attract customers living significant distances from the center. A regional shopping mall may be the nucleus of the activity center. The center provides a variety of high density housing types and employment opportunities, including government services and educational institutions. The center has direct access to regional transportation facilities, including public transit and pedestrian and bicycle paths. Regional Activity Centers are generally greater than one hundred acres in size.
- c. Residential Gross Density: Only land area zoned and planned for residential use, or natural or cluster open space areas, shall be included in gross density calculations. Natural and cluster open space shall be defined as set forth in Section 18.09.040B, except that cluster open space shall not include land developed under the GC Golf Course Zone. Residential gross density shall conform with the following:
 - 1) Minimum - 12 RAC
 - 2) Maximum - 44 RAC
- d. Residential Gross Densities for Developments Using Transfer of Development Rights (TDR's): Projects within designated Receiving Areas utilizing TDR's for development (refer to Chapter 18.92 of the Zoning Code) shall conform to the following density requirements, however the Board of Supervisors, on appeal at public hearing, may modify the required minimum density if environmental site constraints preclude the ability to achieve the minimum density.
 - 1) Minimum – 12 RAC
 - 2) Maximum – 44 RAC
- e. Zoning Districts: Only the following zoning districts shall be deemed in conformance with the land use plan, except as provided for under the Major Resort Community designation, Section 18.89.030C plan policies, or Section 18.90.030E specific plans:
 - 1) CR-3 Single Residence Zone
 - 2) CR-4 Mixed-Dwelling Type Zone
 - 3) CR-5 Multiple Residence Zone
 - 4) TR Transitional Zone
 - 5) CMH-2 County Manufactured and Mobile Home-2 Zone

- 6) MR Major Resort
- 7) CB-1 Local Business Zone
- 8) CB-2 General Business Zone
- 9) CPI Campus Park Industrial Zone

2. Community Activity Center

'CAC' on the Land Use Plan Maps

- a. Purpose: To designate medium intensity mixed-use areas designed to provide goods and services needed generally on a weekly basis along with compatible medium to high density housing types.
- b. Objective: The center provides the range of goods and services necessary to satisfy the weekly shopping and service needs of the surrounding community. The center may include a major supermarket, along with other anchor tenants such as a discount department store, large variety store, or specialty stores such as a hardware/building/home improvement store. The center includes complementary uses, such as high density housing, offices, and government services. Public transit provides direct access to these centers as well as connections to regional activity centers. The center has direct access to a major arterial roadway, with pedestrian and bicycle paths providing access from surrounding neighborhoods. Community Activity Centers are generally less than forty acres in size.
- c. Residential Gross Density: Only land area zoned and planned for residential use, or natural or cluster open space areas, shall be included in gross density calculations. Natural and cluster open space shall be defined as set forth in Section 18.09.040B, except that cluster open space shall not include land developed under the GC Golf Course Zone. Residential gross density shall conform with the following:
 - 1) Minimum - none
 - 2) Maximum - 24 RAC
- d. Residential Gross Densities for Developments Using Transfer of Development Rights (TDR's): Projects within designated Receiving Areas utilizing TDR's for development (refer to Chapter 18.92 of the Zoning Code) shall conform to the following density requirements, however the Board of Supervisors, on appeal at public hearing, may modify the required minimum density if environmental site constraints preclude the ability to achieve the minimum density.
 - 1) Minimum – 6 RAC
 - 2) Maximum – 12 RAC

- e. Zoning Districts: Only the following zoning districts shall be deemed in conformance with the land use plan, except as provided for under the Major Resort Community designation , Section 18.89.030C plan policies, or Section 18.90.030E specific plans:

- 1) CR-2 Single Residence Zone
- 2) CR-3 Single Residence Zone
- 3) CR-4 Mixed-Dwelling Type Zone
- 4) CR-5 Multiple Residence Zone
- 5) TR Transitional Zone
- 6) CMH-2 County Manufactured and Mobile Home-2 Zone
- 7) MR Major Resort Zone
- 8) CB-1 Local Business Zone
- 9) CB-2 General Business Zone
- 10) CPI Campus Park Industrial Zone

**3. Neighborhood Activity Center
'NAC' on the Land Use Plan Maps**

- a. Purpose: To designate low intensity mixed-use areas designed to provide convenience goods and services within or near suburban residential neighborhoods for day-to-day living needs.
- b. Objective: The center provides commercial services that do not attract vehicle trips from outside the immediate service area. A grocery market may be the principle anchor tenant along with other neighborhood services, such as a drugstore, variety/hardware store, self-service laundry, church, and bank. The center may include a mix of medium density housing types. Neighborhood Activity Centers are generally less than fifteen acres in size.
- c. Residential Gross Density: Only land area zoned and planned for residential use, or natural or cluster open space areas, shall be included in gross density calculations. Natural and cluster open space shall be defined as set forth in Section 18.09.040B, except that cluster open space shall not include land developed under the GC Golf Course Zone. Residential gross density shall conform with the following:
- 1) Minimum - none
 - 2) Maximum - 10 RAC
- d. Residential Gross Densities for Developments Using Transfer of Development Rights (TDR's). Projects within designated Receiving Areas utilizing TDR's for development (refer to Chapter 18.92 of the Zoning Code) shall conform to the following density requirements; however the Board of Supervisors, on appeal at public hearing, may modify the required minimum density if environmental site constraints preclude the ability to achieve the minimum density.
- 1) Minimum – 3 RAC
 - 2) Maximum – 5 RAC

- e. Zoning Districts: Only the following zoning districts shall be deemed in conformance with the land use plan, except as provided for under the Major Resort Community designation, Section 18.89.030C plan policies, or Section 18.90.030E specific plans:
 - 1) CR-2 Single Residence Zone
 - 2) CR-3 Single Residence Zone
 - 3) CR-4 Mixed-Dwelling Type Zone
 - 4) CMH-1 County Manufactured and Mobile Home-1 Zone
 - 5) CMH-2 County Manufactured and Mobile Home-2 Zone
 - 6) TR Transitional Zone
 - 7) RVC Rural Village Center Zone
 - 8) CB-1 Local Business Zone
 - 9) CB-2 General Business Zone, provided however that the uses in such zone shall be limited to those set forth in Section 18.45.030B through 18.45.030C.

**4. Multifunctional Corridor
'MFC' on the Land Use Plan Maps**

- a. Purpose: To designate areas for the integrated development of complementary uses along major transportation corridors.
- b. Objective: These areas contain commercial and other non-residential use services and high density residential clusters in a linear configuration along major transportation corridors. Potential adverse impacts of strip commercial development are mitigated through application of special design standards, such as standards for building setbacks, open space, signs, parking, and landscaping. Special attention is given in site design to provide an atmosphere that is pleasant to the pedestrian.
- c. Residential Gross Density: Only land area zoned and planned for residential use, or natural or cluster open space areas, shall be included in gross density calculations. Natural and cluster open space shall be defined as set forth in Section 18.09.040B, except that cluster open space shall not include land developed under the GC Golf Course Zone. Residential gross density shall conform with the following:
 - 1) Minimum - none
 - 2) Maximum - 44 RAC
- d. Residential Gross Densities for Developments Using Transfer of Development Rights (TDR's): Projects within designated Receiving Areas utilizing TDR's for development (refer to Chapter 18.92 of the Zoning Code) shall conform to the following density requirements, however the Board of Supervisors, on appeal at public hearing, may modify the required minimum density if environmental site constraints preclude the ability to achieve the minimum density.
 - 1) Minimum – 6 RAC
 - 2) Maximum – 18 RAC

e. Zoning Districts: Only the following zoning districts shall be deemed in conformance with the land use plan, except as provided for under the Major Resort Community designation, Section 18.89.030C plan policies, or Section 18.90.030E specific plans:

- 1) GC Golf Course Zone
- 2) TH Trailer Homesite Zone
- 3) CR-3 Single Residence Zone
- 4) CR-4 Mixed-Dwelling Type Zone
- 5) CR-5 Multiple Residence Zone
- 6) TR Transitional Zone
- 7) CMH-2 County Manufactured and Mobile Home-2 Zone
- 8) MR Major Resort Zone
- 9) CB-1 Local Business Zone
- 10) CB-2 General Business Zone
- 11) CPI Campus Park Industrial Zone

**5. High Intensity Urban
'HIU' or 'F' on the Land Use Plan Maps**

a. Purpose: To designate areas for a mix of high density housing types and other compatible uses.

b. Objective: These areas have direct access to major transportation corridors and are within walking or bicycling distance from major commercial services and employment centers.

c. Residential Gross Density: Only land area zoned and planned for residential use, or natural or cluster open space areas, shall be included in gross density calculations. Natural and cluster open space shall be defined as set forth in Section 18.09.040B, except that cluster open space shall not include land developed under the GC Golf Course Zone. Residential gross density shall conform with the following:

- 1) Minimum - none
- 2) Maximum - 44 RAC

d. Residential Gross Densities for Developments Using Transfer of Development Rights (TDR's): Projects within designated Receiving Areas utilizing TDR's for development (refer to Chapter 18.92 of the Zoning Code) shall conform to the following density requirements, however the Board of Supervisors, on appeal at public hearing, may modify the required minimum density if environmental site constraints preclude the ability to achieve the minimum density.

- 1) Minimum – 6 RAC
- 2) Maximum – 18 RAC

e. Zoning Districts: Only the following zoning districts shall be deemed in conformance with the land use plan, except as provided for under the Major Resort Community designation, Section 18.89.030C plan policies, or Section 18.90.030E specific plans:

- 1) GC Golf Course Zone
- 2) TH Trailer Homesite Zone
- 3) CR-2 Single Residence Zone
- 4) CR-3 Single Residence Zone
- 5) CR-4 Mixed Dwelling Type Zone
- 6) CR-5 Multiple Residence Zone
- 7) TR Transitional Zone
- 8) CMH-1 County Manufactured And Mobile Home-1 Zone
- 9) CMH-2 County Manufactured And Mobile Home-2 Zone
- 10) MR Major Resort Zone
- 11) CPI Campus Park Industrial Zone

**6. Medium/High Intensity Urban
'MHIU' or 'E' on the Land Use Plan Maps**

a. Purpose: To designate areas for a mix of medium to high density housing types and other compatible uses.

b. Objective: These areas provide opportunities for a variety of residential housing types, including cluster option developments, single family attached dwellings, and apartment complexes. Special attention should be given in site design to assure that uses are compatible with adjacent lower density residential uses.

c. Residential Gross Density: Only land area zoned and planned for residential use, or natural or cluster open space areas, shall be included in gross density calculations. Natural and cluster open space shall be defined as set forth in Section 18.09.040B, except that cluster open space shall not include land developed under the GC Golf Course Zone. Residential gross density shall conform with the following:

- 1) Minimum - none
- 2) Maximum - 24 RAC

d. Residential Gross Densities for Developments Using Transfer of Development Rights (TDR's): Projects within designated Receiving Areas utilizing TDR's for development (refer to Chapter 18.92 of the Zoning Code) shall conform to the following density requirements, however the Board of Supervisors, on appeal at public hearing, may modify the required minimum density if environmental site constraints preclude the ability to achieve the minimum density.

- 1) Minimum – 3 RAC
- 2) Maximum – 6 RAC

- e. Zoning Districts: Only the following zoning districts shall be deemed in conformance with the land use plan, except as provided for under the Major Resort Community designation, Section 18.89.030C plan policies, or Section 18.90.030E specific plans:
 - 1) GC Golf Course Zone
 - 2) CR-1 Single Residence Zone
 - 3) CR-2 Single Residence Zone
 - 4) CR-3 Single Residence Zone
 - 5) CR-4 Mixed-Dwelling Type Zone
 - 6) CR-5 Multiple Residence Zone
 - 7) TR Transitional Zone
 - 8) CMH-1 County Manufactured And Mobile Home-1 Zone
 - 9) CMH-2 County Manufactured And Mobile Home-2 Zone
 - 10) MR Major Resort Zone
 - 11) CPI Campus Park Industrial Zone

**7. Medium Intensity Urban
'MIU' or 'D' on the Land Use Plan Maps**

- a. Purpose: To designate areas for a mix of medium density housing types and other compatible uses.
- b. Objective: These areas provide an opportunity for a variety of residential types, including cluster option developments, and single family attached dwellings. Special attention should be given in site design to assure that uses are compatible with adjacent lower density residential uses.
- c. Residential Gross Density: Only land area zoned and planned for residential use, or natural or cluster open space areas, shall be included in gross density calculations. Natural and cluster open space shall be defined as set forth in Section 18.09.040B, except that cluster open space shall not include land developed under the GC Golf Course Zone. Residential gross density shall conform with the following:
 - 1) Minimum - none
 - 2) Maximum - 10 RAC
- d. Residential Gross Densities for Developments Using Transfer of Development Rights (TDR's). Projects within designated Receiving Areas utilizing TDR's for development (refer to Chapter 18.92 of the Zoning Code) shall conform to the following density requirements, however the Board of Supervisors, on appeal at public hearing, may modify the required minimum density if environmental site constraints preclude the ability to achieve the minimum density.
 - 1) Minimum – 3 RAC
 - 2) Maximum – 5 RAC

- e. Zoning Districts: Only the following zoning districts shall be deemed in conformance with the land use plan, except as provided for under the Major Resort Community designation, Section 18.89.030C plan policies, or Section 18.90.030E specific plans:

- 1) GC Golf Course Zone
- 2) CR-1 Single Residence Zone
- 3) CR-2 Single Residence Zone
- 4) CR-3 Single Residence Zone
- 5) SH Suburban Homestead Zone
- 6) CR-4 Mixed-Dwelling Type Zone
- 7) CR-5 Multiple Residence Zone
- 8) CMH-1 County Manufactured and Mobile Home-1 Zone
- 9) CMH-2 County Manufactured and Mobile Home-2 Zone
- 10) MR Major Resort Zone
- 11) TR Transitional Zone

8. Low Intensity Urban

(Low Intensity Urban 3.0, 1.2, 0.5, and 0.3)

- a. Purpose: To designate areas for low density residential and other compatible uses; to provide incentives for clustering residential development and providing natural open space; and to provide opportunities for a mix of housing types throughout the region.
- b. Residential Gross Density: Only land area zoned and planned for residential use, or natural or cluster open space areas, shall be included in gross density calculations. Natural and cluster open space shall be defined as set forth in Section 18.09.040B, except that cluster open space shall not include land developed under the GC Golf Course Zone. Projects utilizing any of the cluster options set forth in this section shall conform with the provisions of Section 18.09.040 Cluster Development Option. Residential gross density shall conform with the following:

1) Low Intensity Urban 3.0

'LIU-3.0' or 'C-3.0' on the Land Use Plan Maps

- (a) Minimum - none
- (b) Maximum - 3.0 RAC. The maximum gross density may be increased in accordance with the following cluster option:
 - (i) Gross density of 4.0 RAC with 30 percent cluster open space.
- (c) Residential Gross Densities for Developments Using Transfer of Development Rights (TDR's). Projects within designated Receiving Areas utilizing TDR's for development (refer to Chapter 18.92 of the Zoning Code) shall conform to the following density requirements, however the Board of Supervisors, on appeal at public hearing, may modify the required minimum density if environmental site constraints preclude the ability to achieve the minimum density.
 - (i) Minimum density 1.5 RAC
 - (ii) Maximum density 3.0 RAC. The maximum gross density may be increased in accordance with the following cluster option:

- (1) Gross density of 4.0 RAC with 30 percent cluster open space.

2) Low Intensity Urban 1.2

'LIU-1.2' or 'C-1.2' on the Land Use Plan Maps

- (a) Minimum - none
- (b) Maximum - 1.2 RAC. The maximum gross density may be increased in accordance with the following cluster options:
 - (i) Gross density of 2.5 RAC with 30 percent cluster open space, plus 15 percent natural open space; or
 - (ii) Gross density of 4.0 RAC with 30 percent cluster open space, plus 30 percent natural open space.
- (c) Residential Gross Densities for Developments Using Transfer of Development Rights (TDR's). Projects within designated Receiving Areas utilizing TDR's for development (refer to Chapter 18.92 of the Zoning Code) shall conform to the following density requirements:
 - (i) Minimum – (none)
 - (ii) Maximum – 1.2 RAC. The maximum gross density may be increased in accordance with the following cluster option:
 - (1) Gross density of 2.0 RAC with 30 percent cluster open space plus 20 percent natural open space.

3) Low Intensity Urban 0.5

'LIU-0.5' or 'C-0.5' on the Land Use Plan Maps

- (a) Minimum - (none)
- (b) Maximum - 0.5 RAC. The maximum gross density may be increased in accordance with the following cluster options:
 - (i) Gross density of 1.2 RAC with 30 percent cluster open space, plus 20 percent natural open space; or
 - (ii) Gross density of 2.5 RAC with 30 percent cluster open space, plus 35 percent natural open space.
- (c) Residential Gross Densities for Developments Using Transfer of Development Rights (TDR's): Projects within designated Receiving Areas utilizing TDR's for development (refer to Chapter 18.92 of the Zoning Code) shall conform to the following density requirements:
 - (i) Minimum - none
 - (ii) Maximum - 0.5 RAC
 - (iii) The maximum gross density may be increased in accordance with the following cluster option:
 - (1) Gross density of 1.0 RAC with 30 percent cluster open space plus 20 percent natural open space.

4) Low Intensity Urban 0.3

'LIU-0.3' or 'C-0.3' on the Land Use Plan Maps

- (a) Minimum - (none)
- (b) Maximum - 0.3 RAC. The maximum gross density may be increased in accordance with the following cluster options:
 - (i) Gross density of 0.7 RAC with 30 percent cluster open space, plus 20 percent natural open space, or

- (ii) Gross density of 1.2 RAC with 30 percent cluster open space, plus 40 percent natural open space.
- (c) Residential Gross Densities for Developments Using Transfer of Development Rights (TDR's): Projects within designated Receiving Areas utilizing TDR's for development (refer to Chapter 18.92 of the Zoning Code) shall conform to the following density requirements:
 - (i) Minimum (none)
 - (ii) Maximum 0.3 RAC.
 - (iii) The maximum gross density may be increased in accordance with the following cluster option:
 - (1) Gross density of 0.7 RAC with 30 percent cluster open space plus 30 percent natural open space.

c. Zoning Districts

- 1) Within **Low Intensity Urban 3.0 and Low Intensity Urban 1.2**, only the following zoning districts shall be deemed in conformance with the land use plan, except as provided for under the Major Resort Community designation, Section 18.89.030C plan policies, or Section 18.90.030E specific plans:
 - (a) GC Golf Course Zone
 - (b) SR Suburban Ranch Zone
 - (c) SR-2 Suburban Ranch Estate Zone
 - (d) SH Suburban Homestead Zone
 - (e) CR-1 Single Residence Zone
 - (f) CR-2 Single Residence Zone
 - (g) CR-3 Single Residence Zone
 - (h) CR-4 Mixed-Dwelling Type Zone
 - (i) CR-5 Multiple Residence Zone
 - (j) CMH-1 County Manufactured And Mobile Home-1 Zone
 - (k) MR Major Resort Zone
- 2) Within **Low Intensity Urban 0.5 and Low Intensity Urban 0.3**, only the following zoning districts shall be deemed in conformance with the land use plan, except as provided for under the Major Resort Community designation, Section 18.89.030C plan policies, or Section 18.90.030E specific plans:
 - (a) GC Golf Course Zone
 - (b) SR Suburban Ranch Zone
 - (c) SR-2 Suburban Ranch Estate Zone
 - (d) SH Suburban Homestead Zone
 - (e) CR-1 Single Residence Zone
 - (f) CR-2 Single Residence Zone
 - (g) CR-3 Single Residence Zone
 - (h) MR Major Resort Zone
- (3) Open Space Standards for MR Major Resort Zone: **In Low Intensity Urban 1.2, 0.5, and 0.3**, the following minimum open space requirements shall apply within areas rezoned MR Major Resort Zone. Open space for purposes of these requirements shall be natural open space.
 - (a) Low Intensity Urban 1.2 - 15 percent.
 - (b) Low Intensity Urban 0.5 - 20 percent.
 - (c) Low Intensity Urban 0.3 - 30 percent.

B. RURAL INTENSITY CATEGORIES

The following land use categories shall be applied to designate rural development intensities on the land use plan.

1. Rural Activity Center

'RUAC' on the Land Use Plan Maps

- a. Purpose: To designate mixed-use areas where convenience goods and personal services are provided to rural residents on a daily or weekly basis.
- b. Objective: The intent is to minimize vehicle travel between rural settlements and suburban areas. Residential densities slightly higher than the surrounding rural neighborhoods are permitted to provide opportunities for special housing needs, i.e. elderly, single households, low income. The center is not intended to attract vehicle trips from outside the immediate rural service area. A grocery market may be the principal anchor tenant, along with other uses such as a drugstore, variety/hardware store, self-service laundry, church, and bank. The site area requires generally less than twenty acres.
- c. Residential Gross Density: Only land area zoned and planned for residential use, or natural or cluster open space areas, shall be included in gross density calculations. Natural and cluster open space shall be defined as set forth in Section 18.09.040B, except that cluster open space shall not include land developed under the GC Golf Course Zone. Residential gross density shall conform with the following:
 - 1) Minimum - 1.3 RAC
 - 2) Maximum - 10 RAC
- d. Residential Gross Densities for Developments Using Transfer of Development Rights (TDR's): Projects within designated Receiving Areas utilizing TDR's for development (refer to Chapter 18.92 of the Zoning Code) shall conform to the following density requirements:
 - 1) Minimum – 1.3 RAC
 - 2) Maximum – 5.0 RAC
- e. Zoning Districts: Only the following zoning districts shall be deemed in conformance with the land use plan, except as provided for under the Major Resort Community designation, Section 18.89.030C plan policies, or Section 18.90.030E specific plans:
 - 1) GR-1 Rural Residential Zone
 - 2) SH Suburban Homestead Zone
 - 3) CR-2 Single Residence Zone
 - 4) CR-3 Single Residence Zone
 - 5) CR-4 Mixed Dwelling Type Zone
 - 6) CMH-1 County Manufactures And Mobile Home- 1 Zone
 - 7) RVC Rural Village Center Zone

- 8) CB-1 Local Business Zone
- 9) CB-2 General Business Zone

2. Rural Crossroads

'RX' on the Land Use Plan Maps

- a. Purpose: To designate areas at major rural roadway intersections for the provision of limited commercial services to travelers and rural residents.
- b. Residential Gross Density: Residential gross density shall comply with existing zoning.
- c. Zoning Districts: Only the following zoning districts shall be deemed in conformance with the land use plan, except as provided for under the Major Resort Community designation, Section 18.89.030C plan policies, or Section 18.90.030E specific plans:
 - 1) CB-1 Local Business Zone
 - 2) CB-2 General Business Zone
 - 3) Rural Forest Village

3. Rural Forest Village

'RFV' on the Land Use Plan Maps

- a. Purpose: To designate rural villages within confines of the Coronado National Forest.
- b. Residential Gross Density: Only land area zoned and planned for residential use, or natural or cluster open space areas, shall be included in gross density calculations. Natural and cluster open space shall be defined as set forth in Section 18.09.040B, except that cluster open space shall not include land developed under the GC Golf Course Zone. Residential gross density shall conform with the following:
 - 1) Minimum - none
 - 2) Maximum - 1.3 RAC
- c. Zoning Districts: Only the ML Mount Lemmon Zone shall be deemed in conformance with the land use plan.

4. Medium Intensity Rural

'MIR' or 'B' on the Land Use Plan Maps

- a. Purpose: To designate areas for residential uses at densities consistent with rural settlements in close proximity to Rural Activity Centers.
- b. Residential Gross Density: Only land area zoned and planned for residential use, or natural or cluster open space areas, shall be included in gross density calculations. Natural and cluster open space shall be defined as set forth in Section 18.09.040B, except that cluster open space shall not include land developed under the GC Golf Course Zone. Residential gross density shall conform with the following:

- 1) Minimum - none
 - 2) Maximum - 1.3 RAC
- c. Residential Gross Densities for Developments Using Transfer of Development Rights (TDR's): Projects within designated Receiving Areas utilizing TDR's for development (refer to Chapter 18.92 of the Zoning Code) shall conform to the following density requirements:
- 1) Minimum – none
 - 2) Maximum – 1.3 RAC
- d. Zoning Districts: Only the following zoning districts shall be deemed in conformance with the land use plan, except as provided for under the Major Resort Community designation, Section 18.89.030C plan policies, or Section 18.90.030E specific plans:
- 1) RH Rural Homestead Zone
 - 2) GR-1 Rural Residential Zone
 - 3) SR Suburban Ranch Zone
 - 4) SR-2 Suburban Ranch Estate Zone
 - 5) MR Major Resort Zone
- e. Open Space Standard for MR Major Resort Zone: In Medium Intensity Rural a minimum of 20 percent natural open space shall be required within areas rezoned MR Major Resort Zone. Open space for purposes of this requirement shall be natural open space.
5. **Low Intensity Rural**
'LIR' or 'A' on the Land Use Plan Maps
- a. Purpose: To designate areas for residential uses at densities consistent with rural and resource-based characteristics.
- b. Residential Gross Density: Only land area zoned and planned for residential use, or natural or cluster open space areas, shall be included in gross density calculations. Natural and cluster open space shall be defined as set forth in Section 18.09.040B, except that cluster open space shall not include land developed under the GC Golf Course Zone. Residential gross density shall conform with the following:
- 1) Minimum - none
 - 2) Maximum - 0.3 RAC
- c. Residential Gross Densities for Developments Using Transfer of Development Rights (TDR's): Projects within designated Receiving Areas utilizing TDR's for development (refer to Chapter 18.92 of the Zoning Code) shall conform to the following density requirements:
- 1) Minimum – none
 - 2) Maximum – 0.3 RAC

- d. Zoning Districts: Only the following zoning districts shall be deemed in conformance with the land use plan, except as provided for under the Major Resort Community designation, Section 18.89.030C plan policies, or Section 18.90.030E specific plans:
 - 1) RH Rural Homestead Zone
 - 2) SR Suburban Ranch Zone
 - 3) SR-2 Suburban Ranch Estate Zone
 - 4) GR-1 Rural Residential Zone
 - 5) MR Major Resort

- e. Open Space Standard for MR Major Resort Zone: In Low Intensity Rural a minimum of 30 percent natural open space shall be required within areas rezoned MR Major Resort Zone. Open space for purposes of this requirement shall be natural open space.

C. URBAN AND RURAL INTENSITY CATEGORIES

The following land use categories shall be applied to designate urban and rural development intensities on the land use plan.

1. Urban Industrial

'I' on the Land Use Plan Maps

- a. Purpose: To designate adequate area for industrial uses that, if properly located and regulated, are compatible with certain types of commercial activities, but generally incompatible with residential uses.
- b. Zoning Districts: Only the following zoning districts shall be deemed in conformance with the land use plan, except as provided for under the Major Resort Community designation, Section 18.89.030C plan policies, or Section 18.90.030E specific plans:
 - 1) CB-1 Local Business Zone
 - 2) CB-2 General Business Zone
 - 3) CPI Campus Park Industrial Zone
 - 4) CI-1 Light Industrial/Warehousing Zone
 - 5) CI-2 General Industrial Zone
 - 6) GC Golf Course Zone

2. Heavy Industrial

'HI' on the Land Use Plan Maps

- a. Purpose: To designate adequate area for industrial uses that are incompatible with non-industrial uses.
- b. Zoning Districts: Only the following zoning districts shall be deemed in conformance with the land use plan, except as provided for under the Major Resort Community designation, Section 18.89.030C plan policies, or Section 18.90.030E specific plans:
 - 1) CI-1 Light Industrial Zone
 - 2) CI-2 General Industrial Zone
 - 3) CI-3 Heavy Industrial Zone
 - 4) CPI Campus Park Industrial Zone
 - 5) GC Golf Course Zone

3. Resource Transition

'RT' on the Land Use Plan Maps

- a. Purpose: Private land with environmentally sensitive characteristics that include wildlife corridors, natural washes, floodplains, peaks and ridges, buffers to public preserves, and other environmentally sensitive areas. Development of such land shall emphasize design that blends with the natural landscape and supports environmentally sensitive linkages in developing areas.

- b. Residential Gross Density: Only land area zoned and planned for residential use, or natural or cluster open space areas, shall be included in gross density calculations. Natural and cluster open space shall be defined as set forth in Section 18.09.040B, except that cluster open space shall not include land developed under the GC Golf Course Zone. Residential gross density shall conform with the following:
 - 1) Minimum - none
 - 2) Maximum - 0.3 RAC
- c. Residential Gross Densities for Developments Using Transfer of Development Rights (TDR's): Projects within designated Receiving Areas utilizing TDR's for development (refer to Chapter 18.92 of the Zoning Code) shall conform to the following density requirements:
 - 1) Minimum – none
 - 2) Maximum – 0.3 RAC
- d. Zoning Districts: Only the following zoning districts shall be deemed in conformance with the land use plan, except as provided for under the Major Resort Community designation, Section 18.89.030C plan policies, or Section 18.90.030E specific plans:
 - 1) RH Rural Homestead Zone
 - 2) SR Suburban Ranch Zone
 - 3) MR Major Resort
- e. Open Space Standard for MR Major Resort Zone: In Resource Transition a minimum of 30 percent natural open space shall be required within areas rezoned MR Major Resort Zone. Open space for purposes of this requirement shall be natural open space.

4. Resource Conservation

- a. Purpose: Public land that protects existing public open space land necessary to achieve objectives regarding environmental quality, public safety, open space, recreation and cultural heritage and to promote an interconnected regional open space network, including parks, trails, desert belts and other open space areas.
- b. Objective: Implementation options include acquisition, easements, dedications, and cluster development options.
- c. Residential Gross Density: Only land area zoned and planned for residential use, or natural or cluster open space areas, shall be included in gross density calculations. Natural and cluster open space shall be defined as set forth in Section 18.09.040B, except that cluster open space shall not include land developed under the GC Golf Course Zone. Residential gross density shall conform with the following:
 - 1) Minimum - none
 - 2) Maximum - 0.3 RAC

- d. Residential Gross Densities for Developments Using Transfer of Development Rights (TDR's): Projects within designated Receiving Areas utilizing TDR's for development (refer to Chapter 18.92 of the Zoning Code) shall conform to the following density requirements:
 - 1) Minimum – none
 - 2) Maximum – 0.3 RAC

- e. Zoning Districts: Only the following zoning districts shall be deemed in conformance with the land use plan, except as provided for under the Major Resort Community designation, Section 18.89.030C plan policies, or Section 18.90.030E specific plans:
 - 1) IR Institutional Reserve Zone
 - 2) RH Rural Homestead Zone
 - 3) SR Suburban Ranch Zone

**5. Resource Productive
'RP' or the Land Use Plan Maps**

- a. Purpose: To designate cultivated and ranching lands for their productive capabilities and to protect these areas from encroachment by incompatible uses.

- b. Residential Gross Density: Only land area zoned and planned for residential use, or natural or cluster open space areas, shall be included in gross density calculations. Natural and cluster open space shall be defined as set forth in Section 18.09.040B, except that cluster open space shall not include land developed under the GC Golf Course Zone. Residential gross density shall conform with the following:
 - 1) Minimum - none
 - 2) Maximum - 0.3 RAC

- c. Residential Gross Densities for Developments Using Transfer of Development Rights (TDR's): Projects within designated Receiving Areas utilizing TDR's for development (refer to Chapter 18.92 of the Zoning Code) shall conform to the following density requirements:
 - 1) Minimum – (none)
 - 2) Maximum – 0.3 RAC

- d. Zoning Districts: Only the following zoning districts shall be deemed in conformance with the land use plan, except as provided for under the Major Resort Community designation, Section 18.89.030C plan policies, or Section 18.90.030E specific plans:
 - 1) RH Rural Homestead Zone
 - 2) SR Suburban Ranch Zone

7. Resource Extraction

'RE' on the Land Use Plan Maps

- a. Purpose: To designate mining lands for their extractive capabilities and to protect these areas from encroachment by incompatible uses.
- b. Residential Gross Density: Only land area zoned and planned for residential use, or natural or cluster open space areas, shall be included in gross density calculations. Natural and cluster open space shall be defined as set forth in Section 18.09.040B, except that cluster open space shall not include land developed under the GC Golf Course Zone. Residential gross density shall conform with the following:
 - 1) Minimum - none
 - 2) Maximum - 0.3 RAC
- c. Zoning Districts: Only the following zoning districts shall be deemed in conformance with the land use plan, except as provided for under the Major Resort Community designation, Section 18.89.030C plan policies, or Section 18.90.030E specific plans:
 - 1) RH Rural Homestead Zone
 - 2) SR Suburban Ranch Zone

8. Military Airport

'MA' on the Land Use Plan Maps

- a. Purpose: To recognize Davis-Monthan Air Force Base (DMAFB) as a unique and significant factor in shaping the history, character, and economy of Eastern Pima County; provide guidance for future compatible land uses to promote the health, safety and welfare of the community; and, to promote the long-term viability of the base and its missions. Applies to High Noise Areas, Accident Potential Zones (APZ), and Approach-Departure Corridors (ADC) for DMAFB.
- b. Residential Gross Density: New residential development is not a compatible use.
- c. Zoning Districts: Only the following zoning districts shall be deemed in conformance with the land use plan, except as provided for under the Major Resort Community designation, Section 18.89.030C plan policies, or Section 18.90.030E specific plans:
 - 1) CB-1 Local Business Zone
 - 2) CB-2 General Business Zone
 - 3) CPI Campus Park Industrial Zone
 - 4) CI-1 Light Industrial/Warehousing Zone
 - 5) CI-2 General Industrial Zone

D. MAJOR RESORT COMMUNITY

Notwithstanding the provisions of Sections 18.89.060A, B, or C, the following zoning districts shall be deemed in conformance with the land use plan provided such projects conform with the residential gross density, zoning district, and special development standards set forth herein.

1. Purpose: To promote the development of major resort development as an integrated, planned community and in a manner compatible with existing neighborhoods, physical site constraints, and sensitive environments.
2. Residential Gross Density: Only land area zoned and planned for residential use, or natural or cluster open space areas, shall be included in gross density calculations. Natural and cluster open space shall be defined as set forth in Section 18.09.040B, except that cluster open space shall not include land developed under the GC Golf Course Zone. Gross residential densities shall not exceed that specified for each land use intensity category in which the project is located.
3. Zoning Districts: Only the following zoning districts shall be deemed in conformance with the land use plan, except as provided for under Section 18.89.030C plan policies, or Section 18.90.030E specific plans:
 - a. GC Golf Course Zone
 - b. CR-1 Single Residence Zone
 - c. CR-2 Single Residence Zone
 - d. CR-3 Single Residence Zone
 - e. CR-4 Mixed-Dwelling Type Zone
 - f. CR-5 Multiple Residence Zone
 - g. TR Transitional Zone
 - h. MR Major Resort Zone
 - i. CPI Campus Park Industrial Zone
 - j. CB-1 Local Business Zone
4. Special Development Standards:
 - a. A minimum of 10 percent of the total project area shall be developed in accordance with the MR Major Resort Zone.
 - b. Notwithstanding the provisions of Section 18.67.030, the project shall be subject to and action taken in accordance with Chapter 18.67 Buffer Overlay Zone.
 - c. The developer shall demonstrate that the occupants of the project will create a need for the planned commercial uses proposed as part of the project and, in any case, the combined area of CB1 Local Business Zone shall not exceed 6.0 percent of the total project area.
 - d. The combined area of CPI Campus Park Industrial Zone and TR Transitional Zone shall not exceed 15.0 percent of the total project area and CPI Campus Park Industrial Zone shall not be permitted, under the provisions set forth herein, in Special Area S-8.

- e. Areas classified Resource Conservation on the land use plan shall remain in their pre-development state.
- f. The provisions of this section shall not apply in areas classified Low Intensity Rural or Medium Intensity Rural on the land use plan.
- g. The entire land area within a project for which the provisions contained in this section are applied shall be part of a single rezoning request.
- h. Notwithstanding the provisions of paragraph c, above, CPI Campus Park Industrial Zone, TR Transitional Zone, and CB-1 Local Business Zone shall not be permitted in areas classified Resource Transition on the land use plan.
- i. The following minimum open space requirements shall apply in areas classified Low Intensity Urban 1.2, Low intensity Urban 0.5, Low Intensity Urban 0.3, and Resource Transition. Open space for purposes of these requirements shall be natural open space. Requirements are set forth as percentages of the total project site.
 - 1) Low Intensity Urban 1.2 - 15 percent.
 - 2) Low Intensity Urban 0.5 - 20 percent.
 - 3) Low Intensity Urban 0.3 - 30 percent.
 - 4) Resource Transition - 30 percent.

2010 Marana General Plan Excerpts



Figure 5.6 - Land Use

General Plan Land Use	Source: Town of Marana			
	Marana Acres	Marana % of Total	Planning Area Acres	Planning Area % of Total
Airport	2,158	2.78%	6,768	4.65%
Commercial	3,146	4.05%	5,548	3.81%
Industrial	9,818	12.63%	26,799	18.41%
Park/Open Space	3,397	4.37%	5,874	4.04%
Public/Institutional	487	0.63%	527	0.36%
Rural Density Residential	20,692	26.62%	39,001	26.79%
Low Density Residential	9,881	12.71%	26,104	17.93%
Medium Density Residential	5,475	7.04%	11,205	7.70%
High Density Residential	72	0.09%	72	0.05%
Mixed Rural	205	0.26%	265	0.18%
Rivers, Major Washes and Drainage Channels	1,683	2.16%	2,257	1.55%
Master Plan Area	19,365	24.91%	19,392	13.32%
I-10 Corridor	1,361	1.75%	1,759	1.21%
TOTAL	77,740	100.00%	145,571	100.00%

Public/Institutional (PI)

This designation has been given to existing government facilities and public schools.

River, Major Washes, and Drainageways (RWD)

This designation identifies major conveyances of water, which consist of both natural and man made structures. These areas are not suitable for development; however uses such as multiuse trails would be acceptable in some situations.

Park/Open Space (P/OS)

The Park designation identifies existing and proposed sites where neighborhood, community, district, and regional parks as well as primary, connector, and local trails are proposed for development or already exist. Most parks contain a mix of passive and active recreation. Open space designations apply to areas the Town desires to conserve as a natural resource and could possible be used for passive recreation such as walking for hiking.

Rural Density Residential (RDR)

This residential land use is characterized by single-family detached homes on very large properties, including ranchette and estate lots at a density range of 0.1-0.5 residences per acre. Appropriate locations generally include historically agricultural or environmentally sensitive areas and areas where equestrian uses are allowed or where a rural character is desired. Limited neighborhood commercial development may be allowed within this classification.

Low Density Residential (LDR)

Low Density land use is characterized by single-family detached homes on relatively large lots in a density range of 0.5 - 2.0 residences per acre where the retention of a semirural, open character is desired. Environmental factors may allow for clustered housing projects. Appropriate locations include those areas of the community where there may be limited infrastructure. Commercial development is allowed that serves the residential development with both pedestrian connectivity and automobile access. Other appropriate uses serving the community under this classification may include schools, parks, recreational areas, and religious institutions.

Medium Density Residential (MDR)

Medium Density Residential is characterized by single family detached/attached homes on moderately sized lots in a density range of 2.1 - 8.0 residences per acre. Other potential opportunities for residential development in this category include various types of multifamily housing that conform to the prescribed density range. Typically this classification applies to those areas that benefit from existing capacity of public services and utilities, and areas where services and utilities can be extended from existing infrastructure. Other appropriate uses serving the community under this classification may include commercial, schools, parks, recreational areas, centers, and religious institutions.

High Density Residential (HDR)

The High Density Residential land use is characterized by development with attached, clustered and multistory residential units with a density greater than 8.1 residences per acre. The intent is that the high density residential component be located in and around the commercial corridors or around an outlying center of a master planned area. Other appropriate uses serving the community under this classification may include commercial, schools, parks, recreational areas, and religious institutions.

Mixed Rural (MR)

This designation reflects development of varying uses within rural settings in close proximity to major transportation corridors. MR developments are required to maintain performance standards that provide site specific mitigation and design standards to ensure the compatibility of the various uses in these areas. Residential development is allowed as long as the overall density does not exceed two residences per acre.

Commercial (C)

This designation includes commercial uses that range from neighborhood to regional scale commerce. Those on the neighborhood scale may include convenience oriented commercial uses that serve single neighborhoods or groups of neighborhoods. Those

Marana 2010 General Plan

on the intermediate or regional scale may include major commercial centers that serve a wider population base. Development may include regional commercial, large scale retail establishments, local and tourist oriented services, large outdoor sales lots, office development, medical complexes, and research centers.

I-10 Corridor

The I-10 Corridor identifies the Interstate 10, frontage roads and Union Pacific Railroad property that diagonally bisects the Town. The eighteen (18) mile stretch of the highly traveled cross country route is a valuable asset as it allows visitors and travelers, as well as locals to experience the Town.

Airport (A)

This designation defines the operating areas of the Marana Regional Airport and Pinal Airpark, as well as surrounding area that may be part of associated long range development plans. These surrounding areas would include those uses allowed in the Industrial (I) and Commercial (C) land use categories of the General Plan, as well as a range of employment, office and hospitality uses which are compatible with airport operations and which further the economic development goals of the General Plan and the Economic Roadmap.. If determined, compatible multi-family residential uses can be included as well. These areas also serve as a buffer for surrounding residential areas.

Industrial (I)

Industrial designations are intended to provide locations for a wide range of light and heavy industrial uses, including major employment centers, light industrial uses, research and development activities, offices, and institutions as well as mining, storage, processing, fabrication and distribution of goods. Certain areas are more compatible with intensive industrial and manufacturing activities as well as mineral extraction and processing. Design standards may be implemented for specific areas such as along Interstate 10 where lower intensity uses may be encouraged to enhance the Town's appearance. Commercial uses are acceptable in these areas to support the industrial activities that are the predominant use.

Master Plan Area (MPA)

Master Plan Areas identify specific plans that have been adopted by the Town. The purpose of the MPA is to allow flexibility in site planning and design. Active specific plans in the Town are characterized by a variety of intensities and uses, including low to high density residential, differing scales of commercial development, industrial and employment related uses, and significant open space and natural areas. The MPA should be utilized in sensitive natural areas with cluster development and contiguous natural undisturbed open space (NUOS) that results in the best mix of development and conservation. Future MPA locations will be determined by their ability to create a functional, well designed, flexible specific plan.



MARANA

2010 General Plan

5.1.D

Land Use

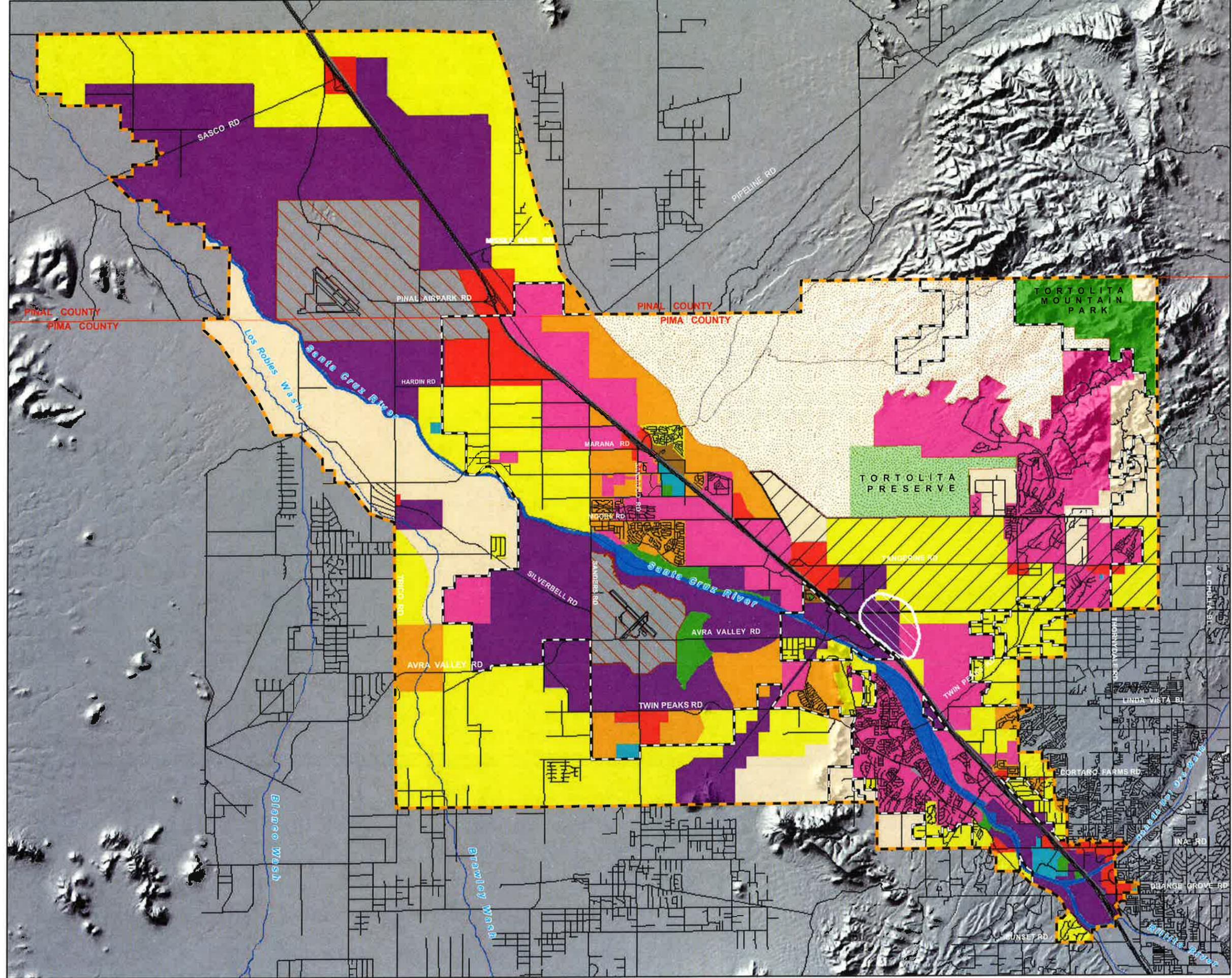
- Airport
- Commercial
- Industrial
- I-10 Corridor
- Rural Density Residential
- Low Density Residential
- Medium Density Residential
- High Density Residential
- Master Plan Area
- Mixed Rural
- Parks/Open Space
- Public/Institutional
- Rivers, Major Washes, and Drainageways

Special Planning Areas

- Avra Valley Eastern Connection
- Tangerine Road
- No Extension of Urban Services (Rural Density Residential)
- Planning Area Boundary
- Marana Town Limits
- Pima/Pinal County Boundary



Data Disclaimer: The Town of Marana provides this map information "As Is" at the request of the user with the understanding that it is not guaranteed to be accurate, correct or complete and conclusions drawn from such information are the responsibility of the user. In no event shall The Town of Marana become liable to users of these data, or any other party, for any loss or direct, indirect, special, incidental, or consequential damages, including but not limited to time, money, or goodwill, arising from the use or modification of the data.



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APPENDIX C

Infrastructure Assessment



Pinal Airpark Infrastructure Assessment

Prepared by C&S Engineers, Inc.
October 2013

Introduction

As part of the Master Plan process for Pinal Airpark, the existing airfield infrastructure was inspected and analyzed to generate a list of potential improvements and prioritize them in order to provide a quality facility for airport users. The future projects identified in the Master Plan will also help bring Pinal Airpark into compliance with FAA standards and make it eligible again for federal grant funding.

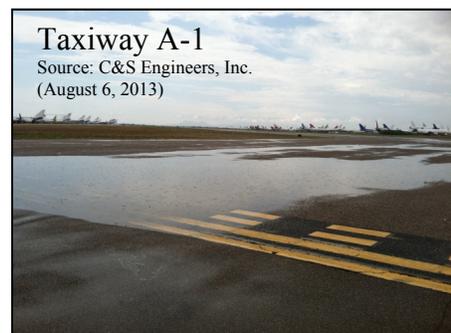
This report was developed based on field inspections and reviews of previously performed studies on the various infrastructure elements at the Airport. A field investigation was conducted on August 6, 2013, with representatives present from Pinal County, Marana Aerospace, Silver Bell Heliport, Parachute Training and Test Facility, and C&S Companies. The reports reviewed include the following:

- *Final Report for Runway 12-30 Evaluation & Rehabilitation Alternatives Analysis*, Dibble Engineering, February 16, 2012
- *Final Report for Taxiway Evaluation & Rehabilitation Alternatives Analysis*, Dibble Engineering, January 31, 2013
- *Pinal County Airpark Electrical Infrastructure Study*, CR Engineers, Inc., February 1, 2013

Airfield Pavements

General Notes

During the site investigation, a storm came through the Airport and allowed the team to identify existing drainage issues with the airfield pavements. Ponding water was observed throughout the airfield. Ponding of this type typically leads to subsurface failures if the water penetrates into the underlying structural layers. The pavement surface shows signs of fatigue and failure such as alligator and block cracking and depressions from heavy loading. The presence of ponding water during the visit indicates that water penetrating into the subgrade, along with age and heavy loading, has likely undermined portions of the pavement structural section.



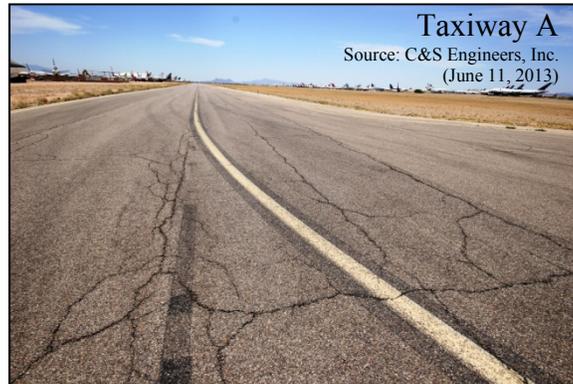
Runway 12-30

The Airport Master Plan prepared by SFC Engineering in 1991 states that the original runway was constructed in 1942 and overlaid in 1988. At the time of the C&S inspection on August 6, 2013, it did not appear that any pavement surface treatments (other than crack seal) have been performed since the overlay in 1988. The pavement surface is oxidized, brittle, and severely cracked. There are also several pavement surface characteristics on the runway that indicate subsurface failures (alligator cracking, block cracking, depressions, rutting, etc.).



Taxiway A

The existing taxiway pavement structural section consists of one to 1.25 inches of a surface treatment referred to as “NovaChip” on top of six to eight inches of Portland Cement Concrete Pavement (PCCP). From the site visit photos, it appears that the underlying PCCP joints have reflected through the surface course in the form of longitudinal and transverse cracking. The surface treatment is also oxidized and brittle from a lack of pavement maintenance treatments over the years.



Connector Taxiways

The pavement on all the connector taxiways is in poor condition, with severe alligator cracking and raveling, indicating subgrade failure. The existing pavement section consists of four to six inches of asphalt concrete (AC) on four to six inches of base course. According to the Dibble report, this pavement section may not be adequate for the estimated fleet mix of aircraft utilizing the Airport.

Apron

It appears that the apron is one of the original airport pavement areas constructed in 1942. The pavement is in poor condition. The surface is severely cracked and there are several corner breaks and spalls along the slab joints. Several applications of crack seal have been placed to improve the pavement; however, it appears that the apron is near, or has exceeded, its original design life.



Airfield Drainage Infrastructure

According to the Airport Layout Plan (ALP), stormwater runoff generally travels from the southeast to the northwest and it appears that no drainage facilities exist on the airfield. The airport drains via sheet flow through the infield areas and over the top of the connector taxiways. Each connector taxiway shows signs of ponding at the hold bars, which are aligned with the drainage channels in the infield areas. In addition, the infield areas themselves are not effectively collecting the stormwater from the surrounding pavements, causing ponding along the edges of pavement.



Airfield Electrical

Airfield Signage

The distance remaining signs for Runway 12-30 are currently located 100 feet from the runway edge stripe. As seen in the pictures below, the junction cans for the signs are either attached to one of the sign legs or are located directly under the sign itself. This design makes maintenance of the signs and the circuit more difficult because the entire sign must be removed to access the transformer and the conductor feeding the sign.



Existing Signage
Source: C&S Engineers, Inc.
(August 6, 2013)

Airfield Lighting

The existing runway edge lights are located about one to two feet off of the runway edge stripe and were installed after the runway was constructed as evidenced by the clearly defined trench cuts and patches through the shoulder pavement at each light.



Runway 12-30 Edge Lights
Source: C&S Engineers, Inc.
(June 11, 2013)

The taxiways currently have edge reflectors that are about five feet from the edge of pavement. These should be upgraded to taxiway edge lights.



Pinal Airpark

Infrastructure Assessment Opinion

Prepared by C&S Engineers, Inc.
October 2013

Introduction

As part of the Master Plan process, the existing airfield infrastructure was inspected and analyzed to generate a set of recommendations for future improvements. The recommendations presented in this report will be used to develop a prioritized project list to bring the Airport into compliance with FAA standards.

This report comes as a result of field inspections and reviews of previously performed studies on the various infrastructure elements at the airport. A field investigation was conducted on August 6, 2013, with representatives present from Pinal County, Marana Aerospace, Silver Bell Heliport, Parachute Training and Test Facility, and C&S Companies. The reports reviewed consist of the following:

- *Final Report for Runway 12-30 Evaluation & Rehabilitation Alternatives Analysis*, Dibble Engineering, February 16, 2012
- *Final Report for Taxiway Evaluation & Rehabilitation Alternatives Analysis*, Dibble Engineering, January 31, 2013
- *Pinal County Airpark Electrical Infrastructure Study*, CR Engineers, February 1, 2013

Airfield Pavements

Runway 12-30

According to the pavement inspection performed by APTEch in April 2013 as part of Arizona Department of Transportation (ADOT) Airfield Pavement Management System (APMS) Update, the average Pavement Condition Index (PCI) value for the runway is now a 17. Under the APMS program, all pavements under a PCI of 55 are categorized as areas to be reconstructed rather than maintained. However, reconstruction can be considered anything from a mill and overlay to a full-depth reclamation. The Dibble report identified three reconstruction alternatives; mill and overlay, full-depth reconstruction, and full-depth reconstruction in the center 75-foot section only. All three alternatives are reasonable, but the preferred treatment would be a complete reconstruction of the entire pavement section. This would not only give it a 20-year lifespan, but it would also bring this pavement into compliance with the FAA standards that require a stabilized base to support aircraft heavier than 100,000 pounds.

Because of funding, the full-depth reconstruction alternatives are difficult to accomplish. Therefore, on September 4, 2013, Pinal County submitted a Request for Proposals for the design of a pavement rehabilitation project consisting of milling off a minimum of two inches of asphalt concrete (AC) and placing three inches of new pavement. This repair method will serve the

Airport for up to five years, depending on the effect of the failed subgrade and the amount of traffic on the new surface.

Taxiways

Similar to the runway recommendation, the ideal solution for taxiway pavements is a complete reconstruction of the structural section. Several options were proposed in the Dibble report, ranging from crack seal and seal coat to full-depth reconstruction. From the updated pavement inspection performed by APTech, the connector taxiways have an average PCI value of 10 and need to be completely reconstructed. With the already failing subgrade and the ponding present on the connector taxiways, a seal coat or a mill and fill will not resolve these issues to prolong the life of the pavement for a significant amount of time.

APTech's recent APMS update also states that Taxiway A now has an average PCI value of 59. This is above ADOT's threshold for reconstruction at 55, but without some form of maintenance treatment, this value will continue to drop and place it in the reconstruction category. C&S suggests the following, additional option worth considering for Taxiway A if reconstruction is not possible:

Mill the "Nova chip" layer off of the underlying Portland Cement Concrete Pavement (PCCP). Apply a Stress Absorbing Membrane Interlayer (SAMI) to the concrete pavement and then place a one- to two-inch thick asphalt overlay on top of that. The asphalt overlay can use either traditional binder material or it can be an asphalt-rubber blend that provides increased flexibility. While this method does not necessarily increase the strength of the pavement or bring it into compliance with FAA standards because of the lack of a stabilized base layer, the SAMI will minimize reflective cracking from the underlying concrete pavement and the life of the pavement section could be extended another five to seven years.

When funding becomes available for reconstruction, drainage improvements should also be considered to avoid recreating the same situation that has caused much damage to the existing taxiway pavements (see next section).

Apron

This pavement is severely cracked with numerous joint spalls and corner breaks. The area displaying the greatest amount of fatigue is the southeast corner where approximately 10 to 20 percent of the pavement surface is covered by crack seal material. Across the entire apron, there



exist many spall repairs that are failing along with the pavement itself. Foreign object debris (FOD) is a concern resulting from aggregate separating in the spalls and cracks. According to the recent ADOT APMS pavement inspection in April 2013, this pavement has an average PCI of 26, which falls into the complete reconstruction category. However, as an interim measure until funding for a complete reconstruction can be obtained, an asphalt overlay would be an effective way to reduce FOD and reduce the amount of runoff entering the cracks and damaging the subgrade. Reflective cracking would be an issue in this overlay over time, but it would help prolong the life of the pavement and help prevent damage to aircraft from FOD.

Airfield Drainage

In order to prevent ponding on the pavement and damage to the pavement structural section, the infield areas need to drain more effectively and the runoff should not be allowed to travel over the top of the connector taxiways. Therefore, the infield areas should be re-graded and culvert crossings should be installed under the connector taxiways. Ideally, this work would coincide with the reconstruction of the connector taxiways in order to raise the taxiway profiles and fit culverts underneath. The new culverts should have sloped inlets and outlets with load bearing grates to provide a safer environment for aircraft that happen to travel into the infield areas.

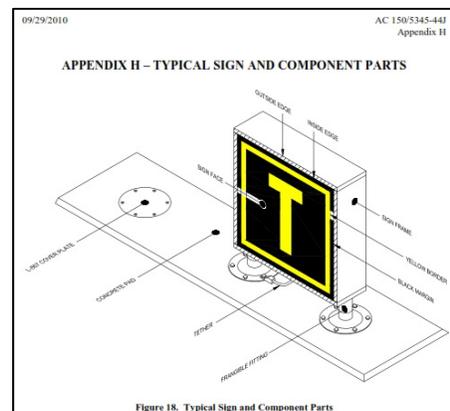
In the soils reports created by Speedie Associates and included in the Dibble report, the borings revealed that the native soil has some plasticity characteristics that may make drainage difficult and may trap moisture in the pavement section. Because of this, edge drains should be considered along all edges of pavement to ensure moisture is moved away from the pavement section as quickly as possible. The edge drains would then carry subsurface moisture to the drainage channels in the infield areas and through the new culvert system underneath the connector taxiways and off the Airport.

Airfield Electrical

Airfield Signage

According to FAA Advisory Circular 150/5340-18F, the distance remaining signs should be no more than 75 feet from the defined edge of the runway. It appears as though they were installed 75 feet from the edge of pavement, but because of the shoulder pavement, the defined edge of the runway is actually the runway edge stripe, which places the signs too far away.

The existing guidance signs and distance remaining signs were constructed using an outdated technique where the junction cans are either collocated with one of the sign legs or are located directly beneath the sign itself. These methods of construction have been abandoned over the years because they create difficult situations pertaining to maintenance. In order to maintain these signs, technicians must remove the entire sign from the foundation to get access to the transformer and the circuit in the junction can. The standard now is to locate the junction box



outside of the sign array as shown in the picture, taken from FAA Advisory Circular 150/5345-44, Figure 18.

Airfield Lighting

The FAA standard requires a minimum of two feet between the edge of the runway and the light fixtures. The light bases were also covered with asphalt pavement, making it difficult to access the junction can in order to maintain the lighting circuit or replace light fixtures. In some instances, the asphalt covered the frangible coupling of the light fixture. The asphalt around the lights should be removed and standard concrete encased junction cans should be installed flush with the surrounding pavement to facilitate maintenance and replacement of broken fixtures.

Taxiway edge lights should be considered to replace the existing edge reflectors. The optimal time for installing the lights would be during the pavement reconstruction projects to avoid trench cuts in the pavement.

Pinal Airpark Infrastructure Assessment and Opinion *Addendum No. 1*

Prepared by C&S Engineers, Inc.
November 2013

Introduction

This report was developed as an addendum to the original assessment report prepared in October 2013 in order to present data collected by coring the existing apron pavement to determine the pavement structural section. A field investigation was conducted from October 7 to October 10, 2013, with representatives present from Pinal County, Marana Aerospace, Ninyo & Moore, and C&S Engineers, Inc. From this visit, Ninyo & Moore generated a report titled *Geotechnical Data Report, Pinal Airpark Main Apron*, dated November 1, 2013.

Airfield Pavements

Apron Assessment

The apron is one of the original airport pavement areas constructed in 1942. The pavement is in poor condition with a PCI of 26. The surface is severely cracked and there are several corner breaks and spalls along the slab joints. Several applications of crack seal have been placed to improve the pavement; however, it appears that the apron is has exceeded its original design life.



In the report created by Ninyo & Moore, 20 sample locations were identified throughout the apron. The pavement was then cored and soil borings were obtained down to 10 feet below the ground surface.

The cores revealed that the average pavement thickness is approximately 6.2 inches. The soil borings revealed that there is no identifiable base course underneath the pavement. It appears that

during the initial construction, native fill material was brought in and compacted to construct the base of the pavement structural section. The concrete pavement was then placed directly on this compacted fill material. The composition of the native material varied from silty sand, clayey sand, sand with gravel, and stiff clay.

Apron Recommendations

With an average Pavement Condition Index (PCI) of 26, the apron pavement is in need of full reconstruction. The discovery of expansive soils underneath the pavement surface indicates that some form of subgrade stabilization may be necessary when the apron is reconstructed. Because the apron accommodates heavy aircraft, current FAA Advisory Circular guidelines require that a stabilized base course layer be constructed under the new concrete pavement.

Performing this reconstruction in phases may assist with obtaining funding and would also allow the airport tenants to remain operational during construction. The construction of an asphalt overlay as the first phase of the reconstruction would help prolong the life of the pavement while the County awaits funding for the full reconstruction. Reflective cracking will likely become an issue over time, but the overlay will help prevent foreign object debris (FOD) and decrease the amount of water penetrating the existing cracks and causing further damage to the existing subgrade and pavement.

Appendix A
Geotechnical Data Report –
Pinal Airpark Main Apron

Prepared by Ninyo & Moore
November 1, 2013

**GEOTECHNICAL DATA REPORT
PINAL AIRPARK MAIN APRON
24641 EAST PINAL AIR PARK ROAD
MARANA, ARIZONA**

PREPARED FOR:

C&S Engineers, Inc.
9200 East Pima Center Parkway, Suite 240
Scottsdale, Arizona 85258

PREPARED BY:

Ninyo & Moore
Geotechnical and Environmental Sciences Consultants
1991 East Ajo Way, Suite 145
Tucson, Arizona 85713

November 1, 2013
Project No. 604250001

November 1, 2013
Project No. 604250001

Mr. Richard Graham, P.E.
Managing Engineer
C&S Engineers, Inc.
9200 East Pima Center Parkway, Suite 240
Scottsdale, Arizona 85258

Subject: Geotechnical Data Report
Pinal Airpark Main Apron
24641 East Pinal Air Park Road
Marana, Arizona

Dear Mr. Graham:

In accordance with our proposal dated September 25, 2013, and your authorization, Ninyo & Moore has performed geotechnical services for the above-referenced site. The attached data report presents our methodology and findings regarding the geotechnical conditions at the project site.

We appreciate the opportunity to be of service to you during this phase of the project.

Respectfully submitted,
NINYO & MOORE



Marek J. Kasztalski, PE, PMP, LEED AP
Senior Geotechnical Engineer

MJK/KLP/clj

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Kevin L. Porter, PE
Senior Engineer

EXPIRES 12/31/13

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1. INTRODUCTION

In accordance with our proposal dated September 25, 2013, we have performed geotechnical services for the Pinal Airpark Main Apron, located at 24541 East Pinal Air Park Road, north of Marana, Arizona. The purpose of our services was to explore the subsurface conditions at the project site. This data report presents the results of our subsurface exploration at the project site.

2. SCOPE OF SERVICES

The scope of our services for the project generally included:

- Reviewing available topographic information, soil surveys, geologic literature, and aerial photographs of the project area.
- Conducting a field trip to the site for geologic reconnaissance.
- Conducting a field trip to the site to mark out the exploration locations.
- Notifying Pinal Airpark personnel and Arizona Blue Stake of the proposed boring locations prior to excavating.
- Coring the existing Portland Cement Concrete (PCC) at 20 locations using an electronic core machine. The concrete cores were measured and photo-documented (Appendix C).
- Performing a geotechnical exploration, which included drilling a total of 20 borings (within the previously mentioned core holes). The borings were advanced with hollow-stem auger drilling techniques to a depth of 10 feet each. The boring logs are presented in Appendix A.
- Performing laboratory tests on selected samples obtained from the borings to evaluate in-situ moisture content and dry density, gradation analyses, Atterberg limits, consolidation (response-to-wetting), and corrosivity characteristics (including pH, minimum resistivity, and sulfate and chloride contents). The results of the laboratory testing are presented on the boring logs and/or in Appendix B.
- Preparing this geotechnical data report presenting the results of our field explorations and laboratory testing.

Our scope of services did not include environmental consulting services such as hazardous waste sampling or analytical testing at the site. A detailed scope of services and estimated fee for such services can be provided upon request.

3. SITE DESCRIPTION

The project site is located within Section 33 in Township 10 South, Range 10 East, at 24541 East Pinal Air Park Road, north of Marana, Arizona (Figure 1). The project site is the PCC portion of the main apron, within the existing Pinal Airpark premises. The apron is currently about 4,300 feet long and 420 feet wide. The Santa Cruz River is located approximately 1.7 miles to the west of the site.

According to the *Red Rock, Arizona, 7.5-Minute United States Geological Survey (USGS) Topographic Quadrangle Map (2011)*, the topography within the project limits ranges from an elevation of about 1,880 feet relative to mean sea level (MSL) near the northwest end of the apron to about 1,890 feet MSL near the southeast end of the apron. Based on the information obtained from this map, the topography in the site vicinity is relatively flat and slopes from the northwest down to the southeast.

Several topographic maps and aerial photographs were reviewed for this project from the Historic Aerials website (NETR, 2013), including the maps from 1965, 1971, and 1993 and aerial photographs from 1958 and 1967. The aerial photograph from 1958 depicted the apron and the adjacent development similar to its current configuration. The aerial photograph from 1967 was similar to the 1958 photograph.

Several aerial photographs from Google Earth were reviewed for this project. Aerial photographs dated 1992, 1996, 2003, 2007, 2009, and 2012 depicted the apron and adjacent airpark developments similar to their present condition.

4. PROJECT DESCRIPTION

We understand that existing infrastructure assessment of the main apron is needed. A visual evaluation of the pavement condition was performed by others earlier this year and resulted in relatively low pavement condition indices (PCI). The results of this exploration are anticipated to help in the evaluation of the existing pavement structure and subgrade conditions for the purpose of future improvements/rehabilitation. Such evaluation will be performed by others.

5. FIELD EXPLORATION AND LABORATORY TESTING

Between October 7 and October 10, 2013, Ninyo & Moore conducted a subsurface exploration at the site in order to evaluate the existing subsurface conditions and to collect PCC pavement and soil samples for laboratory testing. Our field exploration consisted of coring the existing pavement and excavating, logging, and sampling twenty borings (denoted as B-1 through B-20) that extended to depths of approximately 10 feet below the pavement surface using a CME-55 truck-mounted drill rig equipped with hollow-stem augers. Bulk and relatively undisturbed soil samples were collected at selected intervals in our borings. The approximate boring locations are depicted on Figure 2. The boring logs are presented in Appendix A. Photographs of the extracted PCC pavement cores are presented in Appendix C.

The soil samples were transported to the Ninyo & Moore laboratory for laboratory analysis. The analysis included in-situ moisture content and dry density, gradation analysis, Atterberg limits, consolidation (response-to-wetting), and corrosivity characteristics (including pH, minimum resistivity, and sulfate and chloride contents). The results of the laboratory testing are presented on the boring logs in Appendix A and/or in Appendix B.

6. GEOLOGY AND SUBSURFACE CONDITIONS

The geology and subsurface conditions at the site are described in the following sections.

6.1. Geologic Setting

The project site is located in the Sonoran Desert Section of the Basin and Range physiographic province, which is typified by broad alluvial valleys separated by steep, discontinuous, subparallel mountain ranges. The mountain ranges generally trend north-south and northwest-southeast. The basin floors consist of alluvium with thickness extending to several thousands of feet.

The basins and surrounding mountains were formed approximately 10 to 18 million years ago during the mid- to late-Tertiary. Extensional tectonics resulted in the formation of horsts

(mountains) and grabens (basins) with vertical displacement along high-angle normal faults. Intermittent volcanic activity also occurred during this time. The surrounding basins filled with alluvium from the erosion of the surrounding mountains as well as from deposition from rivers. Coarser-grained alluvial material was deposited at the margins of the basins near the mountains.

The surficial geology of the site is described as Late Pleistocene-age (10,000 – 150,000 years before present) river terrace deposits from the adjacent Santa Cruz River. Sediments consist of silty sand with well-rounded gravel. Thin accumulations of calcium carbonate are typical of soil development in the older deposits in this unit (Pearthree et al., 1988).

Our review of the United States Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS) online web soil survey indicated the soils at this site are mapped as Denure Sandy Loam. Loam is an agricultural soil classification that refers to a soil comprised of a mixture of clay, silt, and sand.

6.2. Subsurface Conditions

The following sections describe the subsurface conditions encountered during our field exploration. More detailed descriptions of the materials encountered are presented on the boring logs in Appendix A. Pavement core photographs are included in Appendix C.

6.2.1. Existing Pavement Sections

PCC pavement was encountered at the surface of our boring locations. The PCC thickness varied between 5 and 9 inches with an average thickness of approximately 6.2 inches. Aggregate fill (AF) was not encountered under the PCC in our borings. AF was either blended with the subgrade material so that observation of its depth was not possible, or AF might not have been present. As such, AF was not indicated on the boring logs. The measured pavement core thicknesses are summarized in Table 1 and should be considered approximate.

Table 1 – Summary of PCC Pavement Structural Sections

Core No.	Approximate PCC Thickness (inches)
B-1	6.0
B-2	5.5
B-3	6.5
B-4	5.25
B-5	6.0
B-6	5.0
B-7	6.5
B-8	7.25
B-9	5.75
B-10	5.5
B-11	6.0
B-12	5.75
B-13	5.75
B-14	7.5
B-15	6.25
B-16	9.0
B-17	7.0
B-18	5.75
B-19	5.25
B-20	6.25

6.2.2. Fill

Fill material was encountered in our borings under the PCC pavement, except for boring B-7, and extended to depths between 1.5 and 7.0 feet. The fill generally consisted of loose to medium dense silty sand, clayey sand, silty clayey sand, and sand with variable percentages of gravel, and stiff clay.

6.2.3. Alluvium

Alluvium was encountered in our borings under the pavement and/or fill, and extended to the depths drilled. The alluvium generally consisted of sand with silt, clayey sand, silty sand, and clay, with variable percentages of gravel in our borings. The alluvium was generally in a loose to very dense or firm to hard consistency in our borings.

6.3. Groundwater

Groundwater was not encountered in our borings. Based on well data from the Arizona Department of Water Resources (ADWR), the approximate depth to regional groundwater is approximately 180 feet below ground surface (bgs) or more, in the site vicinity. Regional groundwater levels can fluctuate due to seasonal variations, irrigation, leaking utilities, groundwater withdrawal or injection, flow in the Santa Cruz River and adjacent washes, and other factors.

7. GEOLOGIC HAZARDS

The following sections describe potential geologic hazards at the site, including land subsidence and earth fissures, and faulting.

7.1. Land Subsidence and Earth Fissures

Groundwater depletion, due to groundwater pumping, has caused land subsidence and earth fissures in numerous alluvial basins in Arizona. It has been estimated that subsidence has affected more than 3,000 square miles and has caused damage to a variety of engineered structures and agricultural land (Schumann and Genualdi, 1986). From 1948 to 1983, excessive groundwater withdrawal has been documented in several alluvial valleys where groundwater levels have been reportedly lowered by up to 500 feet in some areas. With such large depletions of groundwater, the alluvium has undergone consolidation resulting in large areas of land subsidence.

In Arizona, earth fissures are generally associated with land subsidence and pose an on-going geologic hazard. Earth fissures generally form near the margins of geomorphic basins where significant amounts of groundwater depletion have occurred. Reportedly, earth fissures have also formed due to tensional stress caused by differential subsidence of the unconsolidated alluvial materials over buried bedrock ridges and irregular bedrock surfaces. Differential subsidence can also be caused by facies changes within unconsolidated alluvial deposits, also causing tensional stress (Schumann and Genualdi, 1986).

Based on our field reconnaissance and our review of the referenced material there are no known earth fissures underlying or immediately adjacent to the subject site. Based on our research, the closest earth fissure is located approximately 9 miles to the northwest of the project site near the southwestern slopes of Picacho Peak (Shipman, 2007). Continued groundwater withdrawal in the area may result in further subsidence and the formation of new fissures or the extension of existing fissures.

7.2. Faulting

The site lies within the Sonoran zone, which is a relatively stable tectonic region located in southwestern Arizona, southeastern California, southern Nevada, and northern Mexico (Euge et al., 1992). This zone is characterized by sparse seismicity and few Quaternary faults. Based on our review of the referenced literature and our site reconnaissance, no active faults are known to cross the project site. The closest known Quaternary fault is the Whitlock Wash Fault Zone, situated approximately 44 miles to the northeast of the project site along the western piedmont of the Catalina Mountains. The Whitlock Wash Fault Zone is a series of north-northeast striking normal faults that dip to the northwest. Recent movement along this fault was approximately 130,000 years ago during the Middle to Late Pleistocene epoch. The slip-rate category of this fault is less than 0.2 millimeters per year (Pearthree, 1996).

8. SEISMIC DESIGN CONSIDERATIONS

Design of the proposed improvements should be performed in accordance with the requirements of the governing jurisdictions and applicable building codes. Table 2 presents the seismic design parameters for the site in accordance with the 2012 International Building Code (IBC) guidelines and adjusted maximum considered earthquake (MCE) spectral response acceleration parameters evaluated using the United States Geological Survey (USGS, 2013) ground motion calculator (web-based).

Table 2 – 2012 International Building Code Seismic Design Criteria

Site Coefficients and Spectral Response Acceleration Parameters	Values
Site Class	D
Site Coefficient, F_a	1.0
Site Coefficient, F_v	1.5
Mapped Spectral Response Acceleration at 0.2-second Period, S_s	2.649 g
Mapped Spectral Response Acceleration at 1.0-second Period, S_1	1.283 g
Spectral Response Acceleration at 0.2-second Period Adjusted for Site Class, S_{MS}	2.649 g
Spectral Response Acceleration at 1.0-second Period Adjusted for Site Class, S_{M1}	1.925 g
Design Spectral Response Acceleration at 0.2-second Period, S_{DS}	1.766 g
Design Spectral Response Acceleration at 1.0-second Period, S_{D1}	1.283 g

9. CORROSION POTENTIAL

The corrosion potential of the on-site materials was analyzed to evaluate its potential effect on the foundations and structures. Corrosion potential was evaluated using the results of laboratory testing of a sample obtained during our subsurface evaluation that was considered representative of soils at the subject site.

Laboratory testing to evaluate corrosion characteristics consisted of pH, minimum electrical resistivity, and chloride and soluble sulfate contents. The pH and minimum electrical resistivity tests were performed in general accordance with Arizona Test 236b, while sulfate and chloride tests were performed in accordance with Arizona Test 733 and 736, respectively. The results of the corrosivity tests are presented in Appendix B.

The soil pH values of the samples tested was 8.2 and 8.3. The minimum electrical resistivity measured in the laboratory was 2,401 ohm-cm and 2,736 ohm-cm. The chloride content of the samples tested in the laboratory was 3 and 19 ppm. The soluble sulfate content of the soil samples tested in the laboratory was 0.001 percent and 0.002 percent.

10. SUMMARY OF FINDINGS

Based on the results of our subsurface evaluation and laboratory testing, the following presents a brief summary of our findings:

- The PCC pavement thickness varied in our boring locations between 5 and 9 inches, with an average thickness of 6.2 inches. An aggregate fill layer beneath the pavement was not observed in our borings.
- The subgrade soils were generally composed of fill and native alluvium, generally of loose to very dense silty sand and clayey sand, or firm to hard clay.
- No known or reported geologic hazards are reported underlying, or immediately adjacent to the project site.

11. LIMITATIONS

The field exploration and laboratory testing presented in this geotechnical report have been conducted in general accordance with current practice and the standard of care exercised by geotechnical consultants performing similar tasks in the project area. No warranty, expressed or implied, is made regarding the findings presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be encountered during construction. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation will be performed upon request. Please also note that our exploration was limited to the geotechnical aspects of the project, and did not include structural issues, environmental concerns, or the presence of hazardous materials.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires additional information or has questions regarding the content or completeness of this document.

This report is intended for design purposes only. It does not provide sufficient data to prepare an accurate bid by contractors. It is suggested that the bidders and their geotechnical consultant perform an independent evaluation of the subsurface conditions in the project areas. The independent evaluations may include, but not be limited to, review of other geotechnical reports prepared for the adjacent areas, site reconnaissance, and additional exploration and laboratory testing.

Our findings are based on the observed site conditions. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

This report is intended exclusively for use by the client. Any use or reuse of the findings, of this report by parties other than the client is undertaken at said parties' sole risk.

12. REFERENCES

American Society for Testing and Materials (ASTM), Annual Book of ASTM Standards.

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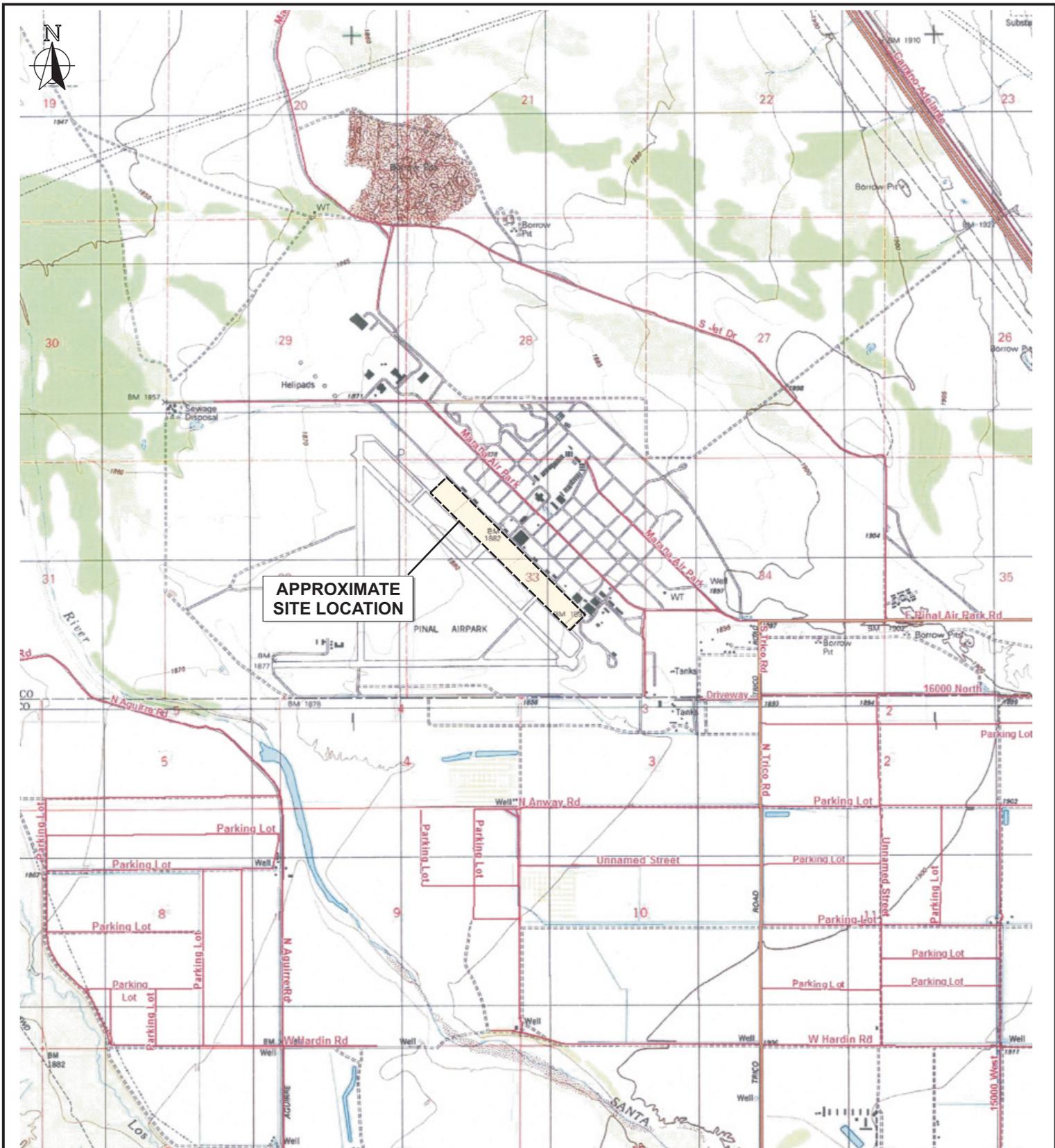
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0 3300
 Approximate Scale:
 1 inch = 3300 feet

Source: US Geological Survey 7.5-minute topographic map, Red Rock, Arizona, rev. 2000.

Note: Dimensions, directions, and locations are approximate.

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SITE LOCATION

FIGURE

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PINAL AIRPARK MAIN APRON
24641 EAST PINAL AIR PARK ROAD
MARANA, ARIZONA

1



Source: NAVTEQ, 10/08/12.



Approximate Scale:
1 inch = 1200 feet

Note: Dimensions, directions, and locations are approximate.

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BORING LOCATIONS

PINAL AIRPARK MAIN APRON
24641 EAST PINAL AIR PARK ROAD
MARANA, ARIZONA

FIGURE

2

file no: 4250bim10113

APPENDIX A

BORING LOGS

Field Procedure for the Collection of Disturbed Samples

Disturbed soil samples were obtained in the field using the following methods.

Bulk Samples

Bulk samples of representative earth materials were obtained from the exploratory borings. The samples were bagged and transported to the laboratory for testing.

The Standard Penetration Test (SPT) Sampler

Disturbed drive samples of earth materials were obtained by means of a Standard Penetration Test sampler. The sampler is composed of a split barrel with an external diameter of 2 inches and an unlined internal diameter of 1-3/8 inches. The sampler was driven into the ground 12 to 18 inches with a 140-pound hammer free-falling from a height of 30 inches in general accordance with ASTM D 1586. The blow counts were recorded for every 6 inches of penetration; the blow counts reported on the logs are those for the last 12 inches of penetration. Soil samples were observed and removed from the sampler, bagged, sealed and transported to the laboratory for testing.

Field Procedure for the Collection of Relatively Undisturbed Samples

Relatively undisturbed soil samples were obtained in the field using the following methods.

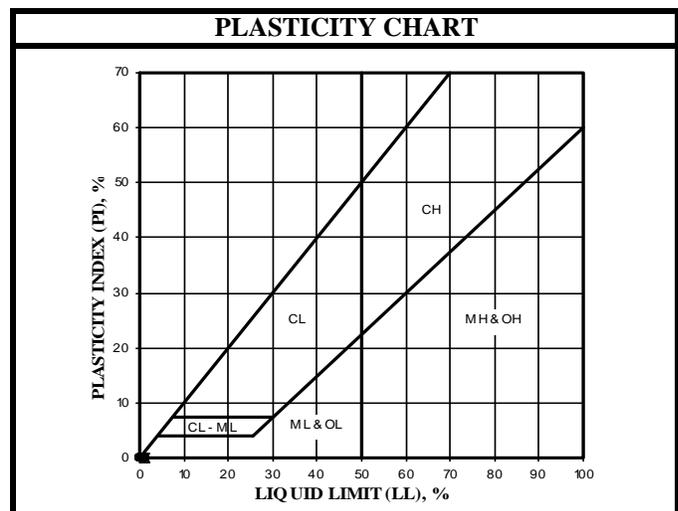
The Modified Split-Barrel Drive Sampler

The sampler, with an external diameter of 3.0 inches, was lined with 1-inch long, thin brass rings with inside diameters of approximately 2.4 inches. The sample barrel was driven into the ground with the weight of a hammer or the Kelly bar of the drill rig in general accordance with ASTM D 3550. The driving weight was permitted to fall freely. The approximate length of the fall, the weight of the hammer or bar, and the number of blows per foot of driving are presented on the boring logs as an index to the relative resistance of the materials sampled. The samples were removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

U.S.C.S. METHOD OF SOIL CLASSIFICATION

MAJOR DIVISIONS		SYMBOL	TYPICAL NAMES	
COARSE-GRAINED SOILS (More than 1/2 of soil > No. 200 Sieve Size)	GRAVELS (More than 1/2 of coarse fraction > No. 4 sieve size)	 GW	Well graded gravels or gravel-sand mixtures, little or no fines	
		 GP	Poorly graded gravels or gravel-sand mixtures, little or no fines	
		 GM	Silty gravels, gravel-sand-silt mixtures	
		 GC	Clayey gravels, gravel-sand-clay mixtures	
	SANDS (More than 1/2 of coarse fraction < No. 4 sieve size)	 SW	Well graded sands or gravelly sands, little or no fines	
		 SP	Poorly graded sands or gravelly sands, little or no fines	
		 SM	Silty sands, sand-silt mixtures	
		 SC	Clayey sands, sand-clay mixtures	
	FINE-GRAINED SOILS (More than 1/2 of soil < No. 200 sieve size)	SILTS & CLAYS Liquid Limit <50	 ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			 CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
 OL			Organic silts and organic silty clays of low plasticity	
SILTS & CLAYS Liquid Limit >50		 MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	
		 CH	Inorganic clays of high plasticity, fat clays	
		 OH	Organic clays of medium to high plasticity, organic silty clays, organic silts	
HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils	

GRAIN SIZE CHART		
CLASSIFICATION	RANGE OF GRAIN	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3"	306 to 76.2
GRAVEL	3" to No. 4	76.2 to 4.76
Coarse	3" to 3/4"	76.2 to 19.1
Fine	3/4" to No. 4	19.1 to 4.76
SAND	No. 4 to No. 200	4.76 to 0.075
Coarse	No. 4 to No. 10	4.76 to 2.00
Medium	No. 10 to No. 40	2.00 to 0.420
Fine	No. 40 to No. 200	0.420 to 0.075
SILT & CLAY	Below No. 200	Below 0.075



BORING LOG EXPLANATION SHEET

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	
	Bulk	Driven						
0	■							Bulk sample. Modified split-barrel drive sampler. No recovery with modified split-barrel drive sampler. Sample retained by others. Standard Penetration Test (SPT). No recovery with a SPT. Shelby tube sample. Distance pushed in inches/length of sample recovered in inches. No recovery with Shelby tube sampler. Continuous Push Sample. Seepage. Groundwater encountered during drilling. Groundwater measured after drilling.
5								XX/XX SM CL
10								Attitudes: Strike/Dip b: Bedding c: Contact j: Joint f: Fracture F: Fault cs: Clay Seam s: Shear bss: Basal Slide Surface sf: Shear Fracture sz: Shear Zone sbs: Shear Bedding Surface
15								The total depth line is a solid line that is drawn at the bottom of the boring.
20								



BORING LOG

Explanation of Boring Log Symbols

PROJECT NO.

DATE

FIGURE

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>10/09/13</u> BORING NO. <u>B-1</u> GROUND ELEVATION <u>--</u> SHEET <u>1</u> OF <u>1</u> METHOD OF DRILLING <u>CME-55, 8" Diameter Hollow-Stem Auger (Southlands)</u> DRIVE WEIGHT <u>140 lbs. (Automatic)</u> DROP <u>30"</u> SAMPLED BY <u>GDS</u> LOGGED BY <u>GDS</u> REVIEWED BY <u>HAH</u>		
	Bulk	Driven						DESCRIPTION/INTERPRETATION		
0							SM	PORTLAND CEMENT CONCRETE: Approximately 6 inches thick. <u>FILL:</u> Brown, damp, loose, silty SAND; trace gravel.		
12								Medium dense.		
11							SP-SM	ALLUVIUM: Reddish brown, damp, loose, poorly graded SAND with silt and gravel.		
8				6.9	108.6			Medium dense; increase in gravel content.		
16								Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled on 10/09/13 shortly after completion of drilling and patched on 10/10/13. <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.		
10										
15										
20										



BORING LOG

PINAL AIRPARK MAIN APRON
MARANA, ARIZONA

PROJECT NO.
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FIGURE
A-1

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>10/09/13</u> BORING NO. <u>B-2</u> GROUND ELEVATION <u>--</u> SHEET <u>1</u> OF <u>1</u> METHOD OF DRILLING <u>CME-55, 8" Diameter Hollow-Stem Auger (Southlands)</u> DRIVE WEIGHT <u>140 lbs. (Automatic)</u> DROP <u>30"</u> SAMPLED BY <u>GDS</u> LOGGED BY <u>GDS</u> REVIEWED BY <u>HAH</u>		
	Bulk	Driven						DESCRIPTION/INTERPRETATION		
0								PORTLAND CEMENT CONCRETE: Approximately 5.5 inches thick.		
9							SC	FILL: Brown, damp, loose, clayey SAND; trace gravel.		
20								Medium dense; increase in gravel content.		
7							SM	ALLUVIUM: Grayish brown, damp, loose, silty SAND with gravel.		
5										
10								Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled on 10/09/13 shortly after completion of drilling and patched on 10/10/13.		
								Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.		
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BORING LOG

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FIGURE
A-2

DEPTH (feet)	Bulk	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>10/09/13</u> BORING NO. <u>B-3</u>
	Driven						SAMPLES
							METHOD OF DRILLING <u>CME-55, 8" Diameter Hollow-Stem Auger (Southlands)</u>
							DRIVE WEIGHT <u>140 lbs. (Automatic)</u> DROP <u>30"</u>
							SAMPLED BY <u>GDS</u> LOGGED BY <u>GDS</u> REVIEWED BY <u>HAH</u>
							DESCRIPTION/INTERPRETATION
0							PORTLAND CEMENT CONCRETE: Approximately 6.5 inches thick.
		7				CL	FILL: Brown, damp, stiff, lean CLAY; trace gravel.
		29				CL	ALLUVIUM: Light brown, damp, hard, lean CLAY; trace gravel; numerous caliche nodules.
5		38					Brown.
		19					Very stiff.
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled on 10/09/13 shortly after completion of drilling and patched on 10/10/13.
							Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
15							
20							



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FIGURE
A-3

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>10/10/13</u> BORING NO. <u>B-4</u> GROUND ELEVATION <u>--</u> SHEET <u>1</u> OF <u>1</u> METHOD OF DRILLING <u>CME-55, 8" Diameter Hollow-Stem Auger (Southlands)</u> DRIVE WEIGHT <u>140 lbs. (Automatic)</u> DROP <u>30"</u> SAMPLED BY <u>GDS</u> LOGGED BY <u>GDS</u> REVIEWED BY <u>HAH</u>		
	Bulk	Driven						DESCRIPTION/INTERPRETATION		
0							SM	PORTLAND CEMENT CONCRETE: Approximately 5.25 inches thick. FILL: Brown, damp, dense, silty SAND; few gravel.		
10			62				SM	ALLUVIUM: Brown, damp, medium dense, silty SAND; few gravel; scattered caliche nodules.		
5			10				SP-SM	Reddish brown, damp, loose, poorly graded SAND with silt and gravel.		
6			6					Dense.		
31			31					Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and patched on 10/10/13 shortly after completion of drilling. <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.		
10										
15										
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BORING LOG

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FIGURE
A-4

DEPTH (feet)	BULK SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED	BORING NO.	
							10/09/13	B-5	
							GROUND ELEVATION	SHEET	OF
							--	1	1
							METHOD OF DRILLING		
							CME-55, 8" Diameter Hollow-Stem Auger (Southlands)		
							DRIVE WEIGHT	DROP	
							140 lbs. (Automatic)	30"	
							SAMPLED BY	LOGGED BY	REVIEWED BY
							GDS	GDS	HAH
							DESCRIPTION/INTERPRETATION		
0							PORTLAND CEMENT CONCRETE: Approximately 6 inches thick.		
		19				SC	FILL: Brown, damp, medium dense, clayey SAND; few gravel.		
		5				CL	ALLUVIUM: Brown, damp, firm, lean CLAY; trace gravel; scattered caliche nodules.		
5						SM	Brown, damp, very dense, silty SAND; trace gravel.		
		77/11"				SC	Brown, damp, very dense, clayey SAND; few gravel.		
		53				SC	Brown, damp, very dense, clayey SAND; few gravel.		
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled on 10/09/13 shortly after completion of drilling and patched on 10/10/13. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.		
15									
20									



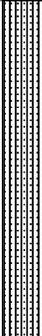
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FIGURE
A-5

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>10/09/13</u> BORING NO. <u>B-6</u> GROUND ELEVATION <u>--</u> SHEET <u>1</u> OF <u>1</u> METHOD OF DRILLING <u>CME-55, 8" Diameter Hollow-Stem Auger (Southlands)</u> DRIVE WEIGHT <u>140 lbs. (Automatic)</u> DROP <u>30"</u> SAMPLED BY <u>GDS</u> LOGGED BY <u>GDS</u> REVIEWED BY <u>HAH</u>		
	Bulk	Driven						DESCRIPTION/INTERPRETATION		
0							SC	PORTLAND CEMENT CONCRETE: Approximately 5 inches thick. FILL: Brown, damp, loose, clayey SAND; trace gravel.		
6			6	8.7	113.3			Medium dense.		
11			11					Medium dense.		
12			12				SP-SM	ALLUVIUM: Reddish and grayish brown, damp, loose, poorly graded SAND with silt and gravel.		
10			10					Medium dense.		
10								Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled on 10/09/13 shortly after completion of drilling and patched on 10/10/13. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.		
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FIGURE
A-6

DEPTH (feet)	BULK SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED	BORING NO.	
							10/09/13	B-7	
							GROUND ELEVATION	SHEET	OF
							--	1	1
							METHOD OF DRILLING		
							CME-55, 8" Diameter Hollow-Stem Auger (Southlands)		
							DRIVE WEIGHT	DROP	
							140 lbs. (Automatic)	30"	
							SAMPLED BY	LOGGED BY	REVIEWED BY
							GDS	GDS	HAH
							DESCRIPTION/INTERPRETATION		
0						SC	PORTLAND CEMENT CONCRETE: Approximately 6.5 inches thick.		
29						SC	ALLUVIUM: Brown, damp, medium dense, clayey SAND; trace gravel; scattered caliche nodules.		
16						SP-SM	Brown, damp, medium dense, poorly graded SAND with silt; few to little gravel.		
10							Loose.		
14							Medium dense; decrease in gravel content.		
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled on 10/09/13 shortly after completion of drilling and patched on 10/10/13.		
							<u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.		
15									
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FIGURE
A-7

DEPTH (feet)	BULK SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED	BORING NO.	
							10/10/13	B-8	
							GROUND ELEVATION	SHEET	OF
							--	1	1
							METHOD OF DRILLING		
							CME-55, 8" Diameter Hollow-Stem Auger (Southlands)		
							DRIVE WEIGHT	DROP	
							140 lbs. (Automatic)	30"	
							SAMPLED BY	LOGGED BY	REVIEWED BY
							GDS	GDS	HAH
							DESCRIPTION/INTERPRETATION		
0							PORTLAND CEMENT CONCRETE: Approximately 7.25 inches thick.		
		11				SM	FILL: Brown, damp, medium dense, silty SAND; trace gravel.		
		32				SC	ALLUVIUM: Brown, damp, dense, clayey SAND; numerous caliche nodules.		
5		32					Light brown; medium dense.		
		13					Brown.		
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and patched on 10/10/13 shortly after completion of drilling.		
							Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.		
15									
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FIGURE
A-8

DEPTH (feet)	BULK SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED	BORING NO.	
							10/09/13	B-9	
							GROUND ELEVATION	SHEET	OF
							--	1	1
							METHOD OF DRILLING		
							CME-55, 8" Diameter Hollow-Stem Auger (Southlands)		
							DRIVE WEIGHT	DROP	
							140 lbs. (Automatic)	30"	
							SAMPLED BY	LOGGED BY	REVIEWED BY
							GDS	GDS	HAH
							DESCRIPTION/INTERPRETATION		
0							PORTLAND CEMENT CONCRETE: Approximately 5.75 inches thick.		
9						SC	FILL: Brown, damp, loose, clayey SAND; few gravel.		
9						CL	ALLUVIUM: Brown, damp, stiff, lean CLAY; trace gravel; scattered caliche nodules.		
37							Hard.		
29									
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled on 10/09/13 shortly after completion of drilling and patched on 10/10/13.		
							Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.		
15									
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FIGURE
A-9

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED	BORING NO.				
	Bulk	Driven						10/10/13	B-10				
								GROUND ELEVATION	SHEET	OF			
								METHOD OF DRILLING	CME-55, 8" Diameter Hollow-Stem Auger (Southlands)				
								DRIVE WEIGHT	140 lbs. (Automatic)	DROP	30"		
								SAMPLED BY	GDS	LOGGED BY	GDS	REVIEWED BY	HAH
								DESCRIPTION/INTERPRETATION					
0							SC-SM	PORTLAND CEMENT CONCRETE: Approximately 5.5 inches thick.					
			8	8.2	111.6			FILL: Brown, damp, loose, silty, clayey SAND; trace gravel.					
			6				SC	ALLUVIUM: Dark reddish brown, damp, stiff, clayey SAND; trace gravel.					
5			13										
			9				SP-SM	Light brown, damp, medium dense, poorly graded SAND with silt; few gravel.					
10								Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and patched on 10/10/13 shortly after completion of drilling.					
								Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.					
15													
20													



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FIGURE
A-10

DEPTH (feet)	BULK SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED	BORING NO.	
							10/09/13	B-11	
							GROUND ELEVATION	SHEET	OF
							--	1	1
							METHOD OF DRILLING		
							CME-55, 8" Diameter Hollow-Stem Auger (Southlands)		
							DRIVE WEIGHT	DROP	
							140 lbs. (Automatic)	30"	
							SAMPLED BY	LOGGED BY	REVIEWED BY
							GDS	GDS	HAH
							DESCRIPTION/INTERPRETATION		
0							PORTLAND CEMENT CONCRETE: Approximately 6 inches thick.		
9						SC	FILL: Brown, damp, loose, clayey SAND; trace gravel.		
11						CL	ALLUVIUM: Reddish brown, damp, very stiff, lean CLAY with sand; trace gravel; numerous caliche nodules; weakly cemented.		
62							Hard; increase in gravel content.		
39							Light brown; decrease in gravel content.		
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled on 10/09/13 shortly after completion of drilling and patched on 10/10/13.		
							Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.		
15									
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FIGURE
A-11

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>10/09/13</u> BORING NO. <u>B-12</u> GROUND ELEVATION <u>--</u> SHEET <u>1</u> OF <u>1</u> METHOD OF DRILLING <u>CME-55, 8" Diameter Hollow-Stem Auger (Southlands)</u> DRIVE WEIGHT <u>140 lbs. (Automatic)</u> DROP <u>30"</u> SAMPLED BY <u>GDS</u> LOGGED BY <u>GDS</u> REVIEWED BY <u>HAH</u>		
	Bulk	Driven						DESCRIPTION/INTERPRETATION		
0								PORTLAND CEMENT CONCRETE: Approximately 5.75 inches thick.		
9							SC	<u>FILL:</u> Brown, damp, loose, clayey SAND; few gravel.		
11							CL	<u>ALLUVIUM:</u> Dark reddish brown, damp, very stiff, lean CLAY with sand; scattered caliche nodules.		
6							SM	Brown, damp, loose, silty SAND; trace gravel.		
6								Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled on 10/09/13 shortly after completion of drilling and patched on 10/10/13. <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.		



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FIGURE
A-12

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>10/09/13</u> BORING NO. <u>B-13</u> GROUND ELEVATION <u>--</u> SHEET <u>1</u> OF <u>1</u> METHOD OF DRILLING <u>CME-55, 8" Diameter Hollow-Stem Auger (Southlands)</u> DRIVE WEIGHT <u>140 lbs. (Automatic)</u> DROP <u>30"</u> SAMPLED BY <u>GDS</u> LOGGED BY <u>GDS</u> REVIEWED BY <u>HAH</u>		
	Bulk	Driven						DESCRIPTION/INTERPRETATION		
0								PORTLAND CEMENT CONCRETE: Approximately 5.75 inches thick.		
8			8				SC	FILL: Brown, damp, loose, clayey SAND; trace gravel.		
17			17				CL	ALLUVIUM: Reddish brown, damp, very stiff, lean CLAY with sand; few to little gravel; numerous caliche nodules.		
31			31	12.7	106.8			Hard; scattered caliche nodules.		
8			8				SM	Brown, damp, medium dense, silty SAND; trace gravel.		
10								Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled on 10/09/13 shortly after completion of drilling and patched on 10/10/13. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.		
15										
20										



BORING LOG

PINAL AIRPARK MAIN APRON
MARANA, ARIZONA

PROJECT NO.
604250001

DATE
11/13

FIGURE
A-13

DEPTH (feet)	Bulk	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>10/09/13</u> BORING NO. <u>B-14</u>
	Driven						GROUND ELEVATION <u>--</u> SHEET <u>1</u> OF <u>1</u>
							METHOD OF DRILLING <u>CME-55, 8" Diameter Hollow-Stem Auger (Southlands)</u>
							DRIVE WEIGHT <u>140 lbs. (Automatic)</u> DROP <u>30"</u>
							SAMPLED BY <u>GDS</u> LOGGED BY <u>GDS</u> REVIEWED BY <u>HAH</u>
							DESCRIPTION/INTERPRETATION
0							<u>PORTLAND CEMENT CONCRETE</u> : Approximately 7.5 inches thick.
		8				SP	<u>FILL</u> : Brown, damp, loose, poorly graded SAND; trace gravel.
						CL	<u>ALLUVIUM</u> : Reddish brown, damp, stiff, lean CLAY with sand; scattered caliche nodules. Very stiff; numerous caliche nodules.
5		12					
		9				SP-SM	Light reddish brown, damp, loose, poorly graded SAND with silt; few gravel.
		7					
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled on 10/09/13 shortly after completion of drilling and patched on 10/10/13. <u>Note</u> : Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
15							
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BORING LOG

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FIGURE
A-14

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED	BORING NO.				
	Bulk	Driven						10/10/13	B-15				
								GROUND ELEVATION	SHEET	OF			
								METHOD OF DRILLING	CME-55, 8" Diameter Hollow-Stem Auger (Southlands)				
								DRIVE WEIGHT	140 lbs. (Automatic)	DROP	30"		
								SAMPLED BY	GDS	LOGGED BY	GDS	REVIEWED BY	HAH
								DESCRIPTION/INTERPRETATION					
0								PORTLAND CEMENT CONCRETE: Approximately 6.25 inches thick.					
			10				SC	FILL: Brown, damp, loose, clayey SAND.					
			7				SC	ALLUVIUM: Reddish brown, damp, loose, clayey SAND; scattered caliche nodules.					
5			73					Very dense; numerous caliche nodules.					
			11				SM	Brown, damp, medium dense, silty SAND; few gravel.					
10								Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and patched on 10/10/13 shortly after completion of drilling.					
								Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.					
15													
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FIGURE
A-15

DEPTH (feet)	BULK SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED	BORING NO.				
							10/10/13	B-16				
							GROUND ELEVATION	SHEET	OF			
							METHOD OF DRILLING	CME-55, 8" Diameter Hollow-Stem Auger (Southlands)				
							DRIVE WEIGHT	140 lbs. (Automatic)	DROP	30"		
							SAMPLED BY	GDS	LOGGED BY	GDS	REVIEWED BY	HAH
							DESCRIPTION/INTERPRETATION					
0							<u>PORTLAND CEMENT CONCRETE</u> : Approximately 9 inches thick.					
10						CL	<u>FILL</u> : Brown, damp, stiff, lean CLAY.					
11						CL	<u>ALLUVIUM</u> : Reddish brown, damp, very stiff, lean CLAY; scattered caliche nodules and filaments.					
14						SM	Brown, damp, loose, silty SAND.					
4						SP-SM	Reddish brown, damp, loose, poorly graded SAND with silt; trace gravel.					
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and patched on 10/10/13 shortly after completion of drilling. <u>Note</u> : Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.					
15												
20												



BORING LOG

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FIGURE
A-16

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>10/10/13</u> BORING NO. <u>B-17</u> GROUND ELEVATION <u>--</u> SHEET <u>1</u> OF <u>1</u> METHOD OF DRILLING <u>CME-55, 8" Diameter Hollow-Stem Auger (Southlands)</u> DRIVE WEIGHT <u>140 lbs. (Automatic)</u> DROP <u>30"</u> SAMPLED BY <u>GDS</u> LOGGED BY <u>GDS</u> REVIEWED BY <u>HAH</u>		
	Bulk	Driven						DESCRIPTION/INTERPRETATION		
0								PORTLAND CEMENT CONCRETE: Approximately 7 inches thick.		
8			8	11.3	105.7		SC	FILL: Brown, damp, loose, clayey SAND.		
13			13				CL	ALLUVIUM: Reddish brown, damp, very stiff, lean CLAY with sand; numerous caliche nodules.		
16			16				SC	Light brown, damp, medium dense, clayey SAND.		
6			6				SM	Light brown, damp, loose, silty SAND.		
10								Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and patched on 10/10/13 shortly after completion of drilling. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.		
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FIGURE
A-17

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>10/10/13</u> BORING NO. <u>B-18</u> GROUND ELEVATION <u>--</u> SHEET <u>1</u> OF <u>1</u> METHOD OF DRILLING <u>CME-55, 8" Diameter Hollow-Stem Auger (Southlands)</u> DRIVE WEIGHT <u>140 lbs. (Automatic)</u> DROP <u>30"</u> SAMPLED BY <u>GDS</u> LOGGED BY <u>GDS</u> REVIEWED BY <u>HAH</u>		
	Bulk	Driven						DESCRIPTION/INTERPRETATION		
0							SC	PORTLAND CEMENT CONCRETE: Approximately 5.75 inches thick. FILL: Brown, damp, loose, clayey SAND; few gravel.		
8							SC	ALLUVIUM: Reddish brown, damp, medium dense, clayey SAND; few to little gravel; scattered caliche nodules.		
15							SM	Brown, damp, medium dense, silty SAND; trace gravel.		
22								Reddish brown; decrease in silt content.		
4								Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and patched on 10/10/13 shortly after completion of drilling.		
10								Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.		
15										
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BORING LOG

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MARANA, ARIZONA

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DATE
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FIGURE
A-18

DEPTH (feet)	BULK SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED	BORING NO.	
							10/10/13	B-19	
							GROUND ELEVATION	SHEET	OF
							--	1	1
							METHOD OF DRILLING		
							CME-55, 8" Diameter Hollow-Stem Auger (Southlands)		
							DRIVE WEIGHT	DROP	
							140 lbs. (Automatic)	30"	
							SAMPLED BY	LOGGED BY	REVIEWED BY
							GDS	GDS	HAH
							DESCRIPTION/INTERPRETATION		
0							PORTLAND CEMENT CONCRETE: Approximately 6 inches thick.		
7						SC	FILL: Brown, damp, loose, clayey SAND.		
5						SC	ALLUVIUM: Reddish brown, damp, loose, clayey SAND; scattered caliche nodules.		
60							Dense; numerous caliche nodules.		
66							Light brown; very dense; moderately cemented.		
10							Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and patched on 10/10/13 shortly after completion of drilling.		
							Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.		
15									
20									



BORING LOG

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MARANA, ARIZONA

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FIGURE
A-19

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED	BORING NO.				
	Bulk	Driven						10/10/13	B-20				
								GROUND ELEVATION	SHEET	OF			
								METHOD OF DRILLING	CME-55, 8" Diameter Hollow-Stem Auger (Southlands)				
								DRIVE WEIGHT	140 lbs. (Automatic)	DROP	30"		
								SAMPLED BY	GDS	LOGGED BY	GDS	REVIEWED BY	HAH
								DESCRIPTION/INTERPRETATION					
0							SC	PORTLAND CEMENT CONCRETE: Approximately 6.25 inches thick.					
12							CL	FILL: Brown, damp, loose, clayey SAND; trace gravel.					
15							CL	ALLUVIUM: Reddish brown, damp, very stiff, lean CLAY with sand; numerous caliche nodules.					
9							SP-SM	Brown, damp, loose, poorly graded SAND with silt; trace gravel.					
7													
10								Total Depth = 10 feet. Groundwater not encountered during drilling. Backfilled and patched on 10/10/13 shortly after completion of drilling.					
								Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.					
15													
20													



BORING LOG

PINAL AIRPARK MAIN APRON
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FIGURE
A-20

APPENDIX B

LABORATORY TESTING

Classification

Soils were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488. Soil classifications are indicated on the logs of the exploratory excavations in Appendix A.

In-Place Moisture and Density Tests

The moisture content and dry density of relatively undisturbed samples obtained from the exploratory excavations were evaluated in general accordance with ASTM D 2937. The test results are presented on the logs of the exploratory excavations in Appendix A.

Gradation Analysis

Gradation analysis tests were performed on selected representative soil samples in general accordance with ASTM D 422. The grain-size distribution curves are shown on Figures B-1 through B-3. These test results were utilized in evaluating the soil classifications in accordance with the Unified Soil Classification System (USCS).

Atterberg Limits

Tests were performed on selected representative fine-grained soil samples to evaluate the liquid limit, plastic limit, and plasticity index in general accordance with ASTM D 4318. These test results were utilized to evaluate the soil classification in accordance with the Unified Soil Classification System. The test results and classifications are shown on Figure B-4.

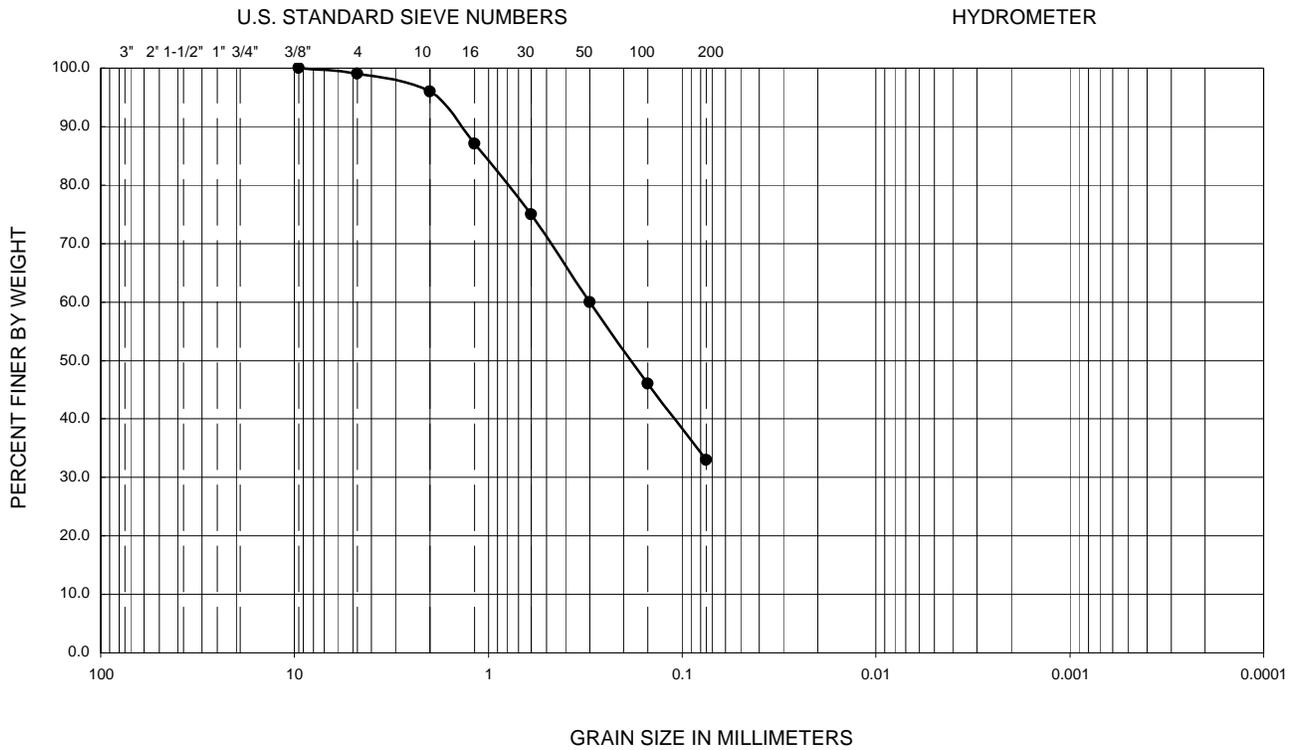
Consolidation Tests

Consolidation tests were performed on selected relatively undisturbed soil samples in general accordance with ASTM D 2435. The samples were inundated during testing to represent adverse field conditions. The percent of consolidation for each load cycle was recorded as a ratio of the amount of vertical compression to the original height of the sample. The results of the tests are summarized on Figures B-5 through B-7.

Soil Corrosivity Tests

Soil pH, and resistivity tests were performed on representative samples in general accordance with Arizona Test Method 236b. The soluble sulfate and chloride content of selected samples were evaluated in general accordance with Arizona Test Method 733 and Arizona Test Method 736, respectively. The test results are presented on Figure B-8.

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY

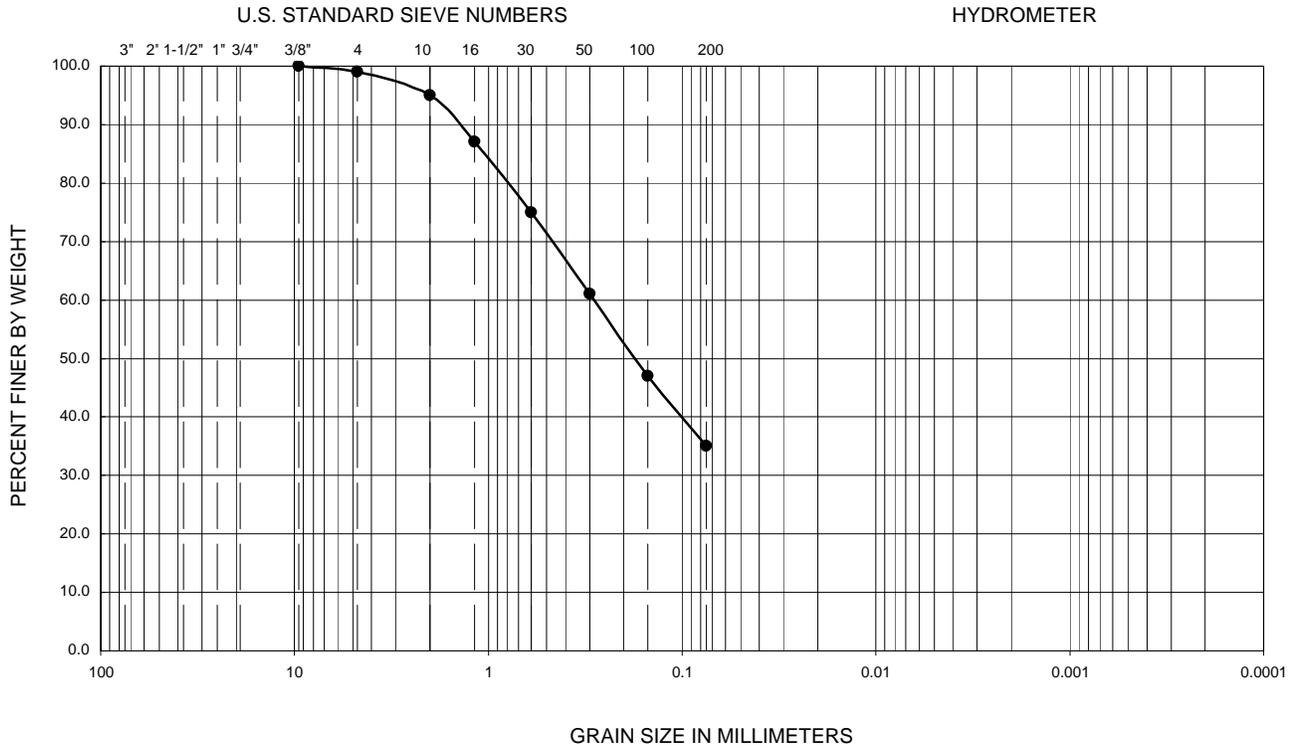


Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D ₁₀	D ₃₀	D ₆₀	C _u	C _c	Passing No. 200 (%)	USCS
●	B-6	0.5-2.0	26	15	11	--	--	--	--	--	33	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore		GRADATION TEST RESULTS		FIGURE B-1
PROJECT NO.	DATE	PINAL AIRPARK MIAN APRON 24641 EAST PINAL AIRPARK ROAD MARANA, ARIZONA		
604250001	11/13			

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY

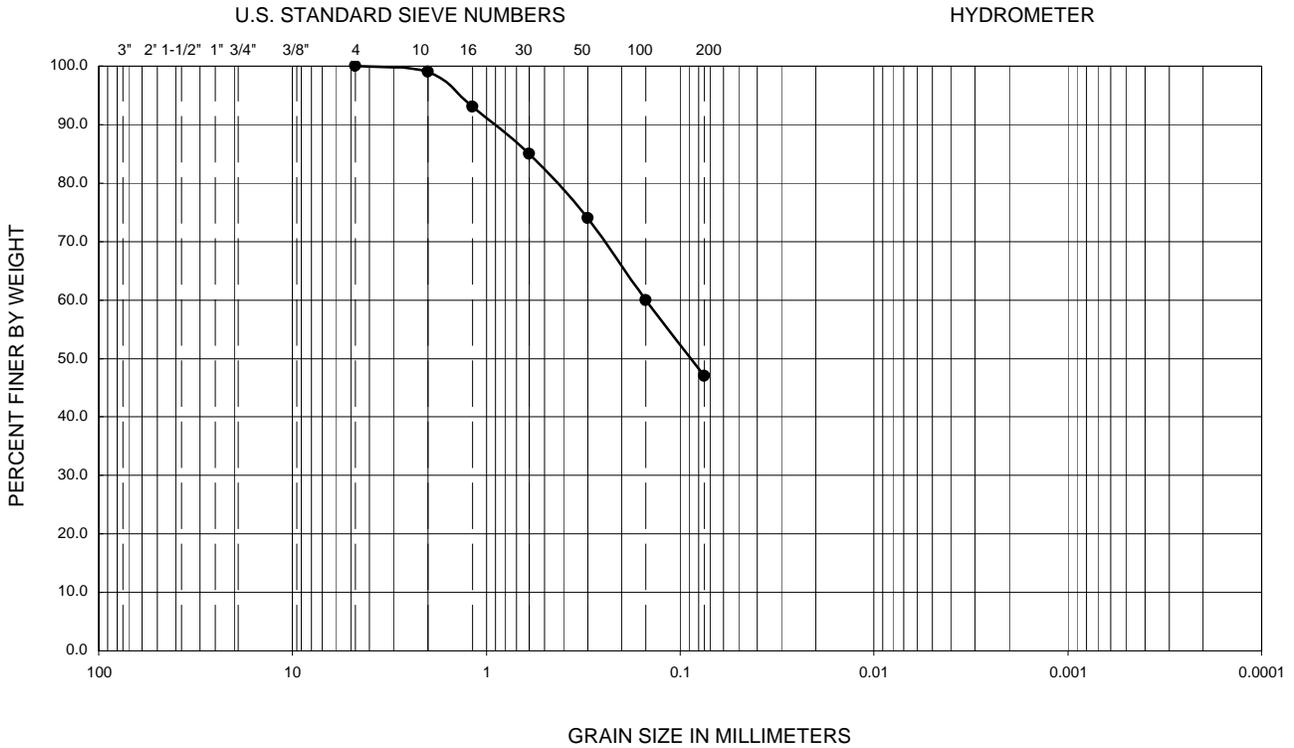


Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D ₁₀	D ₃₀	D ₆₀	C _u	C _c	Passing No. 200 (%)	USCS
●	B-10	0.5-2.0	19	14	5	--	--	--	--	--	35	SC-SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

Ninyo & Moore		GRADATION TEST RESULTS		FIGURE B-2
PROJECT NO.	DATE	PINAL AIRPARK MIAN APRON 24641 EAST PINAL AIRPARK ROAD MARANA, ARIZONA		
604250001	11/13			

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY

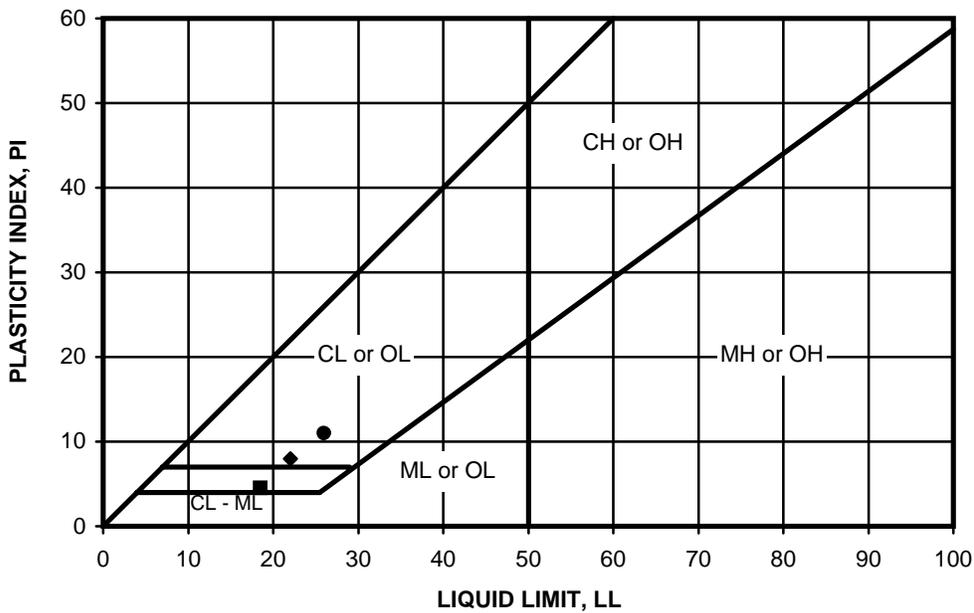


Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D ₁₀	D ₃₀	D ₆₀	C _u	C _c	Passing No. 200 (%)	USCS
●	B-17	0.6-2.1	22	14	8	--	--	--	--	--	47	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

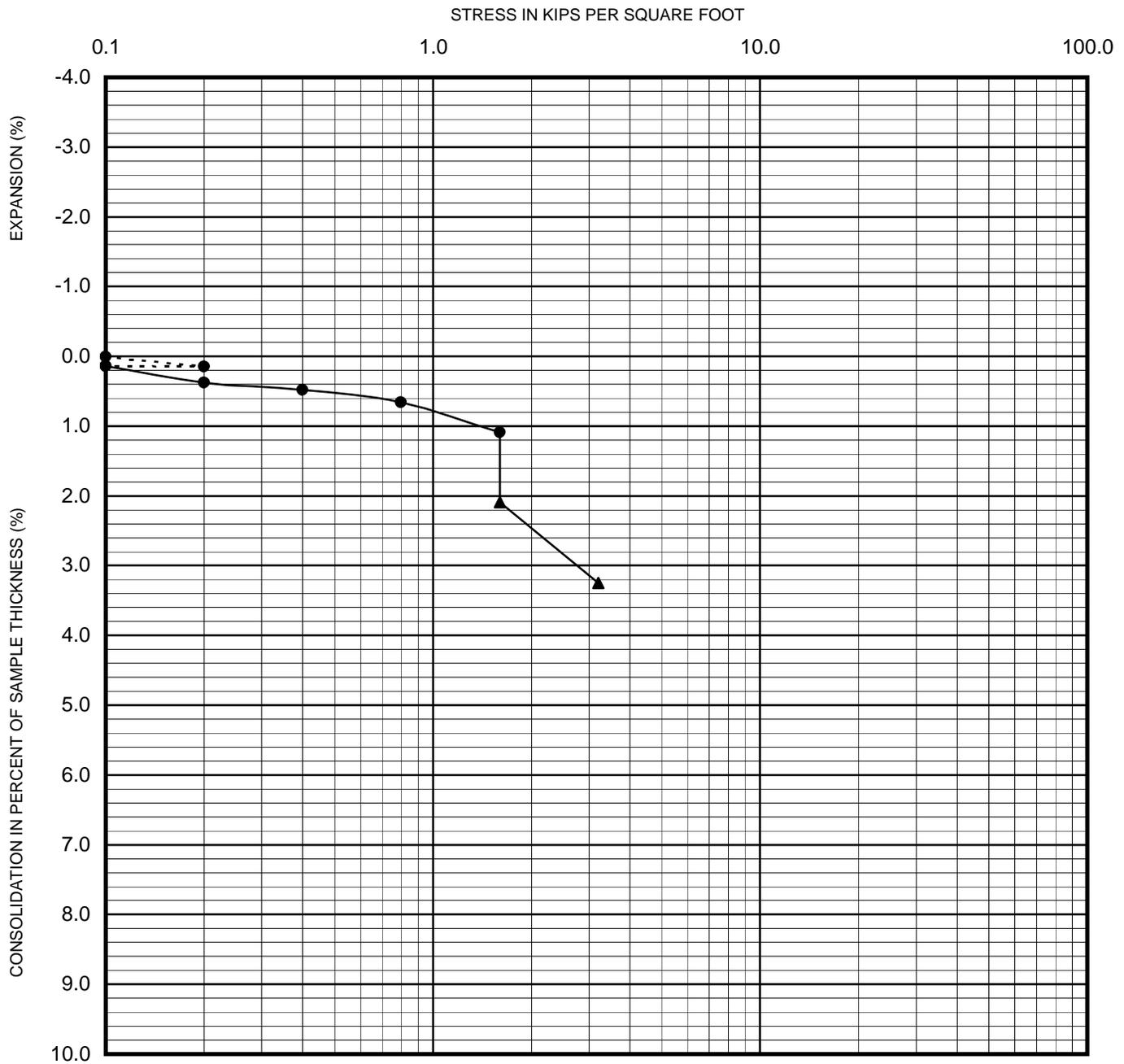
Ninyo & Moore		GRADATION TEST RESULTS		FIGURE B-3
PROJECT NO.	DATE	PINAL AIRPARK MIAN APRON 24641 EAST PINAL AIRPARK ROAD MARANA, ARIZONA		
604250001	11/13			

SYMBOL	LOCATION	DEPTH (FT)	LIQUID LIMIT, LL	PLASTIC LIMIT, PL	PLASTICITY INDEX, PI	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS (Entire Sample)
●	B-6	0.5-2	26	15	11	CL	SC
■	B-10	0.5-2	19	14	5	CL-ML	SC-SM
◆	B-17	0.6-2.1	22	14	8	CL	SC



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318

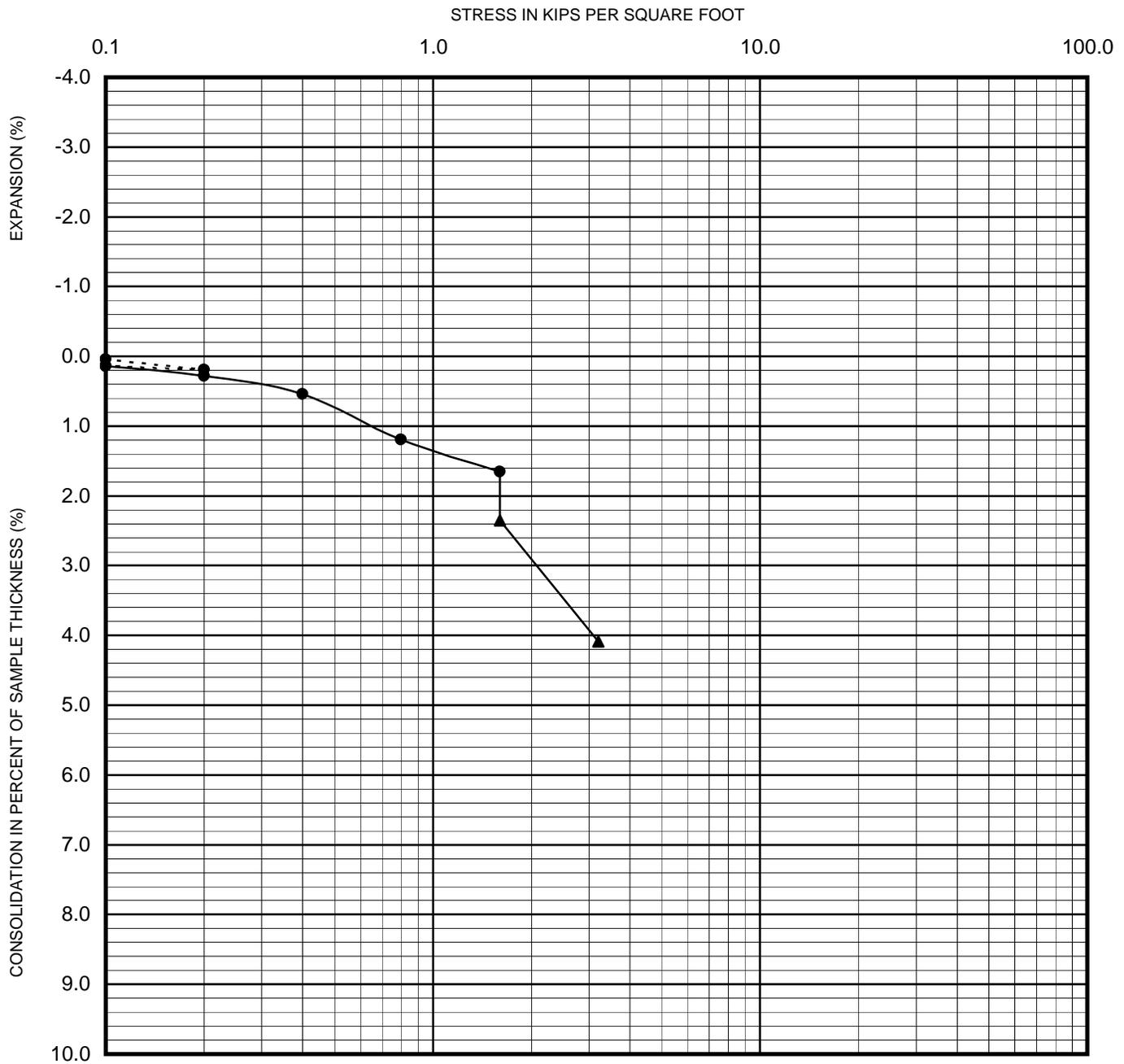
Ninyo & Moore		ATTERBERG LIMITS TEST RESULTS	FIGURE
PROJECT NO. 604250001	DATE 11/13		PINAL AIRPARK MIAN APRON 24641 EAST PINAL AIRPARK ROAD MARANA, ARIZONA



--●---	Seating Cycle	Sample Location	B-6
—●—	Loading Prior to Inundation	Depth (ft.)	0.5-2.0
—▲—	Loading After Inundation	Soil Type	SC
-▲-	Rebound Cycle		

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

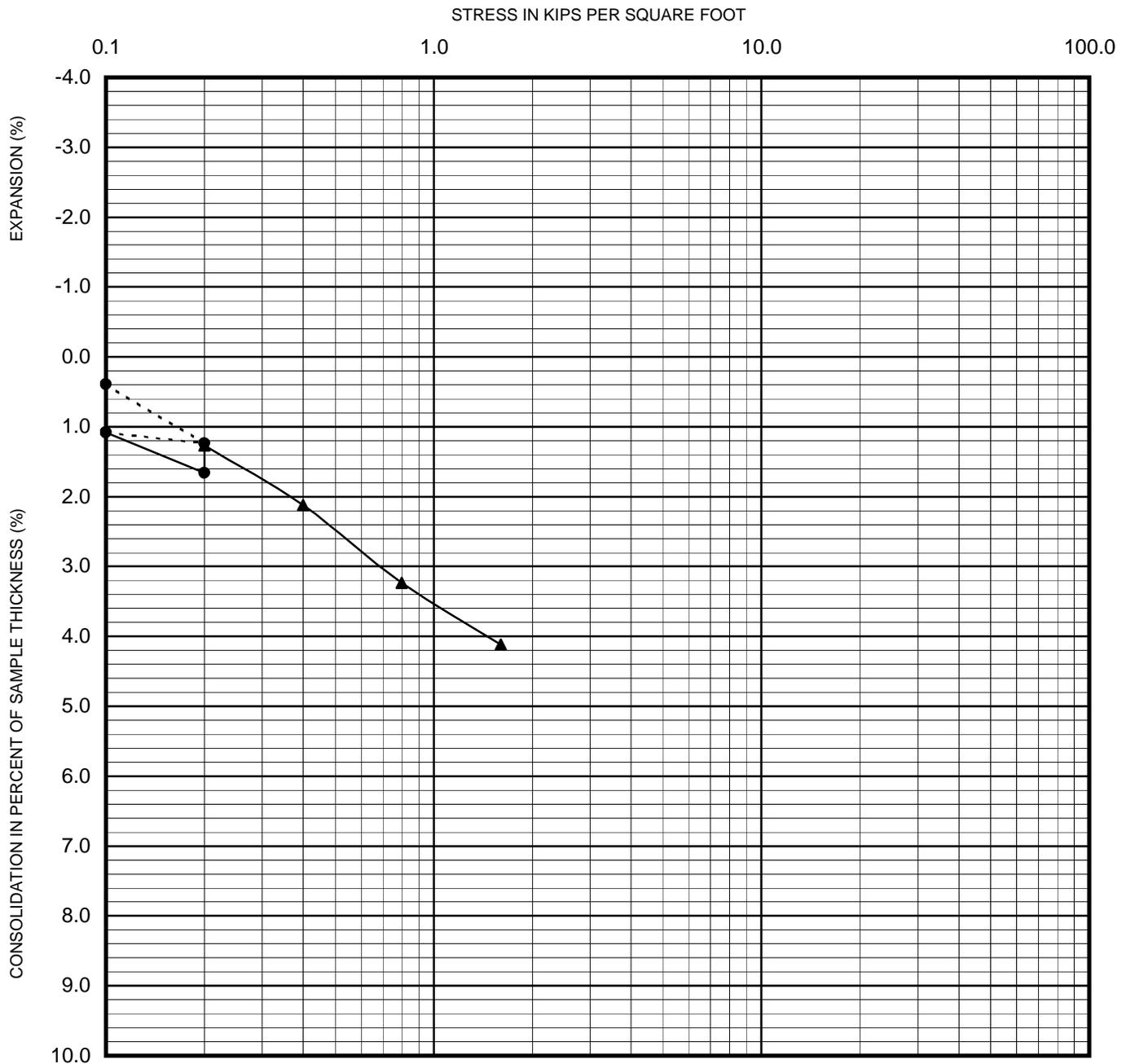
Ninyo & Moore		CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO.	DATE		B-5
604250001	11/13	PINAL AIRPARK MIAN APRON 24641 EAST PINAL AIRPARK ROAD MARANA, ARIZONA	



--●---	Seating Cycle	Sample Location	B-10
—●—	Loading Prior to Inundation	Depth (ft.)	0.5-2.0
—▲—	Loading After Inundation	Soil Type	SC-SM
-▲-	Rebound Cycle		

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

Ninyo & Moore		CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO.	DATE		B-6
604250001	11/13	PINAL AIRPARK MIAN APRON 24641 EAST PINAL AIRPARK ROAD MARANA, ARIZONA	



--●---	Seating Cycle	Sample Location	B-17
—●—	Loading Prior to Inundation	Depth (ft.)	0.6-2.1
—▲—	Loading After Inundation	Soil Type	SC
-▲-	Rebound Cycle		

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

Ninyo & Moore		CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO.	DATE		B-7
604250001	11/13	PINAL AIRPARK MIAN APRON 24641 EAST PINAL AIRPARK ROAD MARANA, ARIZONA	

SAMPLE LOCATION	SAMPLE DEPTH (FT)	pH ¹	RESISTIVITY ¹ (Ohm-cm)	SULFATE CONTENT ²		CHLORIDE CONTENT ³ (ppm)
				(ppm)	(%)	
B-1	0.5-5	8.2	2,736	12	0.001	19
B-19	0.5-5	8.3	2,401	17	0.002	3

¹ PERFORMED IN GENERAL ACCORDANCE WITH ARIZONA TEST METHOD 236b

² PERFORMED IN GENERAL ACCORDANCE WITH ARIZONA TEST METHOD 733

³ PERFORMED IN GENERAL ACCORDANCE WITH ARIZONA TEST METHOD 736

<i>Ninyo & Moore</i>		CORROSIVITY TEST RESULTS	FIGURE
PROJECT NO.	DATE	PINAL AIRPARK MIAN APRON 24641 EAST PINAL AIRPARK ROAD MARANA, ARIZONA	B-8
604250001	11/13		

APPENDIX C

PAVEMENT CORE PHOTOGRAPHS



Photo No. 1

Location: B-1

Date: 10/15/2013



Photo No. 2

Location: B-1

Date: 10/15/2013



Photo No. 3

Location: B-2

Date: 10/15/2013



Photo No. 4

Location: B-2

Date: 10/15/2013



Photo No. 5

Location: B-3

Date: 10/15/2013



Photo No. 6

Location: B-3

Date: 10/15/2013



Photo No. 7

Location: B-4

Date: 10/15/2013



Photo No. 8

Location: B-4

Date: 10/15/2013



Photo No. 9

Location: B-5

Date: 10/15/2013



Photo No. 10

Location: B-5

Date: 10/15/2013



Photo No. 11

Location: B-6

Date: 10/15/2013



Photo No. 12

Location: B-6

Date: 10/15/2013



Photo No. 13

Location: B-7

Date: 10/15/2013



Photo No. 14

Location: B-7

Date: 10/15/2013



Photo No. 15

Location: B-8

Date: 10/15/2013



Photo No. 16

Location: B-8

Date: 10/15/2013



Photo No. 17

Location: B-9

Date: 10/15/2013



Photo No. 18

Location: B-9

Date: 10/15/2013



Photo No. 19

Location: B-10

Date: 10/15/2013



Photo No. 20

Location: B-10

Date: 10/15/2013



Photo No. 21

Location: B-11

Date: 10/15/2013



Photo No. 22

Location: B-11

Date: 10/15/2013



Photo No. 23

Location: B-12

Date: 10/15/2013



Photo No. 24

Location: B-12

Date: 10/15/2013



Photo No. 25

Location: B-13

Date: 10/15/2013

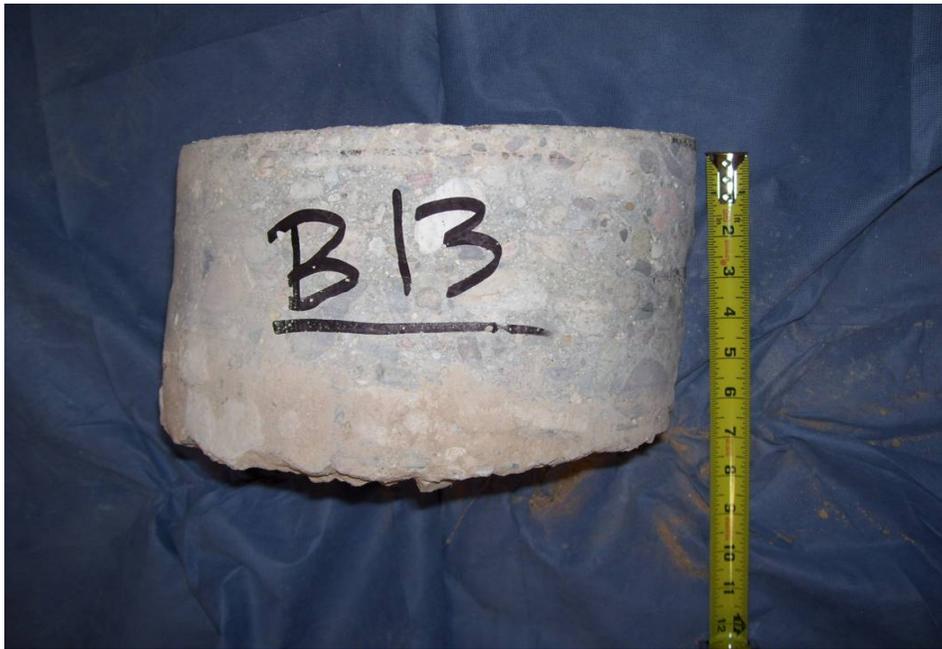


Photo No. 26

Location: B-13

Date: 10/15/2013



Photo No. 27

Location: B-14

Date: 10/15/2013



Photo No. 28

Location: B-14

Date: 10/15/2013



Photo No. 29

Location: B-15

Date: 10/15/2013



Photo No. 30

Location: B1-5

Date: 10/15/2013



Photo No. 31

Location: B-16

Date: 10/15/2013



Photo No. 32

Location: B-16

Date: 10/15/2013



Photo No. 33

Location: B-17

Date: 10/15/2013



Photo No. 34

Location: B-17

Date: 10/15/2013



Photo No. 35

Location: B-18

Date: 10/15/2013



Photo No. 36

Location: B-18

Date: 10/15/2013



Photo No. 37

Location: B-19

Date: 10/15/2013



Photo No. 38

Location: B-19

Date: 10/15/2013



Photo No. 39

Location: B-20

Date: 10/15/2013



Photo No. 40

Location: B-20

Date: 10/15/2013

APPENDIX D

Aviation Activity Data



Arrivals

Ident	Owner	Type	Dept	Dest	Departure Time (GMT)	Arrival Time (GMT)	Elapsed	Disposition
DAL9934	DELTA AIR LINES, INC.	B752	ATL	MZJ	5/5/2013 15:29	5/5/2013 18:53	3h 24m	Arrived
BOE426	BOEING COMMERCIAL AIRPLANE GROUP (SEATTLE, WA)	B738	BFI	MZJ	4/30/2013 19:33	4/30/2013 21:48	2h 15m	Arrived
CPA3332	CATHAY PACIFIC AIRWAYS LTD.	B744	LAX	MZJ	4/24/2013 17:31	4/24/2013 18:21	50m	Tracking Terminated Early
DAL9932	DELTA AIR LINES, INC.	B752	SLC	MZJ	4/22/2013 14:58	4/22/2013 16:22	1h 24m	Arrived
N295AL	Unknown owner	B733	PHKO	MZJ	4/14/2013 18:56	4/15/2013 0:33	6h 37m	Tracking Terminated Early
NCA602	NIPPON CARGO AIRLINES CO., LTD.	B744	ORD	MZJ	4/12/2013 11:23	Indeterminate	N/A	Indeterminate
N15CC	Unknown owner	PC12	CA35	MZJ	4/10/2013 16:12	4/10/2013 23:58	8h 46m	Diverted
BOE983	BOEING COMMERCIAL AIRPLANE GROUP (SEATTLE, WA)	B763	BFI	MZJ	4/9/2013 17:16	4/9/2013 19:30	2h 14m	Arrived
N294AL	Unknown owner	B733	PHKO	MZJ	4/8/2013 19:16	4/9/2013 1:07	6h 51m	Arrived
EJA368	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	C680	ILG	MZJ	4/5/2013 16:11	4/5/2013 22:05	6h 54m	Diverted
N293AL	Unknown owner	B733	PHKO	MZJ	3/27/2013 21:04	3/28/2013 2:16	5h 12m	Arrived
N8422H	ARKON ENGINEERING 706 LEE STREET TROME, NY 13440	P28A	HND	MZJ	3/21/2013 15:58	3/21/2013 18:53	3h 55m	Arrived
N484VX	Unknown owner	B735	BGR	MZJ	3/20/2013 16:27	3/20/2013 21:56	5h 29m	Tracking Terminated Early
N383JP	MORELAND AIRCRAFT LLC 5060 CALIFORNIA AVE STE 1150 BAKERSFIELD, CA 93309-0728	BE20	VNY	MZJ	3/20/2013 16:07	3/20/2013 17:39	2h 32m	Tracking Terminated Early
CPA3332	CATHAY PACIFIC AIRWAYS LTD.	B744	LAX	MZJ	3/18/2013 17:15	3/18/2013 18:12	57m	Arrived
EIA4471	EVERGREEN INTERNATIONAL AIRLINES	B742	PSM	MZJ	3/17/2013 15:50	3/17/2013 21:02	5h 12m	Tracking Terminated Early
KAL029D	KOREAN AIR LINES CO., LTD.	B744	ANC	MZJ	3/12/2013 13:16	3/12/2013 18:25	5h 9m	Arrived
GT12709	ATLAS AIR, INC. (JAMAICA, NY)	B744	MEM	MZJ	2/15/2013 12:01	2/15/2013 14:51	3h 50m	Arrived
N483VX	Unknown owner	B735	BGR	MZJ	2/10/2013 14:54	2/10/2013 21:03	6h 9m	Tracking Terminated Early
KYE951	Unknown owner	MD11	MIA	MZJ	2/9/2013 0:09	2/9/2013 4:54	5h 45m	Arrived
N497CA	FAYARD ENTERPRISES INC 6966 NC 56 HWYFRANKLINTON, NC 27525-9691	C212	BGD	MZJ	2/8/2013 1:19	2/8/2013 4:37	3h 18m	Arrived
BOE604	BOEING COMMERCIAL AIRPLANE GROUP (SEATTLE, WA)	B748	PAE	MZJ	2/4/2013 19:08	2/4/2013 21:22	2h 14m	Tracking Terminated Early
N481VX	Unknown owner	B735	BGR	MZJ	2/3/2013 12:54	2/3/2013 18:52	6h 58m	Arrived
RYN7001	RYAN AVIATION CORPORATION D/B/A RYAN INTERNATIONAL AIRLINES (WICHITA, KS)	B763	TUS	MZJ	1/22/2013 18:45	1/22/2013 18:57	12m	Arrived
RYN7001	RYAN AVIATION CORPORATION D/B/A RYAN INTERNATIONAL AIRLINES (WICHITA, KS)	B763	SBGR	MZJ	1/22/2013 1:08	1/22/2013 5:12	4h 4m	Diverted
N125RD	Unknown owner	B763	RFD	MZJ	1/16/2013 19:38	1/16/2013 22:33	3h 55m	Arrived
N772RD	Unknown owner	A332	RFD	MZJ	1/15/2013 17:40	1/15/2013 20:59	3h 19m	Arrived
DAL9931	DELTA AIR LINES, INC.	B752	MSP	MZJ	1/7/2013 15:15	1/7/2013 18:13	3h 58m	Arrived
DAL9931	DELTA AIR LINES, INC.	DC95	OKC	MZJ	1/5/2013 17:18	1/5/2013 19:16	2h 58m	Arrived
N73SK	BALD EAGLE AIR LLC 9255 SPRINGFIELD CLOSE MISSOULA, MT 59808-9018	C501	EDC	MZJ	1/3/2013 15:25	1/3/2013 18:16	3h 51m	Arrived
DAL9932	DELTA AIR LINES, INC.	B752	MSP	MZJ	12/21/2012 16:44	12/21/2012 19:38	3h 54m	Arrived
N15CC	Unknown owner	PC12	ADS	MZJ	12/19/2012 17:37	12/19/2012 21:36	4h 59m	Arrived
DAL9936	DELTA AIR LINES, INC.	B752	ATL	MZJ	12/18/2012 18:35	12/18/2012 22:19	4h 44m	Arrived
CSN2002	CHINA SOUTHERN AIRLINES	B733	OAK	MZJ	12/13/2012 15:44	12/13/2012 17:27	2h 43m	Arrived
CSN2002	CHINA SOUTHERN AIRLINES	B733	PHNL	MZJ	12/13/2012 9:39	Indeterminate	N/A	Indeterminate
ANA9432	ALL NIPPON AIRWAYS CO., LTD.	A320	ANC	MZJ	12/11/2012 12:13	12/11/2012 17:01	5h 48m	Arrived
N305JD	Unknown owner	P46T	ROW	MZJ	12/7/2012 15:43	12/7/2012 17:46	2h 3m	Arrived
DAL9932	DELTA AIR LINES, INC.	B763	LAX	MZJ	12/1/2012 20:28	12/1/2012 21:27	59m	Arrived
N952DN	Unknown owner	MD90	ANC	MZJ	12/1/2012 16:25	12/1/2012 21:42	5h 17m	Arrived
DAL9932	DELTA AIR LINES, INC.	A320	MSP	MZJ	11/30/2012 15:47	11/30/2012 18:39	3h 52m	Arrived
EJA588	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	C56X	MYF	MZJ	11/29/2012 19:42	11/29/2012 22:28	3h 46m	Diverted
N340CJ	MCGUIRE FREDERICK L 730 N POST OAK RD STE 201 HOUSTON, TX 77024-3837	C340	STS	MZJ	11/29/2012 18:22	11/30/2012 19:20	25h 58m	Tracking Terminated Early
ABD677P	ATLANTA	B742	JFK	MZJ	11/26/2012 17:40	11/26/2012 22:37	5h 57m	Arrived
DAL9931	DELTA AIR LINES, INC.	B752	MSP	MZJ	11/26/2012 15:04	11/26/2012 18:03	3h 59m	Arrived
SWA8700	SOUTHWEST AIRLINES CO. (SAN ANTONIO, TX)	B733	DAL	MZJ	11/15/2012 15:50	11/15/2012 18:03	2h 13m	Arrived
N495CS	FAYARD ENTERPRISES INC RT 7 HWY 56 WEST BOX 703 LOUISBURG, NC 27549	C212	MZJ	MZJ	11/14/2012 12:20	11/14/2012 12:49	29m	Arrived
N434CA	FAYARD ENTERPRISES LLC 6966 NC 56 HWYFRANKLINTON, NC 27549	C212	MZJ	MZJ	11/14/2012 12:14	11/14/2012 12:44	30m	Arrived
(blocked)	(blocked)	B74S	LAS	MZJ	11/6/2012 18:41	11/6/2012 19:32	51m	Arrived
(blocked)	(blocked)	GLF5	MFE	MZJ	11/6/2012 17:09	11/6/2012 19:08	2h 59m	Arrived
DAL9931	DELTA AIR LINES, INC.	DC95	ATL	MZJ	11/6/2012 17:01	11/6/2012 20:30	3h 29m	Arrived
DAL9941	DELTA AIR LINES, INC.	B752	SLC	MZJ	11/4/2012 16:11	11/4/2012 17:19	1h 8m	Arrived
N946DN	Unknown owner	MD90	ANC	MZJ	11/2/2012 16:39	11/2/2012 22:26	6h 47m	Arrived
TAM9394	TAM, TRANSPORTES AEREOS REGIONAIS S.A.	A320	MIA	MZJ	10/28/2012 11:23	10/28/2012 15:51	4h 28m	Arrived
N558CL	Unknown owner	B744	ANC	MZJ	10/20/2012 19:05	10/21/2012 0:14	5h 9m	Arrived
SOQ9401	SOUTHERN AIR INC. (COLUMBUS, OH)	B744	PSM	MZJ	10/20/2012 16:26	10/20/2012 21:24	5h 58m	Arrived
N971PG	Unknown owner	B744	TUS	MZJ	10/20/2012 16:17	10/20/2012 16:32	15m	Arrived
EJA634	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	C56X	MHR	MZJ	10/19/2012 21:14	10/20/2012 0:44	4h 30m	Diverted
N305JD	Unknown owner	P46T	ICT	MZJ	10/18/2012 21:44	10/19/2012 1:13	3h 29m	Arrived
N948DN	Unknown owner	MD90	ANC	MZJ	10/12/2012 16:00	10/12/2012 21:13	5h 13m	Arrived
QFA6019	QANTAS AIRWAYS LIMITED	B744	LAX	MZJ	10/4/2012 18:22	10/4/2012 19:22	1h 0m	Arrived
ABD690P	ATLANTA	B742	TUS	MZJ	9/28/2012 18:06	9/28/2012 18:29	23m	Tracking Terminated Early
N487AA	AMERICAN AIRLINES INC P O BOX 619616 MD 4280-CPVDFW AIRPORT, TX 75261	MD82	MYF	MZJ	9/28/2012 14:14	9/28/2012 14:36	22m	Arrived
N487AA	AMERICAN AIRLINES INC P O BOX 619616 MD 4280-CPVDFW AIRPORT, TX 75261	MD82	MZJ	MZJ	9/28/2012 12:02	9/28/2012 12:45	43m	Arrived
N487AA	AMERICAN AIRLINES INC P O BOX 619616 MD 4280-CPVDFW AIRPORT, TX 75261	MD82	MZJ	MZJ	9/27/2012 14:01	9/27/2012 15:56	2h 55m	Tracking Terminated Early
DAL9931	DELTA AIR LINES, INC.	B763	ATL	MZJ	9/26/2012 14:26	9/26/2012 17:54	3h 28m	Arrived
N487AA	AMERICAN AIRLINES INC P O BOX 619616 MD 4280-CPVDFW AIRPORT, TX 75261	MD82	TUL	MZJ	9/25/2012 18:52	9/25/2012 21:12	2h 20m	Arrived
N939DN	Unknown owner	MD90	SEA	MZJ	9/22/2012 15:00	9/22/2012 17:30	2h 30m	Arrived
N939DN	Unknown owner	MD90	ANC	MZJ	9/21/2012 16:17	9/21/2012 17:45	1h 28m	Diverted
KAL029D	KOREAN AIR LINES CO., LTD.	B744	ANC	MZJ	9/12/2012 13:07	9/12/2012 17:56	5h 49m	Arrived
N7567K	C C & D BUILDERS INC	C210	LGB	MZJ	9/11/2012 18:38	9/12/2012 14:10	20h 32m	Diverted

	2740 JUNIPERO AVESIGNAL HILL, CA 90755-2126										
ANA9432	ALL NIPPON AIRWAYS CO., LTD.	B735	PHNL	MZJ	9/11/2012 16:09	9/11/2012 21:46	6h 37m	Arrived			
RYN7125	RYAN AVIATION CORPORATION D/B/A RYAN INTERNATIONAL AIRLINES (WICHITA,KS)	B763	SEA	MZJ	9/6/2012 20:04	9/6/2012 22:31	2h 27m	Arrived			
SAS9198	SCANDINAVIAN AIRLINES SYSTEM	MD82	BGR	MZJ	9/5/2012 10:04	9/5/2012 15:44	6h 40m	Arrived			
N484SC	GREAT SOUTHWEST AVIATION INC 100 SOUTHWEST WAYROSWELL, NM 88202	PAY2	ROW	MZJ	9/4/2012 21:13	9/4/2012 23:27	2h 14m	Diverted			
DAL9931	DELTA AIR LINES, INC.	B752	ATL	MZJ	9/3/2012 16:29	9/3/2012 19:37	3h 8m	Arrived			
N495CS	FAYARD ENTERPRISES INC RT 7 HWY 56 WEST BOX 703LOUISBURG, NC 27549	C212	LMO	MZJ	8/31/2012 19:44	8/31/2012 23:32	4h 48m	Arrived			
N943DN	Unknown owner	MD90	ANC	MZJ	8/31/2012 16:13	8/31/2012 21:45	6h 32m	Arrived			
RYN7763	RYAN AVIATION CORPORATION D/B/A RYAN INTERNATIONAL AIRLINES (WICHITA,KS)	B763	RFD	MZJ	8/27/2012 15:00	Indeterminate	N/A	Indeterminate			
RYN7763	RYAN AVIATION CORPORATION D/B/A RYAN INTERNATIONAL AIRLINES (WICHITA,KS)	B763	RFD	MZJ	8/27/2012 14:31	8/27/2012 17:19	3h 48m	Arrived			
CSN2002	CHINA SOUTHERN AIRLINES	B733	OAK	MZJ	8/25/2012 15:50	8/25/2012 17:34	2h 44m	Arrived			
N141WE	Unknown owner	DC10	SFB	MZJ	8/22/2012 17:15	8/22/2012 21:05	4h 50m	Arrived			
N228H	CB AIR LLC 1828 185TH AVE NEBELLEVUE, WA 98008-3320	GLEX	TUS	MZJ	8/21/2012 18:43	8/21/2012 18:49	6m	Diverted			
N407BV	Unknown owner	A320	MZJ	MZJ	8/21/2012 16:44	8/21/2012 18:53	2h 9m	Arrived			
N677F	NATIONAL SCIENCE FOUNDATION 4201 WILSON BLVDARLINGTON, VA 22230-0001	GLF5	BJC	MZJ	8/20/2012 15:08	8/20/2012 16:40	2h 32m	Arrived			
ARG1082	AEROLINEAS ARGENTINAS	B735	MIA	MZJ	8/17/2012 16:58	8/17/2012 21:09	4h 11m	Arrived			
N352AS	Unknown owner	B744	MZJ	MZJ	8/16/2012 23:31	8/17/2012 1:31	2h 0m	Arrived			
N305JD	Unknown owner	P46T	GGG	MZJ	8/16/2012 17:20	8/16/2012 22:42	5h 22m	Diverted			
N434CA	FAYARD ENTERPRISES LLC 6966 NC 56 HWYFRANKLINTON, NC 27549	C212	NYL	MZJ	8/16/2012 14:17	8/16/2012 15:30	1h 13m	Arrived			
RYN7213	RYAN AVIATION CORPORATION D/B/A RYAN INTERNATIONAL AIRLINES (WICHITA,KS)	B763	RFD	MZJ	8/9/2012 17:20	8/9/2012 20:18	3h 58m	Arrived			
N944DN	Unknown owner	MD90	ANC	MZJ	8/8/2012 16:01	8/8/2012 21:38	6h 37m	Arrived			
(blocked)	(blocked)	B762	IAH	MZJ	8/7/2012 17:39	8/7/2012 19:36	2h 57m	Arrived			
N988AN	AWMS I C/O ANSETT WORLDWIDE AVIATION SVC445 PARK AVE 20TH FL NEW YORK, NY 10022	B762	MIA	MZJ	8/4/2012 15:57	8/4/2012 19:52	4h 55m	Arrived			
DAL9931	DELTA AIR LINES, INC.	B752	ATL	MZJ	7/27/2012 13:22	7/27/2012 16:34	3h 12m	Tracking Terminated Early			
N352AS	Unknown owner	B744	ROW	MZJ	7/22/2012 19:42	7/22/2012 20:50	1h 8m	Arrived			
N942DN	Unknown owner	MD90	ANC	MZJ	7/21/2012 15:53	7/21/2012 21:24	6h 31m	Arrived			
N434CA	FAYARD ENTERPRISES LLC 6966 NC 56 HWYFRANKLINTON, NC 27549	C212	BGD	MZJ	7/21/2012 0:41	7/21/2012 3:31	3h 50m	Tracking Terminated Early			
N434CA	FAYARD ENTERPRISES LLC 6966 NC 56 HWYFRANKLINTON, NC 27549	C212	DXE	MZJ	7/20/2012 20:43	Indeterminate	N/A	Indeterminate			
N495CS	FAYARD ENTERPRISES INC RT 7 HWY 56 WEST BOX 703LOUISBURG, NC 27549	C212	SDM	MZJ	7/13/2012 20:23	7/13/2012 21:58	2h 35m	Tracking Terminated Early			
TAM9400	TAM, TRANSPORTES AEREOS REGIONAIS S.A.	A320	MIA	MZJ	7/11/2012 11:21	7/11/2012 15:29	4h 8m	Arrived			
SOO9743	SOUTHERN AIR INC. (COLUMBUS, OH)	B744	ROW	MZJ	7/10/2012 20:31	7/11/2012 0:14	4h 43m	Arrived			
N8422H	ARKON ENGINEERING 706 LEE STREETROME, NY 13440	P28A	SAN	MZJ	7/5/2012 21:00	7/5/2012 22:06	1h 6m	Diverted			
N676CL	Unknown owner	A320	ANC	MZJ	7/5/2012 16:34	7/5/2012 21:59	5h 25m	Arrived			
DAL9932	DELTA AIR LINES, INC.	B752	ATL	MZJ	7/3/2012 12:40	7/3/2012 15:47	3h 7m	Arrived			
N938FD	Unknown owner	B752	VCV	MZJ	7/3/2012 0:29	7/3/2012 1:01	32m	Diverted			
N710CL	Unknown owner	A320	ANC	MZJ	6/30/2012 17:26	6/30/2012 22:42	5h 16m	Arrived			
N945DN	Unknown owner	MD90	ANC	MZJ	6/29/2012 17:05	6/29/2012 22:25	5h 20m	Arrived			
(blocked)	(blocked)	TBM7	PVU	MZJ	6/26/2012 22:48	6/27/2012 0:00	1h 12m	Diverted			
(blocked)	(blocked)	B752	IFP	MZJ	6/15/2012 15:58	6/15/2012 16:38	40m	Arrived			
ARC1086	AEROLINEAS ARGENTINAS	B744	MIA	MZJ	6/14/2012 19:00	6/14/2012 23:08	4h 8m	Arrived			
OMEGA10	OMEGA AIR, S. DE R.L.	DC10	VCV	MZJ	6/13/2012 19:37	6/13/2012 20:33	56m	Arrived			
N940DN	Unknown owner	MD90	ANC	MZJ	6/6/2012 15:56	6/6/2012 21:52	6h 56m	Arrived			
N22MS	EVERGREEN EQUITY INC 3850 NE THREE MILE LNMCMINNVILLE, OR 97128-9402	LJ35	PHX	MZJ	6/6/2012 3:56	Indeterminate	N/A	Indeterminate			
TAM9394	TAM, TRANSPORTES AEREOS REGIONAIS S.A.	A320	MIA	MZJ	6/5/2012 12:05	6/5/2012 16:15	4h 10m	Arrived			
DAL9932	DELTA AIR LINES, INC.	DC95	ATL	MZJ	6/2/2012 15:20	6/2/2012 18:39	3h 19m	Arrived			
N407BV	Unknown owner	A320	BRO	MZJ	5/31/2012 19:30	5/31/2012 21:59	2h 29m	Arrived			
N936FR	AFS INVESTMENTS X LLC 201 HIGH RIDGE ROAD 2953-1DSTAMFORD, CT 06927	A320	GYR	MZJ	5/30/2012 23:30	5/30/2012 23:46	16m	Tracking Terminated Early			
N937FR	AFS INVESTMENTS 58 LLC 201 HIGH RIDGE ROAD 2953-1DSTAMFORD, CT 06927	A320	GYR	MZJ	5/30/2012 18:28	5/30/2012 18:43	15m	Tracking Terminated Early			
N531CL	Unknown owner	B763	ATL	MZJ	5/29/2012 16:30	5/29/2012 19:58	3h 28m	Tracking Terminated Early			
(blocked)	(blocked)	C172	IWA	MZJ	5/20/2012 17:15	5/20/2012 18:05	50m	Tracking Terminated Early			
N493EV	Unknown owner	B744	MZJ	MZJ	5/19/2012 18:10	5/19/2012 19:45	2h 35m	Arrived			
(blocked)	(blocked)	B745	SBD	MZJ	5/11/2012 16:33	5/11/2012 17:32	59m	Arrived			
RYN7932	RYAN AVIATION CORPORATION D/B/A RYAN INTERNATIONAL AIRLINES (WICHITA,KS)	MD82	IWA	MZJ	5/11/2012 13:32	5/11/2012 13:43	11m	Arrived			
ELJ33	Unknown owner	H25B	COS	MZJ	5/9/2012 14:57	5/9/2012 16:22	1h 25m	Arrived			
ASH1100	MESA AVIATION SERVICES, INC. (FARMINGTON, NM)	CRJ2	PHX	MZJ	5/4/2012 16:27	5/4/2012 16:42	15m	Arrived			
EIA4471	EVERGREEN INTERNATIONAL AIRLINES	B742	DOV	MZJ	5/1/2012 9:11	5/1/2012 12:53	4h 42m	Arrived			
EIA4471	EVERGREEN INTERNATIONAL AIRLINES	B742	DOV	MZJ	5/1/2012 8:23	Indeterminate	N/A	Indeterminate			
EIA4488	EVERGREEN INTERNATIONAL AIRLINES	B742	JFK	MZJ	4/21/2012 17:17	4/21/2012 22:09	5h 52m	Arrived			
DAL9931	DELTA AIR LINES, INC.	DC95	ATL	MZJ	4/20/2012 12:25	4/20/2012 15:46	3h 21m	Arrived			
EIA4489	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	MZJ	4/18/2012 18:39	4/18/2012 19:15	36m	Tracking Terminated Early			
N250MY	KMW LEASING LLC 630 TRADE CENTER DRLAS VEGAS, NV 89119-3712	B762	PHX	MZJ	4/17/2012 0:00	4/17/2012 0:17	17m	Arrived			
EIA4489	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	MZJ	4/15/2012 0:41	4/15/2012 1:57	1h 16m	Arrived			
EIA4489	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	MZJ	4/14/2012 19:50	4/14/2012 20:03	13m	Arrived			
N596SC	Unknown owner	B733	PHNL	MZJ	4/8/2012 17:30	4/8/2012 23:03	6h 33m	Arrived			
EIA4489	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	MZJ	4/7/2012 22:05	4/7/2012 22:47	42m	Tracking Terminated Early			
N938DN	Unknown owner	MD90	ANC	MZJ	4/4/2012 19:19	4/5/2012 0:37	5h 18m	Arrived			
N834AC	Unknown owner	B744	PHNL	MZJ	4/4/2012 19:13	4/5/2012 0:22	5h 9m	Tracking Terminated Early			
DAL9932	DELTA AIR LINES, INC.	B752	ATL	MZJ	4/1/2012 16:50	4/1/2012 19:50	3h 0m	Arrived			
EJA726	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	GALX	SAF	MZJ	3/29/2012 15:51	3/29/2012 16:43	52m	Arrived			

EJA802	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	C560	ASE	MZJ		3/29/2012 15:03	3/29/2012 16:19	1h 16m	Arrived
DAL9931	DELTA AIR LINES, INC.	DC95	MCI	MZJ		3/26/2012 16:51	3/26/2012 19:16	2h 25m	Arrived
N434CA	FAYARD ENTERPRISES LLC 6966 NC 56 HWYFRANKLINTON, NC 27549	C212	AMA	MZJ		3/22/2012 19:51	3/22/2012 23:05	3h 14m	Arrived
CXGRN	Unknown owner	B737	PHL	MZJ		3/22/2012 18:08	Indeterminate	N/A	Indeterminate
N591SC	Unknown owner	B733	MNZL	MZJ		3/17/2012 17:05	3/17/2012 22:58	6h 53m	Arrived
N467CS	FAYARD ENTERPRISES INC PO BOX 703LOUISBURG, NC 27549-0703	C212	IPL	MZJ		3/16/2012 20:13	3/16/2012 21:27	1h 14m	Arrived
EIA4487	EVERGREEN INTERNATIONAL AIRLINES	B742	WRI	MZJ		3/16/2012 9:26	3/16/2012 13:44	4h 18m	Arrived
ARG1080	AEROLINEAS ARGENTINAS	B735	MIA	MZJ		3/14/2012 16:04	3/14/2012 20:38	5h 34m	Arrived
EIA4488	EVERGREEN INTERNATIONAL AIRLINES	B742	JFK	MZJ		3/10/2012 19:41	3/11/2012 0:38	5h 57m	Arrived
EIA4487	EVERGREEN INTERNATIONAL AIRLINES	B742	ORD	MZJ		3/8/2012 17:23	3/8/2012 21:09	4h 46m	Arrived
DAL9931	DELTA AIR LINES, INC.	B752	ATL	MZJ		3/8/2012 14:13	3/8/2012 18:02	4h 49m	Arrived
N941DN	Unknown owner	MD90	ANC	MZJ		3/6/2012 16:36	3/6/2012 21:15	5h 39m	Arrived
N677F	NATIONAL SCIENCE FOUNDATION 4201 WILSON BLVDARLINGTON, VA 22230-0001	GLF5	BJC	MZJ		3/5/2012 17:28	3/5/2012 19:06	2h 38m	Arrived
DAL9931	DELTA AIR LINES, INC.	B752	ATL	MZJ		3/5/2012 14:49	3/5/2012 18:20	4h 31m	Arrived
N434CA	FAYARD ENTERPRISES LLC 6966 NC 56 HWYFRANKLINTON, NC 27549	C212	LBL	MZJ		3/4/2012 0:36	3/4/2012 4:00	3h 24m	Arrived
ISS7001	MERIDIANA SPA	MD82	BGR	MZJ		3/3/2012 14:50	3/3/2012 20:42	6h 52m	Arrived
N467CS	FAYARD ENTERPRISES INC PO BOX 703LOUISBURG, NC 27549-0703	C212	MZJ	MZJ		3/1/2012 18:37	3/1/2012 19:06	29m	Tracking Terminated Early
N467CS	FAYARD ENTERPRISES INC PO BOX 703LOUISBURG, NC 27549-0703	C212	MZJ	MZJ		2/29/2012 18:48	2/29/2012 19:10	22m	Arrived
(blocked)	(blocked)	B745	LAS	MZJ		2/24/2012 20:12	2/24/2012 20:53	41m	Arrived
W0A9141	WORLD AIRWAYS INC.	B744	MIA	MZJ		2/23/2012 19:52	2/23/2012 23:56	4h 4m	Arrived
(blocked)	(blocked)	P46T	SNK	MZJ		2/23/2012 18:36	2/23/2012 20:55	2h 19m	Arrived
TUA3211	TURKMENHOVAYOLLARY	B712	DAY	MZJ		2/19/2012 19:19	2/19/2012 23:18	4h 59m	Arrived
N495CS	FAYARD ENTERPRISES INC RT 7 HWY 56 WEST BOX 703LOUISBURG, NC 27549	C212	LGF	MZJ		2/16/2012 17:44	2/16/2012 18:46	1h 2m	Arrived
EJA613	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	C56X	LBF	MZJ		2/15/2012 20:21	2/15/2012 22:25	2h 4m	Arrived
TUA3209	TURKMENHOVAYOLLARY	B712	DAY	MZJ		2/15/2012 18:36	2/15/2012 22:44	4h 8m	Arrived
ANA9432	ALL NIPPON AIRWAYS CO., LTD.	B735	PHNL	MZJ		2/14/2012 17:35	2/14/2012 23:51	6h 16m	Arrived
EIA4490	EVERGREEN INTERNATIONAL AIRLINES	B742	JFK	MZJ		2/14/2012 9:27	2/14/2012 14:11	5h 44m	Arrived
DAL9932	DELTA AIR LINES, INC.	DC95	DFW	MZJ		2/11/2012 16:05	2/11/2012 17:58	2h 53m	Arrived
DAL9932	DELTA AIR LINES, INC.	DC95	ATL	MZJ		2/10/2012 13:50	2/10/2012 17:21	4h 31m	Arrived
ISS7001	MERIDIANA SPA	MD82	BGR	MZJ		2/7/2012 14:15	2/7/2012 20:05	6h 50m	Arrived
HORNT22	HORIZON AIR-TAXI LTD	CV22	CVS	MZJ		2/5/2012 16:51	2/5/2012 19:01	2h 10m	Tracking Terminated Early
HORNT21	HORIZON AIR-TAXI LTD	CV22	CVS	MZJ		2/5/2012 16:49	2/5/2012 19:01	2h 12m	Tracking Terminated Early
N937DN	Unknown owner	MD90	ANC	MZJ		2/3/2012 16:42	2/3/2012 22:04	5h 22m	Arrived
EIA4491	EVERGREEN INTERNATIONAL AIRLINES	B744	IAH	MZJ		2/3/2012 12:31	2/3/2012 15:07	3h 36m	Arrived
EJA807	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	C560	JAC	MZJ		1/22/2012 19:55	1/22/2012 21:35	2h 40m	Arrived
EJA807	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	C560	OMA	MZJ		1/22/2012 16:10	Indeterminate	N/A	Indeterminate
N33MC	COSTELLO JAMES P 56210 TWIN RIVERS DRBEND, OR 97707-2040	PAY2	STS	MZJ		1/20/2012 17:02	1/20/2012 19:24	2h 22m	Tracking Terminated Early
DAL9933	DELTA AIR LINES, INC.	B752	ATL	MZJ		1/16/2012 12:09	1/16/2012 15:53	4h 44m	Arrived
DAL9950	DELTA AIR LINES, INC.	B763	ATL	MZJ		1/15/2012 13:45	1/15/2012 17:20	4h 35m	Arrived
N231WM	CALIFORNIA COMPACTION CORP 40655 18TH ST WPALMDALE, CA 93551-2222	SR22	VGT	MZJ		1/14/2012 18:23	1/14/2012 20:30	2h 7m	Arrived
EIA4486	EVERGREEN INTERNATIONAL AIRLINES	B742	JFK	MZJ		1/5/2012 18:19	1/5/2012 22:19	4h 0m	Arrived
EIA4485	EVERGREEN INTERNATIONAL AIRLINES	B742	JFK	MZJ		1/5/2012 9:22	1/5/2012 13:35	4h 13m	Arrived
DAL9931	DELTA AIR LINES, INC.	B738	LAX	MZJ		1/4/2012 16:45	1/4/2012 17:47	1h 2m	Tracking Terminated Early
EIA4489	EVERGREEN INTERNATIONAL AIRLINES	B742	JFK	MZJ		1/4/2012 14:29	1/4/2012 18:40	4h 11m	Arrived
EIA4471	EVERGREEN INTERNATIONAL AIRLINES	B742	JFK	MZJ		1/4/2012 10:31	1/4/2012 14:53	4h 22m	Arrived
DAL9935	DELTA AIR LINES, INC.	B738	ATL	MZJ		12/21/2011 14:19	12/21/2011 18:00	4h 41m	Arrived
N787RR	ROLLS-ROYCE NORTH AMERICA INC 14850 CONFERENCE CENTER DRSTE 100 CHANTILLY, VA 20151-3805	B742	TUS	MZJ		12/11/2011 22:06	12/11/2011 23:38	2h 32m	Arrived
ARG1050	AEROLINEAS ARGENTINAS	B735	MIA	MZJ		12/11/2011 17:26	12/11/2011 22:19	5h 53m	Arrived
DAL9932	DELTA AIR LINES, INC.	DC95	MSP	MZJ		12/11/2011 14:19	12/11/2011 17:08	3h 49m	Arrived
RYN7764	RYAN AVIATION CORPORATION D/B/A RYAN INTERNATIONAL AIRLINES (WICHITA,KS)	B763	RFD	MZJ		12/10/2011 18:56	12/10/2011 21:50	3h 54m	Arrived
AWE9253	AMERICA WEST AIRLINES (TEMPE, AZ)	B733	PHX	MZJ		12/8/2011 19:50	12/8/2011 20:08	18m	Arrived
DAL9932	DELTA AIR LINES, INC.	B738	IND	MZJ		12/7/2011 13:27	12/7/2011 16:41	3h 14m	Arrived
UAL9925	UNITED AIR LINES, INC.	B744	SFO	MZJ		12/6/2011 18:07	12/6/2011 19:44	2h 37m	Tracking Terminated Early
N787RR	ROLLS-ROYCE NORTH AMERICA INC 14850 CONFERENCE CENTER DRSTE 100 CHANTILLY, VA 20151-3805	B742	MZJ	MZJ		12/5/2011 18:54	12/5/2011 20:37	2h 43m	Arrived
DAL9932	DELTA AIR LINES, INC.	B752	ATL	MZJ		12/1/2011 13:28	12/1/2011 17:00	4h 32m	Arrived
DAL9933	DELTA AIR LINES, INC.	B752	ATL	MZJ		12/1/2011 13:23	12/1/2011 16:53	4h 30m	Arrived
DAL9931	DELTA AIR LINES, INC.	B752	ATL	MZJ		12/1/2011 12:48	12/1/2011 16:13	3h 25m	Arrived
N467CS	FAYARD ENTERPRISES INC PO BOX 703LOUISBURG, NC 27549-0703	C212	NYL	MZJ		11/30/2011 20:38	11/30/2011 21:38	1h 0m	Arrived
EIA4488	EVERGREEN INTERNATIONAL AIRLINES	B742	JFK	MZJ		11/25/2011 10:55	11/25/2011 15:23	4h 28m	Arrived
CSN3026	CHINA SOUTHERN AIRLINES	MD90	OAK	MZJ		11/21/2011 15:53	11/21/2011 17:15	1h 22m	Arrived
EJA339	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	C680	TUS	MZJ		11/19/2011 14:54	11/19/2011 14:56	2m	Tracking Terminated Early
N889DH	Unknown owner	PC12	TRM	MZJ		11/18/2011 1:44	11/18/2011 2:38	54m	Arrived
DAL9931	DELTA AIR LINES, INC.	MD90	ROJ	MZJ		11/16/2011 17:06	11/16/2011 17:32	26m	Arrived
(blocked)	(blocked)	LJ45	ROG	MZJ		11/14/2011 14:50	11/14/2011 17:25	3h 35m	Arrived
(blocked)	(blocked)	LJ45	IAD	MZJ		11/14/2011 11:33	Indeterminate	N/A	Indeterminate
EIA4470	EVERGREEN INTERNATIONAL AIRLINES	B742	JFK	MZJ		11/14/2011 8:49	11/14/2011 13:54	5h 5m	Arrived
EJA913	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	C750	MSN	MZJ		11/7/2011 19:54	11/7/2011 22:54	3h 0m	Arrived
EIA4482	EVERGREEN INTERNATIONAL AIRLINES	B742	JFK	MZJ		11/7/2011 9:58	11/7/2011 14:37	5h 39m	Arrived
DAL9941	DELTA AIR LINES, INC.	B752	ATL	MZJ		11/1/2011 17:14	11/1/2011 20:43	3h 29m	Arrived
N762BA	Unknown owner	B738	BFI	MZJ		10/24/2011 18:04	10/24/2011 20:35	3h 31m	Arrived
CSN6999	CHINA SOUTHERN AIRLINES	MD90	OAK	MZJ		10/24/2011 17:43	10/24/2011 19:49	2h 6m	Tracking Terminated Early
N467CS	FAYARD ENTERPRISES INC PO BOX 703LOUISBURG, NC 27549-0703	C212	BGD	MZJ		10/22/2011 13:50	10/22/2011 16:50	3h 0m	Tracking Terminated Early
N497CA	FAYARD ENTERPRISES INC 6966 NC 56 HWYFRANKLINTON, NC 27525-9691	C212	MZJ	MZJ		10/20/2011 11:53	10/20/2011 12:11	18m	Arrived
DAL9931	DELTA AIR LINES, INC.	B752	ATL	MZJ		10/16/2011 16:33	10/16/2011 19:45	3h 12m	Arrived
N761BA	Unknown owner	B738	BFI	MZJ		10/12/2011 18:16	10/12/2011 20:43	2h 27m	Arrived
N760BA	Unknown owner	B738	BFI	MZJ		10/11/2011 18:31	10/11/2011 20:45	2h 14m	Tracking Terminated Early
N759BA	Unknown owner	B738	BFI	MZJ		10/11/2011 18:29	10/11/2011 20:44	2h 15m	Tracking Terminated Early
DAL9994	DELTA AIR LINES, INC.	DC95	MSP	MZJ		10/8/2011 13:50	10/8/2011 16:47	3h 57m	Arrived
EIA4491	EVERGREEN INTERNATIONAL AIRLINES	B744	JFK	MZJ		10/5/2011 15:12	10/5/2011 19:27	4h 15m	Arrived
EIA4490	EVERGREEN INTERNATIONAL AIRLINES	B742	PHX	MZJ		10/1/2011 19:22	10/1/2011 19:38	16m	Arrived

DAL9934	DELTA AIR LINES, INC.	DC95	MSP	MZJ		10/1/2011 13:21	10/1/2011 16:03	3h 42m	Arrived
DAL9932	DELTA AIR LINES, INC.	B752	ATL	MZJ		10/1/2011 12:19	10/1/2011 15:35	3h 16m	Arrived
N344AS	Unknown owner	B744	MZJ	MZJ		9/30/2011 19:00	9/30/2011 19:59	59m	Arrived
DAL9931	DELTA AIR LINES, INC.	B752	ATL	MZJ		9/26/2011 11:17	9/26/2011 14:30	3h 13m	Arrived
EIA4471	EVERGREEN INTERNATIONAL AIRLINES	B742	SUU	MZJ		9/22/2011 19:01	9/22/2011 20:34	2h 33m	Arrived
CSN6999	CHINA SOUTHERN AIRLINES	MD90	OAK	MZJ		9/18/2011 15:55	9/18/2011 17:37	2h 42m	Arrived
EIA4489	EVERGREEN INTERNATIONAL AIRLINES	B742	JFK	MZJ		9/18/2011 14:32	9/18/2011 18:59	4h 27m	Tracking Terminated Early
EIA4485	EVERGREEN INTERNATIONAL AIRLINES	XXXX	EDFH	MZJ		9/14/2011 7:36	9/14/2011 18:52	11h 16m	Arrived
DAL9958	DELTA AIR LINES, INC.	B752	ATL	MZJ		9/7/2011 12:28	9/7/2011 15:35	3h 7m	Arrived
DAL9946	DELTA AIR LINES, INC.	B752	ATL	MZJ		9/7/2011 12:06	9/7/2011 15:16	3h 10m	Arrived
N434CA	FAYARD ENTERPRISES LLC 6966 NC 56 HWYFRANKLINTON, NC 27549	C212	NYL	MZJ		9/1/2011 22:00	9/1/2011 23:02	1h 2m	Arrived
DAL9935	DELTA AIR LINES, INC.	DC95	DTW	MZJ		9/1/2011 17:57	9/1/2011 21:23	3h 26m	Arrived
DAL9932	DELTA AIR LINES, INC.	DC95	MSP	MZJ		8/30/2011 15:51	8/30/2011 18:28	3h 37m	Arrived
CSN6999	CHINA SOUTHERN AIRLINES	MD90	OAK	MZJ		8/22/2011 17:37	8/22/2011 19:16	2h 39m	Arrived
N269AS	Unknown owner	B744	ROW	MZJ		8/21/2011 19:32	8/21/2011 20:06	34m	Diverted
N269AS	Unknown owner	B744	ROW	MZJ		8/21/2011 19:32	8/21/2011 20:26	54m	Arrived
N917W	GC AIR LLC 2400 E KATELLA AVE STE 800ANAHEIM, CA 92806-5955	GLF4	MMV	MZJ		8/21/2011 17:29	8/21/2011 19:51	2h 22m	Tracking Terminated Early
DAL9931	DELTA AIR LINES, INC.	DC95	MSP	MZJ		8/20/2011 22:58	8/21/2011 1:45	3h 47m	Arrived
DAL9994	DELTA AIR LINES, INC.	B752	ATL	MZJ		8/16/2011 12:30	8/16/2011 15:27	3h 57m	Arrived
EIA4491	EVERGREEN INTERNATIONAL AIRLINES	B744	JFK	MZJ		8/14/2011 9:16	8/14/2011 13:34	4h 18m	Arrived
N467CS	FAYARD ENTERPRISES INC PO BOX 703LOUISBURG, NC 27549-0703	C212	EKO	MZJ		8/14/2011 1:56	8/14/2011 5:14	3h 18m	Tracking Terminated Early
N467CS	FAYARD ENTERPRISES INC PO BOX 703LOUISBURG, NC 27549-0703	XXXX	BLI	MZJ		8/13/2011 21:06	Indeterminate	N/A	Indeterminate
N497CA	FAYARD ENTERPRISES INC 6966 NC 56 HWYFRANKLINTON, NC 27525-9691	C212	NYL	MZJ		8/12/2011 21:39	8/12/2011 22:47	1h 8m	Arrived
EJA332	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	C560	SLC	MZJ		8/1/2011 16:56	8/1/2011 18:24	1h 28m	Arrived
EJA332	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	C560	DEN	MZJ		8/1/2011 14:20	Indeterminate	N/A	Indeterminate
(blocked)	(blocked)	B762	IAH	MZJ		7/31/2011 18:14	7/31/2011 20:06	2h 52m	Arrived
N5275S	LAKE GETAWAY LLC 20621 N 33RD AVEPHOENIX, AZ 85027-3065	C172	CRO	MZJ		7/27/2011 21:32	7/28/2011 15:55	18h 23m	Tracking Terminated Early
CSN6999	CHINA SOUTHERN AIRLINES	MD90	OAK	MZJ		7/26/2011 16:58	7/26/2011 18:33	2h 35m	Arrived
N467CS	FAYARD ENTERPRISES INC PO BOX 703LOUISBURG, NC 27549-0703	C212	U42	MZJ		7/25/2011 21:11	7/26/2011 0:29	3h 18m	Tracking Terminated Early
DAL8836	DELTA AIR LINES, INC.	DC95	MSP	MZJ		7/22/2011 13:20	7/22/2011 16:01	3h 41m	Arrived
(blocked)	(blocked)	B752	DLH	MZJ		7/19/2011 16:49	7/19/2011 19:45	3h 56m	Arrived
DAL9955	DELTA AIR LINES, INC.	B763	ATL	MZJ		7/17/2011 11:24	7/17/2011 14:22	3h 58m	Arrived
DAL9931	DELTA AIR LINES, INC.	B752	ATL	MZJ		7/16/2011 11:16	7/16/2011 14:12	3h 56m	Arrived
DAL9935	DELTA AIR LINES, INC.	DC95	MSP	MZJ		7/9/2011 15:49	7/9/2011 18:48	3h 59m	Arrived
BOE440	BOEING COMMERCIAL AIRPLANE GROUP (SEATTLE, WA)	B748	PAE	MZJ		7/1/2011 22:57	7/2/2011 1:26	2h 29m	Tracking Terminated Early
DAL9932	DELTA AIR LINES, INC.	B752	ATL	MZJ		7/1/2011 11:51	7/1/2011 14:56	3h 5m	Arrived
DAL9931	DELTA AIR LINES, INC.	B752	ATL	MZJ		7/1/2011 11:48	7/1/2011 14:50	3h 2m	Arrived
N391EF	Unknown owner	D328	APA	MZJ		6/30/2011 14:29	6/30/2011 16:38	2h 9m	Arrived
EIA4482	EVERGREEN INTERNATIONAL AIRLINES	B742	SUU	MZJ		6/30/2011 1:26	6/30/2011 2:47	1h 21m	Arrived
ABX36	AIRBORNE EXPRESS, INC. (WILMINGTON, OH)	B762	ILN	MZJ		6/29/2011 18:59	6/29/2011 21:17	2h 18m	Tracking Terminated Early
FHE7003	Unknown owner	MD90	BGR	MZJ		6/29/2011 13:33	6/29/2011 18:59	5h 26m	Arrived
CSN6999	CHINA SOUTHERN AIRLINES	MD90	OAK	MZJ		6/26/2011 16:56	6/26/2011 18:31	2h 35m	Arrived
EIA4470	EVERGREEN INTERNATIONAL AIRLINES	B742	SUU	MZJ		6/24/2011 12:15	6/24/2011 13:42	1h 27m	Arrived
FHE7002	Unknown owner	MD90	BGR	MZJ		6/22/2011 13:20	6/22/2011 18:42	5h 22m	Arrived
N22MS	EVERGREEN EQUITY INC 3850 NE THREE MILE LNMCMINNVILLE, OR 97128-9402	LJ35	HOU	MZJ		6/21/2011 13:16	6/21/2011 15:31	2h 15m	Arrived
N467CS	FAYARD ENTERPRISES INC PO BOX 703LOUISBURG, NC 27549-0703	C212	BPG	MZJ		6/20/2011 19:43	6/20/2011 23:08	3h 25m	Arrived
DAL9931	DELTA AIR LINES, INC.	B752	ATL	MZJ		6/18/2011 20:54	6/19/2011 0:18	3h 24m	Arrived
DAL9936	DELTA AIR LINES, INC.	DC95	MSP	MZJ		6/15/2011 13:32	6/15/2011 16:25	3h 53m	Arrived
N497CA	FAYARD ENTERPRISES INC 6966 NC 56 HWYFRANKLINTON, NC 27525-9691	C212	GBD	MZJ		6/11/2011 17:53	6/11/2011 22:19	4h 26m	Tracking Terminated Early
N346AS	Unknown owner	B744	MZJ	MZJ		6/2/2011 21:01	6/2/2011 22:32	2h 31m	Arrived
DAL9931	DELTA AIR LINES, INC.	DC95	MSP	MZJ		6/2/2011 13:22	6/2/2011 16:26	3h 4m	Arrived
N369JD	Unknown owner	SR22	SAT	MZJ		6/1/2011 17:08	6/1/2011 20:51	4h 43m	Tracking Terminated Early
DAL9932	DELTA AIR LINES, INC.	B744	DTW	MZJ		6/1/2011 16:50	6/1/2011 20:26	4h 36m	Arrived
EIA4487	EVERGREEN INTERNATIONAL AIRLINES	B742	ANC	MZJ		5/30/2011 20:17	5/31/2011 1:18	5h 1m	Tracking Terminated Early
ISS7061	MERIDIANA SPA	XXXX	CYQB	MZJ		5/29/2011 13:43	5/29/2011 19:25	6h 42m	Arrived
CSN6999	CHINA SOUTHERN AIRLINES	MD90	OAK	MZJ		5/27/2011 16:28	5/27/2011 18:00	2h 32m	Arrived
EJA73B	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	GALX	BUR	MZJ		5/26/2011 22:39	5/26/2011 23:30	51m	Arrived
N636AN	Unknown owner	B733	BRO	MZJ		5/25/2011 23:23	5/26/2011 1:43	2h 20m	Arrived
EJA668	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	C56X	LAS	MZJ		5/25/2011 16:48	5/25/2011 17:38	50m	Arrived
N434CA	FAYARD ENTERPRISES LLC 6966 NC 56 HWYFRANKLINTON, NC 27549	C212	LGF	MZJ		5/20/2011 20:40	5/20/2011 21:34	54m	Tracking Terminated Early
N31DP	CJPJ ASSOCIATES INC 275 PATERSON AVELITTLE FALLS, NJ 07424-1658	LJ35	LUK	MZJ		5/20/2011 18:54	5/20/2011 22:33	4h 39m	Arrived
EIA4488	EVERGREEN INTERNATIONAL AIRLINES	B742	JFK	MZJ		5/17/2011 8:35	5/17/2011 12:49	4h 14m	Arrived
N551SL	ROBINSON JOE 3410 SILVER SPURSAN ANGELO, TX 76904	P28B	SJT	MZJ		5/16/2011 14:31	5/16/2011 19:11	5h 40m	Arrived
N497CA	FAYARD ENTERPRISES INC 6966 NC 56 HWYFRANKLINTON, NC 27525-9691	C212	AMA	MZJ		5/8/2011 2:00	5/8/2011 5:19	3h 19m	Arrived
EIA4490	EVERGREEN INTERNATIONAL AIRLINES	B742	JFK	MZJ		5/4/2011 8:33	5/4/2011 13:06	5h 33m	Arrived

Departures

Ident	Owner	Type	Dept	Dest	Departure Time (GMT)	Arrival Time (GMT)	Elapsed	Disposition
DAL9931	DELTA AIR LINES, INC.	B752	MZJ	SAT	4/29/2013 22:19	4/30/2013	2h 41m	Arrived
BOE983	BOEING COMMERCIAL AIRPLANE GROUP (SEATTLE, WA)	B763	MZJ	BFI	4/29/2013 16:44	4/29/2013 19:28	3h 44m	Arrived
DAL9931	DELTA AIR LINES, INC.	B752	MZJ	SAT	4/24/2013 22:19	4/24/2013 23:57	2h 38m	Arrived
DAL9931	DELTA AIR LINES, INC.	A319	MZJ	MSLP	4/18/2013 14:35	4/18/2013 14:45	10m	Tracking Terminated Early
DAL9975	DELTA AIR LINES, INC.	B763	MZJ	PANC	4/16/2013 22:39	4/17/2013 4:16	6h 37m	Arrived
N15CC	Unknown owner	PC12	MZJ	CA35	4/10/2013 23:59	4/11/2013 2:59	3h 0m	Tracking Terminated Early
DAL9931	DELTA AIR LINES, INC.	B763	MZJ	PANC	4/10/2013 22:10	4/11/2013 3:58	6h 48m	Arrived
DAL9995	DELTA AIR LINES, INC.	MD90	MZJ	VOO	4/10/2013 19:52	4/10/2013 23:10	3h 18m	Arrived

EJA368	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	C680	MZJ	BFI	4/5/2013 22:06	4/6/2013 0:56	3h 50m	Arrived
N125RD	Unknown owner	B763	MZJ	RME	4/3/2013 20:30	4/4/2013 0:19	4h 49m	Arrived
GT19848	ATLAS AIR, INC. (JAMAICA, NY)	B744	MZJ	IAH	3/31/2013 15:50	3/31/2013 17:48	2h 58m	Arrived
N497CA	FAYARD ENTERPRISES INC 6966 NC 56 HWYFRANKLINTON, NC 27525-9691	C212	MZJ	TUL	3/27/2013 9:50	3/27/2013 14:23	5h 33m	Diverted
N497CA	FAYARD ENTERPRISES INC 6966 NC 56 HWYFRANKLINTON, NC 27525-9691	C212	MZJ	00NC	3/27/2013 9:50	Indeterminate	N/A	Indeterminate
DAL9936	DELTA AIR LINES, INC.	A320	MZJ	BFM	3/25/2013 21:49	3/26/2013 0:16	2h 27m	Arrived
N640CS	Unknown owner	B734	MZJ	OKC	3/25/2013 16:25	3/25/2013 18:07	2h 42m	Arrived
DAL9932	DELTA AIR LINES, INC.	MD90	MZJ	VQQ	3/21/2013 14:59	3/21/2013 18:07	3h 8m	Arrived
N383JP	MORELAND AIRCRAFT LLC 5060 CALIFORNIA AVE STE 1150BAKERSFIELD, CA 93309-0728	BE20	MZJ	PHX	3/20/2013 20:47	3/20/2013 21:12	25m	Arrived
DAL9960	DELTA AIR LINES, INC.	B752	MZJ	SAT	3/15/2013 21:57	3/15/2013 23:35	2h 38m	Arrived
N639CS	Unknown owner	B734	MZJ	OKC	3/14/2013 19:24	3/14/2013 21:22	2h 58m	Arrived
DAL9932	DELTA AIR LINES, INC.	MD90	MZJ	ATL	3/13/2013 16:36	3/13/2013 19:41	3h 5m	Arrived
CWC987	CHALLENGE AIR CARGO INC.	MD11	MZJ	MIA	2/9/2013 18:29	2/9/2013 19:24	55m	Tracking Terminated Early
DAL9933	DELTA AIR LINES, INC.	MD90	MZJ	VQQ	2/1/2013 19:32	2/1/2013 22:37	3h 5m	Arrived
DAL9931	DELTA AIR LINES, INC.	MD90	MZJ	ATL	1/28/2013 15:23	1/28/2013 18:27	3h 4m	Arrived
DAL9931	DELTA AIR LINES, INC.	MD90	MZJ	ATL	1/18/2013 18:08	1/18/2013 21:13	3h 5m	Arrived
DAL9994	DELTA AIR LINES, INC.	MD90	MZJ	VQQ	1/8/2013 15:17	1/8/2013 18:46	3h 29m	Arrived
N73SK	BALD EAGLE AIR LLC 9255 SPRINGFIELD CLOSEMISSOULA, MT 59808-9018	C501	MZJ	EDC	1/3/2013 22:48	1/4/2013 0:55	2h 7m	Arrived
N15CC	Unknown owner	PC12	MZJ	CA35	12/20/2012 0:18	12/20/2012 3:18	3h 0m	Tracking Terminated Early
DAL9931	DELTA AIR LINES, INC.	MD90	MZJ	VQQ	12/18/2012 15:55	12/18/2012 18:59	3h 4m	Arrived
N284CS	Unknown owner	B735	MZJ	TUS	12/17/2012 20:45	12/17/2012 21:48	1h 3m	Diverted
N284CS	Unknown owner	B735	MZJ	PSM	12/17/2012 20:45	Indeterminate	N/A	Indeterminate
N72121	I FLY PLANES LLC 12345 E SKELLY DRTULSA, OK 74128-2411	BK17	MZJ	OLS	12/17/2012 17:29	12/17/2012 18:09	40m	Arrived
N558CL	Unknown owner	B744	MZJ	MIA	12/15/2012 16:25	12/15/2012 20:42	4h 17m	Arrived
N495CS	FAYARD ENTERPRISES INC RT 7 HWY 56 WEST BOX 703LOUISBURG, NC 27549	C212	MZJ	TUL	12/14/2012 10:55	12/14/2012 16:46	6h 51m	Diverted
N495CS	FAYARD ENTERPRISES INC RT 7 HWY 56 WEST BOX 703LOUISBURG, NC 27549	C212	MZJ	LHZ	12/14/2012 10:55	Indeterminate	N/A	Indeterminate
N305JD	Unknown owner	P46T	MZJ	RNO	12/7/2012 20:06	12/7/2012 23:06	3h 0m	Arrived
EJA588	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	C56X	MZJ	OMA	11/29/2012 22:28	11/30/2012 0:51	2h 23m	Arrived
N987AR	Unknown owner	MD11	MZJ	TUS	11/29/2012 16:34	11/29/2012 17:20	46m	Tracking Terminated Early
N434CA	FAYARD ENTERPRISES LLC 6966 NC 56 HWYFRANKLINTON, NC 27549	C212	MZJ	HDO	11/26/2012 16:32	11/26/2012 19:58	3h 26m	Tracking Terminated Early
DAL9931	DELTA AIR LINES, INC.	MD90	MZJ	ATL	11/20/2012 21:25	11/21/2012 0:25	3h 0m	Arrived
DAL9931	DELTA AIR LINES, INC.	MD90	MZJ	VQQ	11/19/2012 19:32	11/19/2012 22:52	3h 20m	Arrived
DAL9931	DELTA AIR LINES, INC.	MD90	MZJ	ATL	11/14/2012 17:09	11/14/2012 20:19	3h 10m	Arrived
N495CS	FAYARD ENTERPRISES INC RT 7 HWY 56 WEST BOX 703LOUISBURG, NC 27549	C212	MZJ	MZJ	11/14/2012 12:20	11/14/2012 12:49	29m	Arrived
N434CA	FAYARD ENTERPRISES LLC 6966 NC 56 HWYFRANKLINTON, NC 27549	C212	MZJ	MZJ	11/14/2012 12:14	11/14/2012 12:44	30m	Arrived
(blocked)	(blocked)	B74S	MZJ	LAS	11/9/2012 1:36	11/9/2012 2:31	55m	Arrived
(blocked)	(blocked)	GLF5	MZJ	LAS	11/6/2012 20:34	11/6/2012 21:27	53m	Arrived
TAI9424	TACA INTERNATIONAL AIRLINES S.A.	A320	MZJ	GYR	10/31/2012 18:30	10/31/2012 19:01	31m	Arrived
EJA634	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	C56X	MZJ	SUS	10/20/2012 0:44	10/20/2012 3:17	3h 33m	Arrived
N487AA	AMERICAN AIRLINES INC P O BOX 619616 MD 4280-CPVDFW AIRPORT, TX 75261	MD82	MZJ	TUL	9/28/2012 20:12	9/28/2012 21:58	2h 46m	Arrived
N487AA	AMERICAN AIRLINES INC P O BOX 619616 MD 4280-CPVDFW AIRPORT, TX 75261	MD82	MZJ	MZJ	9/28/2012 14:14	9/28/2012 14:36	22m	Arrived
N487AA	AMERICAN AIRLINES INC P O BOX 619616 MD 4280-CPVDFW AIRPORT, TX 75261	MD82	MZJ	MZJ	9/28/2012 12:02	9/28/2012 12:45	43m	Arrived
N487AA	AMERICAN AIRLINES INC P O BOX 619616 MD 4280-CPVDFW AIRPORT, TX 75261	MD82	MZJ	MZJ	9/27/2012 14:01	9/27/2012 15:56	2h 55m	Tracking Terminated Early
N834AC	Unknown owner	B744	MZJ	RME	9/25/2012 22:27	9/26/2012 2:13	4h 46m	Arrived
N407BV	Unknown owner	A320	MZJ	CYYT	9/19/2012 22:16	9/20/2012 2:47	5h 31m	Arrived
RYN7125	RYAN AVIATION CORPORATION D/B/A RYAN INTERNATIONAL AIRLINES (WICHITA,KS)	B763	MZJ	SEA	9/10/2012 14:27	9/10/2012 17:23	3h 56m	Arrived
ABD029P	ATLANTA	B744	MZJ	PHX	9/6/2012 1:47	9/6/2012 2:13	26m	Arrived
N484SC	GREAT SOUTHWEST AVIATION INC 100 SOUTHWEST WAYROSWELL, NM 88202	PAY2	MZJ	ROW	9/4/2012 23:27	9/5/2012 1:06	2h 39m	Arrived
N497CA	FAYARD ENTERPRISES INC	C212	MZJ	TUL	8/30/2012 10:27	8/30/2012 15:35	5h 8m	Arrived

	6966 NC 56 HWYFRANKLINTON, NC 27525-9691								
N677F	NATIONAL SCIENCE FOUNDATION 4201 WILSON BLVDARLINGTON, VA 22230-0001	GLF5	MZJ	BJC	8/22/2012 19:20	8/22/2012 20:47	1h 27m	Arrived	
(blocked)	(blocked)	B762	MZJ	IAH	8/22/2012 17:22	8/22/2012 19:22	2h 0m	Arrived	
N407BV	Unknown owner	A320	MZJ	MZJ	8/21/2012 16:44	8/21/2012 18:53	2h 9m	Arrived	
N495CS	FAYARD ENTERPRISES INC RT 7 HWY 56 WEST BOX 703LOUISBURG, NC 27549	C212	MZJ	LMO	8/20/2012 11:43	8/20/2012 14:53	3h 10m	Arrived	
N352AS	Unknown owner	B744	MZJ	MZJ	8/16/2012 23:31	8/17/2012 1:31	2h 0m	Arrived	
N305JD	Unknown owner	P46T	MZJ	FFZ	8/16/2012 22:42	8/16/2012 23:10	28m	Arrived	
N937FR	AFS INVESTMENTS 58 LLC 201 HIGH RIDGE ROAD 2953-1DSTAMFORD, CT 06927	A319	MZJ	CYYR	8/15/2012 15:47	8/15/2012 19:11	3h 24m	Tracking Terminated Early	
N434CA	FAYARD ENTERPRISES LLC 6966 NC 56 HWYFRANKLINTON, NC 27549	C212	MZJ	LGf	8/9/2012 20:52	8/9/2012 21:46	54m	Arrived	
N936FR	AFS INVESTMENTS X LLC 201 HIGH RIDGE ROAD 2953-1DSTAMFORD, CT 06927	A319	MZJ	CYYR	8/6/2012 19:18	8/6/2012 22:36	3h 18m	Tracking Terminated Early	
CGTFF	CNG-TRANSAVIA, JOINT-STOCK COMPANY	B74S	MZJ	CYMX	8/5/2012 18:33	Indeterminate	N/A	Indeterminate	
SOO9743	SOUTHERN AIR INC. (COLUMBUS, OH)	B744	MZJ	MCC	7/17/2012 2:34	7/17/2012 5:09	3h 35m	Arrived	
N495CS	FAYARD ENTERPRISES INC RT 7 HWY 56 WEST BOX 703LOUISBURG, NC 27549	C212	MZJ	SDM	7/12/2012 13:52	7/12/2012 15:26	2h 34m	Arrived	
SOO9743	SOUTHERN AIR INC. (COLUMBUS, OH)	B744	MZJ	SUU	7/10/2012 20:31	7/10/2012 22:30	2h 59m	Diverted	
SOO9743	SOUTHERN AIR INC. (COLUMBUS, OH)	B744	MZJ	MZJ	7/10/2012 20:31	7/11/2012 0:14	4h 43m	Arrived	
N8422H	ARKON ENGINEERING 706 LEE STREETROME, NY 13440	P28A	MZJ	SAN	7/3/2012 15:03	7/3/2012 17:51	3h 48m	Arrived	
N307MS	AIRCRAFT GUARANTY HOLDINGS & TRUST LLC T 515 N SAM HOUSTON PKWY E STE 305HOUSTON, TX 77060-4023	MD83	MZJ	SAT	6/29/2012 19:11	6/29/2012 20:49	2h 38m	Arrived	
DAL8850	DELTA AIR LINES, INC.	MD90	MZJ	ATL	6/27/2012 16:48	6/27/2012 20:12	3h 24m	Arrived	
OMEGA10	OMEGA AIR, S. DE R.L.	DC10	MZJ	VCV	6/26/2012 0:55	6/26/2012 1:44	49m	Arrived	
N787RR	ROLLS-ROYCE NORTH AMERICA INC 14850 CONFERENCE CENTER DRSTE 100 CHANTILLY, VA 20151-3805	B742	MZJ	FHU	6/23/2012 15:43	6/23/2012 16:33	50m	Tracking Terminated Early	
EIA4471	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	JFK	6/19/2012 20:17	6/20/2012 0:45	4h 28m	Arrived	
(blocked)	(blocked)	B752	MZJ	SAN	6/17/2012 14:26	6/17/2012 15:14	48m	Arrived	
N22MS	EVERGREEN EQUITY INC 3850 NE THREE MILE LNMCMINNVILLE, OR 97128- 9402	LJ35	MZJ	PHX	6/6/2012 4:20	6/6/2012 4:48	28m	Arrived	
DTA656P	TAAG, LINHAS AEREAS DE ANGOLA (ANGOLA AIRLINES)	B772	MZJ	LPPR	6/6/2012 0:11	6/6/2012 7:13	7h 2m	Tracking Terminated Early	
(blocked)	(blocked)	B74S	MZJ	LAS	5/30/2012 22:51	5/30/2012 23:49	58m	Arrived	
EIA4493	EVERGREEN INTERNATIONAL AIRLINES	B744	MZJ	OSC	5/24/2012 19:16	5/24/2012 22:12	3h 56m	Arrived	
DAL9970	DELTA AIR LINES, INC.	B744	MZJ	PHX	5/20/2012 16:19	5/20/2012 16:46	27m	Arrived	
N493EV	Unknown owner	B744	MZJ	MZJ	5/19/2012 18:10	5/19/2012 19:45	2h 35m	Arrived	
DAL9932	DELTA AIR LINES, INC.	MD90	MZJ	ATL	5/16/2012 15:46	5/16/2012 19:11	3h 25m	Arrived	
N434CA	FAYARD ENTERPRISES LLC 6966 NC 56 HWYFRANKLINTON, NC 27549	C212	MZJ	OKC	5/9/2012 21:25	5/10/2012 2:06	5h 41m	Arrived	
ELJ33	Unknown owner	H25B	MZJ	DVT	5/9/2012 16:57	5/9/2012 17:14	17m	Arrived	
DAL9761	DELTA AIR LINES, INC.	MD90	MZJ	ATL	5/8/2012 20:14	5/8/2012 23:33	3h 19m	Arrived	
DAL9933	DELTA AIR LINES, INC.	MD90	MZJ	ATL	5/3/2012 21:19	5/4/2012 0:29	3h 10m	Arrived	
DAL9932	DELTA AIR LINES, INC.	B752	MZJ	SAT	4/27/2012 22:01	4/28/2012 17:43	20h 42m	Diverted	
DAL9932	DELTA AIR LINES, INC.	B752	MZJ	MSP	4/27/2012 22:01	Indeterminate	N/A	Indeterminate	
TUA3212	TURKMENHOVAYOLLARY	B712	MZJ	DAY	4/26/2012 19:59	4/26/2012 23:32	4h 33m	Arrived	
DAL9931	DELTA AIR LINES, INC.	MD90	MZJ	VOQ	4/25/2012 21:49	4/26/2012 1:09	3h 20m	Arrived	
N250MY	KMW LEASING LLC 630 TRADE CENTER DR LAS VEGAS, NV 89119-3712	B762	MZJ	PHX	4/24/2012 22:26	4/24/2012 22:45	19m	Arrived	
EIA4488	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	DOV	4/22/2012 17:17	4/22/2012 21:02	4h 45m	Arrived	
EIA4489	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	MZJ	4/18/2012 18:39	4/18/2012 19:15	36m	Tracking Terminated Early	
EIA4489	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	MZJ	4/15/2012 0:41	4/15/2012 1:57	1h 16m	Arrived	
EIA4489	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	MZJ	4/14/2012 19:50	4/14/2012 20:03	13m	Arrived	
DAL9932	DELTA AIR LINES, INC.	MD90	MZJ	VOQ	4/13/2012 20:14	4/13/2012 23:41	3h 27m	Arrived	
EIA4489	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	MZJ	4/7/2012 22:05	4/7/2012 22:47	42m	Tracking Terminated Early	
N467CS	FAYARD ENTERPRISES INC PO BOX 703LOUISBURG, NC 27549-0703	C212	MZJ	DTO	4/7/2012 15:09	4/7/2012 19:20	4h 11m	Tracking Terminated Early	
DAL9931	DELTA AIR LINES, INC.	B752	MZJ	GSO	4/5/2012 13:25	4/5/2012 16:54	3h 29m	Arrived	
TUA3210	TURKMENHOVAYOLLARY	B712	MZJ	DAY	4/1/2012 14:30	4/1/2012 18:23	4h 53m	Arrived	
EJA726	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	GALX	MZJ	HOU	3/29/2012 22:46	3/30/2012 0:46	2h 0m	Arrived	
EJA802	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	C560	MZJ	SLC	3/29/2012 17:43	3/29/2012 19:14	2h 31m	Arrived	
CGXNR	Unknown owner	B732	MZJ	CYYZ	3/24/2012 15:37	3/24/2012 19:58	4h 21m	Arrived	
CGXNR	Unknown owner	B732	MZJ	CYYZ	3/23/2012 16:05	3/23/2012 22:42	7h 37m	Tracking Terminated Early	

N467CS	FAYARD ENTERPRISES INC PO BOX 703LOUISBURG, NC 27549-0703	C212	MZJ	BFL	3/23/2012 15:58	3/23/2012 18:41	3h 43m	Arrived
CGXRN (blocked)	Unknown owner (blocked)	B737 B74S	MZJ MZJ	MZJ SBD	3/22/2012 18:08	<i>Indeterminate</i>	N/A	<i>Indeterminate</i>
DAL9934	DELTA AIR LINES, INC.	MD90	MZJ	ATL	3/21/2012 22:48	3/22/2012 2:16	3h 28m	Arrived
EIA1322	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	TCM	3/20/2012 18:26	3/20/2012 21:17	3h 51m	Arrived
N467CS	FAYARD ENTERPRISES INC PO BOX 703LOUISBURG, NC 27549-0703	C212	MZJ	LGF	3/15/2012 21:37	3/15/2012 22:35	58m	Arrived
DAL9932	DELTA AIR LINES, INC.	B763	MZJ	ATL	3/15/2012 20:11	3/15/2012 23:35	3h 24m	Arrived
EIA4488	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	JFK	3/12/2012 7:12	3/12/2012 11:11	4h 59m	Arrived
N495CS	FAYARD ENTERPRISES INC RT 7 HWY 56 WEST BOX 703LOUISBURG, NC 27549	C212	MZJ	NYL	3/11/2012 21:29	3/11/2012 22:34	1h 5m	Arrived
DAL9931	DELTA AIR LINES, INC.	B752	MZJ	GSO	3/10/2012 16:32	3/10/2012 19:58	3h 26m	Arrived
DAL9937	DELTA AIR LINES, INC.	MD90	MZJ	ATL	3/9/2012 21:12	3/10/2012 0:21	3h 9m	Arrived
N434CA	FAYARD ENTERPRISES LLC 6966 NC 56 HWYFRANKLINTON, NC 27549	C212	MZJ	GVI	3/9/2012 20:20	3/10/2012 0:07	4h 47m	Tracking Terminated Early
EIA1300	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	MUO	3/9/2012 13:00	3/9/2012 14:45	2h 45m	Arrived
N677F	NATIONAL SCIENCE FOUNDATION 4201 WILSON BLVDARLINGTON, VA 22230-0001	GLF5	MZJ	BJC	3/8/2012 20:05	3/8/2012 21:35	2h 30m	Arrived
DAL9931	DELTA AIR LINES, INC.	B752	MZJ	ATL	3/7/2012 19:16	3/7/2012 22:10	3h 54m	Arrived
DAL9936	DELTA AIR LINES, INC.	B738	MZJ	SLC	3/5/2012 21:58	3/5/2012 23:22	1h 24m	Arrived
DAL9932	DELTA AIR LINES, INC.	B738	MZJ	ATL	3/2/2012 18:47	3/2/2012 21:45	3h 58m	Arrived
N467CS	FAYARD ENTERPRISES INC PO BOX 703LOUISBURG, NC 27549-0703	C212	MZJ	MZJ	3/1/2012 18:37	3/1/2012 19:06	29m	Tracking Terminated Early
DAL9931	DELTA AIR LINES, INC.	B738	MZJ	ATL	2/29/2012 22:01	3/1/2012 0:50	3h 49m	Arrived
N467CS	FAYARD ENTERPRISES INC PO BOX 703LOUISBURG, NC 27549-0703	C212	MZJ	MZJ	2/29/2012 18:48	2/29/2012 19:10	22m	Arrived
EIA4490	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	JFK	2/27/2012 21:50	2/28/2012 1:20	4h 30m	Arrived
N434CA	FAYARD ENTERPRISES LLC 6966 NC 56 HWYFRANKLINTON, NC 27549	C212	MZJ	MTO	2/26/2012 23:32	2/27/2012 4:49	5h 17m	Arrived
(blocked)	(blocked)	P46T	MZJ	SDL	2/23/2012 22:05	2/23/2012 22:34	29m	Arrived
DAL9994	DELTA AIR LINES, INC.	MD90	MZJ	ATL	2/16/2012 19:54	2/16/2012 22:57	3h 3m	Arrived
EJA613	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	C56X	MZJ	BUR	2/16/2012 17:12	2/16/2012 18:19	1h 7m	Arrived
DAL9932	DELTA AIR LINES, INC.	B752	MZJ	SAT	2/15/2012 21:36	2/15/2012 23:01	1h 25m	Arrived
HORNT22	HORIZON AIR-TAXI LTD	V22	MZJ	CVS	2/11/2012 17:40	2/11/2012 19:36	2h 56m	Arrived
HORNT21	HORIZON AIR-TAXI LTD	V22	MZJ	CVS	2/11/2012 17:33	2/11/2012 19:31	2h 58m	Arrived
N495CS	FAYARD ENTERPRISES INC RT 7 HWY 56 WEST BOX 703LOUISBURG, NC 27549	C212	MZJ	LGF	2/7/2012 21:23	2/7/2012 22:19	56m	Arrived
EIA1248	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	WRI	2/6/2012 21:06	2/7/2012 1:14	4h 8m	Arrived
EIA4492	EVERGREEN INTERNATIONAL AIRLINES	B744	MZJ	IAH	2/4/2012 5:14	2/4/2012 6:56	2h 42m	Arrived
DAL9931	DELTA AIR LINES, INC.	B752	MZJ	GSO	1/25/2012 1:40	<i>Indeterminate</i>	N/A	<i>Indeterminate</i>
EJA807	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	C560	MZJ	SDL	1/22/2012 22:36	1/22/2012 22:52	16m	Arrived
N822PB	WELLS FARGO BANK NORTHWEST NA TRUSTEE 299 SOUTH MAIN 12TH FLOORMAC U1228-120 SALT LAKE CITY, UT 84111	B752	MZJ	ROW	1/17/2012 23:31	1/18/2012 0:19	48m	Arrived
DAL9932	DELTA AIR LINES, INC.	B752	MZJ	SAT	1/16/2012 20:53	1/16/2012 22:21	1h 28m	Arrived
N231WM	CALIFORNIA COMPACTION CORP 40655 18TH ST WPALMDALE, CA 93551-2222	SR22	MZJ	TUS	1/14/2012 21:15	1/14/2012 21:31	16m	Arrived
ACA7164	AIR CANADA	A319	MZJ	CYMX	1/12/2012 18:52	1/12/2012 22:59	4h 7m	Arrived
ACA7160	AIR CANADA	A319	MZJ	CYMX	1/12/2012 18:43	1/12/2012 22:51	4h 8m	Arrived
EIA4471	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	IAH	1/10/2012 17:51	1/10/2012 19:40	2h 49m	Arrived
N9KGCC	Unknown owner	B739	MZJ	TUS	1/10/2012 17:37	1/10/2012 19:31	2h 54m	Arrived
DAL9934	DELTA AIR LINES, INC.	B752	MZJ	SAT	1/3/2012 17:58	1/3/2012 19:30	2h 32m	Arrived
N689GX	Unknown owner	B752	MZJ	ROW	12/30/2011 23:00	12/30/2011 23:53	53m	Arrived
DAL9931	DELTA AIR LINES, INC.	MD90	MZJ	ATL	12/22/2011 16:31	12/22/2011 19:35	3h 4m	Arrived
N688GX	WELLS FARGO BANK NORTHWEST NA TRUSTEE 299 SOUTH MAIN STREET 12TH FLMAC U1228-120 SALT LAKE CITY, UT 84111	B752	MZJ	ROW	12/21/2011 0:24	12/21/2011 1:38	1h 14m	Arrived
N497CA	FAYARD ENTERPRISES INC 6966 NC 56 HWYFRANKLINTON, NC 27525-9691	C212	MZJ	OTX1	12/17/2011 14:40	12/17/2011 18:48	4h 8m	Tracking Terminated Early
ARG1050	AEROLINEAS ARGENTINAS	B735	MZJ	TUS	12/12/2011 1:11	12/12/2011 1:21	10m	Arrived
N787RR	ROLLS-ROYCE NORTH AMERICA INC 14850 CONFERENCE CENTER DRSTE 100 CHANTILLY, VA 20151-3805	B742	MZJ	TUS	12/11/2011 18:23	12/11/2011 18:33	10m	Arrived
BOE627	BOEING COMMERCIAL AIRPLANE GROUP (SEATTLE, WA)	B738	MZJ	BFI	12/9/2011 18:32	12/9/2011 21:14	3h 42m	Arrived
DAL9931	DELTA AIR LINES, INC.	MD90	MZJ	ATL	12/9/2011 18:15	12/9/2011 21:22	3h 7m	Arrived

BOE630	BOEING COMMERCIAL AIRPLANE GROUP (SEATTLE, WA)	B738	MZJ	BFI	12/8/2011 19:47	12/8/2011 22:48	3h 1m	Arrived
DAL9931	DELTA AIR LINES, INC.	MD90	MZJ	ATL	12/8/2011 16:49	12/8/2011 19:54	3h 5m	Arrived
BOE629	BOEING COMMERCIAL AIRPLANE GROUP (SEATTLE, WA)	B738	MZJ	BFI	12/7/2011 20:27	12/7/2011 23:15	3h 48m	Arrived
BOE628	BOEING COMMERCIAL AIRPLANE GROUP (SEATTLE, WA)	B738	MZJ	BFI	12/6/2011 23:05	12/7/2011 1:45	3h 40m	Arrived
N787RR	ROLLS-ROYCE NORTH AMERICA INC 14850 CONFERENCE CENTER DRSTE 100 CHANTILLY, VA 20151-3805	B742	MZJ	MZJ	12/5/2011 18:54	12/5/2011 20:37	2h 43m	Arrived
EIA4488	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	DOV	12/5/2011 7:42	12/5/2011 11:35	4h 53m	Arrived
CK59768	KITTY HAWK INT'L INC. D/B/A AMERICAN INT'L AIRWAYS (YPSILANTI, MI)	B744	MZJ	OSC	11/30/2011 14:10	11/30/2011 17:27	3h 17m	Arrived
N467CS	FAYARD ENTERPRISES INC PO BOX 703LOUISBURG, NC 27549-0703	C212	MZJ	NYL	11/27/2011 22:26	11/27/2011 23:22	56m	Arrived
EIA4470	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	WRI	11/22/2011 19:32	11/22/2011 23:18	4h 46m	Arrived
EJA339	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	C680	MZJ	ILG	11/19/2011 16:56	11/19/2011 20:32	4h 36m	Arrived
DAL9931	DELTA AIR LINES, INC.	MD90	MZJ	ATL	11/19/2011 16:06	11/19/2011 19:13	3h 7m	Arrived
DAL9931	DELTA AIR LINES, INC.	MD90	MZJ	ATL	11/17/2011 18:12	11/17/2011 21:16	3h 4m	Arrived
DAL9931	DELTA AIR LINES, INC.	MD90	MZJ	ATL	11/16/2011 17:06	11/16/2011 17:17	11m	Diverted
DAL9931	DELTA AIR LINES, INC.	MD90	MZJ	MZJ	11/16/2011 17:06	11/16/2011 17:32	26m	Arrived
N467CS	FAYARD ENTERPRISES INC PO BOX 703LOUISBURG, NC 27549-0703	C212	MZJ	NYL	11/14/2011 21:23	11/14/2011 22:28	1h 5m	Arrived
(blocked)	(blocked)	LJ45	MZJ	ROG	11/14/2011 19:51	11/14/2011 21:46	2h 55m	Arrived
EIA4482	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	JFK	11/13/2011 5:41	11/13/2011 9:14	4h 33m	Arrived
EJA913	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	C750	MZJ	OKC	11/8/2011 0:32	11/8/2011 1:54	1h 22m	Arrived
N511JZ	LIFT CEA CHINA LLC C/O WILMINGTON TRUST CO1100 N MARKET ST WILMINGTON, DE 19890-1605	MD82	MZJ	OPF	11/4/2011 16:48	11/4/2011 20:39	4h 51m	Arrived
DAL9932	DELTA AIR LINES, INC.	MD90	MZJ	ATL	11/4/2011 15:42	11/4/2011 18:59	3h 17m	Arrived
EIA4491	EVERGREEN INTERNATIONAL AIRLINES	B744	MZJ	IAH	11/3/2011 22:19	11/4/2011 0:07	2h 48m	Arrived
DAL9936	DELTA AIR LINES, INC.	B763	MZJ	ATL	10/27/2011 17:08	10/27/2011 20:01	3h 53m	Arrived
N497CA	FAYARD ENTERPRISES INC 6966 NC 56 HWYFRANKLINTON, NC 27525-9691	C212	MZJ	MZJ	10/20/2011 11:53	10/20/2011 12:11	18m	Arrived
DAL9994	DELTA AIR LINES, INC.	MD90	MZJ	ATL	10/19/2011 19:41	10/19/2011 22:33	3h 52m	Arrived
(blocked)	(blocked)	B737	MZJ	AFW	10/13/2011 21:28	10/13/2011 23:12	2h 44m	Arrived
EIA4490	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	DOV	10/6/2011 4:43	10/6/2011 8:33	4h 50m	Arrived
DAL9944	DELTA AIR LINES, INC.	MD90	MZJ	ATL	10/4/2011 16:47	10/4/2011 19:57	3h 10m	Arrived
ABD025P	ATLANTA	B744	MZJ	PHX	10/4/2011 2:16	10/4/2011 2:36	20m	Arrived
N344AS	Unknown owner	B744	MZJ	MZJ	9/30/2011 19:00	9/30/2011 19:59	59m	Arrived
EIA4471	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	DOV	9/27/2011 6:25	9/27/2011 10:26	4h 1m	Arrived
EIA4489	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	SUU	9/25/2011 15:13	9/25/2011 16:46	2h 33m	Arrived
N415TG	TELFORD AVIATION HOLDINGS INC 154 MAINE AVEBANGOR, ME 04401-4342	C208	MZJ	PWA	9/20/2011 11:54	9/20/2011 16:35	5h 41m	Arrived
EIA4485	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	CHS	9/19/2011 6:51	9/19/2011 10:20	3h 29m	Arrived
ABD024P	ATLANTA	B744	MZJ	PHX	9/18/2011 14:16	9/18/2011 14:33	17m	Arrived
DAL9931	DELTA AIR LINES, INC.	MD90	MZJ	ATL	9/16/2011 20:42	9/16/2011 23:54	3h 12m	Arrived
N467CS	FAYARD ENTERPRISES INC PO BOX 703LOUISBURG, NC 27549-0703	C212	MZJ	FTW	9/3/2011 13:05	9/3/2011 17:47	5h 42m	Arrived
DAL9994	DELTA AIR LINES, INC.	MD90	MZJ	ATL	9/2/2011 14:10	9/2/2011 17:28	3h 18m	Arrived
DAL9994	DELTA AIR LINES, INC.	MD90	MZJ	ATL	8/30/2011 20:05	8/30/2011 23:24	3h 19m	Arrived
N434CA	FAYARD ENTERPRISES LLC 6966 NC 56 HWYFRANKLINTON, NC 27549	C212	MZJ	NYL	8/29/2011 0:09	8/29/2011 1:16	1h 7m	Arrived
(blocked)	(blocked)	B762	MZJ	IAH	8/22/2011 19:27	8/22/2011 21:23	2h 56m	Arrived
N917W	GC AIR LLC 2400 E KATELLA AVE STE 800ANAHEIM, CA 92806-5955	GLF4	MZJ	SAT	8/22/2011 0:01	8/22/2011 1:43	2h 42m	Arrived
EIA4491	EVERGREEN INTERNATIONAL AIRLINES	B744	MZJ	IAH	8/17/2011 2:14	8/17/2011 4:09	2h 55m	Arrived
N497CA	FAYARD ENTERPRISES INC 6966 NC 56 HWYFRANKLINTON, NC 27525-9691	C212	MZJ	LGf	8/7/2011 15:46	8/7/2011 16:40	54m	Arrived
N467CS	FAYARD ENTERPRISES INC PO BOX 703LOUISBURG, NC 27549-0703	C212	MZJ	RIW	8/4/2011 13:21	8/4/2011 19:35	6h 14m	Diverted
N467CS	FAYARD ENTERPRISES INC PO BOX 703LOUISBURG, NC 27549-0703	C212	MZJ	CYXE	8/4/2011 13:21	<i>Indeterminate</i>	N/A	<i>Indeterminate</i>
EJA332	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	C560	MZJ	STL	8/1/2011 19:48	8/1/2011 22:49	3h 1m	Arrived
(blocked)	(blocked)	B752	MZJ	BZN	7/26/2011 1:59	7/26/2011 3:46	2h 47m	Arrived
N497CA	FAYARD ENTERPRISES INC 6966 NC 56 HWYFRANKLINTON, NC 27525-9691	C212	MZJ	ABQ	7/24/2011 18:49	7/24/2011 20:41	2h 52m	Arrived
DAL9931	DELTA AIR LINES, INC.	MD90	MZJ	ATL	7/20/2011 23:22	7/21/2011 2:40	3h 18m	Arrived
N467CS	FAYARD ENTERPRISES INC PO BOX 703LOUISBURG, NC 27549-0703	C212	MZJ	GNG	7/20/2011 13:38	7/20/2011 19:30	6h 52m	Diverted

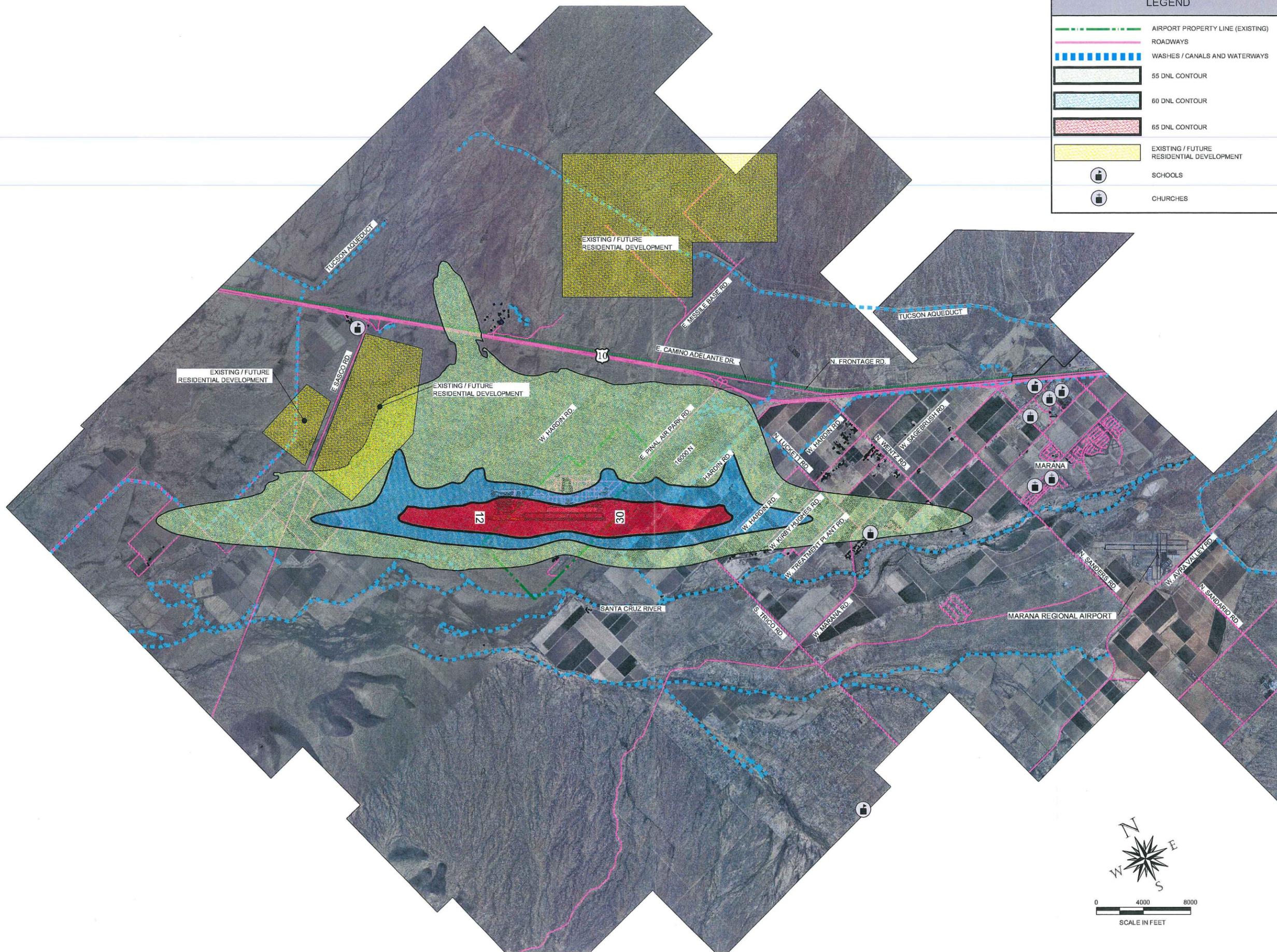
N467CS	FAYARD ENTERPRISES INC PO BOX 703LOUISBURG, NC 27549-0703	C212	MZJ	COE	7/20/2011 13:38	<i>Indeterminate</i>	N/A	<i>Indeterminate</i>
N791AX	ABX AIR INC 145 HUNTER DRWILMINGTON, OH 45177-9390	B762	MZJ	FLL	7/15/2011 20:12	7/16/2011 0:22	4h 10m	Arrived
N933F	WILMINGTON TRUST COMPANY TRUSTEE RODNEY SQUARE NORTHWILMINGTON, DE 19890	DC93	MZJ	MMIO	7/14/2011 17:22	7/14/2011 18:59	2h 37m	Tracking Terminated Early
BOE440	BOEING COMMERCIAL AIRPLANE GROUP (SEATTLE, WA)	B748	MZJ	PMD	7/8/2011 16:07	7/8/2011 17:00	53m	Arrived
EIA4482	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	DOV	6/30/2011 15:28	6/30/2011 19:34	4h 6m	Arrived
EIA4470	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	SUU	6/28/2011 12:07	6/28/2011 13:38	2h 31m	Arrived
N786AT	ASTAR AIR CARGO INC 2 S BISCAYNE BLVD STE 3663MIAMI, FL 33131-1807	B722	MZJ	OPF	6/24/2011 22:07	6/25/2011 1:53	4h 46m	Arrived
N22MS	EVERGREEN EQUITY INC 3850 NE THREE MILE LNMCMINNVILLE, OR 97128-9402	LJ35	MZJ	PHX	6/21/2011 17:30	6/21/2011 17:42	12m	Tracking Terminated Early
EIA4482	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	DOV	6/16/2011 15:39	6/16/2011 19:44	4h 5m	Arrived
N346AS	Unknown owner	B744	MZJ	MZJ	6/2/2011 21:01	6/2/2011 22:32	2h 31m	Arrived
EIA4487	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	PANC	5/31/2011 16:25	5/31/2011 21:47	5h 22m	Arrived
OAE927	OMNI AIR EXPRESS, INC. (TULSA, OK)	B772	MZJ	SBD	5/27/2011 22:16	5/27/2011 23:04	48m	Arrived
N497CA	FAYARD ENTERPRISES INC 6966 NC 56 HWYFRANKLINTON, NC 27525-9691	C212	MZJ	DDC	5/27/2011 17:00	5/27/2011 19:26	2h 26m	Diverted
N497CA	FAYARD ENTERPRISES INC 6966 NC 56 HWYFRANKLINTON, NC 27525-9691	C212	MZJ	BGD	5/27/2011 17:00	5/27/2011 19:28	2h 28m	Diverted
N497CA	FAYARD ENTERPRISES INC 6966 NC 56 HWYFRANKLINTON, NC 27525-9691	C212	MZJ	GBD	5/27/2011 17:00	5/27/2011 20:38	4h 38m	Tracking Terminated Early
EJA738	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	GALX	MZJ	PHX	5/27/2011 0:10	5/27/2011 0:23	13m	Arrived
EJA668	EXECUTIVE JET AVIATION, INC. (COLUMBUS, OH)	C56X	MZJ	SMO	5/25/2011 18:35	5/25/2011 19:51	1h 16m	Arrived
N31DP	CJPJ ASSOCIATES INC 275 PATERSON AVELITTLE FALLS, NJ 07424-1658	LJ35	MZJ	LUK	5/23/2011 20:18	5/23/2011 23:20	3h 2m	Arrived
N434CA	FAYARD ENTERPRISES LLC 6966 NC 56 HWYFRANKLINTON, NC 27549	C212	MZJ	LGF	5/20/2011 12:23	5/20/2011 13:30	1h 7m	Arrived
N551SL	ROBINSON JOE 3410 SILVER SPURS ANGELO, TX 76904	P28A	MZJ	HWD	5/16/2011 21:03	5/16/2011 23:55	3h 52m	Diverted
N551SL	ROBINSON JOE 3410 SILVER SPURS ANGELO, TX 76904	P28A	MZJ	BFL	5/16/2011 21:03	5/17/2011 0:28	3h 25m	Tracking Terminated Early
EIA4490	EVERGREEN INTERNATIONAL AIRLINES	B742	MZJ	DOV	5/9/2011 12:17	5/9/2011 16:35	4h 18m	Arrived

APPENDIX E

***Draft Noise Contours Excerpted from
2009 Noise Study Working Paper #1 prepared by
Armstrong Consultants***



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LEGEND	
	AIRPORT PROPERTY LINE (EXISTING)
	ROADWAYS
	WASHES / CANALS AND WATERWAYS
	55 DNL CONTOUR
	60 DNL CONTOUR
	65 DNL CONTOUR
	EXISTING / FUTURE RESIDENTIAL DEVELOPMENT
	SCHOOLS
	CHURCHES

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PINAL AIRPARK
MARANA, ARIZONA

2009 NOISE STUDY

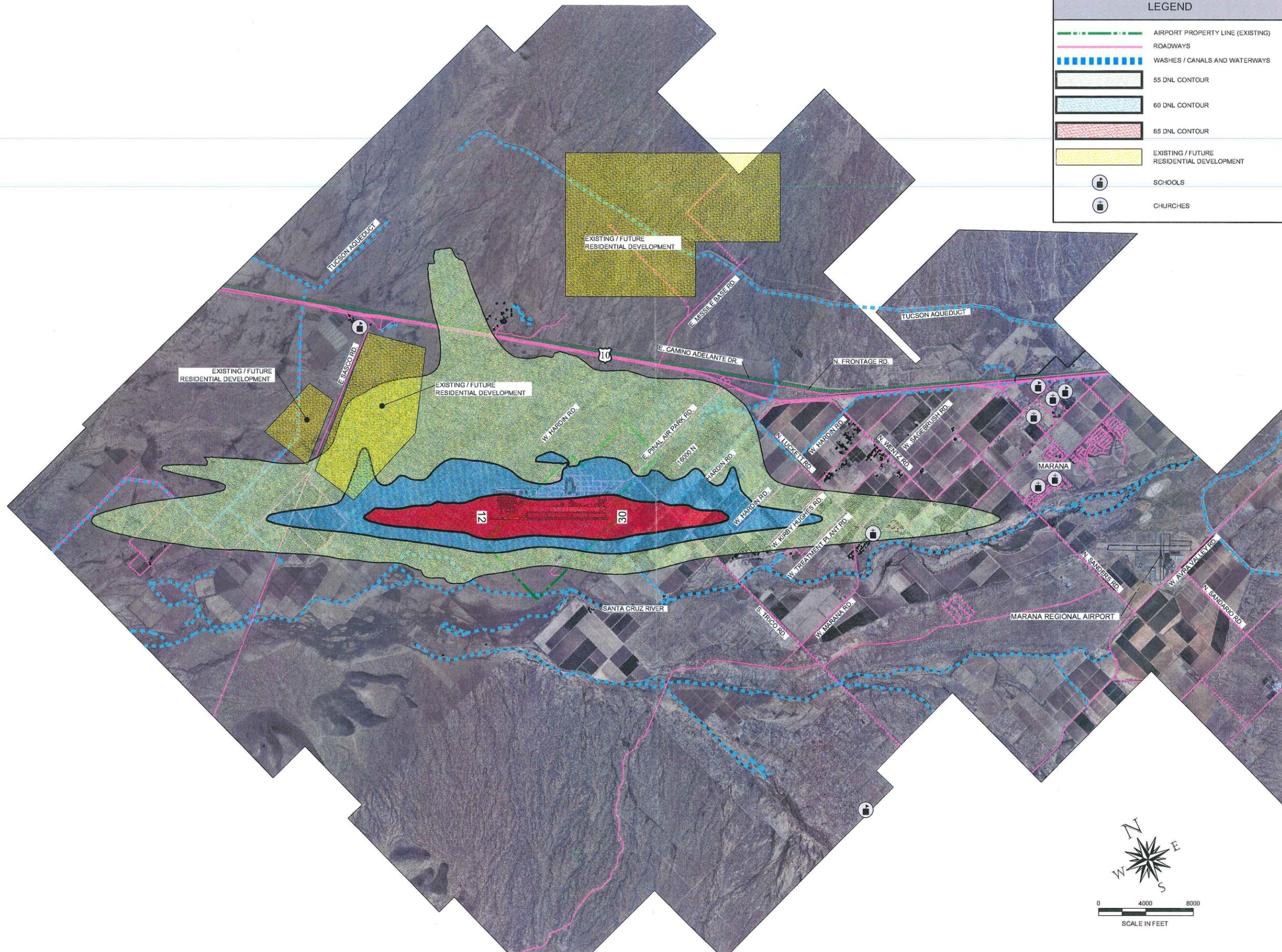
No.	Revision	Date	By

Project No: 095911
Date: 06.2009
File Name: 5911526

Drawn: GWK
Checked: HD
Approved: DAC

NOISE EXPOSURE MAP FOR 2008

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LEGEND	
	AIRPORT PROPERTY LINE (EXISTING)
	ROADWAYS
	WASHES / CANALS AND WATERWAYS
	55 DNL CONTOUR
	60 DNL CONTOUR
	65 DNL CONTOUR
	EXISTING / FUTURE RESIDENTIAL DEVELOPMENT
	SCHOOLS
	CHURCHES

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PINAL AIRPARK
MARANA, ARIZONA

2009 NOISE STUDY

No.	Revision	Date	By

Project No: 095911
Date: 06.2009
File Name: 5911522

Drawn: GWK
Checked: HD
Approved: DAC

NOISE EXPOSURE MAP FOR 2028

Sheet: 1 of 1

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APPENDIX F

Airspace Analysis





PINAL AIRPARK TERMINAL AREA AIRSPACE

AIRSPACE SETTING

Pinal Airpark hosts a variety of aircraft operations and aeronautical activities. Aside from those conducted by general aviation aircraft, air carrier aircraft destined for long-term storage or requiring maintenance, overhaul and repair services provided by Marana Aerospace Solutions frequent the Airpark. The Airpark is also the home of the U.S. Special Operations Command's Parachute Training and Testing Facility (PTTF.) Drop zones (landing sites) for the paratroopers are located in an unpaved, open area about 2500' laterally southwest of Runway 12-30. The Arizona Army National Guard Silver Bell Army Heliport (SBAHP) is located immediately beyond the northern boundaries of the Airpark (east of the extended Runway 12-30 centerline.) The SBAHP operates 4 helipads and provides helicopter parking spaces for about 54 helicopters. SBAHP provides support for Army Aviation Support Facility #2; Western Army Aviation Training Site (WAATS); 1-285th Attack/Reconnaissance Battalion (ARB); Peace Vanguard (Singapore); Detachment 1, B Company 640th Aviation Support Battalion, and Detachment 1, C Company 3-140 Aviation. The WAATS principally provides helicopter training for UH-60A/L Blackhawks and LUH-72A.

Aviation activities at Pinal Airpark follow generally accepted practices at an uncontrolled facility. A standard (left-hand) airfield traffic pattern is established for Runway 12 and a nonstandard (right-hand) airfield traffic pattern is required for Runway 30 for fixed and rotary wing aircraft, although straight-in arrivals and departures can be conducted depending on current air traffic activity. The traffic pattern altitude is set at 1109' AGL (3002' AMSL) for fixed wing aircraft and 709' AGL (2602' AMSL) for rotary wing aircraft to afford a level of vertical separation. Runway 12 is the designated calm wind runway. Traffic advisories are available on the common traffic advisory frequency (CTAF - 123.05 MHz) and all aircraft operate under visual flight rules. Visual flight rules (VFR) are a set of regulations under which a pilot operates an aircraft in weather conditions generally clear enough to allow the pilot to see where the aircraft is going. Pilots flying under VFR assume responsibility for their separation from all other aircraft and are generally not assigned routes or altitudes by air traffic control. At present, there are no instrument approach procedures published for Runway 12 or Runway 30.

Discussions with representatives of the SBAHP with respect to their standard operating procedures disclosed that departing helicopters transition to one of four helipads aligned to their parking lane via hover or wheel taxi and then depart either on a heading of 120°, 300° or 210° and then along routes prescribed in the Heliport Standard Operating Procedures handbook and eventually toward the direction of their destination. The heading of 210° is utilized only by pilots based at SBAHP; transient helicopter pilots are not briefed to use this departure route. Local helicopter training flights make extensive use of Runway 12-30 and its designated traffic pattern for repetitive takeoffs and landings and either hover or wheel taxi to their respective parking lane positions when completing their training flights. Care is taken to avoid noise sensitive areas near

the Pinal Airpark as well as the parachute jump drop zones in an area adjacent to the southwestern quadrant of the Airpark.

The most common destination for these helicopters is the Picacho Army National Guard Heliport (Picacho ARNG Heliport) located some 12 nautical miles (NM) to the northwest of Pinal Airpark and about 3 NM west-northwest of Picacho Peak, and very nearly positioned along the extended centerline of Runway 12-30. This helicopter training facility, depicted on some aeronautical charts is also referred to as the Picacho Stagefield Heliport is equipped with four helicopter lanes, helicopter parking area and an air traffic control tower staffed by the Arizona Army National Guard. Use of this facility reduces the training traffic levels at the uncontrolled Pinal Airpark and SBAHP. Helicopter flights occur throughout the day and night. During nighttime conditions and pending the type of helicopter, pilots will train on Night Vision System (NVS) or Night Vision Goggles (NVG's) or both. Standard operating procedures for the Silver Bell Army Heliport provide for radio call-outs so that pilots in the area are advised of their position, altitude and route of flight intentions.

Figures 1 through 4 (see pages 15 through 18) illustrate various helicopter arrival and departure paths from the SBAHP. The routes are depicted in a generalized manner and can vary based on pilot discretion and the location and altitude of aircraft known to be in the area as announced on the CTAF. Therefore, actual flight paths can and do vary.

When initially departing on headings of 120° and 300° from the helipads, the helicopters overfly the parallel taxiway on the east side of Runway 12-30 and initiate a climb to an altitude of 2200' AMSL. In the event that aircraft are operating on that taxiway, helicopters overfly the turf area between the taxiway and the runway. Once reaching their initial VFR reporting point as specified in Figures 1 through 4 and named as the North Power Plant, North Red Rock, East Cattle Pens, North Santa Cruz, the Microwave Tower and Silverbell Road Intersection, the helicopters navigate toward their ultimate destination. When that destination is the Picacho ARNG Heliport, the routing typically follows a dry riverbed (Santa Cruz River) that angles toward the north and northwest, skirting west of Picacho Peak.

Helicopter departures on the 210° heading remain at 200' AGL (2093' AMSL) until clear of the airport traffic pattern before climbing to 2200' AMSL. This positions the helicopter to cross the Runway 12-30 extended centerline and also avoids the jump drop zones adjacent to the southwest quadrant of Pinal Airpark. When destined to the Picacho ARNG Heliport, helicopters will typically turn right to a heading of 270° before reaching the sewage ponds and then normally fly west of the cattle pens, along the Santa Cruz River to the northwest, through an open land use corridor. Otherwise, the helicopter will continue to the microwave tower or North Santa Cruz VFR reporting points before turning to their intended destination.

Because the Picacho ARNG Heliport is located nearly on the extended runway centerline of Runway 12-30 at Pinal Airpark, helicopters transiting between these facilities may cross that centerline. This can present a conflict with aircraft arrivals on Runway 12 when those aircraft are at altitudes less than 2600' AMSL (the designated altitude for helicopter arrivals at one of the designated VFR reporting points.)

Helicopter arrivals are first routed to VFR reporting point (West Cattle Pens, South Power Plant, South Red Rock and the Silver Bell Road Intersection) at an altitude of 2600' AMSL, enter the traffic pattern at that altitude or, depending on local aircraft traffic conditions, proceed directly to the assigned helipad to land.

The Arizona Army National Guard has been pursuing the issuance by the Federal Aviation Administration of an instrument approach procedure to the SBAHP that would be authorized for use only by Department of Defense helicopters. The procedures are intended for the northernmost helipad at the SBAHP and also include an instrument departure procedure, but could be developed to Runway 12 and/or Runway 30 if determined to be more practical. The intent is to provide RNAV (GPS) approach procedures with vertical and horizontal navigational guidance, termed RNAV (GPS) LPV, or limited to lateral navigation capability depending on the procedure design. These procedures are currently under consideration and design for publication in April 2015.

Representatives the PTF indicated that 36,000 jumps (number of paratroopers exiting the aircraft) occurred in 2013 and future levels of activity are expected to be greater. Operating procedures allow for jumps at altitudes as high as 25,000' AMSL at any hour of the day, although most operations are conducted at 14,000' AMSL. Night jumps are usually scheduled during the period between 3:00 a.m. and 4:00 a.m. when essentially no other aircraft activity is anticipated in the Tucson region and to take advantage of early sunlight in the event there is a need for search and rescue or other emergency response. The CASA 212 aircraft is typically utilized for jump activity and is operated under a contract with Rampart Aviation. At times, other military units may deploy the much larger C-130 aircraft for jump training exercises involving more paratroopers. Jump aircraft communicate with the Tucson Terminal Radar Approach Control (TRACON) located at Davis Monthan Air Force Base as they climb to altitude and descend. The jump aircraft operate within a 15-n.m. radius, although they typically remain within 5 n.m. of Pinal Airpark. It usually requires between 15 and 20 minutes to reach jump altitude, depending on the takeoff weight of the aircraft and weather conditions. The TRACON is advised two minutes prior to paratroopers departing the aircraft and all reach the drop zones within a few minutes, depending on the type of jump procedure utilized.

AREA AIRPORTS

The location of Pinal Airpark with respect to other airport facilities is illustrated in Figure 5, Visual Flight Rules Sectional Map (see page 19), and highlights the following features:

1. Pinal Airpark is located at the northern end of a cluster of airports in the Tucson region. This cluster comprises Tucson International Airport, Davis Monthan Air Force Base, Ryan Field, Marana Regional and La Cholla airports, and the El Tiro Gliderport. Of these, the El Tiro Gliderport is located closest to Pinal Airpark by a distance of nearly 6 n.m. to the south-southwest. This is a privately-owned facility, open to the public on a prior-permission basis, as is the La Cholla Airport. The nearest public-use airport is the Marana Regional Airport located some 8 n.m. to the southeast.
2. With the exception of Ryan Field, La Cholla Airpark and the El Tiro Gliderport, the primary runway alignments at the cluster of airports is northwest-southeast, due mostly to the direction of prevailing winds experienced in what might be considered a broad valley in the Sonoran desert surrounded by higher terrain to the east and west. This primary runway alignment enhances the ability to control aircraft flow and spacing and minimizes the potential of airspace conflicts. However, there are times when aircraft operations at Tucson International Airport are to the southeast and concurrently those at Davis Monthan Air Force Base are to the northwest and vice versa.

3. Pinal Airpark is positioned at the extreme southeastern edge of Class E airspace associated with airports to the northwest extending toward the Phoenix area. The nearest of these airports is the Eloy Municipal Airport about 22 n.m. to the northwest.

As a point of information, all airspace in the United States is designated into one of six classes based on the complexity, density and type of aircraft operations; the level of safety required and consideration of national and public interest. Classes A, B, C, D and E are designated controlled airspace, while Class G is uncontrolled. Each class of airspace has specified operating rules that all aircraft must follow. Class E airspace has the least rigid operating requirements of the five controlled airspace designations and extends from either 700' above ground level (AGL) or 1200' AGL to the base on the nearest class of controlled airspace, but not greater than 14,500' above mean sea level (AMSL.) Pilots operating in Class E airspace need not communicate with air traffic control, although they can receive air traffic advisories on a workload-permitting basis. Flight visibility in Class E airspace must be 3 statute miles or greater and aircraft are to maintain a separation of 500' below, 1000' above and 2000' horizontally from clouds.

Class C airspace surrounds Tucson International and Davis Monthan Air Force Base; however, it does not encompass Pinal Airpark. Aircraft operating through the Class C airspace must communicate with air traffic controllers prior to entering the airspace and are provided with aircraft separation services. The Class C airspace extends from the surface to 6600' AMSL within 5 n.m. of each airport and from 4200' AMSL up to 6600' AMSL beyond that radius to 10 n.m.

Victor Airways are another form of controlled Class E airspace beginning at 1200' AGL and are used to define a route between two terminal navigational aids. Victor Airway 16 (V16) passes directly above Pinal Airpark, which establishes its base elevation at 3093' AMSL at that point, just 91' above the traffic pattern altitude for fixed wing aircraft. V66-105 transits about 10 n.m. southwest of Pinal Airpark and has no impact on aircraft operations at the Airpark.

Other features of the airspace setting for Pinal Airpark include military operating areas (MOA), principally to the northeast and southwest. MOA's are a type of special use airspace and active during specified days and times. They may extend from the surface to designated AMSL or AGL altitudes depending on the type of military aircraft activity that they accommodate. The MOA's do not overly influence the civilian aircraft activity that occurs in the vicinity of Pinal Airpark.

Military training routes are also shown in Figure 5 and designated with a VR or IR prefix, depending on whether the aircraft is being flown under visual (VR) or instrument (IR) regulations. Military training routes are designed for low altitude, high speed flight. Low altitude may infer as close to the ground as technically viable and high speed can be in excess of 250 knots. The nearest military training route (VR 239-244) passes within 7.5 n.m. northwest of the Pinal Airpark and is operational when the visibility is 5 statute miles or more and the ceiling is at least 3000' AGL. Each of these VR routes is flown at altitudes ranging from 300' AGL to 9500' AMSL. Aircraft announce their flight intentions on a UHF frequency intended for air-to-air communications, a frequency that is not typically monitored by civilian aircraft.

The VFR Sectional Map also indicates that the maximum elevation figure (MEF) in the quadrant in which Pinal Airpark is located is 5000' AMSL. The MEF takes into account the highest natural or manmade obstacle elevation with an upward adjustment that accounts for the source for the elevation data and an additional 100' for manmade obstacles and 200' for terrain.

Figure 6 (see page 20) illustrates the low level (up to but not including 18,000' AMSL) en route instrument flight rule (IFR) routes that traverse the airspace in the vicinity of Pinal Airpark. Most overlie the visual flight rule (VFR) routes described above. V16 is also designated Tango Route 306 (T306), which denotes a routing based on the use of global positioning system data. The aircraft must be equipped with the avionics to receive the satellite positioning data. T306 has a minimum en route altitude (MEA) of 6500' AMSL. The shaded blue area surrounding Tucson International Airport and Davis Monthan Air Force Base is the Class C airspace described above.

Another informative data point on the low altitude IFR chart is the off route obstruction clearance altitude (OROCA) of 9200' AMSL. The OROCA represents the highest possible obstruction elevation including both terrain and other vertical obstruction data (towers, trees, etc.) bounded by the ticked lines of latitude and longitude including data 4 n.m outside the quadrant. The OROCA includes an upward adjustment of 1000' for designated nonmountainous areas of the United States and 2000' for designated mountainous areas. The entire state of Arizona is designated as a mountainous area.

INSTRUMENT APPROACH PROCEDURES

Pinal Airpark is not currently served with an instrument approach capability. However, all of the airports extending from Eloy Municipal to the northwest and Marana Regional, Ryan Field, Tucson International and Davis Monthan Air Force Base to the southeast, with the exception of the privately-owned La Cholla Airpark, El Tiro Gliderport and Eloy Municipal Airport, are served with a nonprecision or precision instrument approach procedure. A nonprecision instrument approach provides arriving aircraft with lateral course navigation guidance. Precision instrument approaches add a vertical component to the guidance. These approach capabilities can be provided with conventional ground based terminal navigational aids or through the use of augmented satellite global positioning system data. The aircraft must be suitably equipped to receive the navigational guidance and, depending on the type of procedure being flown, the aircraft crew must be certified to utilize the procedure.

Table 1 on the following page summarizes the existing instrument approach procedures published for each of the airports in the Tucson region and the approach minimums for approach category C aircraft. These are aircraft with approach speeds of between 121 knots and 140 knots. Most of the air carrier aircraft operating at Tucson International Airport and the relatively larger corporate jet aircraft operate within this range. The A-10 Warthog assigned to the 355th Fighter Wing at Davis-Monthan Air Force Base is also an approach category C aircraft. Table 1 also indicates the initial approach fix altitude for each procedure. This altitude, among others, is particularly relevant given that the Pinal Airpark is located at the northwestern end of the cluster of airports in the Tucson area and may affect the design of future instrument approach procedures to Runway 12. Air traffic flows to the northwest are less of an airspace issue at Pinal Airpark because the missed approach procedures designed with such instrument approaches terminate at fixes south of Pinal Airpark. A graphical depiction of the relevant instrument approach procedures and fix locations, and a discussion of their compatibility with a potential instrument approach to Runway 12 and Runway 30 at Pinal Airpark is presented in a subsequent section of this report.

**Table 1
SUMMARY OF EXISTING INSTRUMENT APPROACH PROCEDURES**

Airport / Instrument Approach	Approach Category C Aircraft Minimums (HATh - VIS)	Initial Approach Fix Altitude (AMSL) (lowest authorized)
Tucson International Airport		
RNAV (GPS) 3	712 - 2½	NEVZI Waypoint 5800
ILS or LOC 11L	201 - ½	TACUB Intersection 6000
RNAV (RNP) Y 11L	348 - ¾	TACUB Intersection 6000
RNAV (GPS) Z 11L	250 - ½	TACUB Intersection 6000
VOR or TACAN 11L	361 - ½	TACUB Intersection 6000
RNAV (GPS) 11R	360 - ¼	MAVVA Waypoint 6000
RNAV (GPS) 21	568 - 2	SASME Waypoint 7600
RNAV (GPS) 29L	411 - 1⅜	WISAR Waypoint 6300
RNAV (GPS) 29R	346 - ¼	UGETE Waypoint 8000
RNAV (GPS) Z 29R	286 - 1	WAXES Waypoint 5900
LOC/DME BC 29R	477 - ¼	SULLI Reporting Point 8000
VOR/DME or TACAN 29R	477 - ¼	SULLI Reporting Point 8000
Davis Monthan AFB		
TACAN 12	800 - 2½	HUMMR 8000
HI-TACAN 12	800 - 2½	HUMMR 12000
HI-ILS or LOC/DME 30	300 - 1	LUZON 13000
ILS or LOC/DME 30	300 - 1	LUZON 10600
HI-TACAN 30	700 - 1⅜	LUZON 13000
TACAN 30	700 - 1⅜	LUZON 10600
Ryan Field		
ILS or LOC 6R	250 - 1	JIPSY Intersection 5000
NDB/DME or GPS 6R	900 - ¾	IZUTU 6600
Marana Regional Airport		
RNAV (GPS) 3	454 - ¼	ALMON Reporting Point 5400
RNAV (GPS) 12	409 - 1⅛	PICLI Reporting Point 4900
NDB 12	1458 - 1½	Remain within 10 nm 4800
RNAV (GPS) 21	315 - 1	NABPI 4400
RNAV (GPS)-E	789 - ¼	TACYU 6700+

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STANDARD ARRIVAL ROUTES (Southeast Bound)

Standard arrival routes (STAR) are prescribed routes that facilitate the transition from the en route airspace structure to a fix in the terminal area from which an instrument approach can be conducted. Use of the STAR reduces the extent of voice communication between air traffic controllers and the pilot because the STAR specifically identifies the route and altitudes that are to be flown.

Two STAR's have been published for Tucson International Airport -- Dingo Five Arrival and Zonna One Arrival. The Dingo Five Arrival is intended to serve arrivals on Runway 11L and Runway 29R, although air traffic controllers can route aircraft by issuing radar vectors to other runway ends. The STAR begins at either the Phoenix VORTAC or the Gila Bend VORTAC at an altitude of 8000' AMSL. These fixes direct the aircraft to the BASER reporting point, which is some 46 n.m. from the Tucson VORTAC. Aircraft remain at 8000' AMSL passing BASER to the DINGO reporting point and then to the MAVVA reporting point some 27 n.m. from the TUS VORTAC, by which time the aircraft should be at 6000' AMSL.

The Zonna One Arrival is based on the use of area navigation (RNAV) and specifies waypoints that begin as far east as the El Paso VORTAC and the Newman VORTAC (north of El Paso.) At those positions, the aircraft is at Flight Level 230 (23,000' AMSL) and descending to pass the Zonna waypoint at Flight Level 210 and the SSAND reporting point at 14,000' AMSL. At that fix, the aircraft is some 27 n.m. from the Tucson VORTAC and is routed with radar vectors by air traffic control to the approach course for the landing runway in use.

There are no STAR's published for the other Tucson region airports. The Dingo One Arrival positions aircraft west and south of Pinal Airpark at altitudes ranging between 6000' AMSL and 8000' AMSL depending on the descent rate selected by the pilot for the instrument approach procedure to be flown, or as directed by air traffic control. The Zinno One Arrival routes aircraft well south and east of Pinal Airpark.

STANDARD INSTRUMENT DEPARTURE PROCEDURES

Standard instrument departure (SID) procedures are equivalent in function to STARs and apply to instrument departures from specified runway ends. Three SID procedures are published for Tucson International Airport named the Tucson Eight Departure, Burro Three Departure (RNAV) and the Wldkt Two Departure (RNAV.) The latter two rely on the use of RNAV waypoints and reporting points. The Tucson Eight Departure is defined by terminal navigational aids and reporting points. Each SID specifies altitudes that the aircraft is to attain along the route of flight, and these pass south and west, and north and east of Pinal Airpark. When the aircraft is abeam Pinal Airpark on any of the routings, its altitude is at least 9500' AMSL and thus is not a factor for low level operations, including potential instrument approaches, at the Airpark.

The Almon One Departure is published for aircraft departing Runway 6L and Runway 24R at Ryan Field. The routing directs the aircraft to the west of Ryan Field and then to climb direct to the ALMON reporting point at an altitude of 8000' AMSL. This places the aircraft west and south of Pinal Airpark. From the ALMON reporting point, aircraft are then routed by air traffic control to the next fix along their flight plan.

POTENTIAL FOR INSTRUMENT APPROACHES TO PINAL AIRPARK

The utilization of the airspace in the Tucson region can affect the design and implementation of instrument approach procedures to Runway 12 and Runway 30 at the Pinal Airpark. It is noted that there is no instrument approach to Runway 30 at the Marana Regional Airport. This airport is located about 8 n.m. closer to Tucson International Airport, Davis Monthan Air Force Base and Ryan Field than Pinal Airpark, which may account for the inability to design an instrument approach to Runway 30. Nonetheless, it is appropriate to evaluate a potential instrument approach to Runway 30 at the Pinal Airpark.

Runway 12 Instrument Approach Potential

Figure 7 (see page 21) presents a graphical depiction of those instrument approach procedures published to the area airports in terms of routing, fixes and altitudes for southeast flows. The illustration focuses on those instrument approach procedures that have a bearing on the potential design of an instrument approach to Runway 12 at the Pinal Airpark. Additionally, fixes (intersections, reporting points and waypoints) described previously are illustrated in Figure 7.

Instrument approach routings and altitudes to Runway 11L and Runway 11R at Tucson International Airport and Runway 12 at Davis Monthan Air Force Base are of primary concern. The initial approach fixes associated with instrument approach procedures (TACUB INT, MAVVA and HUMMR) are each located south of Pinal Airpark and at least 4100' above the Pinal Airpark elevation. Aircraft transitioning from the en route airspace structure to these initial approach fixes are at higher altitudes. This operating environment facilitates the selection of initial, intermediate and final approach fixes that can be set at altitudes less than those currently established for these airports in the design of an instrument approach to Runway 12 at Pinal Airpark.

The PICLI reporting point is the initial approach fix (4900' AMSL) for the RNAV (GPS) 12 approach at Marana Regional Airport and located northwest of Pinal Airpark on a nearly a direct extension of the Runway 12 alignment. The magnetic heading of Runway 12 at Pinal Airpark is about 124°. However, the instrument approach procedure to Runway 12 at Marana Regional Airport next routes the aircraft to the east to the CITUT waypoint and then in a southerly direction to the Runway 12 threshold at the Marana Regional Airport. The final approach segment is offset 14° to the east of the runway heading, yet retains a straight-in designation. This routing maintains a lateral separation of some 2 n.m. to the east of and at an altitude of about 3200' AMSL when abeam the Pinal Airpark. Aircraft operating in the traffic pattern at Pinal Airpark could be as close as 1 n.m. (when the crosswind leg and base leg is 1 n.m. in length) and 200' lower than aircraft conducting the RNAV (GPS) instrument approach to Runway 12 at Marana Regional Airport.

The NDB 12 instrument approach at Marana Regional Airport requires that the aircraft conduct a procedure turn within 10 n.m. of the Airport at an altitude of 4400' AMSL after descending from the en route airspace structure between the altitudes of 4800' AMSL and 10,000' AMSL. The procedure turn may occur to the northwest of the Pinal Airpark because the distance between these two airports is about 8 n.m. The approach course is offset 13° to the west of the Runway 12 alignment. Provided that the aircraft conducting the NDB 12 approach remains at 4400' AMSL, this altitude should provide sufficient vertical separation for instrument approach procedures at the Pinal Airpark.

As described earlier, potential for airspace conflicts can arise when helicopters operate between the SBAHP and the Picacho ARNG Heliport some 12 n.m. to the northwest at altitudes of between 2200' AMSL and 2300' AMSL. This routing will place the helicopters at low altitude within the obstacle evaluation area of any potential instrument approach procedure to Runway 12 and depending on pilot route preferences could cross the extended runway centerline along the route. It appears that the only solution, absent air traffic control of the airspace, is to route the helicopters toward the east and then northwest following Interstate Highway 10 until beyond the eastern edge of Picacho Peak and then turning to the west direct to the Picacho ARNG Heliport. This routing could have adverse helicopter noise impacts on surrounding land uses, particularly those involving wildlife (ostrich) management. Further, in order to avoid crossing the extended Runway 12-30 centerline, the helicopters would need to depart and arrive directly above the helicopter parking positions and terminal facility, a maneuver that is not considered in keeping with safe operating procedures.

Additional opportunity for airspace conflict can occur between aircraft conducting an instrument approach to Runway 12 at Pinal Airpark and those operating on the military training routes (VR 239, VR 244 and VR 231.) As described earlier, military aircraft can be operating at high speed and between 300' AGL and 9500' AMSL when crossing through the instrument approach corridor to Runway 12.

Instrument approaches also provide for a missed approach segment to enable aircraft to fly to a missed approach point in the event there is an anomaly in the approach procedure. When flows are to the northwest in the Tucson region, the missed approach procedures for Runway 29R and Runway 29L at Tucson International Airport direct aircraft to the PIMMA reporting point, about 20 n.m. northwest from the Tucson VORTAC by which fix the aircraft is at an altitude of either 6500' AMSL or 6800' AMSL. The PIMMA reporting point is located slightly east of the runway heading and about 12 n.m. southeast of Pinal Airpark and 4 n.m. southeast of the Marana Regional Airport. The missed approach procedures for Runway 30 at Davis Monthan Air Force Base is the SHORR reporting point, which is northeast of the PIMMA reporting point and more distant from the Pinal Airpark. Aircraft are to be at 6900' AMSL when reaching the SHORR reporting point.

Missed approach procedures for Runway 12 at the Marana Regional Airport present the most potential for impacts on low level flight operations at Pinal Airpark. Those for Runway 3, Runway 21 and the RNAV (GPS)-E route aircraft to the ALMON reporting point west and south of Pinal Airpark at an altitude of either 6000' AMSL or 6700' AMSL. The missed approach point for the NDB 12 procedure is the NDB located at the Airport, which is achieved by conducting a climbing left turn to an altitude of 5800' AMSL. The PICLI reporting point serves as the missed approach holding position for the RNAV (GPS) instrument approach to Runway 12. This missed approach procedure requires the aircraft to execute a climbing right turn and proceed direct to the PICLI reporting point and hold at 6500' AMSL. This routing, after accounting for a turning radius that nearly aligns the aircraft on a course parallel and west of the final approach segment, should maintain the aircraft west of Pinal Airpark, but will eventually cross the extended Runway 12-30 centerline and through the airspace typically utilized by Army National Guard helicopters operating to and from the Picacho ARNG Heliport. The altitude of the aircraft as it passes west and possibly overhead of the Pinal Airpark depends on the altitude at which the missed approach procedure is initiated, the point along the instrument approach at which a decision is made to execute the missed approach and the climb performance of the aircraft. If the aircraft executes the missed approach at the missed approach point, which is 0.5 n.m. from the Marana Regional Airport Runway 12 threshold at the published minimum descent altitude of 409' AMSL and climbs at the standard departure initial climb rate of

200'/n.m., it is likely to be at an altitude of about 2500' AMSL when abeam of the Pinal Airpark. This altitude is above the 2200' AMSL and 2300' AMSL altitudes typically flown by Army National Guard helicopters between the SBAHP and the Picacho ARNG Heliport. The aircraft then needs to climb to 6500' AMSL over the remaining distance of about 8 n.m. to the PICLI reporting point. This requires a climb gradient of 500'/n.m., a value that is well within the operating performance of modern general aviation aircraft. Nonetheless, an instrument approach to Pinal Airpark should take into consideration the missed approach procedure for the RNAV (GPS) 12 instrument approach at Marana Regional Airport.

Assuming that air traffic control of the airspace can be provided, there is the potential to design an RNAV (GPS) instrument approach to Runway 12 at Pinal Airpark. A possible routing is to transition from the en route airspace from the Stanfield VORTAC on a 127° heading for a distance of about 13 n.m. that directs the aircraft to an initial approach fix. The initial approach fix altitude is 8000' AMSL, the same at which the aircraft passes above the Standfield VORTAC, and which provides an adequate required obstacle clearance from surrounding terrain and manmade obstacles. An intermediate fix can then be established on a heading of 85° for a distance of about 12 n.m. and positions the aircraft on the extended runway centerline. The aircraft is about 15 n.m. from the Runway 12 threshold at that point. The final approach fix is then positioned 5 n.m. from the Runway 12 threshold on the extended runway centerline. Based on a threshold crossing height of 50' (1925' AMSL) and near optimum descent gradients, the final approach fix altitude is 3500' AMSL and the intermediate approach fix altitude is 5000' AMSL. These equate to descent gradients of 315'/n.m. and 150'/ n.m., respectively, and are the near optimal rates in these segments of the instrument approach. The missed approach segment considers a climbing right turn direct to the PICLI reporting point and a holding altitude of 6500' AMSL.

Positioning the final approach fix 5 n.m. from the Runway 12 threshold at an altitude of 3500' AMSL places the aircraft 900' above the Army National Guard helicopters operating between the SBAHP and the Picacho ARNG Heliport at that point and higher when further to the northwest when operating from the intermediate approach. However, as the aircraft descends from the final approach fix toward the Runway 12 threshold, it will pass through the helicopter operating altitude. Herein lies an airspace conflict that requires further analysis to define mitigation solutions, including a missed approach procedure that provides for a climbing right turn to an appropriately positioned waypoint.

The aircraft conducting an instrument approach to Runway 12 will be at an altitude of between 3500' AMSL and 5000' AMSL when passing through the military aircraft VR training routes to the north and northwest of Pinal Airpark. The military aircraft operating on these routes could be at the same altitude. This is an airspace management issue that also warrants further evaluation in the design of an instrument approach to Runway 12. Although military aircraft training routes transition through the entire Arizona airspace, a cursory review indicates that they are located more distant from the end of a runway than those associated with the Pinal Airpark. For example, the centerline of VR 239-244 passes within about 14 n.m. of the Marana Regional Airport. However, even at that distance, aircraft flying the RNAV (GPS) 12 instrument approach to Marana Regional Airport pass through VR 241 and VR 239-244 during the transition from the PICLI reporting point to the CITUT waypoint at an altitude of 4900' AMSL, which is within the authorized altitude range of the VR routes.

Instrument approach minimums are then based on the obstacle evaluation areas in the final approach segment and missed approach segments, the results of which could impact on the position and altitudes of the final, intermediate and initial approach fixes. Other factors may also influence the determination of the achievable approach minimums. The complete design of the instrument approach procedure is an iterative process that balances the outcomes in each of the four segments to realize a suitable and feasible solution.

In the event that control of the airspace cannot be assured, primarily through the Tucson TRACON and possibly by an air traffic control tower at the Pinal Airpark, the option remains to clear an aircraft instrument approach to Runway 12 as described above; however, incorporate a visual descent point at an altitude of 3100' AMSL that occurs between the final approach fix (3500' AMSL) and the Runway 12 threshold. At that point, which is estimated to be about 3.8 n.m. from the Runway 12 threshold, the aircraft terminates the instrument approach and continues a visual descent to the landing. Although this is a less than ideal outcome, the instrument approach procedure to the visual descent point provides the aircraft with positive course guidance from the en route airspace to a point in space at which a decision to continue the approach under visual flight rules can be made.

Runway 30 Instrument Approach Potential

Figure 7 can also be used to graphically illustrate the potential for an instrument approach procedure to Runway 30 at Pinal Airpark. When aircraft are operating at the Tucson region airports in a northwesterly flow, the approach procedures commence at initial approach fixes that are southeast of the landing airport. The instrument approaches to Runway 6R at Ryan Field are well west of the Field and south of Pinal Airpark. There are no published instrument approach procedures to Runway 30 at the Marana Regional Airport. Consequently, potential conflicts in the use of the airspace for an instrument approach to Runway 30 at Pinal Airpark may arise with missed approach procedures at the other Tucson region airports. The missed approach procedures to Runway 29L and Runway 29R at Tucson International Airport are either straight or right climbs to the PIMMA reporting point at a holding altitude of either 6500' AMSL or 6800' AMSL. The PIMMA reporting point is southeast of the Marana Regional Airport and Pinal Airpark. The missed approach procedure for Runway 21 at Tucson International Airport provides for a climbing right turn and hold at an altitude of 6000' AMSL at the Ryan Field NDB, and that for the Runway 3 missed approach is a climbing left turn to the PIMMA reporting point at an altitude of 6500' AMSL. The missed approach procedures for Runway 30 instrument approaches at Davis Monthan Air Force Base each require straight climbs to an altitude of 6900' AMSL and holding at the PIMMA reporting point.

The missed approach procedures utilize different holding positions for most of the instrument approaches at the Marana Regional Airport. The missed approach procedure for the RNAV (GPS) 3 procedure involves a climbing left turn to the ALMON reporting point at an altitude of 6000' AMSL. When aircraft execute a missed approach using the RNAV (GPS) 12 instrument approach, the missed approach procedure requires a climbing right turn and direct to the PICLI reporting point at an altitude of 6500' AMSL. The missed approach procedure requires the aircraft to pass through military training routes VR 241 and VR 239-244 and their altitude range. The missed approach for the NDB 12 approach is a close-in climbing left turn to hold at the NDB at 5800' AMSL. The missed approach procedure for the RNAV (GPS) 21 instrument approach directs the aircraft in a straight southwesterly climb to the TUPBO waypoint and then a right turn to the northwest to the ALMON reporting point at an altitude of 6000' AMSL. Of note is the missed approach procedure developed for the RNAV (GPS)-E instrument approach at Marana Regional Airport. The approach is from the southeast and the

missed approach course provides for a straight climb to the KULRE waypoint and then a turn to the southwest to hold at the ALMON reporting point at an attitude of 6000' AMSL. This route positions aircraft most closely to Pinal Airpark, about 4 n.m. to the south. Each of these missed approach procedures maintain the aircraft south and west of Pinal Airpark and, with exception of the RNAV (GPS) 12 procedure, outside of the airspace assigned to the three VR routes.

Figure 7 also illustrates the best potential routing for an instrument approach procedure to Runway 30 at Pinal Airpark. It takes into consideration that fixes typically employed to facilitate instrument approaches in a southeasterly flow will not be in use when Runway 30 is active at Pinal Airpark, and that the missed approach procedures for the Tucson region airports do not extend closer than 4 n.m. south of the Airpark. Terrain features are another factor in selecting an appropriate instrument approach routing. Consequently, an RNAV (GPS) instrument approach to Runway 30 could consider an initial approach fix about 3 n.m. northwest of the La Cholla Airport established by the 328° radial from the Tucson VORTAC to the CROME reporting point. From that fix, the aircraft flies a southwesterly course on a heading of about 238° to an intermediate approach fix located on the extended runway centerline at the PIMMA reporting point. A right turn to align with the runway heading of 304° toward a final approach fix and the Runway 30 threshold may then be viable. The intermediate approach fix (PIMMA) would be located about 4 n.m. south of the Marana Regional Airport. The final approach fix would be positioned about 5 n.m. from the Runway 30 threshold and the aircraft would overfly the Marana Regional Airport in the approximately 6 n.m. intermediate approach segment. The relatively high terrain in the vicinity of the initial approach fix, on the order of 4700' AMSL excluding upward adjustments for obstacle data accuracy and the distances between the approach fixes, could result in an initial approach fix altitude that does not facilitate acceptable descent gradients to the intermediate approach fix and that to the final approach fix. The result could also yield relatively high approach minimums, aside from obstacles in the final approach segment, which may render the procedure less than desirable. The missed approach procedure to Runway 30 at the Pinal Airpark can present a conflict with helicopters transitioning between the Silver Bell Army Heliport and the Picacho Army National Guard Heliport. This conflict may be mitigated by positioning the missed approach point about 2.3 n.m. southeast of the Runway 30 threshold and executing a climbing right turn toward the intermediate approach fix. This places the aircraft east of the Pinal Airpark and above the helicopter operations. It is possible that opposite direction flight activity at Tucson International Airport and Davis Monthan Air Force Base may render an instrument approach procedure to Runway 30 as problematic given this potential overlap in airspace use. The design of an instrument approach procedure to Runway 30 at Pinal Airpark will require further detailed analysis to define its feasibility and utility to aircraft operators, but is considered as an unlikely outcome due to the potential for descent gradients between approach segment fixes that exceed allowable limits and the potential for interaction with opposite direction flights at the Tucson International Airport and Davis Monthan Air Force Base.

FINDINGS AND RECOMMENDATIONS

The airspace environment at the Pinal Airpark is influenced by a variety of users that render a complex operating situation in terms of the range of aircraft types in use and paratrooper activities conducted by the Army National Guard and other units that train at the Airpark and the Silver Bell Army Heliport. The fact that the primary runway headings at the airports in this region of Tucson are aligned in a predominantly northwest-southeast direction aids in the management of the airspace. The Tucson TRACON manages the terminal area airspace, but due to the Class E airspace designation encompassing the Pinal Airpark issues advisory traffic information on a workload permitting basis. The Pinal Airpark operates under visual flight rules

within this Class E airspace. Pilots are required to operate in a see-and-avoid basis and communicate their intentions via a common traffic advisory frequency.

The location of the Pinal Airpark at the far northwestern end of the cluster of Tucson region airports provides opportunity to establish instrument approach procedures to each runway end. Absent the helicopter operations between the Silver Bell Army Heliport and the Picacho Army National Guard Heliport, a procedure to Runway 12 may have more viability given the surrounding terrain and use of the airspace by other airports in the Tucson region. The viability of an instrument approach procedure to Runway 30 is not necessarily eliminated at this time, but appears to have less potential for implementation. Each requires further detailed analysis.

The main impediment to the implementation of an instrument approach procedure to Runway 12 at the Pinal Airpark is the routing and altitudes flown by the Army National Guard between the Silver Bell Army Heliport and the Picacho Army National Guard Heliport. The current routing may cross the extended runway centerline depending on the departure and arrival corridor utilized by the helicopters, and within the obstacle evaluation area for the RNAV (GPS) instrument approach procedure. Therefore, the procedure design needs to take into consideration that the helicopters are located within that area at altitudes that present a potential airspace conflict when passing the final approach fix. The design of an instrument approach procedure final approach segment can be offset up to 30° to either side of the extended runway centerline depending on the type of procedure flown (lateral navigation or lateral navigation with vertical guidance), the aircraft approach category, and its intercept point with the extended Runway 12 centerline. Alternatively, the designation of a visual descent point between the final approach fix and the Runway 12 threshold may offer a viable solution. Means to define a helicopter routing that does not conflict with instrument approach procedure arrivals, the design of an offset instrument approach, or imposition of a visual descent point will require further evaluation. Representatives of the Arizona Army National Guard expressed a willingness to modify the visual flight routes that are currently in use to accommodate an instrument approach procedure(s) to Pinal Airpark. An additional conflict can arise between instrument approaches to Runway 12 and military training flights using the VR routes north and northwest of the Pinal Airpark.

Expanded control and management of the Pinal Airpark airspace may have merit given the range of aircraft types and aviation-related activities that utilize the facility and the Silver Bell Army Heliport on a daily basis. Establishment of Class D airspace and an air traffic control tower is the primary means to enable this operational capability and enhance flight safety for all users. The primary difference between Class D airspace and the current Class E designation is that aircraft are required to have two-way radio communication to enter Class D airspace and are provided with aircraft separation and traffic advisories. The volume of airspace associated with Class D airspace is generally cylindrical in form, centered on the airport and normally extends from the surface to 2500' AGL (4393' AMSL.) The outer radius of the airspace is variable, but is generally 4 n.m. with extensions to accommodate instrument approach procedures. Class D airspace reverts to Class E airspace when the air traffic control tower is closed. The availability of an air traffic control tower can mitigate the potential airspace conflicts between aircraft and Army National Guard helicopters. The tower is also able to monitor and control military aircraft operating on the VR training routes that pass north and northwest of the Pinal Airpark.

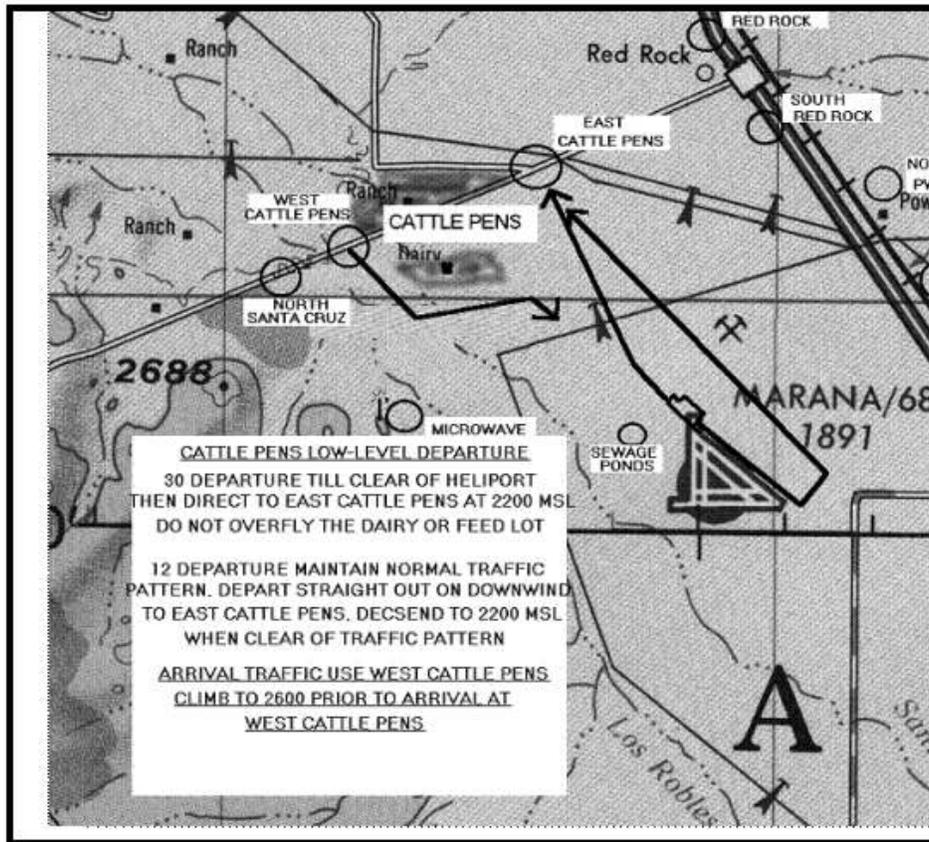
Representatives of the Arizona Army National Guard have offered to staff an air traffic control tower, much as is in operation at the Picacho Army National Guard Heliport, when invited to do so by the airport owner, Pinal County. Further studies should be conducted to assess the present value, life-cycle, benefit/cost of establishing an air traffic control tower including obtaining the radar display data from the Tucson TRACON.

Further Considerations

The implementation of an instrument approach procedure(s) at Pinal Airpark will require further evaluation to include:

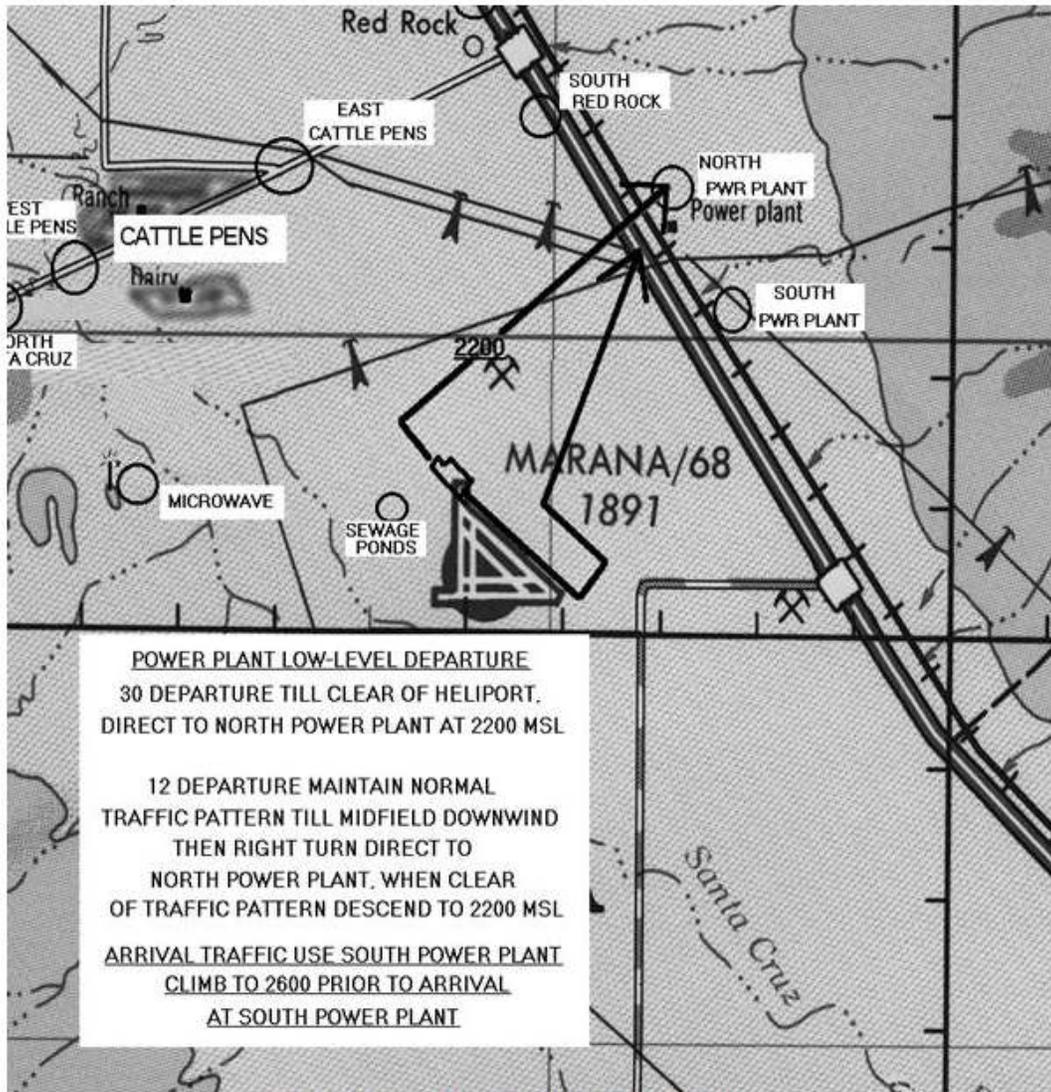
1. A more detailed procedure design feasibility study that takes into consideration the existing and potential relocation of the Runway 12 threshold and available obstacle data to determine achievable approach minimums and compliance with airport facility design standards. This feasibility study can identify means to mitigate obstacle issues or establish a process to meet facility design standards prior to requesting a final procedure design and flight check by the Federal Aviation Administration Flight Procedures Office. The feasibility study can also incorporate a present value, life-cycle, benefit/cost analysis as appropriate for the circumstances that serves to justify airport improvement capital costs that might accompany the establishment of an instrument approach procedure, including the frequency of instrument flight rule weather conditions.
2. Discussions with the Arizona Army National Guard with respect to staffing an air traffic control tower and obtaining a Class D airspace designation and/or defining new Arizona Army National Guard visual flight rule departure and arrival routings.
3. Updated obstacle survey for use in the final instrument approach procedure design.
4. Recognition that the availability of an instrument approach procedure could attract flight training activities from general aviation airports located in the south Phoenix area, which would impose a higher potential for conflicts among all users of the Pinal Airpark airspace.

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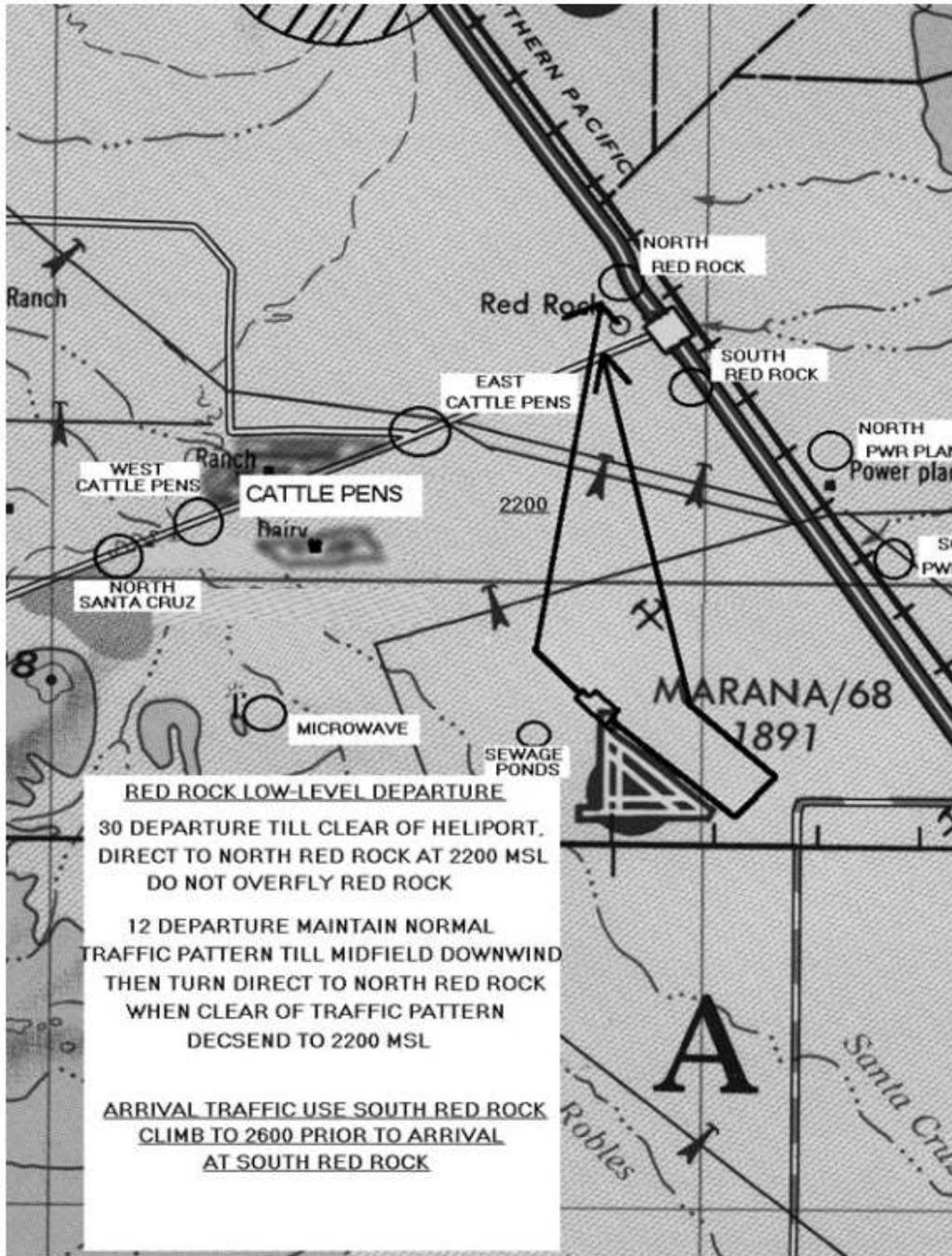
CATTLE PENS LOW-LEVEL DEPARTURE / ARRIVAL

Figure 1



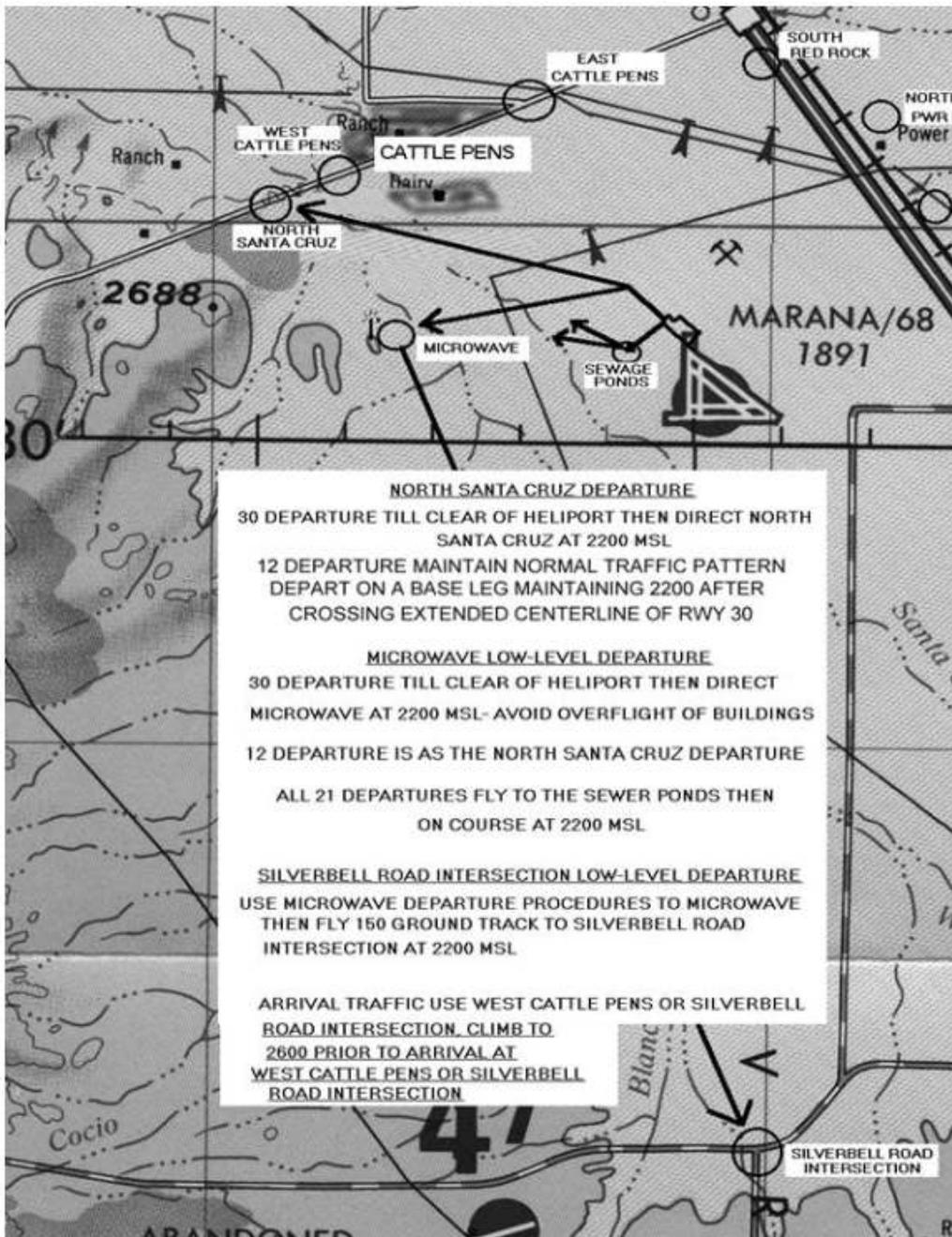
POWER PLANT LOW-LEVEL DEPARTURE

Figure 2



RED ROCK LOW-LEVEL DEPARTURE

Figure 3



NORTH SANTA CRUZ, MICROWAVE LOW-LEVEL AND SILVER BELL ROAD INTERSECTION LOW-LEVEL DEPARTURES

Figure 4

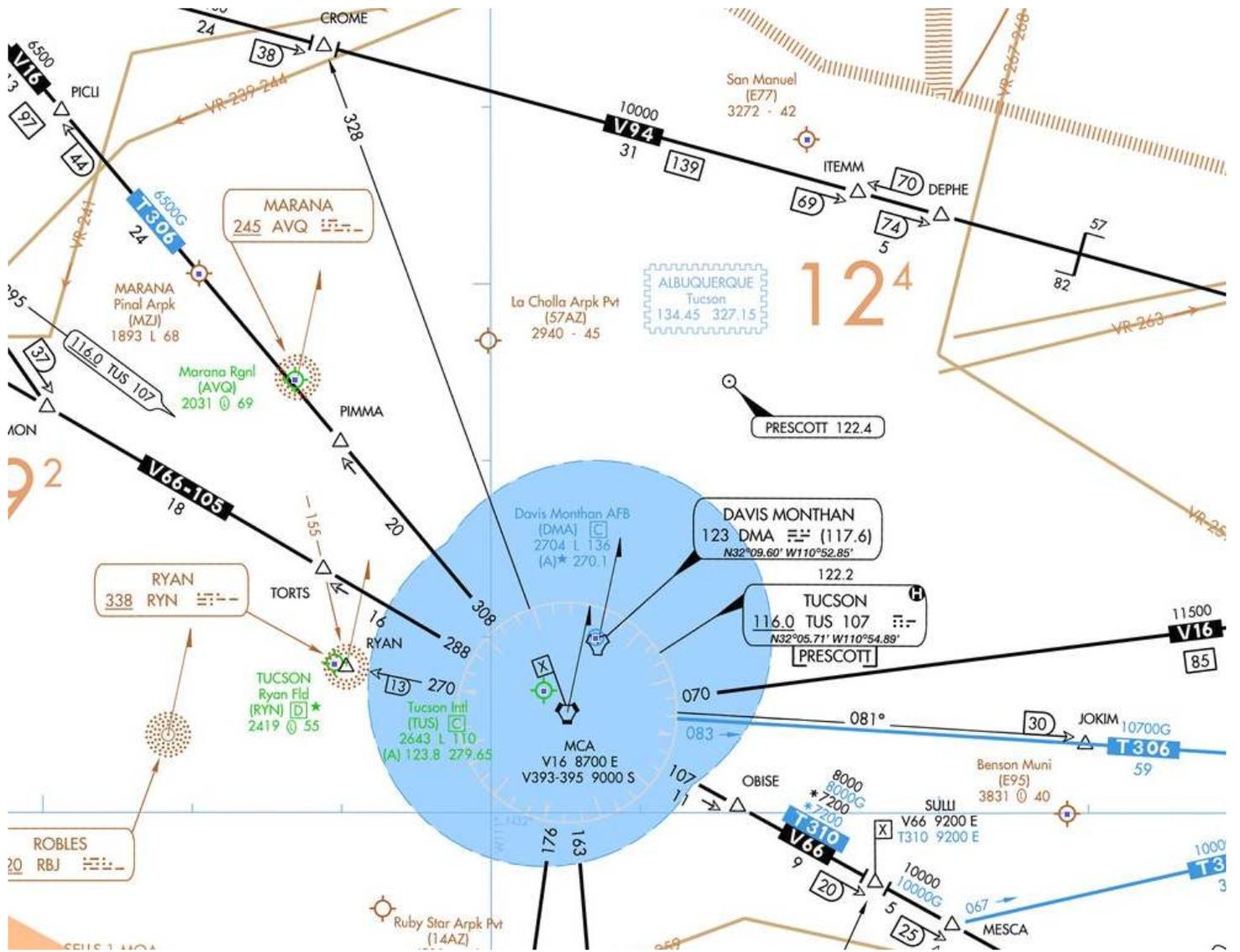


Figure 6 - Low Altitude IFR Chart

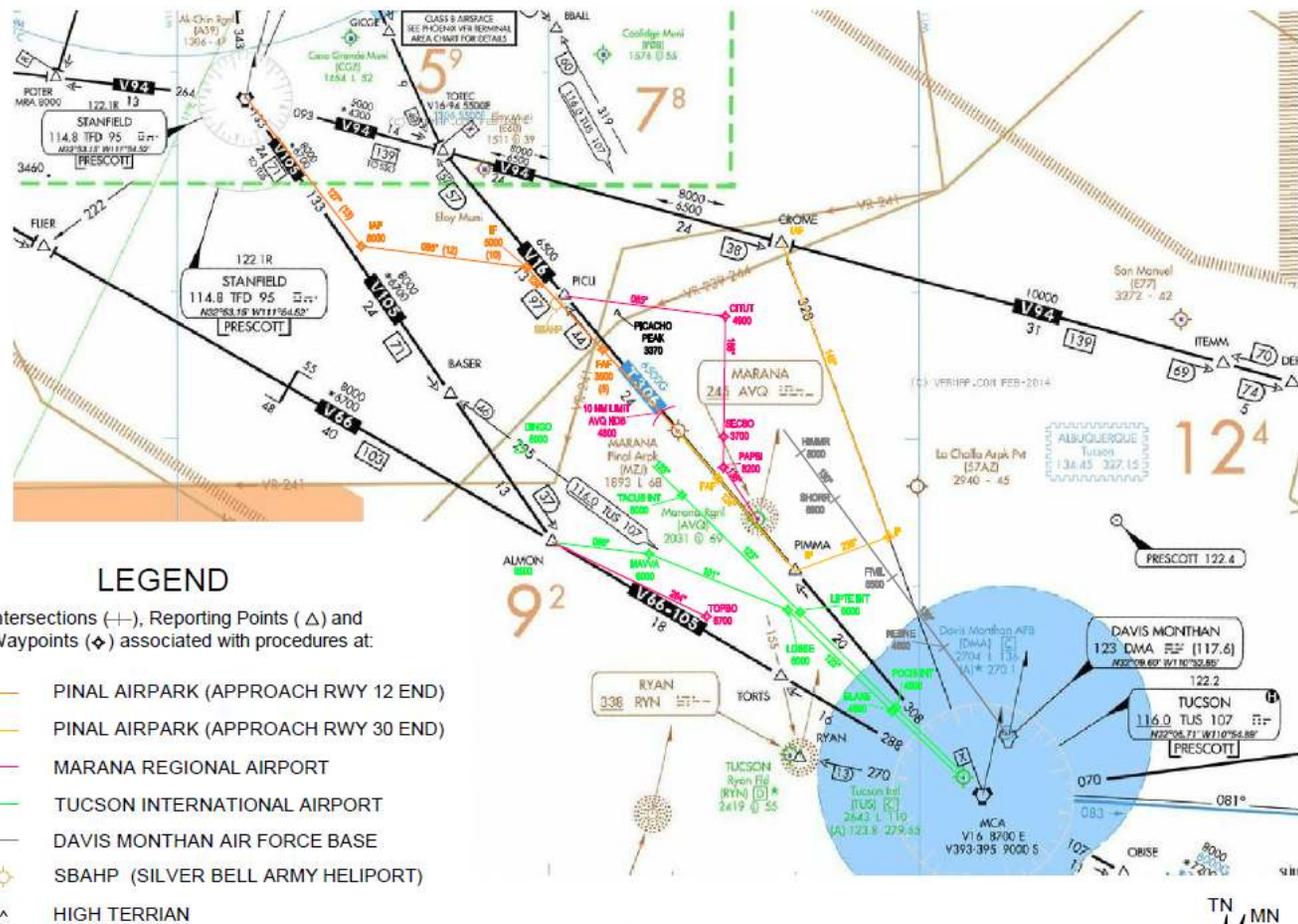


Figure 7
Selected Existing Southeast Flow Instrument Approach Procedures and Potential Instrument Approach Procedures to Runway 12 and Runway 30 at Pinal Airpark

