FINAL ENVIRONMENTAL ASSESSMENT

for

PROPOSED AIRPORT IMPROVEMENTS

at

FLAGSTAFF PULLIAM AIRPORT

Flagstaff, AZ

FLAGSTAFF
PULLIAM AIRPORT

Prepared for the

CITY OF FLAGSTAFF

JUNE 2006

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U.S. DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration
Western-Pacific Region
Hawthorne, California

AUG 1 2006

FINDING OF NO SIGNIFICANT IMPACT AND RECORD OF DECISION

PROPOSED
1,801 FOOT EXTENSION TO RUNWAY 3/21 AND THE PARALLEL TAXIWAY SYSTEM AND OTHER ASSOCIATED IMPROVEMENTS

FLAGSTAFF PULLIAM AIRPORT
Flagstaff, Coconino County, Arizona

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GENERAL INFORMATION ABOUT THIS DOCUMENT

WHAT'S IN THIS DOCUMENT? This document is the Federal Aviation Administration's (FAA) Finding of No Significant Impact (FONSI) and Record of Decision (ROD) for proposed improvements to the Flagstaff Pulliam Airport (FLG), Flagstaff, Coconcino County, Arizona. This document includes those final agency determinations and approvals for those proposed federal actions described in the Final EA dated June 2006. This document discusses all alternatives considered by the FAA in reaching its decision, summarizes the analysis used to evaluate the alternatives, and briefly summarizes the potential environmental consequences of the Flagstaff Pulliam Airport Improvements Alternatives and the No Action Alternative, which are evaluated in detail in this FONSI and ROD. This document also identifies the environmentally preferred alternative and selects the Airport Improvement Alternative for implementation at FLG. This document identifies applicable and required mitigation.

BACKGROUND. In July 2005, the City of Flagstaff prepared a Draft Environmental Assessment (DEA). The DEA addressed the potential environmental effects of the proposed FLG Airport Development Program (ADP), Alternative and reasonable Alternatives to that proposal. The DEA was prepared in accordance with the requirements of the National Environmental Policy Act (NEPA). FAA published the Notice of Availability for the DEA on July 19, 2005. FAA received comments on the draft between July 19, 2005 and August 26, 2005.

Copies of this FONSI and ROD are available for inspection at various libraries in the Flagstaff area; the FAA Headquarters Office in Washington, D.C. and Western-Pacific Regional Office in Hawthorne, California; and at the administrative offices of FLG.

WHAT SHOULD YOU DO? Read the Record of Decision to understand the actions that FAA will take relative to the FLG Airport Improvement Alternative.

WHAT HAPPENS AFTER THIS? The City of Flagstaff may begin to carry out the Airport Improvement Alternative as funds become available.

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Figure 1: Airport Layout Plan of Proposed FLG Improvements 5

U.S. DEPARTMENT OF TRANSPORTATION
Federal Aviation Administration

FINDING OF NO SIGNIFICANT IMPACT AND RECORD OF DECISION

Proposed 1,801 foot extension to Runway 3/21 and the Parallel Taxiway System and other associated improvements

FLAGSTAFF PULLIAM AIRPORT
Flagstaff, Coconino County, Arizona

I. INTRODUCTION

This document serves as a Finding of No Significant Impact (FONSI) and Record of Decision (ROD) for the Federal Aviation Administration's (FAA) proposed federal action of unconditional approval of the portion of the Airport Layout Plan (ALP) that depicts a 1,801-foot extension for Runway 3/21 and Taxiway A (Proposed Action). The Proposed Action will result in the relocation of the existing airport service road, and other associated improvements for Flagstaff Pulliam Airport (FLG), located in Flagstaff, Arizona. The airport is owned and operated by the City of Flagstaff, Arizona.

The City of Flagstaff's proposal (the Proposed Action) is to extend Runway 3/21 and Taxiway A 1,801 - feet to the east of their present location, and to extend runway and taxiway lighting, as well as the relocation of the existing on-airport service road. The proposed runway does not meet the definition for a "major runway extension" as described in paragraph 9 (l) of *FAA Order 5050.4B, "National Environmental Policy Act (NEPA) Implementing instructions for Airport Actions."* The proposal includes the acquisition of 85 acres of land contained within the expanded avigation easement area northeast of the airport. Acquisition of this land will allow the airport to have positive control over the Runway Safety Area (RSA) and Runway Protection Zone (RPZ) for Runway 3/21 to ensure the airport meets FAA Airport Design Standards. The land is part of a land exchange between the United States Forest Service and Yavapai Ranch. Details of the exchange are outlined within the *Northern Arizona Land Exchange and Verde River Basin Partnership Act of 2005* passed in November 2005. The extended runway is proposed to be constructed to provide a safe operating environment consistent with current FAA design standards for the range of general aviation and commercial service aircraft currently using the facility. The proposed runway extension will allow the airport to better accommodate general aviation business jets as well as commercial service regional jets in the near term as well as over the long term planning period. The 1801-foot extension will permit business jet to take off more fully loaded with passengers and fuel on warm summer days, and allow commercial flights to destinations beyond the existing limited service to Phoenix.

In accordance with Title 40, Code of Federal Regulation (CFR) § 1501.3 of the President's Council on Environmental Quality Regulations (CEQ), implementing federal regulations for the National Environmental Policy Act (NEPA) of 1969, the FAA supervised preparation of a Final Environmental Assessment (Final EA), dated June 2006. The EA was prepared in accordance with the requirements of NEPA as defined in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures.*

The analysis of the various environmental categories required by FAA Order 1050.1E revealed that the proposed runway and taxiway extension project would not exceed the federal thresholds of significance and will not significantly affect the quality of the human environment. Therefore, considering the various consultation and document coordination efforts on the part of the FAA and the airport sponsor, the type and extent of the comments received from all parties including federal, state, and local governmental agencies, groups and interested citizens, and the analysis of impacts presented in the Final EA, the FAA determined that the appropriate level of federal environmental disclosure action for this project is an EA.

This FONSI and ROD will describe the purpose and need of the project, actions to be taken by the FAA, alternatives examined in the Final EA, environmental effects of the preferred alternative, committed mitigation, and the FAA's decision. The nature and extent of the FAA's decision is clearly stated in this FONSI/ROD, which is a decision document.

II. Background

FLG is located in North Central Arizona. FLG is a commercial service aviation airport on 795 acres on the southwest side of the city on Highway 17. FLG is owned and run by the City of Flagstaff. An update to the airport's Master Plan was completed in 2005. Among other things, the Master Plan identified the need to improve the airport facilities by extending Runway 3/21 to serve existing and future aircraft at Flagstaff Pulliam Airport. The airport's current scheduled service is solely provided by Mesa Airlines (operating as America West) using 37 seat DeHavilland Dash 8 turboprop aircraft and the 19-seat Beach 1900. The airline has been increasing it's fleet with the Canadair Regional Jet 200 (CRJ-200). The proposed extension will accommodate general aviation business jets and commercial service using regional jet aircraft. The scoping period for this Environmental Assessment began in January 2004.

Comments received raised issues about potential impacts of the proposed runway extension on units of the National Park System in the vicinity of the Grand Canyon. Based on National Park Service (NPS) concerns at FLG and St. George, Utah, the FAA recommended that the City of Flagstaff conduct a Supplemental Noise Analysis for inclusion into the Draft EA. On July 20, 2005, the Draft EA was made available for review. On August 18, 2005, a Public Information Workshop and Public Hearing were held regarding the Draft EA. The public comment period on the Draft EA closed on August 25, 2005. Comments received on the Draft EA resulted in the FAA reviewing the Supplemental Noise Analysis as it applied to potential noise impacts on National Park Units. Subsequently, FAA directed the City to amend its Draft EA to include the new Supplemental Noise Analysis information. The Amended Draft EA was made available for public review on December 11, 2005. On January 18, 2006, the City held a second public hearing on the Amended Draft EA. In an effort to ensure public participation, the sponsor filed public notice on March 13, 2006 to extend the comment period on the Amended EA to April 24, 2006.

III. Purpose and Need

Section 1.3 of the Final EA outlines the purpose and need for the proposed airport improvements at Flagstaff Pulliam Airport. The City of Flagstaff is proposing improvements to Flagstaff Pulliam Airport to meet the needs of both existing and anticipated future users of the airport. The airport serves over 2,100 business jet operations annually, yet the existing 6,999-foot runway length does not meet the requirements for the 75 percent family of business jets operating at 60 percent useful load on hot summer days. Small piston powered aircraft weighing less than 12,500 pounds can also be restricted from operating at the mean maximum daily temperature due to the available runway length. Section 1.3.2.3 of the Final EA states the performance of many piston-powered aircraft is significantly affected at higher elevations, thus requiring additional runway length. In addition, the existing runway length is not adequate for the airport to accommodate daily scheduled flights by regional jets. Section 1.3.2.3 of the Final EA states that most regional jets have been found to require significantly more runway length at higher elevation airports such as Flagstaff Pulliam Airport due in part to density altitude. Regional Jet service may become imperative for the airport to maintain and improve upon its current level of commercial airline service. At the present time, scheduled commercial service flights at Flagstaff Pulliam Airport use turboprop aircraft. These include the 37 seat Dehaviland Dash 8 and the 19 seat Beech 1900. All scheduled service flights are to Phoenix Sky Harbor International Airport. Other potential future destinations from Flagstaff Pulliam Airport include Las Vegas, Denver, Los Angeles, Salt Lake City, and San Francisco / Oakland.

Based upon these evaluations, a runway length of 8,800 feet will best meet the needs of Flagstaff Pulliam Airport's commercial and general aviation users both in the near term as well as over the long term planning period. The various components of the proposed airport development (Proposed Action) are:

- Acquisition of approximately 85 acres of land to accommodate the Runway Safety Area and Runway Protection Zone for the proposed runway/taxiway extension

- Site preparation, grading and drainage to accommodate a 1,801-foot northerly extension of Runway 3/21 from 6,999 feet to 8,800 feet long by 150 feet wide including the parallel taxiway system.

- Paving, lighting, and marking of the 1,801-foot northerly extension of Runway 3/21 from 6,999 feet to 8,800 feet long by 150 feet wide including the parallel taxiway system.

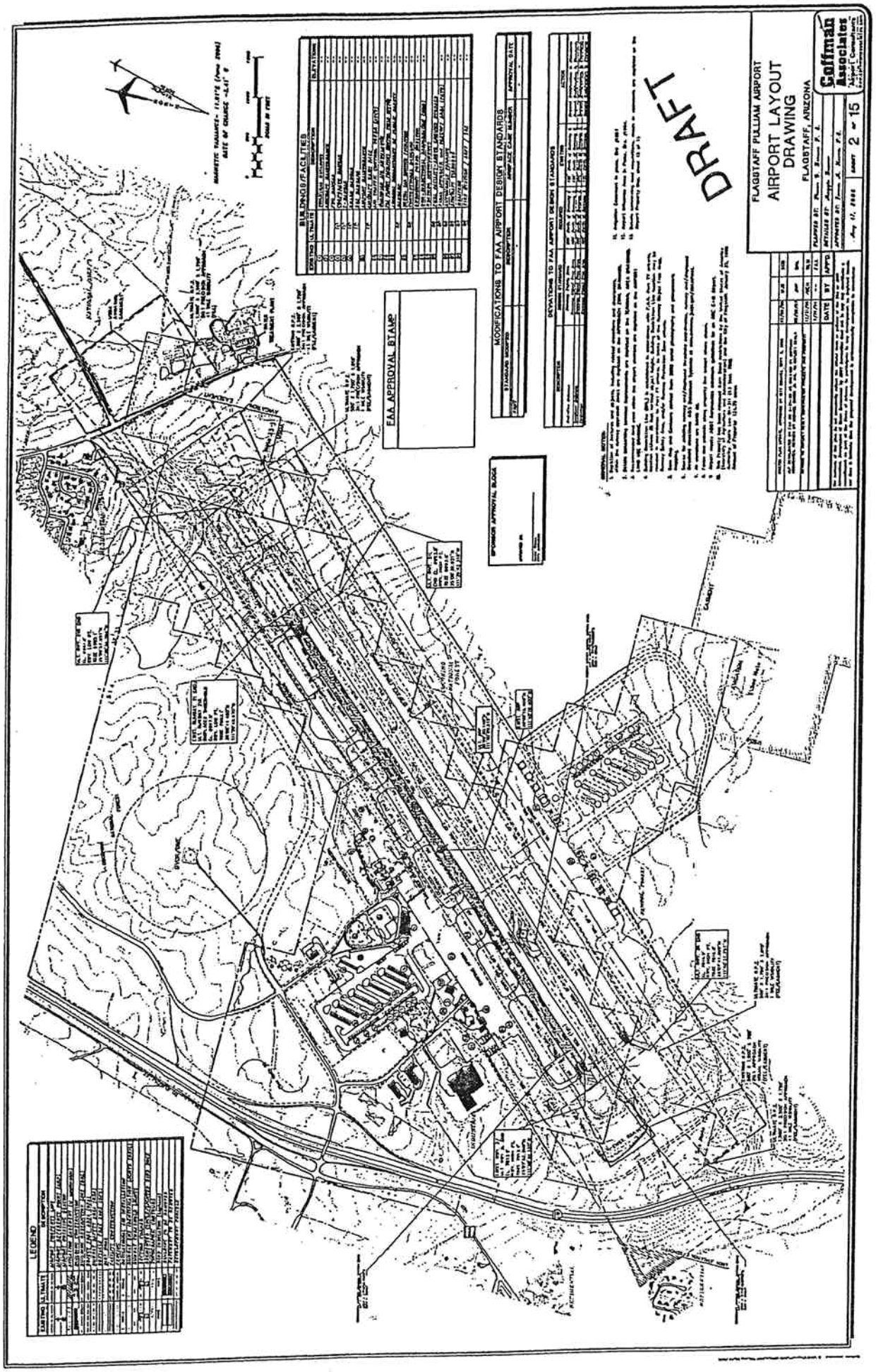
- Relocation of existing Approach Lighting System.

- Relocation of the existing on-airport service road.

Existing facilities at Flagstaff Pulliam Airport include one asphalt-paved runway oriented northeast to the southwest, aircraft parking, aprons and taxiways. The existing and future Airport Reference Code for Flagstaff Pulliam Airport is C-II. Runway 3/21 is 150 feet wide, 6,999 feet long with pavement strength of 30,000 pounds Single - Wheel Loading (SWL). The airport elevation at Flagstaff Pulliam Airport is 7,014 feet above mean sea level (MSL). For runway length calculations, the mean maximum daily temperature also referred to, as the design temperature that occurs in July in Flagstaff according to the National Weather Service is 81.9 degrees Fahrenheit (F)

The purpose of the Proposed Action is two fold. First the improvements will allow the airport to adequately fulfill its current and future role in the national and state aviation systems. On the National level, the FAA lists Flagstaff Pulliam Airport in the current National Plan of Integrated Airport Systems 2006-2009 (NPIAS) as a primary commercial service airport. Within the Arizona State Airport System, Flagstaff Pulliam Airport is also classified as a primary commercial service airport. Due to current needs in the general aviation community (particularly business jets), and in anticipation of changes in the commercial service fleet mix planned to serve the airport, Section 1.3.2.1 of the Final EA indicates the existing airfield facilities are inadequate to meet the role set forth for Flagstaff Pulliam Airport in the federal and state aviation system plans. Flagstaff Pulliam Airport's designation as a primary commercial service airport translates to the airport's level of importance within the national aviation system. Forecast and facility requirements contained within the NPIAS assume that the airport will continue to fulfill its role within the national aviation system through being capable of allowing air carriers to provide commercial air service to the northern portions of the State of Arizona as well as accommodate local general aviation needs. The proposed runway extension will allow the airport to continue to fulfill its role in the National and State Aviation Systems through enhancing the airports capability to accommodate general aviation business jets, as well as commercial service regional jets. Secondly, Section 1.3.2.3 of the Final EA indicates the airfield does not meet the operational requirements of the critical aircraft, business jets currently using the facility. A general aviation runway length analysis conducted by the airport indicates that the current runway is not sufficient for existing general aviation needs. In addition, the existing runway length is not adequate for the airport to accommodate daily scheduled flights by regional jets. With the commuter airline service becoming dominated by regional jets, a longer runway is needed. According to Section 1.3.2.3 of the Final EA, other cities that could be served using commercial service regional jets from Flagstaff Pulliam Airport that cannot be served now, include Salt Lake City, Las Vegas, Denver, Los Angeles, and San Francisco.

Figure 1 depicts the proposed action on the Airport Layout Plan of Proposed FLG Improvements


DRAFT
FLAGSTAFF PULLIAM AIRPORT
AIRPORT LAYOUT
DRAWING
FLAGSTAFF, ARIZONA
Coffman Associates
BUILDINGS/FACILITIES
MODIFICATIONS TO FAA AIRPORT DESIGN STANDARDS
DEVIATIONS TO FAA AIRPORT DESIGN STANDARDS
FAA APPROVAL STAMP
SPONSOR APPROVAL BLOCK
LEGEND
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IV. PROPOSED FEDERAL AGENCY ACTIONS AND APPROVALS

The Federal actions that are the subject of this FONSI/ROD include the following:

1. Unconditional approval of the portion of the Airport Layout Plan (ALP) that depicts the proposed runway and taxiway extensions pursuant to 49 U.S.C. Section 40103(b), 44718 and 47107(a)(16) and 14 CFR Part 77. The ALP depicting the proposed improvements has been processed by the FAA to determine conformance with FAA design criteria and implications for federal grant agreements (refer to 14 CFR Part 77 and 157). FAA has determined that the Proposed Project, as described in Section III above, is consistent with existing airspace utilization and procedures. The ALP was evaluated under airspace case number 2002-AWP-3154-NRA.

2. Determine under 49 U.S.C. § 44502(b), that the airport development is reasonably necessary for use in air commerce or in the interests of national defense.

3. Continued close coordination with the City of Flagstaff and appropriate FAA program offices, as required, to maintain aviation and airfield safety during construction pursuant to 49 U.S.C. § 44706.

4. Relocation of the Approach Lighting System to accommodate the proposed extension.

5. Extension of Runway 3/21and associated runway safety area to meet FAA Airport Design Standards (14 CFR 139.309).

6. Extension of runway and taxiway lighting as well as the relocation of the existing airport service road.

7. Approval of modification to Airport Certification Manual. (14 CFR Part 139).

All items discussed in Section 1.1.1, and illustrated on Exhibit 1B in the Final EA, are expected to be developed within the next five years (2006-2011). The FAA has federal oversight for the implementation of the proposed Airport Master Plan Update near-term project improvements.

V. ALTERNATIVES

The Final EA contains a thorough and objective review of a range of reasonable alternatives to the City's proposed project at FLG in accordance with CEQ regulations (40 CFR § 1502.14). FAA then evaluated in detail all reasonable alternatives and alternatives that were practical or feasible from the technical and economic standpoint. In reviewing alternatives, the FAA considered all pertinent factors including the environmental impact as well as the FAA statutory charter in 49 USC § 40101 et seq. The FAA identified a total of seven alternatives, four on-airport and two off-airport alternatives and the No Action alternative. The full ranges of alternatives were scaled down by the Flagstaff Pulliam Airport to one that meets the cities and the FAA's purpose and need. Alternatives A and B warrant further consideration, and the alternatives that were rejected were eliminated from further discussion.

Title 40, Code of Federal Regulations Part 1502.14(d) requires that a range of alternatives be evaluated in the EA. The range of alternatives includes all reasonable alternatives, which must be rigorously explored and objectively evaluated, as well as other alternatives, which are eliminated from detailed study with a brief discussion of the reasons for eliminating them. The range of alternatives considered includes: Alternative A – Extend Runway 3/21, 1,801 feet to the northeast, Alternative B – No Action, Alternative C – Extend Runway 3/21, 1,801 feet to the southwest, Alternative D – Extend Runway 3/21, 1,600 feet to the northeast and 200-feet to the southwest, Alternative E – Extend Runway 3/21, 1,200-feet to the northeast and 600-feet to the southwest, Alternative F – Upgrade Alternate Airport, Alternative G – Construct New Airport. For this analysis, each alternative was evaluated for its ability to meet the runway length needs of the existing business jet fleet that already utilizes Flagstaff Pulliam Airport as well as commercial regional jets in the future. The results of the alternative analysis determined which alternatives would be considered reasonable and practicable thereby warranting further consideration.

ALTERNATIVES UNDER CONSIDERATION: Section 2.1 of the Final EA presents two alternatives to be carried forward for further consideration described below. They are also evaluated in Section VI of this FONSI/ROD, Alternatives Analysis and Conclusion.

ALTERNATIVE A: - EXTEND RUNWAY 3/21 1,801-FEET TO THE NORTHEAST. (PROPOSED ACTION): Under this alternative, the runway is extended to accommodate both the CRJ-200 as well as the business jet fleet, which currently utilizes the airport. The Proposed Action alternative includes a 1,801-foot extension of Runway 3/21 and its associated parallel taxiway system, Taxiway A to the northeast, thereby providing total runway length of 8,800 feet. The associated high intensity runway lighting (HIRL) and medium intensity taxiway lighting (MITL) would also be extended. The airport's medium intensity approach lighting system with runway alignment indicator lights (MALSR) would be placed within the pavement of the displaced runway threshold.

ALTERNATIVE B: - NO ACTION ALTERNATIVE: For the purposes of 40 CFR § 1502.14(d), this alternative is identified as the No Action alternative. This regulation requires an analysis of this alternative that would result in the Proposed Action not occurring. Implementation of the No Action alternative would mean the airport would continue to not meet the design standards for Airplane Design Group (ADG) C-II aircraft currently using the airport. The No Action alternative was retained in the Final EA for consideration pursuant to 40 CFR 1502.14.

ALTERNATIVES CONSIDERED BUT REJECTED: Section 2.2 of the Final EA presents five alternatives other than Alternative A the Proposed Action, and Alternative B the No Action alternative that were evaluated, and not given further consideration. These alternatives are described below and their reasons for elimination are presented in Section VI of this document, Alternatives Analysis and Conclusion.

ALTERNATIVE C: - EXTEND RUNWAY 3/21, 1,801 FEET TO THE SOUTHWEST: Alternative C places the full extension on the southwest end of the runway. The advantage of this alternative over the Proposed Action would be the use of the entire 8,800-foot runway length for both takeoffs and landings. A 1,801-foot extension to the southwest would place the runway at the edge of the Interstate 17 right-of- way. In addition, the extension would place the end of the runway closer to residences located to the southwest.

ALTERNATIVE D: - EXTEND RUNWAY 3/21, 1,600 FEET TO THE NORTHEAST AND 200-FEET TO THE SOUTHWEST: Alternatives D uses a combination of shorter

extensions on both ends of the runway. As with the full southwest extension, Alternative D places the runway end closer to the residences located southwest of the airport.

ALTERNATIVE E: - EXTEND RUNWAY 3/21, 1,200-FEET TO THE NORTHEAST AND 600-FEET TO THE SOUTHWEST: Alternative E was considered because it provides the maximum southwest extension that does not affect Interstate 17.

ALTERNATIVE F: – UPGRADE ALTERNATE AIRPORT: Alternative F presents an alternative to developing the proposed improvements at Flagstaff Pulliam Airport by upgrading another airport in the immediate area.

ALTERNATIVE G: - CONSTRUCT NEW AIRPORT: Alternative G proposes construction of a new airport. A new airport would result in the duplication of investment in airport facilities and supporting access and infrastructure that are already available at the existing airport site.

VI. ALTERNATIVES ANALYSIS AND CONCLUSION

The proposed alternative is more effective and efficient in meeting the FAA's Purpose and Need than the other alternatives considered. The proposed runway extension 1,801 feet to the northeast would result in no significant adverse impacts. Therefore, the FAA, in this FONSI/ROD, has determined that Alternative A is the FAA's preferred alternative. This alternative would meet the FAA airport design standards at Flagstaff Pulliam Airport and accommodate current activity levels. Implementation of the No Action alternative would mean the airport would essentially remain in its present condition; therefore additional runway length would not be provided, and the airports ability to maintain and improve upon its current level of service would be jeopardized. Section 1.3.2.3 of the Final EA describes the runway length requirements for Flagstaff Pulliam Airport. At higher elevation airports such as FLG, it is stated in the Final EA that most regional jets require significantly more runway length. The runway length analysis demonstrates the impact elevation of the airport, air temperature, gradient of the runway and the operating weight of the aircraft has on the operating requirement of a given aircraft type. Table 1E of the Final EA provides airport and runway data, and runway length recommended for airport design that indicates the current runway length at FLG is not sufficient for existing aviation needs.

The No Action alternative was retained in the EA for consideration pursuant to 40 CFR 1502.14. The No Action Alternative does not meet the purpose and need of having the airport meet FAA Airport Design Standards. The advantage of Alternative C over the Proposed Action would be the use of the entire 8,800-foot runway length for both takeoffs and landings. A 1,801-foot extension to the southwest would place the runway at the edge of the Interstate 17 right-of- way.

In addition, the extension would place the end of the runway closer to residences located to the southwest. Alternatives C, D and E are not reasonable to implement due to increased environmental and social impacts to noise sensitive land uses in town. The city of Flagstaff does not own or operate any other airports in the area. Sedona Airport is the closest at 22 nautical miles, and is a general aviation airport with no provisions for certificated passenger service. Section 2.2.2.1 of the Final EA state the airport would require even greater upgrades at a significantly higher cost. Therefore, Alternative F does not meet the purpose and need for the project, as it does not provide for an easy transition of activity to an alternate airport. A new airport would result in the duplication of investment in airport facilities and supporting access and infrastructure that are already available at the existing airport site. Therefore, as described in Section 2.2.2.2

of the Final EA, Alternative G was determined to result in significantly greater environmental impacts than any of the on-airport development alternatives.

VII. ENVIRONMENTAL CONSEQUENCES

The impacts of the seven development Alternatives are summarized below. Detailed discussions for each environmental impact category are contained in the Final EA. In this FONSI/ROD, each environmental impact category studied is listed with a brief discussion of the results of the impact analysis, and, if necessary, any mitigation measures. Those action or measures to avoid or minimize environmental harm that are practicable to implement are summarized in each environmental impact category, as appropriate. The Final EA included analysis and review of the Proposed Action and the No Action alternatives. The Final EA has satisfied FAA guidelines identified in FAA Orders 1050.1E and 5050.4B for the preparation of an environmental assessment.

The Final EA examined the following environmental impact categories: Noise; Compatible Land Use; Environmental Justice; Socioeconomic Impacts; Air and Water Quality; Department of Transportation Act Section 4(f) Land; Historical, Architectural, and Cultural Resources; Biotic Communities; Wetlands; Floodplains; Coastal Resources; Coastal Barriers; Wild and Scenic Rivers; Farmland; Energy Supply and Natural Resources; Light Emissions; Solid Waste Impact; Construction Impacts and Cumulative Impacts.

A. AIR QUALITY: Section 4.6 of the Final EA discusses air quality impacts. Communication received from the Arizona Department of Environmental Quality (ADEQ), Air Quality Division (See Appendix B of the Final EA), indicates that the project is located in a designated attainment area for air quality as the area currently meets federal and state health standards for air pollution levels, including air particulates. Consequently, there are no State Implementation Plan (SIP) requirements or specific control measures with respect to ambient air quality in the Flagstaff area. According to Section 4.6.5 of the Final EA, the implementation of the recommended mitigation measures discussed in Section 4.19, *Construction*, will aid in the Airport not adversely impacting the air quality attainment levels with implementation of the proposed action. Therefore the Proposed Action alternative will result in no adverse air quality impacts.

In order to document the impact of the Proposed Action on air quality, an emissions inventory was completed. Based on the evaluation contained in Table 4K of the Final EA, the forecasted net emissions of the proposed project are below the threshold emission rates. Therefore the emissions are not regionally significant. Although a General Conformity Determination (GCD) is not required for the project because it is located in an attainment area, the results of the emissions inventory was compared with de minimis emission levels established in the general conformity regulations, 40 CFR § 91.153 pursuant to Section 176(c) of the Clean Air Act Amendments of 1990. Therefore, the emissions are considered *de minimis* and the project is presumed to conform. The No Action alternative will result in no significant air quality impacts, as the airport will continue to operate in a manner similar to what it does today.

B. COASTAL ZONE MANAGEMENT AND COASTAL BARRIERS: Section 4.13 of the Final EA addresses potential coastal impacts. FLG is located more than 350 miles east of the Pacific Ocean, well outside of any coastal zone. The Proposed Action or No Action alternatives would have no direct or indirect impacts to coastal resources, as none are in the vicinity of the project area. The Coastal Barriers Resources Act refers to underdeveloped coastal barriers along the Atlantic and Gulf Coasts. The Proposed Action and the No Action Alternative do not create an impact to this geographic area.

C. COMPATIBLE LAND USE: Section 4.3 of the Final EA describes the potential Land use surrounding Flagstaff Pulliam Airport consists of a mixture open space, industrial, and residential uses. Areas immediately to the west and south of the airport are managed by the U.S. Forest Service and are currently underdeveloped. As required under 49 USC § 47107(a)(10), the City of Flagstaff's Land Use Assurance letter, is included in the Appendix of the Final EA. As discussed within Section 4.1 of the Final EA implementation of the Proposed Action alternative results in the removal of all currently impacted residences from the 65 DNL noise contour by the year 2011. Therefore, the Proposed Action alternative results in no negative land use impacts. Conversely, implementation of the No Action alternative results in the removal of only one residence from the 65 DNL noise contour. Due to the continued presence of residences within the 2011 65 DNL noise contour, the No Action alternative results in no adverse land use impacts. No mitigation measures are required.

D. CONSTRUCTION IMPACTS: Section 4.19 of the Final EA indicates impacts related to the Proposed Action Alternative would be associated with construction of the proposed development. Temporary environmental impacts may occur as a result of construction activities. These impacts would primarily relate to noise resulting from heavy construction equipment, fugitive dust emissions, and potential impacts on water quality from runoff and soil erosion from exposed surfaces. The No Action alternative will result in no impacts, as no construction will occur with project implementation. Section 4.19 of the Final EA states the project design and construction of the proposed action alternative will incorporate Best Management Practices (BMPs) to protect the quality of the natural resources and minimize environmental impacts. Mitigation measures during construction are a condition of approval and are outlined in Section 4.19.3 of the Final EA and in Section VIII of this document.

E. DEPARTMENT OF TRANSPORTATION (DOT) ACT OF 1966, SECTION 4(f), as amended and U.S. DEPARTMENT OF INTERIOR LAND AND WATER CONSERVATION FUND ACT OF 1965, SECTION 6(f): To determine potential impacts on Section 4(f) protected park resources, consultation with the City of Flagstaff and the National Park Service was undertaken. Section 4.11 of the Final EA indicated that the proposed project would not result in direct or indirect uses of protected park resources, which include publicly owned parks, recreation areas, or wildlife and waterfowl refuges of national, state or local significance. No direct acquisition of real property from existing protected parklands would be required. In addition, the Proposed Project would not substantially impair protected park resources in the vicinity of the airport.

In response to the National Park Service's concerns regarding the cumulative impact of the proposed airport improvement on various National Park units, the Supplemental Noise Analysis contained within Section 4.2 of the Final EA was undertaken. The results of this analysis indicated that the park units would not likely be substantially impaired. The Proposed Action project will not have a direct or constructive use of properties protected by DOT Section 4(f). The No Action alternative would not result in impacts to Section 4(f) properties since the project would not occur.

F. FARMLAND: In Section 4.15 of the Final EA, communication received from the National Resources Conservation Service (NRCS) indicated that the land surrounding the airport is already in or committed to urban development, used as water storage, or land that is not prime or unique farmland. A copy of the NRCS letter is included within Appendix B of the EA. As airport development projects are exempt from the requirements of the Farmland Protection Policy Act (FPPA), indirect impacts to this resource category are not expected to occur as a result of the Proposed Action.

G. FISH, WILDLIFE AND PLANTS: Section 4.12 of the Final EA addresses the potential impacts of the Proposed Action and the No Action Alternative on Fish, Wildlife and Plants. As part of the EA, the FAA consulted with the U.S. Fish and Wildlife Service (USFWS) and the Arizona Game and Fish Department (AGFD) for information regarding potential impacts to wildlife, plants and native habitat as a result of the Proposed Action. These agencies provided a list of protected species for Coconino County. To further define the existing environmental condition, two surveys were completed: a Biological Assessment (BA) for federally listed threatened or endangered species of flora or fauna within the proposed area and a Noxious Weed Assessment. Within the BA and noxious weed assessments, the potential impact of the Proposed Action alternative was assessed. The BA concluded the following. The Flagstaff Pennyroyal populations were identified in areas that would not be disturbed by construction of the proposed airport. The Bald Eagle and the Mexican Spotted Owl may be affected, but will not be adversely affected by the Proposed Action. This determination was made based on factors that are outlined in detail on pages 12 and 13 of the BA contained in Appendix F. Through coordination with the USFWS, the FAA determined that implementation of the Proposed Action alternative will result not adversely impact protected species. In addition with the mitigation measures discussed within the BA, no adverse impacts associated with the propagation of noxious weeds are expected to occur as a result of the Proposed Action.

No construction will occur with implementation of the No Action alternative; therefore, no impacts to biological resources are anticipated.

H. FLOODPLAINS: Section 4.9 of the Final EA states no direct or indirect impacts to flood plain resources would be experienced with implementation of the Proposed Action or No Action alternatives. The project area does not contain any designated 100 or 500 year floodplains. Therefore, no mitigation measures are required.

I. HAZARDOUS MATERIALS AND SOLID WASTE: No known hazardous materials are located on site other than those used for typical operation of the airport, including aircraft fuel and maintenance materials. Construction of the Proposed Action alternative will result in some earthwork disturbances; however, based on research conducted by Environmental Data Resources, Inc. (EDR), it is unlikely that earthwork will expose or uncover any buried hazardous materials. A copy of the EDR report is contained in Appendix E, of the EA. Development of the Proposed Action alternative is anticipated to result in no adverse impacts to hazardous materials, or solid waste. Obtaining and modifying necessary permits for operation of the airport and construction of the proposed improvements will help to ensure that in the event there are any potential impacts, they are properly mitigated. The No Action alternative is not expected have any impacts on hazardous materials or solid waste since the proposed project will not occur.

J. HISTORIC, ARCHITECTURAL, ARCHAEOLOGICAL AND CULTURAL RESOURCES: Section 4.10 of the Final EA describes the potential impacts on archaeological and historic properties. Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended and its implementing regulations (36 CFR Part 800), FAA consulted with the Arizona State Historic Preservation Officer (SHPO) on the Proposed Action. In accordance with Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, FAA coordinated with the Hopi Tribal Historic Preservation Officer (THPO) at the onset of the project. Based on the survey findings, the FAA determined that the construction and operation of the proposed project alternative would not affect any historic properties listed or eligible for listing, on the National Register of Historic Places (NHRP). The SHPO concurred with FAA's findings in a letter dated August 3, 2004. A copy of this letter is contained within Appendix B of

the Final EA. Tribal coordination was undertaken at the onset of the project, as well as at the conclusion of the cultural resources surveys to identify any concerns related to potential impacts to tribal resources. The Hopi Tribe submitted a written response, and none of the Native American tribes indicated concerns regarding impacts to tribal resources. Copies of the letters sent to and received from the tribes are contained within Appendix B of the Final EA.

Both the SHPO and Hopi Tribe indicated that if any cultural features or deposits are encountered during construction, all construction activities in the vicinity of the project would cease until a determination can be made as to its significance. FAA has determined the proposed undertaking and the No Action Alternative will not affect any properties listed or eligible for listing on the National Register of Historic Places.

Area of Potential Effect (APE). The APE consists of three parcels of land adjacent to the current airport. Area 1 is comprised of 88 acres located northeast of the existing Runway 3/21. A 1,800-foot extension will be added to the runway in this area. The APE in Area 1 generally corresponds to the area impacted by pavement construction plus a proposed increase in the Runway Protection Zone (RPZ) for this project. Changes in Area 1 will also include modification and relocation of the approach lighting, and relocation of the airport access road from Lake Mary Road. Construction in Area 1 will require a cut of 225,000 cubic yards, the addition of 1,000,000 cubic yards of fill, and mechanical grading and leveling. Area 2 consists of 11 acres southwest of the existing runway, corresponding to a proposed increase in the RPZ, and will be graded and cleared for an extended Runway Safety Area. There will also be an acquisition of an aerial easement area within the Coconino National Forest. Area 3 is a 180-acre parcel located southeast of the current runway. Area 3 is located within the Future Eastside Aviation Development Area and will be used as a borrow source for the additional 775,000 cubic yards of fill required for Area 1. Altogether, the APE consists of 279 acres.
Extending the runway and taxiway will not involve any substantial changes to the type or intensity of lights currently employed at the airport. Therefore, the proposed undertaking at Flagstaff Pulliam Airport will not result in any visual effects.

No significant impact to cultural or historic resources would likely occur with implementation of the No Action alternative as no construction would occur.

K. LIGHT EMISSIONS: Section 4.17 of the Final EA describes the potential impacts on light emissions. Section 4.17.1 of the Final EA addresses the measures the city has established to prevent the creation of light emissions that would diminish the night sky and astronomical activities at various observatories around the city. Implementation of the Proposed Action Alternative or No Action Alternative will not result in significant impacts to lighting or visual resources. There is currently a vegetative buffer between the airport and residential land uses. This vegetative buffer would remain after alternative implementation.

L. NATURAL RESOURCES AND ENERGY SUPPLY: Section 4.16 of the Final EA discusses the resource utilization and energy supply associated with the Proposed Project. Implementation of the Proposed Action alternative would result in increased aircraft fuel usage when compared to the No Action alternative. However, as the airport begins service to additional markets, and improves service to Phoenix Sky Harbor International Airport, the number of vehicle trips to Phoenix could decrease, thereby partially offsetting the increased aircraft fuel usage. There are no known sources of mineral or energy resources in the project area that would be adversely affected by the Proposed Action Alternative

There are no adverse impacts to energy supply and natural resources are anticipated with implementation of either alternative.

M. NOISE: Section 4.1.4.1 and 4.1.4.2 of the Final EA analyzes the noise impacts of the Proposed Action and No Action alternatives. In accordance with FAA Orders 1050.1.E and 5050.4B, the anticipated noise condition for both of the alternatives has been developed for the anticipated year of project implementation (2006) and five years from the implementation date (2011). Section 4.1.1.2 of the Final EA indicates that from the time the environmental assessment was started in 2003, the City of Flagstaff expected to have the runway extension completed by 2006. As a result 2006 and 2011 were chosen as appropriate time frames for analysis.

The 65 *Yearly Day – Night Average Sound Level* (DNL) noise contour for the Proposed Action alternative in 2006 extends southwest approximately 3,000 feet from the end of the Runway. To the northeast, the contour remains within the proposed acquisition area and extends approximately 600 feet off the end of extended Runway 21. The 70 and 75 DNL noise contours are contained within the airport's aviation easements. Two dwelling units are contained within the 2006 Proposed Action noise contour. Indirect noise impacts primarily relate to those that occur during construction of the proposed airport improvements. These impacts are discussed further in the Final EA in Section 4.18.

The 2011 proposed project noise contours are smaller than those prepared for 2006. The 65 DNL noise contour extends southwest approximately 2,700 feet from the end of Runway 3. To the northeast, the contour remains within the proposed property acquisition area and extends approximately 600 feet off the end of extended Runway 21. The 70 and 75 DNL noise contours are contained within the airport's avigation easements. No dwelling units are contained within the 2011 Proposed Action 65 DNL noise contour.

The No Action 2006 noise contours are shaped differently than the Proposed Action alternative due not only to the runway extension, but also the change in the commercial service fleet mix. The 65 DNL noise contour extends approximately 4,000 feet from the end of Runway 3 to the southwest and approximately 2,200 feet from the end of Runway 21 to the northeast. The 70 DNL noise contour extends approximately 1900 feet from the end of Runway 3 to the southwest. The contour remains on airport property to the northeast. The 75 DNL noise contour is contained entirely on airport property. Fourteen dwelling units are contained within the 2006 No Action 65 DNL noise contour. These dwelling units consist of single-family homes and are located southwest of the airport.

The 2011 No Action noise contours are smaller than the 2006 No Action noise contours. The 65 DNL noise contour extends approximately 3,700 feet from the end of Runway 3 to the southwest and approximately 2,100 feet from the end of Runway 21 to the northeast. The 70 DNL noise contour extends 1,700 feet from the end of Runway 3 to the southwest. The contour remains on airport property to the northeast. The 75 DNL noise contour is contained entirely on airport property.

The 1,800-foot runway extension to the northeast, proposed as part of the Proposed Action alternative, allows aircraft more distance to gain altitude before leaving airport property, thereby resulting in fewer noise impacts when compared to the No Action alternative. As indicated in Table 4C, of the Draft EA, implementation of the Proposed Action alternative reduces the number of dwelling units in the 65 DNL noise contour under both the 2006 and 2011 modeling scenarios. Twelve residences are removed from the 65 DNL noise contour in 2006 under the Proposed Action and 13 are removed

in 2011. No new homes are contained within the 65 DNL noise contour with implementation of the Proposed Action. In Summary, based on the analysis contained within Section 4.1.1.1 of the Final EA with implementation of the Proposed Action, no noise sensitive areas would experience an increase in noise of 1.5 DNL or greater, at or above the 65 DNL noise contour when compared to the No Action alternative. The number of dwelling units within the 65 DNL noise contour decreases significantly with the implementation of the Proposed Action alternative; therefore, no significant noise impacts would result with the implementation of the Proposed Action alternative.

Given the land uses around the airport, noise impacts for both the No Action and Proposed Action are not considered significant.

Supplemental Noise Analysis: FAA Order 1050.1E, Appendix A, Section 14.5, allows for the preparation of supplemental noise analyses for select projects. These analyses are prepared at the direction of the FAA and are tailored to enhance understanding of the pertinent facts surrounding the potential environmental changes, which could result with implementation of the proposed project. The standard methodology for evaluating noise at or around airports involved the use of the FAA approved Integrated Noise Model (INM) for use in Environmental Assessments. The INM model describes aircraft noise in the *Yearly Day – Night Average Sound Level* (DNL). Supplemental noise analyses allow for the use of additional noise descriptors other than the DNL descriptor discussed previously in Section 4.1 of the Final EA. The supplemental descriptors discussed within Order 1050.1E included in this study are:

Single event loudness: L_{max} (maximum sound level), a single event descriptor that is the highest A-weighted sound level, on the basis of an average annual day, measured the sound event over a 24-hour period.

Cumulative sound energy: Leq (equivalent sound level), a cumulative level of a steady tone that provides an equivalent amount of sound energy for any specific period.

Time that aircraft can be heard: TAA (time above ambient), a time-based descriptor that gives the duration, in minutes, for which aircraft-related noise exceeds the average ambient sound level or other specified A-weighted value in decibels (dB) during a given period.

During the initial scoping process for this EA, which included both resource agencies and public interest groups, a number of comments were received regarding concerns about increased noise over National Park units resulting from the proposed airport improvements. A letter dated September 18, 2003 from the National Park Service (NPS) (included in Appendix B of the Draft EA) indicated concerns regarding the increase in overflights of a number of NPS units ranging from Walnut Canyon, located approximately eight miles from Flagstaff Pulliam Airport, to the Grand Canyon National Park (GCNP), which, at its closest point, is located approximately 55 miles from the airport. As a result of the NPS concerns, as well as the interest of other public groups concerned about noise over the park units, the FAA determined that a supplemental noise analysis was warranted for inclusion into the Final Draft EA.

The supplemental noise analysis focused on quantifying the potential cumulative impact of the proposed airport improvements, principally the introduction of regional jets into the airport's fleet mix (Proposed Action alternative). The remaining fleet mix using the airport would be the same regardless of whether the proposed airport improvements are undertaken. As discussed in Chapter One of the Final EA, introduction of the regional jet could allow the airport to be capable of allowing air carriers to provide commercial air

service to additional markets such as Los Angeles, Salt Lake City, and Denver; therefore, the modeling efforts would include trips to these destinations. For comparative purposes, the future No Action alternative was modeled. The future No Action alternative assumes that additional markets would be introduced to the Flagstaff area. As discussed in Chapter One of the Final EA, the additional potential destinations included Salt Lake City and Denver. For modeling purposes, the Beech 1900 would be utilized in lieu of the regional jet. These fleet mix changes were incorporated into the cumulative overflight fleet mix experienced at the park units.

To best analyze the potential changes on the cumulative impacts of the Proposed Action and No Action alternatives, two tiers of supplemental analysis were developed. These analyses used Cartesian coordinate systems (i.e., grid points) to determine the potential impacts by the proposed airport improvements on NPS units within the two levels of analysis.

The first tier is a cumulative analysis of potential noise changes for those areas where the regional jets or Beech 1900s, departing from Flagstaff Pulliam Airport, would be below an altitude of 10,000 feet above ground level (AGL). The 10,000-foot elevation was selected for several reasons. First, according to paragraph 14.5e of Appendix A of FAA Order 10501E, for airspace actions where the study area is larger than the immediate vicinity of the airport, noise impacts will be determined from the ground to 10,000 feet AGL. Second, the FAA revised Air Traffic Noise Screening (ATNS) policy (January 5, 2001), which was created to address airspace changes that may cause controversy on environmental grounds, uses 10,000 feet as an altitude cut-off when evaluating departure procedures. Finally, the aircraft profile data used for FAA noise modeling have been developed to 10,000 feet.

The second tier analysis was focused on the cumulative impacts of the proposed project, primarily as they relate to the potential impacts of additional overflights of the GCNP. This analysis also focused on the impacts of both the Proposed Action alternative, introduction of the regional jet, and the No Action alternative's use of the Beech 1900. This analysis was conducted over the entire GCNP at five nautical mile increments to determine if there were any changes in cumulative noise exposure.

Section 4.2 of the Final EA contains the Supplemental Noise Analysis that provides an outline of the modeling assumptions used, followed by the results of each tier of analysis. The INM Version 6.1 was used for the supplemental noise analysis. The INM has been the FAA's standard noise modeling tool since 1978 for predicting noise impacts in the vicinity of airports and other areas. For this study, it was determined that utilizing four noise descriptors would be appropriate. L_{max} is beneficial as it provides the peak noise level that an individual may hear during an aircraft overflight, pending the absence of other background noise. TAA was also found to be a potentially suitable descriptor for this analysis as it provides a time-based comparison of the number of minutes the aircraft noise exceeds an ambient sound level during a 24-hour day. Leq (12-hour) and Leq (24-hour) were determined to be suitable versus the 24-hour noise descriptor DNL (which penalizes nighttime aircraft noise events), as the national parks are often only open to the public during daytime hours.

The FAA identified 26 dBA as a reasonable and representative average ambient sound level to apply to the regional Tier One analysis based on available 2000 data for quiet conditions in sparse conifer forest areas near the Grand Canyon National Park (GCNP) and the proximity of GCNP to Flagstaff. It is notable that the Tier Two analysis of GCNP takes advantage of variable ambient sound levels that are specific to GCNP and cover the Tier Two study area. The GCNP variable ambient sound levels are based on

different terrain and vegetation categories (e.g., desert scrub, pinion juniper, coniferous forest, and water-affected areas).

The Supplemental Noise Analysis sections in the Final EA outline the modeling assumptions followed by the results of each tier of analysis. In summary the cumulative noise analysis results demonstrate that the use of regional jet aircraft, which climb faster and cruise at higher altitudes than Beech 1900 turbo-prop aircraft, will result in an overall decrease in noise for both the Flagstaff area Monuments and the GCNP. Without the proposed runway extension, Flagstaff Pulliam Airport will not be able to accommodate regional jet aircraft, thereby forcing commercial service operators to continue the use of the less efficient and nosier turbo-prop aircraft. The Tier One Analysis for the Flagstaff Area Monuments did not find a sound level increase discernable to the human ear within the Walnut Canyon or Sunset Crater National Monuments when the Proposed Action and No Action Alternatives were compared. However the TAA levels increased slightly with implementation of the Proposed Action Alternative. The tier Two Analysis for the GCNP showed an overall decrease in Lmax, TAA, Leq12, and Leq24 levels with implementation of the Proposed Action Alternative versus the No Action Alternative. The analysis findings are not, by themselves, a measure of adverse aircraft noise or significant aircraft noise impacts.

N. SECONDARY (INDUCED) IMPACTS: The Proposed Action will allow the airport to better accommodate general aviation business jets, as well as commercial service regional jets. Section 4.4.4 of the Final EA indicates the introduction of larger corporate aircraft service into the Flagstaff area could induce additional industries into the area. Several major mixed-use communities are planned in the Flagstaff area, which will result in additional employment and revenues associated with the increased populations. This increase will also have an effect on the growth of Flagstaff Pulliam Airport.

Section 4.4.4 of the Final EA indicates there will be positive impacts to employment from the Proposed Action, in part, due to the enhancement of the commercial airline service. Alterations to surface transportation patterns, division or disruption of existing communities or interference with orderly planned development is not anticipated to occur with implementation of the proposed action alternative.

The No Action alternative would result in the airport's potential inability to fulfill its assigned role in the national and state aviation systems.

O. SOCIOECONOMIC, ENVIRONMENTAL JUSTICE AND CHILD HEALTH: Social and Environmental Justice impacts and considerations contained in Executive Order 12898 and the analysis procedures described in DOT Order 5610.2, have been evaluated for this project. Direct socioeconomic impacts resulting from implementation of the Proposed Action alternative are primarily related to potential changes in

employment related to the project. The No Action alternative does not disrupt or socially impact the existing or future community. Implementation of the Proposed Action alternative would likely result in positive socioeconomic benefits to the Flagstaff area due to the enhancement of the commercial airline service. This enhancement would likely result in job creation and potential benefits to the tourism-related business. The No Action alternative could potentially result in temporary negative socioeconomic impacts due to the anticipated transition in the commercial airline provider at the airport. Section 4.4.3.1 of the Final EA indicates the Proposed Action Alternative will not divide or disrupt surface transportation patterns, around the city of Flagstaff.

Areas that would be impacted by the proposed improvements, such as those contained within the 65 DNL noise contour, do not contain a higher percentage of minority or low-income populations than what exist at the city, county, or state levels. Therefore, there is no disproportionately high and adverse impact to minority or low-income populations.

P. WATER RESOURCES: Section 4.7 of the Final EA discusses impacts to water resources. Implementation of the Proposed Action alternative will require a number of permits be obtained to alleviate potential water quality impacts. These permits include an Arizona Pollution Discharge Elimination System (AZPDES) construction permit (discussed further in Section 4.19), a Section 404 permit from the U.S. Army Corps of Engineers (refer to Section 4.8 of the Final EA), and the City of Flagstaff's existing AZPDES operating permit will need to be modified to include the additional impervious surfaces at the airport. It is anticipated that impacts to water quality will be managed through the various permitting processes; as a result the Proposed Action alternative is anticipated to result in no adverse impacts to water quality. The No Action alternative will result in no impacts to water quality, as no construction would occur.

Q. WETLANDS: Section 4.8 of the Final EA discusses impacts to wetlands. An inquiry was made to the U.S. Army Corps of Engineers (COE) as to the jurisdictional limits of Section 404 of the Clean Water Act for the unnamed washes within the Flagstaff Pulliam Airport expansion area. A jurisdictional determination was undertaken for the northeastern portion of airport property in September 2004. A copy of this delineation is included within Appendix G of the EA. The results of this jurisdictional determination are depicted on Exhibit 3E in Chapter Three of the Final EA. There are jurisdictional areas located along, and north east of existing Taxiway A. Implementation of the Proposed Action alternative will result in impacting approximately 2,700 feet of the delineated waters of the U.S. located along, and north of, Taxiway A. The project design will allow for this area to be relocated along the extended Taxiway A; as a result it is not likely the action will have substantial alterations on the hydrology needed to sustain the functions and values of the affected wetland or any wetlands to which it is connected. In addition, the impact would likely not reduce the jurisdictional area's ability to retain floodwaters or storm-associated runoff. Section 4.8.4 of the Final EA indicates that the wetlands along the taxiway do not harbor or support the hazardous movement of wildlife. In addition, the proposed project would have no affect on the fish or wildlife habitat. There would be no adverse affects on the function of a wetland to protect the quality or quantity of municipal water supplies.

Based upon the information provided in Section 4.8 of the Final EA, the Proposed Action Alternative is anticipated to result in no adverse impacts to wetlands or waters of the U.S. The No Action alternative will result in no development activities at the airport, therefore no impacts to wetlands or waters of the U.S. are anticipated.

R. WILD AND SCENIC RIVERS: Section 4.14 of the Final EA discuses impacts to wild and scenic rivers. Only one river in the State of Arizona is designated as wild and scenic. This River, the Verde River is located 45 miles south of Flagstaff Pulliam Airport. Due to the distance from Flagstaff Pulliam Airport to the river segments designated or eligible to be included in the Wild or Scenic River system, impacts to these resources would not occur. The No Action alternative would not impact any wild or scenic rivers.

S. UNAVOIDABLE ADVERSE IMPACT AND IRREVERSIBLE COMMITMENT OF RECOURCES: The proposed action alternative would result in the use of resources and have environmental impacts that are unavoidable. The impacts associated with the proposed improvements are disclosed for specific impact categories in the Final EA. None of the impacts are considered to be adverse or exceed thresholds of significance. Mitigation measures recommended during construction that are a condition of approval are outlined in Section 4.19.3 of the Final EA and in Section VIII of this document. The No Action Alternative would not result in the unavoidable use of resources or environmental impacts.

T. CONSISTENCY WITH PLANS, GOALS AND POLICIES: The Final EA was developed in coordination with various public agencies, and is consistent with development plans for the area. The Proposed Action Alternative would not conflict with the objectives of Federal, regional, state or local land use plans, polices or controls for the city of Flagstaff. The No Action Alternative is not consistent with the plans, goals and policies in that it would not allow the city of Flagstaff to safely and efficiently meet the aviation goals of the airport.

U. DEGREE OF CONTROVERSY: The City of Flagstaff began the scoping period for this Environmental Assessment in January 2004. Comments that were received raised issues about potential impacts of the proposed runway extension on units of the National Park System in the vicinity of the Grand Canyon. Based on National Park Service (NPS) concerns at FLG and St. George, Utah, the FAA recommended to the City of Flagstaff to conduct a Supplemental Noise Analysis for inclusion into the Draft EA. On July 20, 2005 the Draft EA was made available for review. On August 18, 2005, a Public Information Workshop and Public Hearing were held regarding the Draft EA findings. The formal public comment period closed on the Draft EA August 25, 2005. Comments received on the Draft EA resulted in the FAA reviewing the Supplemental Noise Analysis as it applied to potential noise impacts on National Park Units. Subsequently, FAA directed the City to amend its Draft EA to include the new Supplemental Noise Analysis information. The Amended Draft EA was made available for public review on December 11, 2005. On January 18, 2006, the City held a second public hearing on the Amended Draft EA. Comments on the Amended Draft EA were received from members of the public after the second public hearing. The sponsor, in an effort to ensure public participation and to provide additional time for the public to submit comments, filed a public notice on March 13, 2006 to extend the comment period on the Amended EA to April 24, 2006. All comments on the Amended Draft EA during the comment periods are included in the Final EA.

V. MAN'S RELATIONSHIP BETWEEN LOCAL SHORT-TERM OF HIS ENVIRONMENT AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY: The Proposed Action Alternative would require the use of the environment to achieve the short term goals of meeting design standards, and providing a safe operating facility for existing and anticipated future users of the airport. Traffic delays, fugitive dust, and increased emissions form construction vehicles; visual and aesthetic impacts and additional construction noise are probable as a result of the proposed action. These impacts, short term in nature, would be minimized through the establishment of and use

of environmental controls, such as Best Management Practices (BMPs) and Federal and local construction standards. Mitigation measures recommended during construction that are a condition of approval are outlined in Section 4.19.3 of the Final EA and in Section VIII of this document.

W. CUMULATIVE IMPACTS: According to CEQ, cumulative impacts represent the "impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR § 1508.7)."

The Final EA considered, to the extent reasonable and practical, the possible impacts of the Proposed Project alternative and other developments, both on and off the airport that are related in terms of time or proximity.

In Section 3.5 of the Final EA, FAA evaluated past, present and reasonably foreseeable on- and off-airport projects to assess their potential for significant environmental impacts that have been undertaken or are planned to be undertaken in the near-term. These projects include the following:

Completed Projects:

- Runway safety area improvements
- Removal of obstructions to the airport's Part 77 surface

Projects to be undertaken in the near-term:

- Construction of an aircraft rescue and fir fighting (ARFF) building
- Widening of JW Powell and Pulliam Drive
- Connection of JW Powell Drive with Lake Mary Road
- Development of airport perimeter roads
- Construction of the east parallel taxiway system
- Miscellaneous airport improvement projects
- Land exchange between the U.S. Forest Service and the Yavapai Ranch Limited Partnership
- Development of various sections of the Flagstaff Urban Trails System
- Routine road maintenance projects

The proposed airport improvements under the Proposed Action alternative and recently completed airport improvements are consistent with the Flagstaff Pulliam Airport Master Plan. Resources issues that are appropriate for analysis under a cumulative impact assessment are addressed in Section 4.20 of the Final EA. A summary of the analysis of the cumulative overall impacts of the Proposed Action alternative and the No Action alternative is found in Table 4M. The Proposed Action alternative would maintain the airport's competitiveness in the regional air service industry. Due to the lack of proposed runway improvements under the No Action alternative, adverse social impacts are reasonably foreseeable due to the airports probable decline in competitiveness in the regional air service industry. In Section 4.1.5 of the Final EA, under the No Action alternative, noise sensitive development experiences a 1.5 DNL increase in noise when compared to the Proposed Action alternative. Based on the less than significant impact of the proposed preferred alternative and the significant impact on noise sensitive development of the No Action Alternative, the Proposed Action Alternative will not result in a significant cumulative impact to the airport and surrounding communities.

VIII. MITIGATION

REQUIRED MITIGATION MEASURES: In accordance with 40 CFR § 1505.3, the FAA will take appropriate steps, through Federal funding grant assurances and conditions, airport layout plan approvals, and contract plans and specifications, to ensure that the mitigation action is implemented during project development, and will monitor the implementation of these mitigation actions as necessary to assure that representations made in the Final EA with respect to mitigation are carried out. There are approvals contained in this FONSI/ROD that are specifically conditioned upon full implementation of these mitigation measures. The following mandatory mitigation measures are fully described in Chapter Four of the Final EA

Fish, Wildlife and Plants. The following identifies mandatory mitigation measures recommended for controlling invasive species/noxious weeds. According to the USFS's Noxious Weed Strategic Plan Working Guidelines, Coconino, Kaibab and Prescott National Forests, use of the following BMPs will decrease the spread of the identified invasive species:

- Prior to construction taking place, dig up any bull thistle plants in the construction areas. Dig a hole a minimum of five feet below the surface level in an area that will be paved over and place noxious weed plant material in the hole. Fill hole with weed free soil or gravel.

- Wet all soil before scraping or moving it in order to prevent soil containing seeds of noxious weeds from becoming airborne or spread otherwise.

- In areas with Dalmatian toadflax, Mullein and Cheatgrass, vehicles and equipment that are driven through, or parked in, weed-infested areas must be spray-washed each time the vehicle leaves the area. A high pressure hose will be used to clear the undercarriage, tire tread, grill, radiator, and beds of any mud, dirt, and plant parts that may potentially spread the seeds or viable parts of noxious plants. Wash sites should be shown on a 1:24,000 scale map and should be monitored for future weed infestation.

- All construction vehicles and equipment will be washed before coming onto national forest system land as described above.

- When construction is complete, all disturbed areas will be reseeded with a certified weed-free native plant mix.

- The use of off-site fill materials in the project areas is discouraged. Excavated substrate from on-site will be used whenever fill substrate is needed. If on-site substrate is used, and if it contains weed seed, this soil should not be part of the top three inches of soil. Rather, weed-free soil will be used in the top three inches. If material is imported from off-site, the origin site of the fill will be surveyed for noxious weeds. Fill material will not come from a source infested with noxious weeds.

- Water used for dust abatement and other construction activities should be obtained from a source that is free of noxious weeds.

- The locations of all Class A plants will be mapped on a 1:24,000 scale map for entry into the Southwest Exotic Plant Mapping Program (SWEMP) database.

Copies of all survey forms and maps will be given to the lead Forest Service district.

Construction Impacts. The following mitigation measures are mandatory conditions of approval of this FONSI/ROD during construction:

Site Preparation

- Minimize land disturbance.
- Use watering trucks to minimize dust.
- Cover trucks when hauling dirt.
- Stabilize the surface of dirt piles if not removed immediately.
- Use windbreaks to prevent accidental dust pollution.
- Limit vehicular paths and stabilize these temporary roads.
- Grade to prevent soil from washing onto paved roadways.
- Pave all unpaved construction roads and parking areas to road grade for a length no less than 50 feet where such roads and parking areas exit the construction site, to prevent dirt from washing onto paved roadways.

Construction

- Cover trucks when transferring materials.
- Use dust suppressants on traveled paths, which are not paved.
- Minimize unnecessary vehicular and machinery activities.
- Minimize dirt track-out by washing or cleaning trucks before leaving the construction site.

Post Construction

- Revegetate any disturbed land not used.
- Remove unused material.
- Remove dirt piles.
- Revegetate all vehicular paths created during construction to avoid future off-road vehicular activities.

Construction Scheduling

- Sequence construction activities so that areas void of vegetative are not exposed for long periods of time.
- Schedule landscaping and other work that permanently stabilizes the area, to be done immediately after the land has been graded to its final contour.
- Alter the project schedule to minimize the amount of denuded areas during wet months.
- Construct permanent storm water control facilities early in the project schedule and then utilize these structures for controlling erosion and sedimentation.

Limiting Exposed Areas

- Divert up-slope water from entering the denuded areas of the construction site by constructing dikes and swales.
- Divert or intercept storm water before it reaches long and/or steep slopes.
- Release captured storm water at a slow and controlled rate to prevent damage to downstream drainage ways and structures.
- Increase the soil's ability to absorb moisture through vegetative means, surface roughening, and/or mulching.
- Stage grading so that the native vegetation provides a buffer to slow and disperse runoff.

Runoff Velocity Reduction

- Build a check dams or other energy dissipation structures in unlined drainage channels to slow runoff velocity and encourage settlement of sediments.
- Limit slopes to 3:1 wherever practical.
- Intercept runoff before it reaches steep slopes using diversion dikes, swales, or other barriers.
- Protect slopes with mulches, matting, or other types of temporary or permanent soil stabilization.
- Provide velocity-reducing structures or rip rap linings at storm water outfalls.

Sediment Trapping

- Direct sediment-laden storm water to temporary sediment traps.
- Construct temporary sediment traps or basins at the drainage outlet for the site.
- Use temporary sediment barriers such as slit fences, straw bale barriers, sand bag barriers, and gravel filter barriers for construction sites with relatively flat slopes that produce sheet flow runoff.

Good Housekeeping

- Schedule regular inspections of storm water and sediment control devices.
- Repair and/or replace storm water and sediment control devices as often as necessary to maintain their effectiveness.

IX. AGENCY PREFERRED ALTERNATIVE

Based on the information disclosed in the Final EA, the FAA has determined that Alternative A demonstrated the best ability to meet the purpose and need of the project with minimal adverse environmental impact. The proposed runway extension 1,801 feet to the Northeast would result in no significant adverse impacts. This alternative would meet FAA airport design standards at Flagstaff Pulliam Airport and accommodate current and future activity levels. Therefore, Alternative A is the FAA's preferred alternative.

X. ENVIRONMENTALLY PREFERRED ALTERNATIVE

In accordance with 40 CFR §1505.2(b), the environmentally preferred alternative should be identified in the FONSI/ROD. The environmentally preferred alternative is the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves and enhances historic, cultural and natural resources. (See CEQ Memorandum, Questions and Answers about the NEPA Regulations, 46 Fed. Reg. 18026, March 23, 1981, as amended, 51 Fed. Reg. 15618, April 25, 1986, Question Number 6a). After considering these factors, including the long-term consequences, the FAA has determined the environmentally preferred alternative is the Proposed Alternative for the reasons discussed in this FONSI/ROD, Section VII, *Environmental Consequences*.

XI AGENCY FINDINGS

In accordance with the guidelines described in paragraph 1202 of FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing instructions for Airport Actions,* the FAA has made the following findings and determinations, as necessary, for the proposed project based upon appropriate evidence set forth in the administrative record required by the Airport and Airway Improvement Act of 1982, as amended.

1. **The project is reasonably consistent with existing plans of public agencies for development of the area [49 USC § 47106(a)].** Flagstaff Pulliam Airport is situated entirely on land owned and controlled by the City of Flagstaff. The Proposed Action is consistent with the plans, goals and policies for the area.

2. **Fair consideration has been given to the interests of communities in or near the project location [49 USC § 47106(b)(2)].** Throughout the EA process, local government officials, agencies, organizations, and residents of nearby communities have been consulted, or have participated in activities that have contributed to the preparation of the Final EA. Appendix B of the Final EA contains the responses from the various agencies that were consulted.

   The Draft EA was made available to the public on a July 19, 2005. The public comment period on the Draft EA ended on August 26, 2005. There were 51 written comments received and addressed in the Final EA. A public hearing was held on August 18, 2005. Two comments were received during the hearing. On December 11th an amended Draft EA was made available for pubic comment as a result of modifications to the Supplemental Noise Analysis. Three comments were received on the document. On March 13th the public comment period was extended again due to comments received on the amended Draft EA and to ensure all interested parties had a reasonable opportunity to review the revised Draft EA and submit comments. The comment period closed April 24, 2006. Attached as an appendix to the Final EA are the comments and the responses prepared by the Airport Sponsor.

3. **Appropriate action has been or will be taken to restrict, to the extent reasonable, the use of land in the vicinity of the airport to purposes compatible with airport operations [49 USC § 47107(a)(10)].** In its February 23, 2005 letter, the Flagstaff Airport provided the required land use assurances to the FAA (See EA, Appendix C).

4. **The FAA has given this proposal the independent and objective evaluation required by the Council on Environmental Quality [40 CFR 1506.5].** As described in the Final EA the Proposed Action, and the No Action alternatives were studied extensively to determine the potential assessed impacts and appropriate mitigation measures. FAA provided input, advice, and expertise throughout the planning and technical analysis, along with an administrative and legal review of the project. FAA has independently evaluated the 2006 Final EA, and takes responsibility for its scope and contents.

5. **The air emissions resulting from the Proposed Action have been determined by the FAA to be "*de minimis*" and will therefore conform with the State Implementation Plan for air quality pursuant to Section 176 (c)(1)(a) and (b) of the Federal Clean Air Act as amended in 1990.** Flagstaff Pulliam Airport is located in an area designated as attainment area that does not exceed the National Ambient Air Quality Standards (NAAQS) for any pollutant. Therefore air quality conformity

rules do not apply. Based on the evaluation contained in Table 4K of the EA, the forecasted net emissions of the proposed project are below the threshold emission rates. Therefore the emissions are not regionally significant.

6. **Determination that the airport development is reasonably necessary for use in air commerce or in the interests of national defense pursuant to 49 USC § 44502(b).** The FAA has determined that the Proposed Action described in the Flagstaff EA would improve the safety and efficiency of the airport. FAA has determined the proposed runway and taxiway extensions can be operated safely. The Airport Layout Plan was evaluated under airspace case number 2002-AWP-3154-NRA.

7. **Appropriate action has been or will be taken to restrict, to the extent reasonable, the use of land in the vicinity of the airport to purposes compatible with airport operations [49 U.S.C. § 47107(a)(10)].** As required under 49 USC § 47107(a)(10), the City of Flagstaff's Land Use Assurance letter, is included in the Appendix of the Final EA.

8. **The proposed action does not involve the displacement and relocation of people [42 U.S.C. § 4601 *et. seq.*].** Alternative A the Proposed Action of the Final EA does not include any residential acquisition or relocation of businesses as part of the proposed actions

XII. DECISION AND ORDERS

Section 2.1.1 of the Final EA identifies Alternative A, the Proposed Action Alternative as the City of Flagstaff's preferred action. The FAA has identified Alternative A as the FAA's preferred alternative in this FONSI / ROD. The FAA must now select one of the following choices:

- Approve agency actions necessary to implement the Proposed Action, or
- Disapprove agency actions to implement the Proposed Action.

Approval would signify that applicable federal requirements relating to airport development and planning have been met. Approval would also permit the City of Flagstaff to proceed with the proposed eligible development and possibly receive federal funding. Not approving these agency actions would prevent the City of Flagstaff from proceeding with implementation of the Proposed Action in a timely manner with federal assistance in the form of Airport Improvement Program funds.

Decision: I have carefully considered the FAA's goals and objectives in relation to the various aeronautical aspects of the proposed runway and taxiway extensions project at Flagstaff Pulliam Airport as discussed in the Final EA. The review included: the purpose and need to be served by this Proposed Action; alternative means of achieving the purpose and need; the environmental impacts of these alternatives; and the mitigation necessary to preserve and enhance the human environment.

Under the authority delegated to me by the Administrator of the Federal Aviation Administration, I find that the project is reasonably supported. I therefore direct that action be taken to carry out the following agency actions discussed more fully in Section IV of this FONSI/ROD, including:

1. Unconditional approval of the portion of the ALP that depicts the proposed relocation, extension and widening of Runway 03/21 submitted by the City of Flagstaff for the Flagstaff Pulliam Airport pursuant to 49 USC § 40103(b), 44718 and 47107(a)(16) and 14 CFR 77. The approval of the ALP is based on determinations through the aeronautical study process regarding obstructions to navigable airspace, and that the airport development proposal is acceptable from an airspace perspective.

2. Determine under 49 U.S.C. § 44502(b), that the airport development is reasonably necessary for use in air commerce or in the interests of national defense.

3. Continued close coordination with the City of Flagstaff and appropriate FAA program offices, as required, for safety during construction.

4. Approval to proceed with further processing of an application for federal assistance for those eligible airport development projects described as the Proposed Action within the Final EA and this FONSI/ROD, under 49 USC § 47101 et seq.

5. Extension of Runway 3/21 and the associated runway safety area to meet FAA Airport Design Standards (14 CFR Part 139.309).

6. Extension of runway and taxiway lighting, relocation of existing approach lighting system, as well as the relocation of the existing airport service road.

7. Approval of modifications to the Airport Certification Manual (14 CFR Part 139)

This order is issued under applicable statutory authorities, including 49 USC § 40101(d), 40103(b), 40113(a), 44701, 44706, 44718(b), and 47101 et seq.

I have carefully and thoroughly considered the facts contained in the attached EA. Based on that information I find that the proposed Federal action is consistent with existing national environmental policies and objectives as set forth in section 101(a) of the National Environmental Policy Act of 1969 (NEPA). I also find the proposed Federal Action, with the required mitigation referenced above will not significantly affect the quality of the human environment or otherwise include any condition requiring consultation pursuant to section 102 (2)(C) of NEPA. As a result, FAA will not prepare an EIS for this action.

William C. Withycombe

William C. Withycombe
Regional Administrator

07/14/06
Date

Right of Appeal

This decision, including any subsequent actions approving a grant of Federal funds or approval of an application to impose and use passenger facility charges to the City of Flagstaff, Arizona, is taken pursuant to 49 USC § 40101 et seq. and 49 USC § 47101 et seq., and constitutes an order of the Administrator which is subject to review by the Courts of Appeals of the United States in accordance with the provisions of 49 USC § 46110.

FINAL
ENVIRONMENTAL ASSESSMENT

For Proposed Runway 3-21 1,801-Foot Extension And Associated Improvements

VOLUME 1 OF 2

FLAGSTAFF PULLIAM AIRPORT
Flagstaff, Arizona

Prepared for the
CITY OF FLAGSTAFF

By
COFFMAN ASSOCIATES, INC.

June 2006

This Environmental Assessment becomes a Federal Document when evaluated and signed by the responsible FAA Official.

_____ _____

Responsible FAA Official Date

FLAGSTAFF
PULLIAM AIRPORT

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Flagstaff, Arizona

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FLAGSTAFF
PULLIAM AIRPORT

Chapter One

PURPOSE AND NEED

Chapter One
PURPOSE AND NEED

Flagstaff Pulliam Airport is a commercial service aviation facility located on 795 acres, on the southwest side of the City of Flagstaff, just to the east of Interstate 17. The existing airport facility consists of a 6,999-foot paved asphalt runway oriented northeast to southwest. **Exhibit 1A** depicts the location of the airport in its regional setting. Refer to Chapter Three for more information regarding the existing airport's facilities and general location.

An update to the airport's Master Plan was completed in 2005. The purpose of the Master Plan update was to evaluate the airport's ability to meet design standards and provide a safe operating facility for existing and anticipated future users of the airport. This update provided an inventory of existing facilities, projected aviation demand forecasts, and identified facility requirements to accommodate forecasted demand. The study also examined airside and landside alternatives, and recommended an airport layout and improvement schedule. Among other things, this document identified the need to improve the airport facilities by extending Runway 3-21 to serve existing and future aircraft at Flagstaff Pulliam Airport.

This Environmental Assessment (EA) will evaluate the proposed runway development by first outlining the need for the airport improvements (Chapter One), followed by an evaluation of runway alternatives (Chapter Two), a discussion of the existing environmental resources surrounding the proposed development (Chapter Three), concluding with a discussion of the affect of runway development on identified

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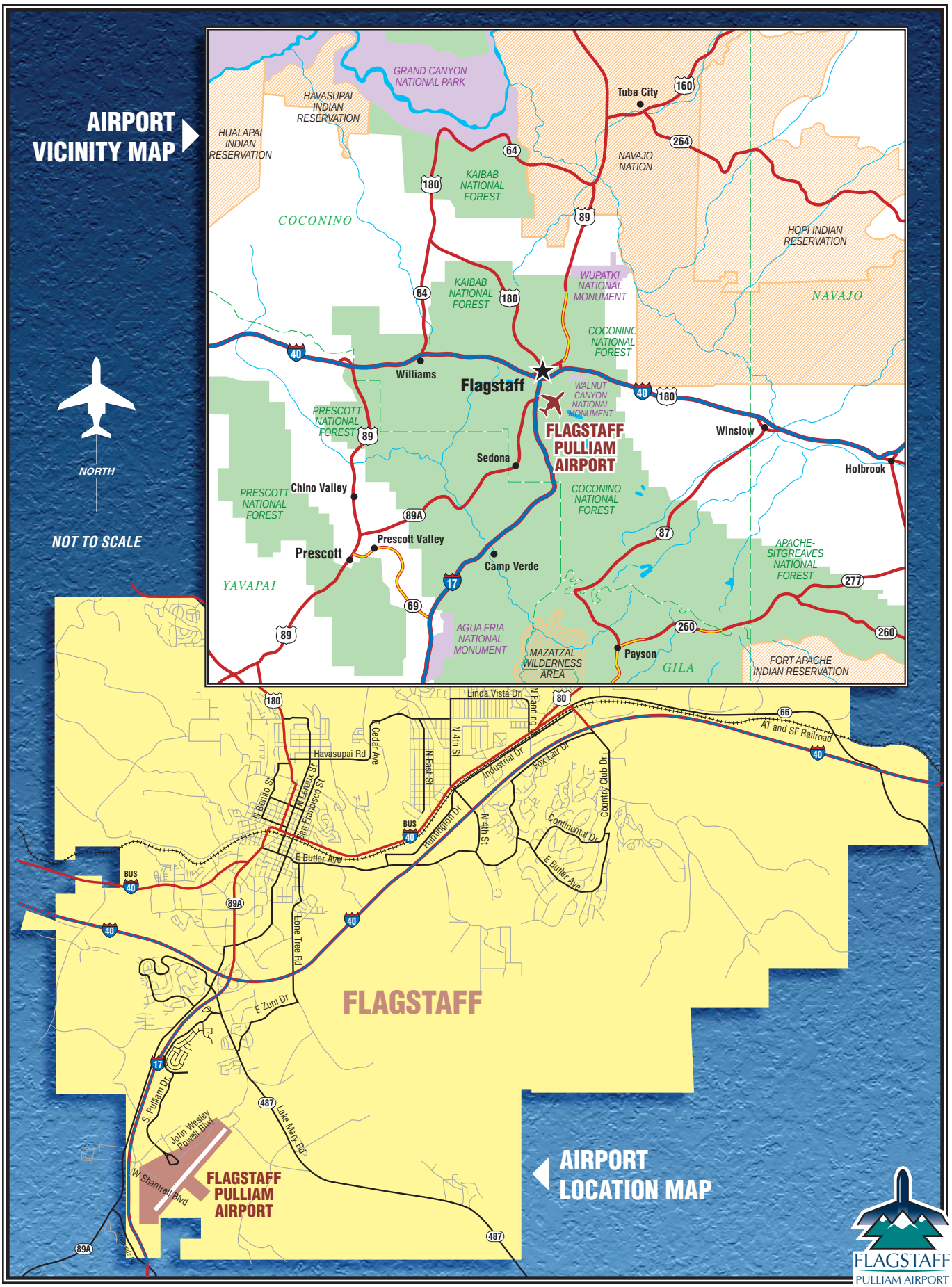

Exhibit 1A
LOCATION MAP

environmental resources, and means to mitigate the potential negative environmental consequences (Chapter Four).

1.1 PROPOSED ACTION

The City of Flagstaff is proposing improvements to Flagstaff Pulliam Airport to meet the needs of both existing and anticipated future users of the airport. The following sections further outline the proposed airport development and requested federal action.

1.1.1 Proposed Airport Development

The various components of the proposed airport development (proposed action) are depicted on **Exhibit 1B** and briefly defined below.

- **Runway and taxiway extension**. To meet the needs of existing and anticipated future users of the airport, a 1,801-foot extension is proposed for Runway 3-21 and Taxiway A. This will require the extension of runway and taxiway lighting as well as the relocation of the existing on-airport service road. The extension will result in a pavement length of 8,800 feet; however, the landing distance available on Runway 21 will remain at 6,999 feet. The displaced threshold is necessary to maintain obstruction clearances for the existing instrument landing system (ILS) approach to Runway 21. No new obstructions will result from the extension of Runway 3-21.

- **Land acquisition.** Upon the completion of an ongoing land exchange between the U.S. Forest Service and a private entity (Yavapai Ranch), acquire from the private entity, the areas which are contained within the expanded avigation easement area northeast of the airport. Acquisition of this land will allow for full protection of the RSA and RPZ for Runway 21. This land exchange was outlined in detail within Senate Bill 161, *Northern Arizona Land Exchange and Verde River Basin Partnership Act of 2005*. This act was passed by the House and Senate after the Draft EA was printed. As of printing of this Final EA, the Act is awaiting the signature of the President of the United States. It is anticipated that the property will be acquired from the private landowner in 2007.

  Within the Draft EA acquisition of an avigation easement from the Forest Service was discussed. Since the *Northern Arizona Land Exchange and Verde River Basin Partnership Act of 2005* has been passed, this easement will no longer be required. **Exhibit 1B** has been modified to reflect this change.

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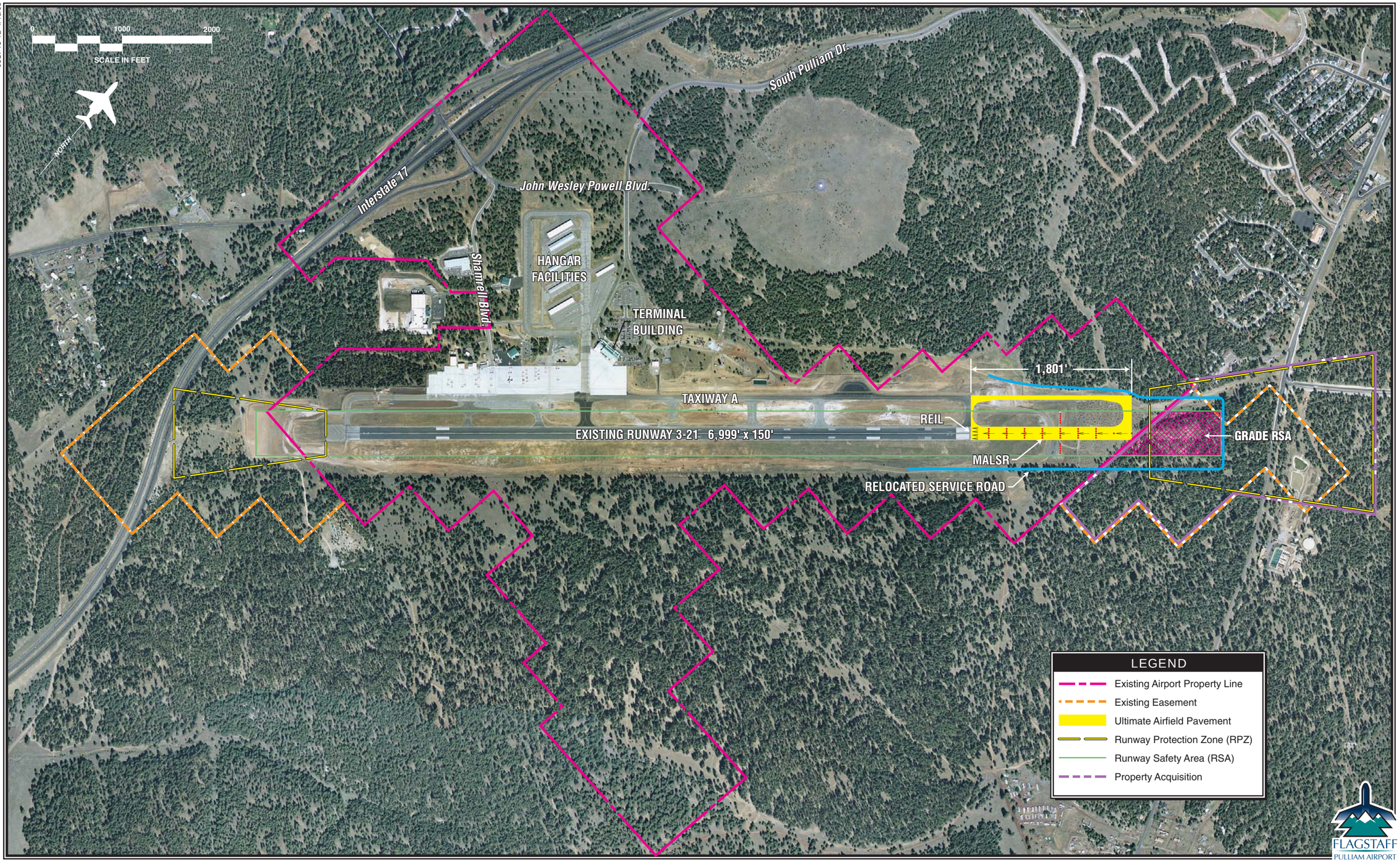

Exhibit 1B
PROPOSED ACTION

- **Borrow and Fill.** Approximately 800,000 cubic yards of fill would be required to allow for the grading of the Runway 21 RSA. The borrow material is available on-site.

1.1.2 Requested Federal Action

The purpose of this EA is to evaluate the environmental conditions at Flagstaff Pulliam Airport for near-term projects, with phased implementation between 2005 and 2009. The requested federal action includes conditional approval of the sponsor's ALP and approval of further processing of an application for federal assistance to implement those Airport Improvement Program (AIP) eligible projects.

1.2 DOCUMENTATION REQUIREMENTS AND STANDARDS

The environmental consequences of maintaining the existing airport facility will be evaluated as the No Action alternative. The environmental consequences of the proposed airport improvements will be evaluated as the proposed action. This EA has been prepared in accordance with the requirements of Section 102(2)(c) of the *National Environmental Policy Act (NEPA) of 1969* (PL 91-190, 42 USC 4321 *et. seq.*) and Title V of the *Airport and Airway Improvement Act of 1982*, as amended. NEPA stipulates that projects that are funded by the federal government, in part or whole, require an assessment of their environmental consequences.

The Federal Aviation Administration (FAA) is the lead federal agency for NEPA compliance. The format and subject matter included within this report conform to the requirements and standards set forth by the FAA as contained principally in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, but also addresses appropriate items in FAA Order 5050.4A, *Airport Environmental Handbook*.

1.2.1 Document Incorporation by Reference

This EA incorporates by reference all, or portions of, other technical documents that are a matter of public record. These documents, including the 2005 Airport Master Plan, either relate to the proposed action alternative or provide additional information concerning the environmental setting in which elements of the proposed action are proposed. **Appendix H** contains a listing of documents utilized in the preparation of this EA.

1.3 PURPOSE AND NEED FOR PROPOSED ACTION

The following sections outline the purpose and need for the proposed airport improvements at Flagstaff Pulliam Airport.

1.3.1 Purpose of Proposed Improvements

The primary purpose of the airfield improvements identified on **Exhibit 1B** is twofold. First, the improvements will ***allow the Airport to adequately fulfill its current and future role in the national and state aviation systems.*** Due to current needs in the general aviation community (particularly business jets), and in anticipation of changes in the commercial service fleet mix planned to serve the airport, the existing airfield facilities are inadequate to meet the role set forth for Flagstaff Pulliam Airport in the federal and state aviation system plans. These system plans call for this airport to be capable of providing commercial air service to the northern portions of the State of Arizona as well as accommodate local general aviation needs. The proposed runway extension will allow the airport to better accommodate general aviation business jets as well as commercial service regional jets.

The current runway length of 6,999 feet severely limits the flight range of business jets departing from Flagstaff Pulliam Airport. This requires the aircraft to make otherwise unnecessary fuel stops enroute, thus increasing flight times and operational costs to the user. In addition, the current length does not meet the FAA design criteria for serving small airplanes weighing less than 12,500 pounds. The extension of the runway to 8,800 feet will optimize the airport's capabilities for general aviation users.

The existing runway length also effectively prohibits regional jet service to the airport. Regional jet service may become imperative for the airport to be able to maintain and improve upon its current level of commercial airline service. The proposed runway extension will also meet this need.

The airport's current scheduled service is solely provided by Mesa Airlines (operating as America West Express) using 37-seat DeHavilland Dash 8 turboprop aircraft. All scheduled service flights are to Phoenix Sky Harbor International Airport, which is 119 nautical miles (NM) from Flagstaff Pulliam Airport.

The airline has been growing its fleet with regional jets such as the Canadair Regional Jet 200 (CRJ-200) while reducing its turboprop fleet. Since the current runway length cannot support regional jet aircraft, the airport's ability to maintain and improve upon its current level of service could be jeopardized within the next few years.

Mesa Airlines code-sharing contract with America West Airlines expires in 2007. Even if the current agreement is renewed, the airline is expected to continue to use regional

jets whenever possible. If the current airline were replaced, it is expected that replacement service would be with a commuter airline using 19-seat turboprop aircraft, unless the runway is extended. This would be a significant downgrade in service for the Flagstaff area.

Secondly, the improvements proposed are designed ***to provide a safe operating environment consistent with current airport design standards for the range of general aviation and commercial service aircraft that will regularly utilize Flagstaff Pulliam Airport now and in the future***. The airfield does not meet the operational requirements of the most critical aircraft, business jets, currently using the facility. The proposed airport improvements will allow the airport to more safely accommodate these business jets which already perform approximately 2,100 operations annually. According to FAA runway length design program, the runway length is also inadequate for some smaller general aviation propeller aircraft to safely depart. Additionally, the existing runway length is not adequate for the airport to accommodate daily scheduled flights by regional jets, which are becoming the preferred aircraft for markets such as Flagstaff.

1.3.2 Need for Proposed Improvements

This section identifies and quantifies the need for the proposed airport improvements first by defining the role of Flagstaff Pulliam Airport in the federal and state aviation systems. This is followed with a discussion regarding the fleet mix currently utilizing, and anticipated to utilize, the airport in the future. The types of aircraft which utilize the airport are the primary factors in determining the facility requirements of the airport; therefore, the aviation demand discussion is followed by a detailed analysis regarding airport facility needs.

1.3.2.1 Airport Role in the National and State Aviation Systems

The FAA and the Arizona Department of Transportation (ADOT) have long recognized the importance of Flagstaff Pulliam Airport in their airport system planning. On the national level, the FAA lists Flagstaff Pulliam Airport in the current *National Plan of Integrated Airport Systems 2005-2009 (NPIAS)* as a primary commercial service airport. Within the Arizona State Airport System, Flagstaff Pulliam Airport is also classified as a Primary Commercial Service Airport. The proposed improvements are in conformity with and/or specifically recommended in the federal and state plans, as summarized below.

National Role

The NPIAS identifies airports that are significant to air transportation and, subsequently, are eligible to receive grants under the Federal Airport Improvement Program (AIP). Airports within the NPIAS are classified as being commercial service, reliever, or general aviation airports. Commercial service airports are defined as public airports receiving scheduled passenger service and having 2,500 or more enplaned passengers per year. Within the commercial service category are two additional designators – primary and non-primary. Primary commercial service airports are those that have more than 10,000 annual passenger enplanements. Non-primary commercial service airports are those which have fewer than 10,000 annual enplanements. The FAA has designated just 510 of the 3,444 airports in the NPIAS as commercial service airports; of the 510, only 383 are primary commercial service airports. Flagstaff Pulliam Airport is one of eight airports in the State of Arizona designated by the NPIAS as a primary commercial service airport.

Flagstaff Pulliam Airport's designation as a primary commercial service airport translates to the airport's level of importance within the national aviation system. Forecasts and facility requirements contained within the NPIAS assume that the airport will continue to fulfill its role within the national aviation system by providing commercial airline service to northern Arizona. In order to allow the airport to continue to fulfill its assigned role, the airport needs to be able to accommodate the needs of the commercial airline providers, (i.e., provide adequate facilities to accommodate the regional jet.) The master plan acknowledged that the inability to accommodate regional jets could limit the air service options at Flagstaff Pulliam Airport in the future. Should the existing service provider leave Flagstaff Pulliam Airport for any reason, the most probable replacement airline would have to use 19-seat aircraft. This would be a downgrade in service that could potentially reduce enplanement levels at the airport. If annual enplanements were to drop below 10,000, the airport would be reclassified as a non-primary commercial service airport, since it would not be able to fulfill its role as a primary commercial service airport.

State Role

Within the Arizona State Airport System, Flagstaff Pulliam Airport is classified as a primary commercial service airport. The *Arizona State Aviation Needs Study (SANS) 2000* further classifies the airport as a Regional Commerce Center. The study defined the characteristics of a regional commerce center as an airport which acts as a single hub today (i.e., serves one market) with the potential to serve multiple hubs in the future. Flagstaff Pulliam Airport is one of two airports which has been assigned this classification, with the second being Yuma International Airport in southwestern Arizona. The airport's ability to service multiple hubs in the future is dependent on

the introduction of the regional jet, which in turn is dependent on the proposed runway extension.

In conclusion, based on the role the airport is expected to serve in the national and state transportation systems, the airport needs to be capable of adequately serving the regional jet as well as business jet aircraft. Flagstaff Pulliam Airport plays a very important role in the national and state aviation systems. Any inability to fulfill this role would result in an impact to the aviation community on both the national and state levels. The airport currently meets the demands of both the commercial service and business jet communities but needs to evolve as these two markets expand and transition to different types of aircraft.

1.3.2.2 Airport Demand

As stated previously, the types of aircraft which utilize Flagstaff Pulliam Airport and the number of operations by these aircraft are the primary factors used in determining which FAA design standards are applicable to the design and construction of airport facilities. For the purposes of defining the need for the proposed airport improvements, the demand discussion has been broken into two sections: airline activity demand, which relates to the transition of the commercial service fleet to regional jets; and general aviation demand, which presents a discussion regarding the business jet activity at the airport.

Airline Activity Demand

Airline activity at Flagstaff Pulliam Airport has primarily been comprised of regional/commuter service since deregulation. Prior to deregulation, the airport was served by Frontier Airlines and Cochise Airlines. Frontier Airlines utilized Convair 580 turboprops and DC-9s, while Cochise Airlines used small twin-engine aircraft.

Table 1A depicts the annual enplaned passengers at Flagstaff Pulliam Airport since 1980. Prior to deregulation in 1979, the airport's highest annual boardings were around 16,000. After deregulation, traffic remained in the teens until 1984 when commuter service began to improve. A significant jump occurred in 1987 when America West started service. Traffic continued to grow until the end of the decade as service continued to improve under SkyWest and America West. Traffic began to decline during the early 1990s as service transitioned to all 19-seat aircraft, but regained momentum in the mid-1990s when America West Express increased its service frequency to 16 daily flights. Since 1997, however, traffic has declined each year through 2001. Traffic began to grow the next year, and reached an estimated 40,064 enplanements in 2004.

The fluctuation in commercial passenger activity at Flagstaff over the years is not unusual for a small commercial market with interstate highway access to a large hub airport within 150 miles. The level of usage does not reflect the passengers generated by the market. In fact, the level of usage can vary with the level of service provided. Major factors include fares, frequency of service, size and type of aircraft, destinations, and airline reliability.

Future air service at Flagstaff Pulliam Airport will be dependent upon the airport's ability to accommodate regional jets. Mesa Airlines is moving toward an all-regional jet fleet in its southwest service as America West Express.

Additional runway length will be necessary for Flagstaff Pulliam Airport to accommodate the regional jets, the extent of which will be evaluated in later sections. At least one other commuter airline has unofficially indicated an interest in serving Flagstaff Pulliam Airport to other destinations if regional jets can be accommodated.

The entry of regional jets would be a service improvement that would have the potential to recapture a significant share of the local market that is currently driving I-17 to Phoenix Sky Harbor International Airport. An air service study prepared in February 1998 for Flagstaff Pulliam Airport by The Boyd Group/ASRC, Inc. included a survey that indicated just 26 percent of local air carrier traffic was utilizing Flagstaff Pulliam Airport. From this information and other data, the study indicated that 265,000 passengers (132,500 enplanements) annually leak to other airports, including as many as 250,000 to Sky Harbor.

The Boyd Group indicated it is likely that 50 percent of the leakage could never be captured simply because the discount fares and service at the large hub in Phoenix could never be completely matched in a market such as Flagstaff. This would mean that Flagstaff Pulliam Airport could attract up to 62.5 percent of its own market demand with service improvements. **Table 1A** quantifies the resulting forecast increase in enplanements, along with the airport's national market share, through the year 2015.

As previously discussed, a transition to the regional jet will be required to accommodate the forecasted enplanement levels. The airport's existing air carrier, Mesa Airlines (under the code-share name America West), is growing its fleet with Canadair Regional Jets, such as the CRJ-200, while the number of turboprop aircraft in its fleet have been reduced. For example, since 2002 Mesa Airlines has increased its regional jet fleet from 64 to 139 aircraft. Over the same time frame, the number of turboprop aircraft in the airline's fleet has been reduced from 62 to 41. This equates to 77 percent of Mesa's fleet now being comprised of regional jets compared to just 51 percent three years ago. The CRJ-200 is a 50-seat aircraft and is most likely to serve Flagstaff. Therefore, the CRJ-200 will be defined as the critical aircraft for commercial

service purposes and will be used to define the number of future commercial service aircraft operations.

TABLE 1A
Historical and Forecast Enplanements
Flagstaff Pulliam Airport

Year	Enplanements	U.S. Domestic Enplanements (millions)	Flagstaff Pulliam Airport Market Share
1980	14,877	287.9	0.0052%
1981	14,784	274.4	0.0054%
1982	15,319	286.0	0.0054%
1983	13,000	308.1	0.0042%
1984	19,089	333.8	0.0057%
1985	19,140	369.9	0.0052%
1986	23,203	404.7	0.0057%
1987	41,463	441.2	0.0094%
1988	47,006	441.2	0.0107%
1989	51,891	443.6	0.0117%
1990	51,687	456.6	0.0113%
1991	48,304	445.9	0.0108%
1992	49,508	464.7	0.0107%
1993	42,262	470.4	0.0090%
1994	41,138	511.3	0.0080%
1995	39,213	531.1	0.0074%
1996	47,171	558.1	0.0085%
1997	46,704	579.1	0.0081%
1998	39,573	592.1	0.0067%
1999	36,656	613.3	0.0060%
2000	34,483	640.5	0.0054%
2001	31,370	627.5	0.0050%
2002	38,455	574.5	0.0065%
2003	36,400	587.9	0.0062%
2004 *	40,064	NA	NA
FORECAST ENPLANEMENTS			
2005	57,851	680.6	0.0085%
2010	81,540	815.4	0.0100%
2015	123,650	989.2	0.0125%

Source: Coffman Associates, *2005 Flagstaff Pulliam Airport Master Plan*
* Estimated enplanements as of February 9, 2005

Table 1B presents the commercial service fleet mix and anticipated operations forecast through the year 2015. Due to the increased seating available on the regional jet, the number of future operations with the proposed airport improvements is less than what would be expected if the regional jet was not able to utilize the airport. If the airport isn't upgraded to accommodate the regional jet, it is anticipated that commercial airline service would be provided utilizing smaller turboprop aircraft. Due to the

smaller seating capacities of these aircraft, additional operations would be required to meet the forecasted enplanement demand.

TABLE 1B
Airline Fleet Mix and Operations Forecast
Flagstaff Pulliam Airport

	Actual	Forecast	
Fleet Mix Seating Capacity	**2003**	**2010**	**2015**
60+	0%	0%	10%
45-59	0%	100%	80%
35-44	100%	0%	10%
20-34	0%	0%	0%
10-19	0%	0%	0%
Seats per Departure	37.0	50.0	50.7
Boarding Load Factor	63.0%	59%	60%
Enplanements per Departure	23.3	25.0	26.4
Annual Enplanements	36,400	82,000	124,000*
Annual Operations	3,118	5,560*	8,152

* Numbers have been rounded.
Source: Coffman Associates, *2005 Flagstaff Pulliam Airport Master Plan*

General Aviation Demand

An airport's activity is typically measured by the number and type of based aircraft and the number and type of operations (an operation is defined as one takeoff or one landing). Based aircraft at Flagstaff Pulliam Airport in 2003 included 99 single-engine aircraft, seven multi-engine piston aircraft, seven turboprops, one jet, and two helicopters. Currently, based aircraft include 110 single-engine, six multi-engine, 6 turboprop, and three helicopters. **Table 1C** provides a breakdown of the airport's based aircraft by type.

Before preparing a forecast of future general aviation operations at the airport, one must have an understanding of the type and number of operations which currently occur at the airport. While Flagstaff Pulliam Airport is equipped with an airport traffic control tower (ATCT), it is not a 24-hour tower, so ATCT counts provided will not be all-inclusive of operations at the airport. During the preparation of the 2005 Airport Master Plan, FAA flight plan records for Flagstaff Pulliam Airport were reviewed for a four-month period from September 1 through December 31, 2002 to supplement the ATCT operational counts. The flight plan records provide information regarding aircraft type, owner, date and time of flight, as well as the origin for arrivals and the destination for departing operations. This information was used to determine the total 2002 operations at the airport.

An estimate of the annual operations at Flagstaff Pulliam Airport is included in **Table 1C**. The general aviation operations are broken into two types - itinerant and local. A local operation is a takeoff or landing performed by an aircraft that operates within sight of the airport, or which executes simulated approaches, or "touch-and-go" operations at the airport. Itinerant operations are those performed by aircraft with a specific origin or destination away from the airport.

Based on the existing activity at the airport, forecasts of future activity were prepared. During the preparation of these forecasts, a number of factors were evaluated including historical operations at the airport, forecasts prepared by the FAA and ADOT, and forecasts prepared during previous master planning efforts at the airport. **Table 1C** presents the results of this analysis for the years 2005, 2010, and 2015. These forecasts provide the basis for the Environmental Consequences analyses found in Chapter 4.

TABLE 1C
Summary of Aviation Forecasts
Flagstaff Pulliam Airport

	Actual	***Forecasts***	
	2003	**2010**	**2015**
ANNUAL OPERATIONS			
General Aviation			
Itinerant	25,541	32,200	34,600
Local	15,363	20,800	21,900
Airline	3,118	5,600*	8,200
Other Air Taxi	6,376	6,600	7,100
Military	955	800	800
TOTAL OPERATIONS	**51,353**	**66,000**	**72,600**
BASED AIRCRAFT			
Single-engine	99	110	115
Multi-engine	7	8	8
Turboprop	7	8	9
Jet	1	2	4
Helicopter	2	3	3
TOTAL BASED AIRCRAFT	**116**	**131**	**139**

* Numbers have been rounded.
Source: Coffman Associates, *2005 Flagstaff Pulliam Airport Master Plan*

1.3.2.3 Facility Requirements

The previous sections outlined the existing and forecast activity at Flagstaff Pulliam Airport. Of critical importance to the proposed action is the transition of the

commercial airline fleet from turboprop aircraft to regional jets as well as the use of business jets at the airport. The following sections outline the need for each of the proposed airport improvements based upon FAA safety and design standards.

• AIRFIELD SAFETY DESIGN STANDARDS

The selection of appropriate FAA design standards for the development and location of airport facilities is based primarily upon the characteristics of the aircraft which are currently using, or are expected to use, the airport. The critical design aircraft is defined as the most demanding category of aircraft, or family of aircraft, which conducts at least 500 operations per year at the airport. Planning for future aircraft use is of particular importance since design standards are used to plan separation distances between facilities. These future standards must be considered now to ensure that short term development does not preclude the long range potential needs of the airport.

The FAA has established a coding system to relate airport design criteria to the operational and physical characteristics of aircraft expected to use the airport. This airport reference code (ARC) has two components: the first component, depicted by a letter, is the aircraft approach category and relates to aircraft approach speed (operational characteristic); the second component, depicted by a Roman numeral, is the airplane design group and relates to aircraft wingspan (physical characteristic). Generally, aircraft approach speed applies to runways and runway-related facilities, while airplane wingspan primarily relates to separation criteria involving taxiways, taxilanes, and landside facilities.

According to FAA Advisory Circular (AC) 150/5300-13, *Airport Design*, an aircraft's approach category is based upon 1.3 times its stall speed in landing configuration at that aircraft's maximum certificated weight. The five approach categories used in airport planning are as follows:

Category A: Speed less than 91 knots.
Category B: Speed 91 knots or more, but less than 121 knots.
Category C: Speed 121 knots or more, but less than 141 knots.
Category D: Speed 141 knots or more, but less than 166 knots.
Category E: Speed greater than 166 knots.

The airplane design group (ADG) is based upon the aircraft's wingspan. The six ADGs used in airport planning are as follows:

Group I: Up to but not including 49 feet.
Group II: 49 feet up to but not including 79 feet.
Group III: 79 feet up to but not including 118 feet.

Group IV: 118 feet up to but not including 171 feet.
Group V: 171 feet up to but not including 214 feet.
Group VI: 214 feet or greater.

The airport is currently designed for aircraft in ARC C-III. While a few business jets are in ARC C-III, most are within C-II or below. The regional jet that is proposed to provide service in the future is also within ARC C-II. Thus, the airport's safety design features are adequate for the critical aircraft. The only inadequacy from a design standpoint is the runway length available for takeoff. This is discussed further in the following section.

- **RUNWAY LENGTH REQUIREMENTS**

Runway length requirements are based upon the design aircraft, or group of aircraft. The runway length may consider the performance characteristics of individual aircraft types, while the other dimensional standards are generally based upon the most critical airport reference code expected to use the runway. The dimensional standards are outlined for the planning period for the primary runway as well as for a potential parallel runway to meet future capacity demand.

The aircraft performance capability is a key factor in determining the runway length needed for takeoff and landing. The performance capability and, subsequently, the runway length requirement of a given aircraft type can be affected by the elevation of the airport, the air temperature, the gradient of the runway, and the operating weight of the aircraft.

The airport elevation at Flagstaff Pulliam Airport is 7,014 feet above mean sea level (MSL). The temperature commonly used for design is the mean maximum daily temperature during the hottest month. According to the National Weather Service, that occurs in July in Flagstaff and is 81.9 degrees Fahrenheit (F). The elevation varies by 16 feet from its high (7,014 feet) to its low (6,998 feet) for a runway gradient of 0.23 percent.

In the past, the critical aircraft at most commuter service airports such as Flagstaff have been business jets. This has been, at least in part, because most commuter aircraft were turboprops that generally require less runway length than jets. The advent of regional jets, however, has changed that in some locations. While relatively efficient on 7,000 feet or less runway length at lower elevations, most regional jets have been found to require significantly more length at higher elevation airports such as Flagstaff Pulliam Airport. In fact, the regional jet requires more runway length at high altitude than many large commercial service jets. Flagstaff Pulliam Airport had scheduled service by Boeing 737 aircraft for a short while in the late 1980s. The airport still receives occasional charter flights from large commercial jets.

Unfortunately, Flagstaff Pulliam Airport does not generate sufficient traffic to warrant service by these aircraft which accommodate 90 passengers or more. Another consideration at high elevation is the performance of piston-powered aircraft. Piston-powered aircraft that are not turbo-charged often require significantly more runway length at higher elevation airports.

The aircraft load is dependent upon the payload of passengers and/or cargo plus the amount of fuel on board. For departures, the amount of fuel varies depending upon the length of nonstop flight, or trip length. This can vary for commuter and general aviation aircraft. As a result, the runway requirements for each are evaluated to determine the critical runway length for Flagstaff Pulliam Airport.

- **Airline Runway Length Requirements**

At the present time, scheduled commercial service flights at Flagstaff Pulliam Airport use turboprop aircraft. These include the 37-seat Dash 8 and the 19-seat Beech 1900. All scheduled service flights are to Phoenix Sky Harbor International Airport, which is 119 NM from the airport.

The airport's sole carrier, Mesa Airlines, has been reducing its turboprop fleet while growing its regional jet fleet. SkyWest Airlines, which has provided service to Flagstaff in the past, has also been replacing turboprops with regional jets. It is highly probable that Flagstaff's ability to maintain and improve upon its current level of service will be dependent upon the airport's ability to accommodate regional jets.

Mesa Airlines provides service to the America West hub in Phoenix. SkyWest provides service to the Delta Airlines hub in Salt Lake City (391 nm). Other potential future destinations and the flight distances from Flagstaff include Las Vegas (206 nm), Denver (490 nm), Los Angeles (392 nm), and San Francisco/Oakland (619 nm).

The Mesa and SkyWest fleets primarily utilize the Canadair Regional Jet (CRJ) 200. Mesa owns the CRJ 200ER, while SkyWest owns the 200LR. As stated previously, both aircraft have a 50-passenger seating capacity. Both operate the CRJ-700 aircraft as well. This aircraft typically serves larger markets than Flagstaff, however, it will ultimately serve FLG after the market develops.

The runway length analysis for the CRJ determined that the 7,014-foot elevation of Flagstaff will restrict the takeoff weight to 44,800 pounds at the design temperature of 82 degrees F. This is 6,000 to 8,000 pounds less than the certificated maximum takeoff weight of the ER and LR models. ***At 44,800 pounds, the aircraft would require 8,700 feet of runway length at the design temperature.***

The operating empty weight of the aircraft is 30,500 pounds, leaving a maximum useful load of 14,300 pounds. When operating at its 50-seat capacity with an average payload of 200 pounds per passenger (10,000 pounds), the aircraft would be limited to 4,300 pounds of fuel. After allowing for auxiliary power units (APU), taxi, and reserve fuel requirements, it was determined that the maximum range with a full load from Flagstaff Pulliam Airport would be approximately 520 miles. This would allow the aircraft to fly nonstop to the most likely near term destinations of Phoenix and Salt Lake City, in addition to other future potential destinations such as Las Vegas, Denver, and the Los Angeles Basin.

- **General Aviation Runway Length Requirements**

Table 1E outlines the runway length requirements for various classifications of general aviation aircraft at Flagstaff Pulliam Airport. These were derived utilizing the FAA Airport Design Computer Program for *Runway Lengths Recommended for Airport Design*. These runway lengths are based upon groupings or "families" of aircraft. As discussed earlier, the runway design required should be based upon the most critical family of aircraft with at least 500 annual operations. For general aviation purposes, the most critical family of aircraft at Flagstaff Pulliam Airport is within ARC C-II.

Small aircraft are defined as aircraft weighing 12,500 pounds or less. Small airplanes make up the vast majority of general aviation activity at Flagstaff Pulliam Airport and at most airports. In particular, piston-powered aircraft make up the majority of small airplane operations. The performance of many piston aircraft is significantly affected at high elevation airports. As a result, the runway length requirement for these aircraft is 8,400 feet.

Larger airplanes of 60,000 pounds or less are typically comprised of business jets. The classifications listed on the table include 75 and 100 percent of the fleet. FAA Advisory Circular 150/5325-4A, *Runway Length Requirements for Airport Design*, lists the following common aircraft in the 75 percent fleet classification:

- LearJet (20, 30, and 40 series)
- Rockwell Sabreliner (40, 60, 75, and 80 series)
- Cessna Citation (500 and 600 series)
- Dassault Falcon (10, 20, 50 series)
- Hawker-Siddeley-125 (400, and 600)
- Israeli Westwind 1124
- Raytheon 390
- Mitsubishi MU-300
- Beechjet 400A

TABLE 1E **General Aviation Runway Length Requirements** **Flagstaff Pulliam Airport**	
AIRPORT AND RUNWAY DATA	
Airport elevation	7,014 feet
Mean daily maximum temperature of the hottest month	81.90 F
Maximum difference in runway centerline elevation	16 feet
Length of haul for airplanes of more than 60,000 pounds	975 miles
Wet runway	
RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN	
Small airplanes with approach speeds of less than 30 knots	510 feet
Small airplanes with approach speeds of less than 50 knots	1,360 feet
Small airplanes with less than 10 passenger seats	
75 percent of these small airplanes	6,000 feet
95 percent of these small airplanes	8,400 feet
100 percent of these small airplanes	8,400 feet
Small airplanes with 10 or more passenger seats	8,400 feet
Large airplanes of 60,000 pounds or less	
75 percent of these large airplanes at 60 percent useful load	7,600 feet
75 percent of these large airplanes at 90 percent useful load	**8,800 feet**
100 percent of these large airplanes at 60 percent useful load	11,200 feet
100 percent of these large airplanes at 90 percent useful load	11,200 feet
Airplanes of more than 60,000 pounds	Approximately 8,800 feet
REFERENCE: Chapter 2 of AC 150/5325-4A, *Runway Length Requirements for Airport Design*, no Changes included.	

Flight plan data was utilized to better define the fleet mix and destinations of business jet aircraft utilizing Flagstaff Pulliam Airport. From this data, business jet operations were estimated at 2,100 (1,050 departures) in 2002. Approximately 75 percent of these operations were conducted by business jets in the 75 percent of the fleet category. Business jets in the 100 percent category conducted 19 percent of the operations. Business jets weighing over 60,000 pounds conducted the remaining six percent of operations.

A major corporate jet user of the airport is the W.L. Gore Company, the largest private employer in Flagstaff. The company's corporate aircraft, an Israeli Westwind 1124, makes regular flights between New Castle County Airport in Delaware and Flagstaff Pulliam Airport. The flight distance between the two airports is 1,990 nautical miles. Over the course of a year, less than one-third of the trips to New Castle County can be

flown nonstop. The other two-thirds of the trips must stop to refuel in either Kansas or Colorado. The number of trips the aircraft had to stop and refuel indicates that a longer runway for takeoff would be beneficial.

This aircraft fits into the 75 percent large airplane classification in the table. A runway length of 7,600 feet would accommodate these aircraft at 60 percent of their useful load. The useful load is the maximum certificated takeoff weight minus the operating empty weight. Sixty (60) percent loading will not generally permit aircraft in this category to fly nonstop to the east coast.

A useful load of 90 percent will generally accommodate cross-country flights by these aircraft, provided they have sufficient range. The Westwind has a maximum range of 2,440 miles with a full load of fuel. A runway length of 8,800 feet will accommodate the 75 percent classification at 90 percent useful load.

There are a few business jets that exceed the 60,000 pound category. These include the Gulfstream II, III, IV, and V, as well as the Global Express. The Boeing Business Jet (BBJ) also exceeds 60,000 pounds. The flight plan log had 11 departures by these types of aircraft. This would relate to an estimated 130 annual operations. The table indicates that this size of general aviation aircraft could operate on at least a 975-mile trip length from 8,800 feet of runway at Flagstaff Pulliam Airport.

- **CONCLUSION**

The analysis above indicates that the current runway length at Flagstaff Pulliam Airport is not sufficient for existing general aviation needs. Aircraft serving one of the largest local employers face operational limitations. The airport serves over 2,100 business jet operations annually, yet the existing 6,999-foot runway does not meet the requirements for the 75 percent family of business jets operating at 60 percent useful load. Small piston-powered aircraft weighing less than 12,500 pounds can also be restricted from operating at the design temperature due to the available runway length.

In addition, the existing runway length is not adequate for the airport to accommodate daily scheduled flights by regional jets. With the commuter airline service becoming dominated by regional jets, a longer runway is necessary.

Based upon the evaluations above, a runway length of 8,800 feet will best meet the needs of Flagstaff Pulliam Airport's commercial and general aviation users both in the near term as well as over the long term planning period.

1.4 IMPLEMENTATION TIMEFRAME

All items discussed in Section 1.1.1 and illustrated on **Exhibit 1B** are expected to be developed within the next five years (2005-2010). **Table 1F** outlines the anticipated development schedule. The FAA has federal oversight for the implementation of the proposed Airport Master Plan Update near-term project improvements.

TABLE 1F
Schedule of Proposed Improvements, 2005-2010
Flagstaff Pulliam Airport

Project Description	Anticipated Start Date
Project Design.	2005 *
Acquisition of Avigation Easement from U.S. Forest Service.	2005
Acquire areas within the avigation easement in fee-simple to allow for the creation of the RSA and the preservation of the RPZ for Runway 21.	2007
Construction of runway extension and associated projects.	2007

* Contingent on issuance of a finding of no significant impact (FONSI) by the FAA
Source: Coffman Associates, *2005 Flagstaff Pulliam Airport Master Plan*

FLAGSTAFF
PULLIAM AIRPORT

Chapter Two

ALTERNATIVES

Chapter Two
ALTERNATIVES

The objective of this alternatives analysis is to identify reasonable alternatives which accommodate the purpose and need identified in Chapter One. Once identified, each alternative is evaluated in terms of its ability to satisfy the objectives of the purpose and need for the project and its potential for an effect on the surrounding environment. The results of this evaluation determine which alternatives will be considered reasonable and practicable, thereby warranting further consideration. The alternatives under consideration are more closely evaluated in Chapter Four of this document.

Under the *National Environmental Policy Act* (NEPA), as stated in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, and FAA Order 5050.4A, *Airport Environmental Handbook*, the Federal Aviation Administration (FAA) allows alternatives to be eliminated from further consideration when they do not fulfill the purpose and need for the action or cannot be reasonably implemented. In general, if an alternative's cost would likely exceed the benefits or when the environmental consequences are excessive, particularly when compared to other alternatives which do meet the purpose and need, that alternative can be eliminated from further consideration. Alternatives that do not meet the purpose and need stated in Chapter One, or are deemed to be not reasonable, will be eliminated and will not be discussed further in this Environmental Assessment (EA), with the exception of the No Action alternative. The *Council on Environmental Quality* (CEQ), Section 1502.14(c), requires the evaluation of the No Action alternative, regardless of whether it meets the stated purpose and need or is reasonable to implement.

For this analysis, each alternative was evaluated for its ability to meet the runway length needs of the existing business jet fleet that already utilizes Flagstaff Pulliam Airport as well as commercial service regional jets in the future. During the preparation of the 2005 Airport Master Plan, it was determined that a runway length of 8,800 feet at Flagstaff Pulliam Airport would be required to meet these aircraft needs. Therefore, on-airport development alternatives will be evaluated based on their ability to provide an 8,800-foot runway. Off-airport alternatives will be evaluated based on their ability to accommodate the commercial service needs of the Flagstaff area as well as the business jet community.

Many of the alternatives presented in the following sections were evaluated in detail within the *2005 Flagstaff Pulliam Airport Master Plan*. The proposed action alternative reflects the short-term recommended runway improvements contained within the Master Plan.

Alternatives Under Consideration:

- Alternative A - Proposed Action, Extend Runway 3-21 1,801 feet to the northeast
- Alternative B - No Action

Alternatives Considered but Eliminated from Detailed Study:

- Alternative C – Extend Runway 3-21 1,801 feet to the southwest
- Alternative D – Extend Runway 3-21 1,600 feet to the northeast and 200 feet to the southwest
- Alternative E – Extend Runway 3-21 1,200 feet to the northeast and 600 feet to the southwest
- Alternative F – Upgrade Alternate Airport
- Alternative G – Construct New Airport

2.1 ALTERNATIVES UNDER CONSIDERATION

2.1.1 Alternative A – Proposed Action, Extend Runway 3-21 1,801 feet to the northeast

The proposed action is depicted on **Exhibit 2A**. Under this alternative, the airport is upgraded to accommodate both the CRJ-200 as well as the business jet fleet which currently utilizes the airport. The proposed action alternative includes a 1,801-foot extension of Runway 3-21 and its associated parallel taxiway, Taxiway A to the northeast, thereby providing a total runway length of 8,800 feet. The associated high intensity runway lighting (HIRL) and medium intensity taxiway lighting (MITL) would also be extended. The airport's medium intensity approach lighting

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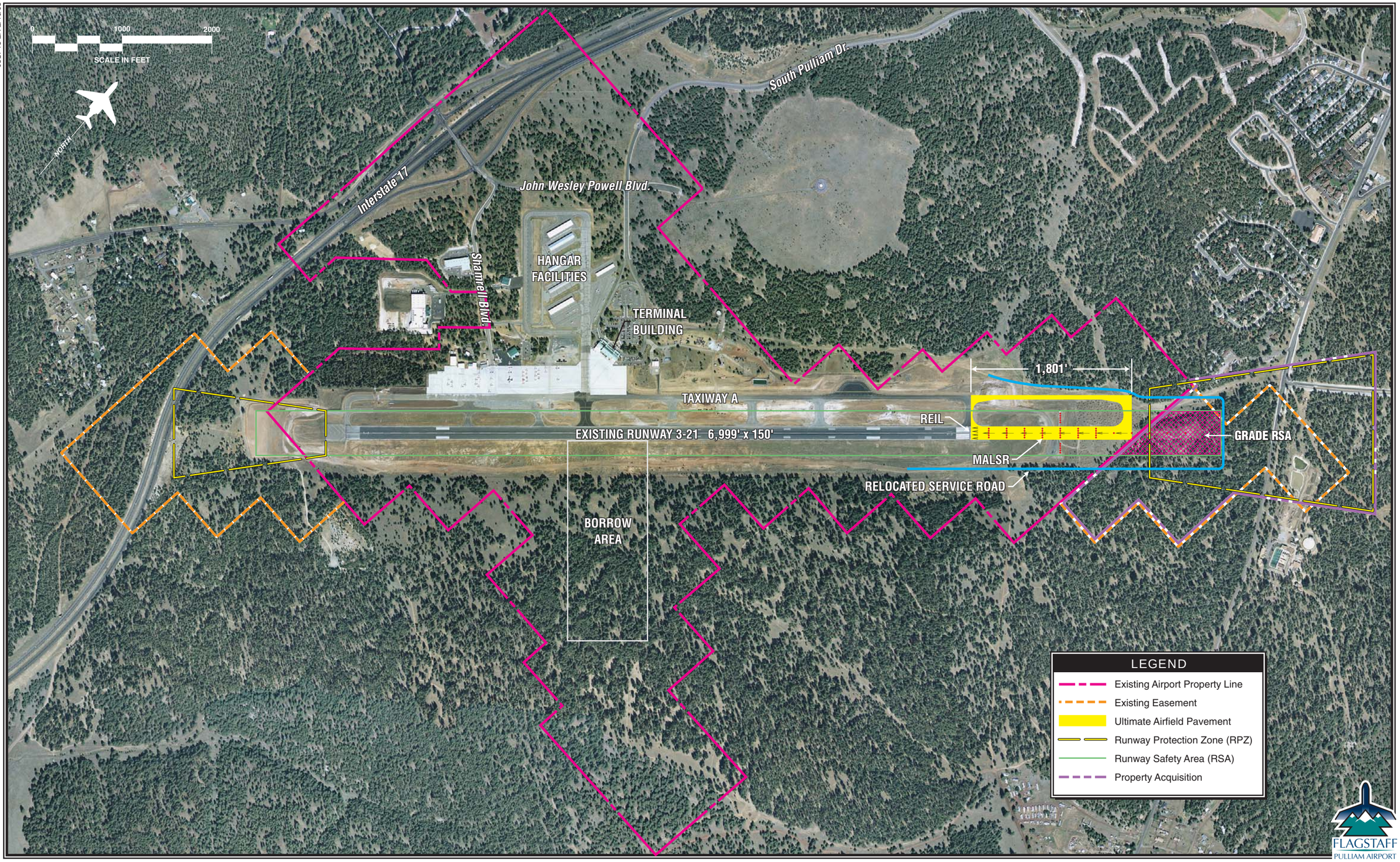

Exhibit 2A
PROPOSED ACTION

system with runway alignment indicator lights (MALSR) would be placed within the pavement of the displaced runway threshold as depicted on **Exhibit 2A**.

With the extension of the runway to the northeast, 8,800 feet of pavement would be available for both takeoff and landing on Runway 3 as well as takeoffs on Runway 21. However, due to the presence of Mt. Elden, the landing threshold would be maintained in its current location. Thus, the runway available for landing would remain at 6,999 feet. Mt. Elden is an obstruction to the FAR Part 77 precision approach surface to Runway 21, thereby affecting the airport's instrument landing system (ILS) approach design. Extending the runway to the northeast places Mt. Elden closer to the approach; therefore, under current ILS procedures, it is not likely that the approach can be moved to the end of the extended runway. Since the runway extension is primarily needed for takeoff, but not for landing, the impact to operations would be minor.

The extension of Runway 3-21 to the northeast would require a number of additional airport improvements including the following.

- The existing service road would need to be relocated to a location outside the object free area (OFA) for the runway. The proposed relocation is depicted on **Exhibit 2A**.

- Since the landing threshold for Runway 21 would not change, the existing Runway 21 runway end identifier lights (REILs) and medium intensity approach lighting system with runway alignment indicator lights (MALSR) would simply be placed in pavement.

- Acquisition of the property contained within the expanded RSA and RPZ for Runway 21. The property will be acquired upon the completion of an ongoing land exchange between the U.S. Forest Service and a private entity. This land exchange is discussed further within Chapter Three.

- Approximately 800,000 cubic yards of fill would be required to allow for the grading of the Runway 21 RSA. The borrow material is available on-site as depicted on **Exhibit 2A**. No negative environmental impacts have been identified should this portion of airport property be utilized for borrow material.

Potential environmental impacts associated with this alternative primarily relate to wetlands and water quality. Resource agencies have indicated that any impacts can be mitigated through the various permitting processes. Implementation of this alternative would result in positive noise impacts around the airport as a number of homes are removed from the 65 DNL noise contour when compared to the existing condition and no action alternatives. Noise impacts are discussed further within Section 1.1 of Chapter Four.

This alternative fully meets the purpose and need of the project and is considered feasible to implement; therefore, it will be carried through the EA for detailed analysis. The alternative fully meets the stated runway length needs of 8,800 feet and would allow for the operation of the CRJ-200 at Flagstaff Pulliam Airport as well as allow for longer haul flights by business jets.

2.1.2 Alternative B – No Action

The no action alternative essentially considers keeping the airport in its present condition; therefore, additional runway length would not be provided. The primary concerns with the no action alternative are its current affect on business jet users and its potential affect on air service to Flagstaff and much of northern Arizona.

The no action alternative would continue to affect general aviation business jet aircraft that operate at the airport. As an example, the largest non-public employer in Flagstaff is one of the primary users of corporate aircraft at the airport. Their corporate aircraft flies almost daily between Flagstaff and the east coast. At least two thirds of those flights departing Flagstaff require a fuel stop in either Colorado or Kansas.

A future concern with the No Action Alternative is its potential effect on local commercial air service. The current service by America West Express (Mesa Airlines) uses Dash 8 turboprop aircraft. The airline has been growing its fleet with regional jets such as the Canadair Regional Jet 200 (CRJ-200) while reducing its fleet of turboprops. As indicated in Chapter One, the current runway length of 6,999 feet is not sufficient to support scheduled service by regional jet aircraft. Thus, the airport's ability to maintain and improve upon its current level of could be jeopardized within the few years.

Mesa Airlines code-sharing contract with America West expires in 2007. Even if the agreement is renewed, the airline is expected to continue to utilize regional jets wherever possible. If the current airline were to be replaced, it is expected that service would be by a commuter airline using 19-seat turboprop aircraft. This would be a significant downgrade in service.

The Dash 8 aircraft currently operated by Mesa Airlines into Flagstaff is one of the few turboprops in service that can operate within the airports design conditions. Great Lakes Airlines is another regional airline that provides service to many Arizona Airports. It would be a strong potential candidate for replacement service at Flagstaff. Great Lakes Airlines uses 19-seat Beech 1900 aircraft as well as the 30-seat Embraer 120 turboprop. The airline informed the Flagstaff Pulliam Airport Manager of that the Embraer 120 would face severe operating restrictions with the existing runway length. Subsequently, its 19-seat aircraft would be the remaining alternative for providing service.

Environmental impacts which would result upon implementation of the no action alternative primarily relate to air quality and noise. Currently, a number of air travelers from the Flagstaff area drive to Phoenix for commercial service flights. This "commute" results in an increased amount of air emissions from the vehicles. Additionally, due to the limited runway length at Flagstaff Pulliam Airport, many of the business jet operators which operate out of the airport are required to make fuel stops on the way to their final destination. Providing additional pavement length would allow for these aircraft to take on additional fuel, thereby reducing the number of fuel stops. This would, in turn, result in fewer air quality impacts at other airports across the U.S. Air quality impacts are much greater on departure than when the aircraft is cruising at a specified altitude.

As discussed in the previous section, implementation of the proposed action alternative results in a beneficial noise impact as a number of homes are removed from the 65 DNL noise contour. Implementation of the no action alternative would result in increased noise impacts when compared to the existing condition and the proposed action alternatives. This impact is discussed further within Chapter Four, Section 4.1, of this EA.

In summary, adverse economic, social, environmental, and political impacts are associated with the no action alternative. Combined with the eventual effect on the regional community's ability to accrue additional economic growth, the no action alternative would result in a substandard aviation facility and the ultimate decline or cessation of commercial aircraft operations.

The no action alternative does not meet the identified purpose and need for the facility, as identified in Chapter One. However, while the no action alternative was found not feasible, in accordance with *CEQ 1502.14*, FAA Order 1050.1E, *Paragraph 506e, Environmental Impacts: Policies and Procedures*, and FAA Order 5050.4A, Paragraph 47.c(1)(g), *Airport Environmental Handbook*, it is further analyzed with regard to its potential environmental impact in Chapter Four of this environmental document.

2.2 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

During the preparation of this EA, as well as previous master plans for the airport, a number of alternatives, other than the proposed action, were evaluated. These alternatives, as well as the reasons for their elimination, are presented in the following sections.

2.2.1 On-Airport Development Alternatives

A number of additional on-airport alternatives were evaluated to determine the optimal location for the needed runway extension. These additional alternatives are discussed below.

2.2.1.1 Alternative C - 1,801-Foot Runway Extension to the Southwest

Alternative C, depicted on **Exhibit 2B**, places the full extension on the southwest end of the runway. The advantage of this alternative over the proposed action would be the use of the entire 8,800-foot runway length for both takeoffs and landings. While this would be ideal, the current 6,999-foot length is adequate for landing; therefore, to make this alternative more feasible than the proposed action alternative, this alternative must indicate other advantages either in cost, operational efficiency, or environmental impact.

An 1,801-foot extension to the southwest would place the runway at the edge of the Interstate 17 right-of-way. To provide for adequate RSA beyond the runway end, Interstate 17 would either need to be relocated or a bridge would need to be constructed to contain the RSA, both very costly endeavors. Earthwork fills of up to 70 feet will be required in the areas between the relocated runway end and Interstate 17. The runway protection zone (RPZ) would extend over property beyond the current fee simple property and the current easements on U.S. Forest Service property.

In addition, the extension would place the end of the runway closer to residences located to the southwest, thereby resulting in increased noise impacts. Constructing the proposed action alternative (an 1,801-foot extension to the northeast) places departing aircraft higher over the residences to the southwest, reducing the potential for noise impacts.

While this alternative meets the purpose and need for the project, it was eliminated as it is not reasonable to implement due to the increased environmental and social impacts including greater noise impacts on residences, the need to relocate or bridge Interstate 17, increased amount of fill needed for the project, and increased cost for design and construction.

2.2.1.2 Alternatives D and E – Combination Runway Extensions

Alternatives D and **E** are presented on **Exhibit 2C**. These alternatives use a combination of shorter extensions on both ends of the runway. Previous master plans, prepared for the airport in 1984 and 1991, indicated that a 200-foot extension could be accommodated on the southwest end, but there was little advantage to the split project. The landing threshold on Runway 21 would still need to be displaced.

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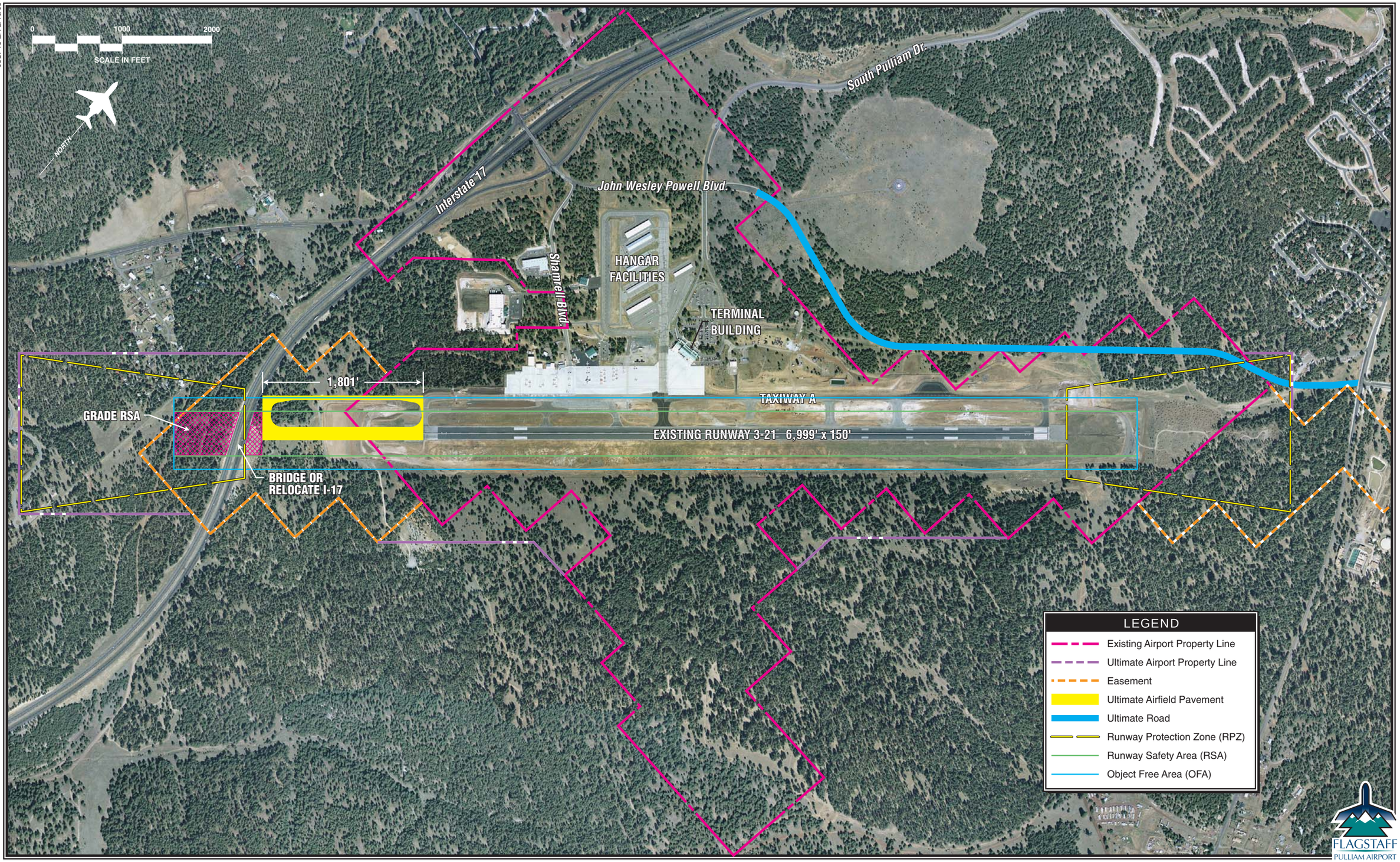

Exhibit 2B
ALTERNATIVE C - 1,801' EXTENSION
TO THE SOUTHWEST

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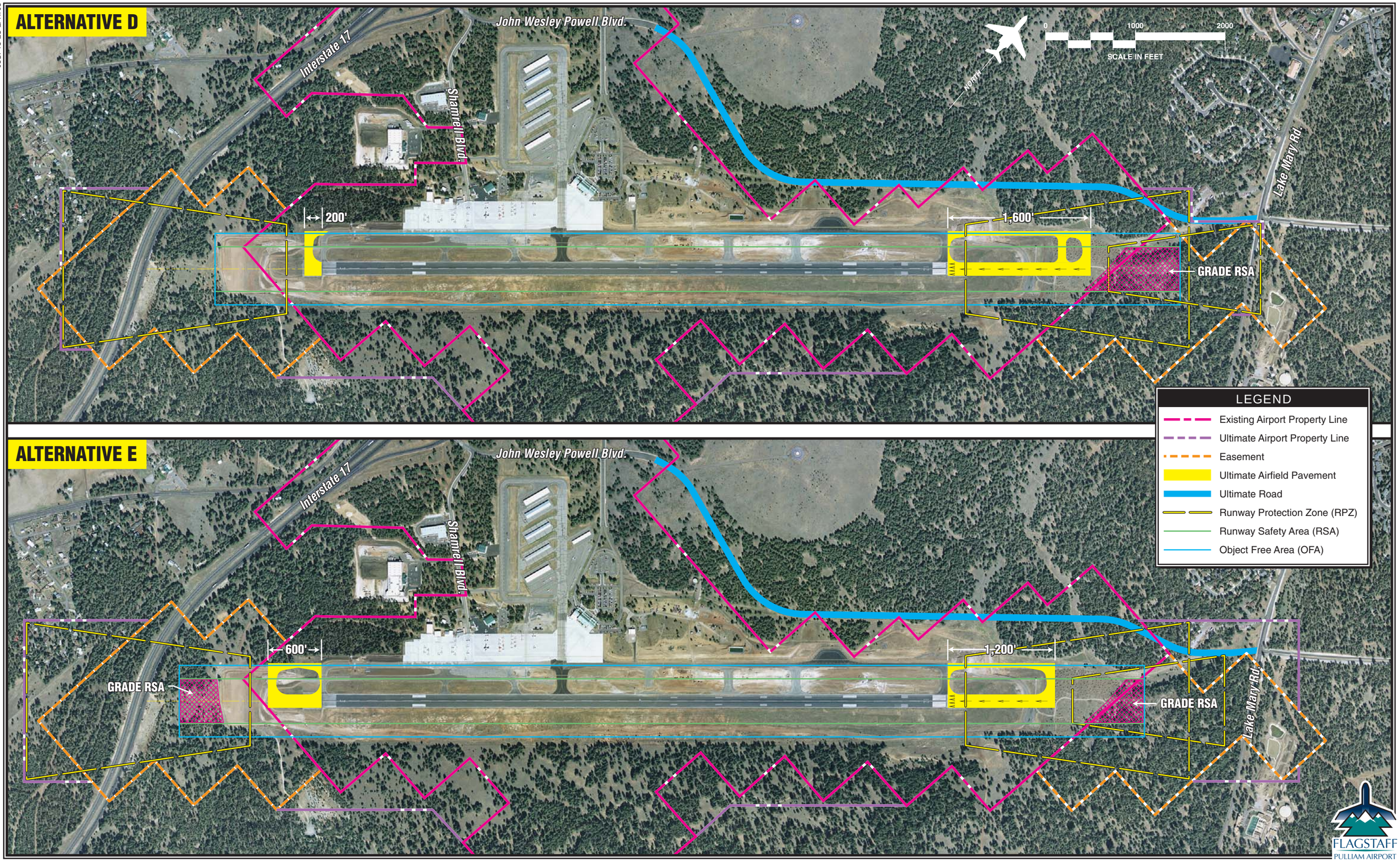

FLAGSTAFF
PULLIAM AIRPORT

Exhibit 2C
ALTERNATIVES D AND E - OTHER
RUNWAY EXTENSION ALTERNATIVES

The RSA would still require fill beyond its current grading. In addition, navigational aids associated with the southwest end of the runway would require relocation. This includes both the VASI and the localizer serving the ILS.

As with the full southwest extension, **Alternative D** places the runway end closer to the residences located southwest of the airport, albeit much less. This alternative provides for a 200-foot runway extension to the southwest and a 1,600-foot runway extension to the northeast. Departures to the southwest will also be higher than with Alternative E, but still slightly lower than with the proposed action alternative. The minimal extension simply serves to increase construction costs and time, while offering no distinct operational or environmental advantage over the proposed action. This alternative was eliminated as it was determined to not be reasonable to implement due to the increased environmental and social impacts.

Alternative E was added to the consideration as it provides the maximum southwest extension that does not affect Interstate 17. This alternative includes a 600-foot runway extension to the southwest and a 1,200-foot runway extension to the northeast. All the disadvantages of Alternative D remain. The development cost increases above that of Alternative D, as does the southwest property acquisition requirements from the U.S. Forest Service. The increase in noise impacts on residents southwest of the airport is less than Alternative C, but more than Alternative D. Again, while this alternative meets the purpose and need, it has been eliminated for the same reasons as Alternatives C and D were eliminated.

2.2.2 Off-Airport Development Alternatives

Other development alternatives consider upgrading existing airports other than Flagstaff Pulliam Airport to meet the project's purpose and need, or constructing an entirely new airport. The following sections evaluate these alternatives.

2.2.2.1 Alternative F - Upgrade Alternate Airport(s)

An alternative to developing the proposed improvements at Flagstaff Pulliam Airport is to upgrade another airport in the immediate area. This would, in effect, provide a facility in Flagstaff capable of safely accommodating most of the general aviation aircraft which currently utilize Flagstaff Pulliam Airport and transfer the activity of the more demanding aircraft, the regional jet and some business jets, to another airport in the area. This approach is typically taken when the airports are located in close proximity to one another and fewer environmental impacts result from upgrading the alternate airport to meet the needs of the area users. For example, in a metropolitan area which is served by two general aviation airports, one of the airports could be surrounded by habitat for a federally-protected species and the other could be devoid of sensitive environmental resources. To maintain the en-

vironmental integrity near the airport with the federally-protected species, the decision could be made to only upgrade the airport which is not surrounded by sensitive environmental resources, thereby encouraging the users to utilize the airport which more closely meets their operational needs. The aircraft which need the longer runway may opt to use the airport which was upgraded and users of smaller aircraft may opt to utilize the airport which did not receive the runway extension. Airports cannot forbid certain aircraft from utilizing their airport*; however, proceeding in this manner could encourage users to utilize alternate airports.

Criteria typically used to consider the viability of other airports to serve the needs of an airport include travel time from the service area, existing facilities, and the ability to provide an adequate runway length to meet the needs of the Flagstaff area. According to FAA Order 5090.3B, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*, the community to be served by an airport is to be within at least 30 minutes average ground travel time from an existing NPIAS airport. **Exhibit 2D** depicts the airports which are located in proximity to the City of Flagstaff.

Sedona Airport, H. A. Clark Memorial Airport in Williams, and Cottonwood Airport are the closest airports that are included in the NPIAS. Sedona Airport is the closest at 22 nautical miles, while H. A. Clark Memorial Airport is the closest in travel time, still more than 30 minutes to the west of Flagstaff. All are general aviation airports with no provisions for certificated passenger service. H. A. Clark Memorial Airport has the longest available runway at 5,992 feet, 1,000 feet less than the current length at Flagstaff Pulliam Airport. Each would require even greater construction upgrades at a significantly higher cost.

In addition, the commercial service airport would be located significantly further from the City of Flagstaff, the population center of the region. The cost associated with redeveloping the facilities at another airport in the region, combined with the loss of the convenience provided by the location of Flagstaff Pulliam Airport, would result in a loss of more local passengers to the major hub in Phoenix. The loss of airport revenues generated by these passengers would only further increase the direct cost burden of the relocation on the taxpayer.

Improving these airports as an alternate to Flagstaff Pulliam Airport would not necessarily result in fewer environmental impacts. Each of these areas is located in proximity to national and state park units, cultural resource sites, and habitat for protected species. Additionally, topography limits would hinder the development of some of these sites due to their existing locations. Therefore, developing these sites has the potential to result in an increase in environmental impacts. Social impacts

* Section 4-13 (a) of FAA Order 5190.6, Airport Compliance Requirements, states that the owner of any airport developed with Federal Grant Assistance is required to operate it for the use and benefit of the public and make it available to all types, kinds, and classes of aeronautical activity on fair and reasonable terms and without unjust discrimination.

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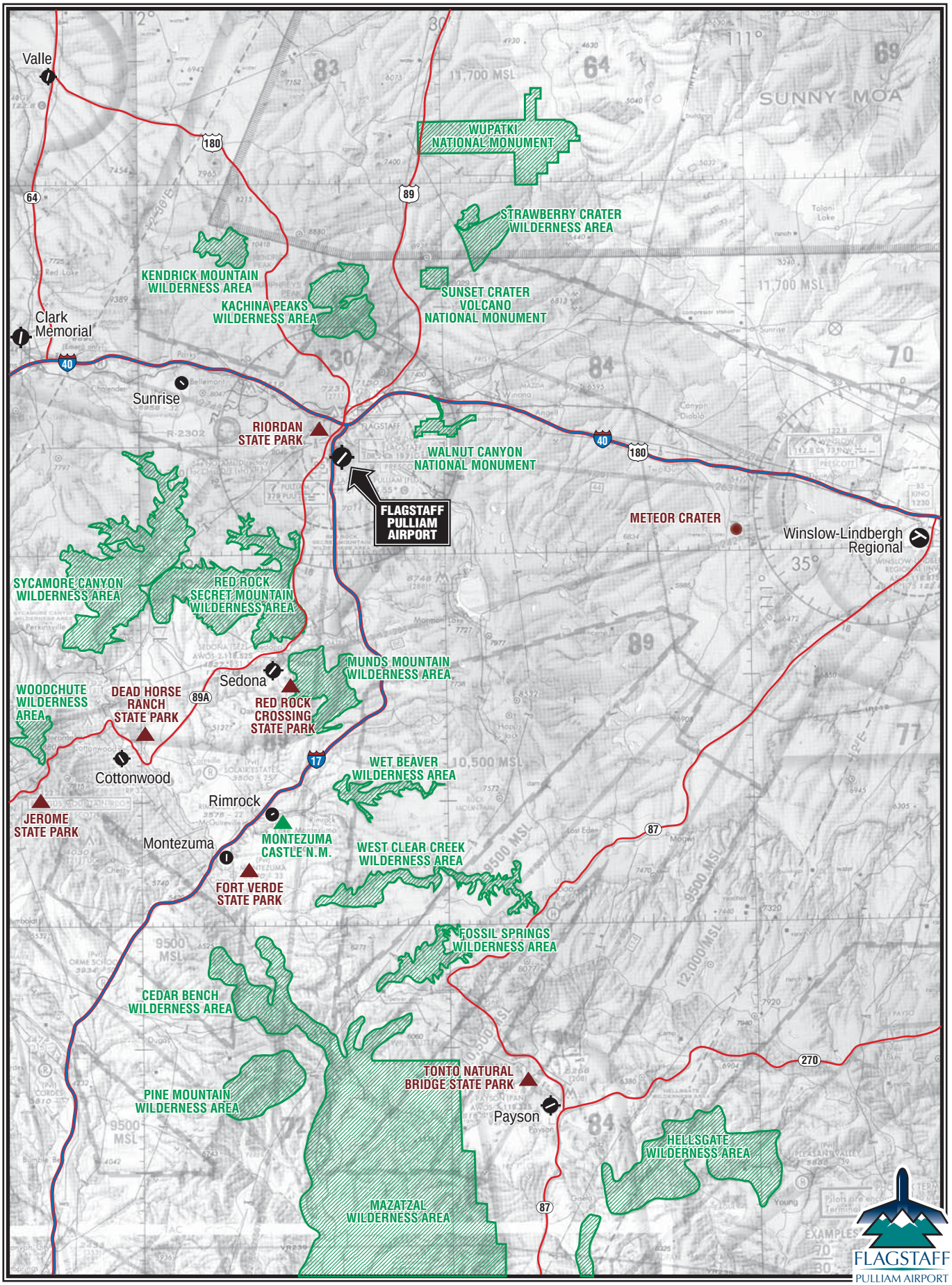

Exhibit 2D
AREA AIRPORTS

would also be encountered as the communities in which these airports are located would have to adjust to a significant increase in aircraft activity. These communities may not be willing to support the development of a commercial service airport.

This alternative does not meet the purpose and need for the project, as it does not provide for an easy transition of the existing commercial service activity to an alternate airport. The alternative is also not reasonable as the FAA cannot insist an airport be developed for commercial service uses.

2.2.2.2 Alternative G - Construct New Airport

Construction of a new airport is an alternative that will typically be favored by many residing close to the existing airport or those concerned with the impacts of the airport development on the environment. Relocating an airport, however, is very complex and expensive, especially when commercial service is involved.

In addition to the major financial investment, the development of a new commercial airport also takes a commitment of extensive land area. The location for a new site is usually undeveloped. As a result, the potential for impacts to wildlife habitat, wetlands, and cultural resources is higher than at an existing site which still has development capability.

A new airport also requires the duplication of investment in airport facilities and supporting access and infrastructure that are already available at the existing airport site. A new airport site would require the construction of an entirely new airfield, air passenger terminal facilities, general aviation facilities, as well as ground access. In addition, utilities such as water, sewer, electricity, and gas would have to be extended to a new site.

There are several constraints to finding a suitable alternative airport site in the Flagstaff vicinity. Mountainous terrain quickly limits the available search area. The terrain would not only affect the development of airport sites, but also could impact the ability to obtain an instrument approach. Airspace for local site options is also affected by several protected wilderness areas and national monuments and parks throughout the region.

Since a new airport would involve new development on a much larger scale, in what would likely be a more pristine location, the potential impacts to wildlife and its habitat would be greater. The undeveloped environment is home to a wide variety of biotic communities including several potentially threatened or endangered species. Archeological sites also abound in the region, further increasing the potential for significant impacts at a new site.

The economic realities of relocating to a new airport must also be considered. The construction of a new major airport can require a financial commitment of a billion dollars or more. Virtually the entire cost of this development is financed by taxes, rates, and charges that are being paid by air travelers and the aviation industry as a whole. While it is appropriate that the airport user pay for aviation facilities and their operation, the airport proprietor still has a duty to be fiscally responsible.

The high costs associated with new airport development will continue to limit the number of new major facilities that the aviation industry and the public can absorb. Therefore, it is prudent to maximize existing public investment to meet future needs before abandoning that investment simply to duplicate it elsewhere.

There have been only two new major commercial service airports constructed in the United States in the last quarter century. Those airports were in Ft. Myers, Florida, and Denver, Colorado. Southwest Florida International Airport was constructed because the existing airport was in an urban location that was severely limited in runway length and room for terminal development. Denver International Airport was constructed primarily to replace an airport with some of the highest operational delays in the nation and with no feasible means to increase the airfield's capacity on-site.

Flagstaff Pulliam Airport does not experience any of these constraints, nor is it expected to experience severe development constraints for many years to come. Community planning has included the airport in its long range future. Given the investment in the existing facilities, and the ability to meet future needs, relocation to another location is neither prudent nor feasible.

This alternative would meet the identified purpose and need for the project; however, it would result in significantly greater environmental impacts than any of the on-airport development alternatives. An area not currently subject to aircraft noise would become so, potentially resulting in both noise and compatible land use impacts, and greater impacts to national parks, biological and historical/cultural resources are likely. This alternative is, therefore, determined to not be reasonable and is not further considered in this environmental analysis.

2.3 SUMMARY OF ALTERNATIVES CONSIDERED

As outlined within the *National Environmental Protection Act* (NEPA), alternatives can be eliminated from further consideration when they either don't meet the project's purpose and need or are deemed to not be reasonable. In general, a project is not reasonable if it is neither reasonable nor practical to implement or when the costs would likely exceed the benefit.

Table 2A contains a summary of the alternatives which were considered within this chapter. Each alternative was analyzed based on its ability to meet the stated purpose and need, whether it is feasible, and potential environmental impacts resulting from alternative implementation.

2.4 ALTERNATIVES TO BE CARRIED FORWARD FOR FURTHER CONSIDERATION

The proposed action alternative is described in detail within Chapter One, Section 1.1 of this EA. This alternative is reasonable and meets the stated purpose and need of the project. The potential environmental impacts resulting from implementation of the proposed action alternative will be evaluated, along with the no action alternative, within Chapter Four of this EA.

TABLE 2A
Summary of Alternatives Considered

Alternative	Meets Purpose & Need	Reasonable	Potential Environmental Impacts
A - Proposed Action, Extend Runway 3-21 1,801 feet to the northeast	Yes	Yes	• Noise impacts on surrounding residential areas decrease when compared to the existing condition or no action alternative. • Potential reduction in vehicular air quality impacts as the number of people traveling to Phoenix for air service decline. • Wetland and water quality impacts which will be mitigated through the permitting process. • Concerns raised by National Park Service regarding overflight of park units.
B – No Action	No	No. It is not reasonable to implement this alternative as it would threaten the viability of commercial air service for the City of Flagstaff.	• Noise impacts are higher than those that would occur with the proposed action. • Social and socioeconomic impacts resulting from the loss or decrease in commercial airline service to the area. • Air quality impacts resulting from the potential increase in passengers utilizing Phoenix Sky Harbor for commercial air service. • Concerns raised by National Park Service regarding overflight of park units.
C – Extend Runway 3-21 1,801 feet to the southwest	Yes	No. The cost to implement this alternative exceeds the costs of the proposed action and would require the relocation of an interstate highway.	• Increased noise impacts as the runway would be located closer to the neighborhoods southwest of the airport. • Social impacts due to the relocation or bridging of Interstate 17. • Potential impacts to wetlands and water quality. • Increased amount of fill material required when compared to the proposed action. • Concerns raised by National Park Service regarding overflight of park units.

TABLE 2A (Continued)
Summary of Alternatives Considered

Alternative	Meets Purpose & Need	Reasonable	Potential Environmental Impacts
D - 1,600-foot extension to the northeast and 200-foot extension to the southwest	Yes	No. Due to the increased amount of fill when compared to the proposed action, this alternative would be much more costly to implement.	• Increased noise impacts as the runway would be located closer to the neighborhoods located southwest of the airport. • Potential impacts to wetlands and water quality. • Increased amount of fill material required when compared to the proposed action. • Concerns raised by National Park Service regarding overflight of park units.
E - 1,200-foot extension to the northeast and 600-foot extension to the southwest	Yes	No. Due to the increased amount of fill when compared to the proposed action, this alternative would be much more costly to implement.	• Increased noise impacts as the runway would be located closer to the neighborhoods southwest of the airport. • Potential impacts to wetlands and water quality. • Increased amount of fill material required when compared to the proposed action. • Concerns raised by National Park Service regarding overflight of park units.
F – Upgrade Alternate Airport	No	No. The costs required to upgrade one of the existing airports to allow commercial service would be very high.	• Potential impacts in all impact categories, especially protected species, cultural resources, and noise. • Anticipate concerns from the National Park Service as all the alternate locations mentioned are in proximity to park units.
G – Construct New Airport	Yes	No. The costs to construct a new commercial service airport far exceed the costs of improving the existing airport.	• Potential impacts in all impact categories, especially protected species, cultural resources, and noise. • Anticipate concerns from the National Park Service as all the alternate locations mentioned are in proximity to park units.

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PULLIAM AIRPORT

Chapter Three

AFFECTED ENVIRONMENT

Chapter Three
AFFECTED ENVIRONMENT

The purpose of this chapter is to identify or highlight any important background materials that describe the existing environment at Flagstaff Pulliam Airport. Further discussions of existing environmental conditions are provided in Chapter Four.

3.1 AIRPORT BACKGROUND

Flagstaff Pulliam Airport has facilities capable of accommodating both commercial airline activity and general aviation users. Commercial service at the airport is provided by America West Express (operated by Mesa Airlines). General aviation activity accounts for the majority of all aircraft operations. These operations are performed by all segments of general aviation aircraft, including gliders, small engine aircraft, turboprop, and business jet aircraft.

3.1.1 LOCATION AND POLITICAL JURISDICTION

Flagstaff Pulliam Airport is located on approximately 795 acres on the southwest side of the City of Flagstaff, just to the east of Interstate 17. The airport's elevation of 7,011 feet above mean sea level (MSL) makes it the highest airport in the State of

Arizona. The City of Flagstaff and the airport are located within Coconino County and are adjacent to the Coconino National Forest.

The airport has excellent interstate access as it is situated just east of Interstate 17 and a few miles from the intersection of I-17 with I-40. Access to the airport is available from John Wesley Powell Boulevard's interchange with the Interstate. Secondary access is available from Lake Mary Road and South Pulliam Drive Boulevard. Exhibit 1A depicts the airport in its local and regional setting.

Flagstaff Pulliam Airport is owned and operated by the City of Flagstaff and is included within the Department of Public Works. A seven-member Airport Commission is responsible for reviewing and reporting to the Council on the development of the airport and on matters affecting the operation and efficiency of the airport, using the Airport Master Plan as a guide. The Airport Commission is appointed by the Mayor and City Council for staggered three-year terms.

3.1.2 EXISTING AIRPORT FACILITIES

The facilities at an airport can be divided into two distinct categories: airside facilities and landside facilities. Airside facilities include those directly associated with aircraft operation. Landside facilities include those necessary to provide an interface between surface and air transportation, as well as support aircraft servicing, storage, maintenance, and operational safety.

3.1.2.1 Airside Facilities

Airside facilities generally include, but are not limited to, runways, taxiways, connecting taxiways, airfield lighting, and navigational aids. As depicted on **Exhibit 3A**, Flagstaff Pulliam Airport has a single runway available for use. Runway 3-21 is oriented northeast-southwest, and is 6,999 feet long and 150 feet wide. The runway is constructed of asphalt with a porous friction course (PFC) surface. PFC is designed to promote drainage to reduce hydroplaning potential. The runway has a single wheel loading (SWL) strength of 30,000 pounds, a dual wheel loading (DWL) strength of 95,000 pounds, and a dual tandem wheel loading (DTWL) strength of 140,000 pounds. **Table 3A** summarizes the basic runway data.

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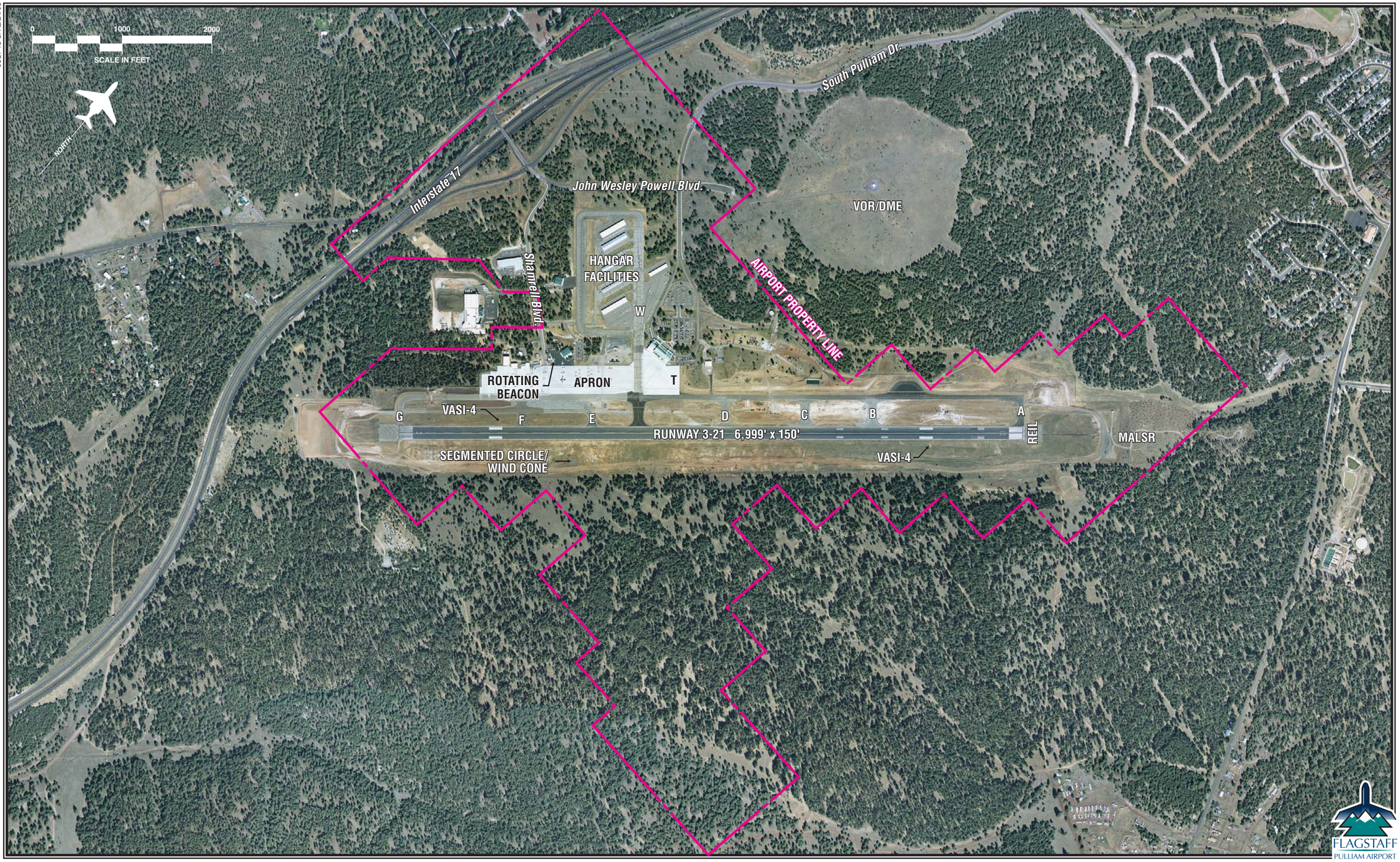

FLAGSTAFF PULLIAM AIRPORT

Exhibit 3A
EXISTING AIRFIELD FACILITIES

TABLE 3A
Runway Information
Flagstaff Pulliam Airport

	Runway	
	3	**21**
Runway Length (feet)	6,999	
Runway Width (feet)	150	
Runway Surface Material	Asphalt/Porous Friction Course	
Displaced Threshold	None	
Runway Load-Bearing Strength		
SWL	30,000	
DWL	95,000	
DTWL	140,000	
Approach Aids		
VASI	Yes	Yes
MALSR	No	Yes
Markings	Non-precision Instrument	Precision Instrument
Lighting	HIRL	
Instrument Approach Procedures	VOR, GPS	ILS, NDB, VOR, GPS
Traffic Pattern	Left	Left

Source: *Airport Facility Directory*, North Central United States, November 28, 2002

Notes:
SWL - Single wheel loading
DWL - Dual wheel loading
DTWL - Dual tandem wheel loading
VASI - Visual Approach Slope Indicator
MIRL - Medium intensity runway lighting
HIRL - High intensity runway lighting
MALSR - Medium intensity approach lighting system with runway alignment indicator lights

The airfield taxiway system includes a full-length parallel taxiway, along with several exit taxiways and connecting taxiways. The taxiway numbering system is identified on **Exhibit 3A**.

3.1.2.2 Landside Facilities

Landside facilities are essential to the daily operation of the airport and consist primarily of those facilities required to accommodate aircraft, pilots, and passengers while they are at the airport. Landside facilities at Flagstaff Pulliam Airport are depicted on **Exhibit 3A**.

The passenger terminal at Flagstaff Pulliam Airport was completed and put into service in 1993. The 21,700-square foot terminal building provides for airline tick-

eting, security screening, secure departure area, baggage claim, a restaurant, and rental cars. Airport administration offices, including a conference room, are located on the second floor.

In addition to commercial aviation facilities, general aviation facilities play a primary role in the overall activity at Flagstaff Pulliam Airport. It is general aviation that comprises the largest share of aircraft operations at the airport.

The general aviation area is located along the flight line, southwest of the passenger terminal complex. It is accessed by Shamrell Boulevard, which connects to the general aviation facilities from John Wesley Powell Boulevard. **Exhibit 3A** depicts the west general aviation terminal area.

3.1.3 SUPPORT FACILITIES

The availability of utilities serving Flagstaff Pulliam Airport is an important factor in determining the development potential of the airport property. Utilities are necessary to the daily operation of an airport and are an important factor when examining the future development at an airport.

Water and wastewater service is provided to the airport by the City of Flagstaff. Power is supplied by Arizona Public Service Company, and natural gas is provided by Citizen Utilities.

3.2 LAND USE

3.2.1 EXISTING LAND USE

Existing land uses surrounding Flagstaff Pulliam Airport, depicted on **Exhibit 3B**, consist of a mix of open space, industrial, and residential development. Areas immediately to the west and south of the airport are managed by the U.S. Forest Service and are currently undeveloped. Land uses to the north include a mixture of open space and low- and medium-density residential. East of the airport are large tracts of open space as well as low-density residential development.

3.2.1.1 Noise-Sensitive Institutions

Five noise-sensitive institutions are present within the study area. As illustrated in **Exhibit 3B**, these institutions are located in the northern portion of the study area and include two churches and three schools. The three schools consist of one elementary school, De Miguel Elementary; one charter school; and one community college, Coconino Community College. The two places of worship within the study area

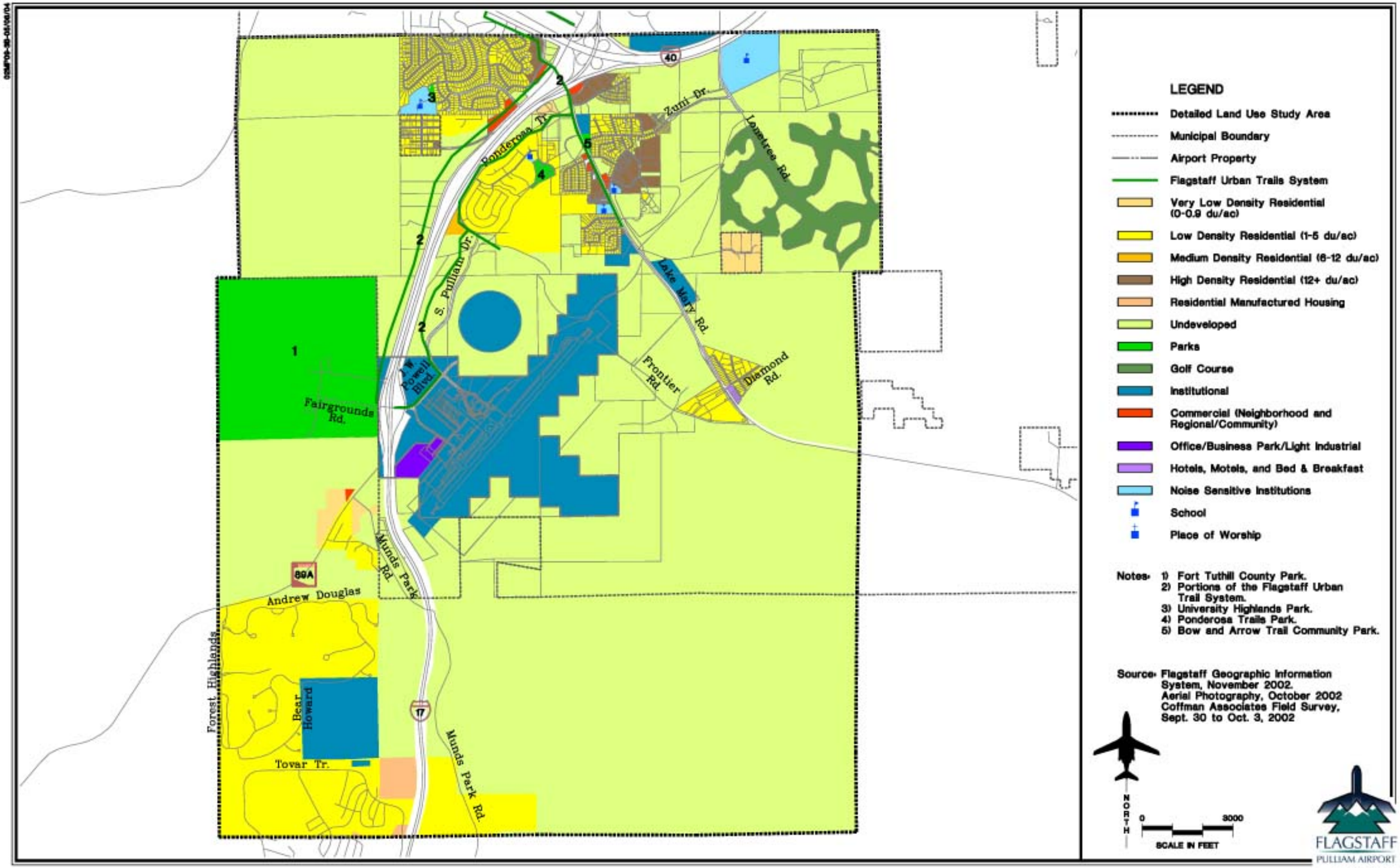

Exhibit 3B
GENERALIZED EXISTING LAND USE

include the Bethel Baptist Church and the Church of Jesus Christ of Latter Day Saints.

3.2.1.2 Public Parks and Recreation Areas

A number of public parks or recreation areas are found within the immediate study area. These areas are identified on **Exhibit 3B** and include the following:

- *Fort Tuthill County Park*. This park is located approximately two miles from the airport, just west of Interstate 17.
- *Portions of the Flagstaff Urban Trail System*. Portions of the Flagstaff Urban Trail System, which are located within the study area, connect the airport and Fort Tuthill County Park to downtown Flagstaff.
- *University Highlands Park*. This park is located approximately two miles north of the airport.
- *Ponderosa Trails Park*. This park is classified as a neighborhood park and is located less than one mile north of the airport.
- *Bow and Arrow Trail Community Park*. This park, also classified as a neighborhood park, is located one mile north of the airport.

The nearest National Park Unit is Walnut Canyon National Monument, which is located approximately nine miles east of the airport.

3.2.2 FUTURE LAND USE AND LAND USE PLANNING POLICIES

Flagstaff Pulliam Airport is located within the southwestern-most portion of the City of Flagstaff. The city limits for Flagstaff end just south and west of existing airport property. Therefore, in the Flagstaff Pulliam Airport study area, the City of Flagstaff and Coconino County share the responsibility for land use regulation. Both the City of Flagstaff and Coconino County have prepared and adopted general plans and zoning ordinances.

3.2.2.1 General Plan

The *Flagstaff Area Regional Land Use and Transportation Plan* was prepared by the City of Flagstaff and Coconino County. The plan is an expansion of and an update to the existing city and county general and comprehensive plans. The purpose of the plan is to provide a regional approach to planning in the Flagstaff region.

Planned future land uses around the airport, as presented within the *Flagstaff Area Regional Land Use and Transportation Plan,* are depicted on **Exhibit 3C**. As de-

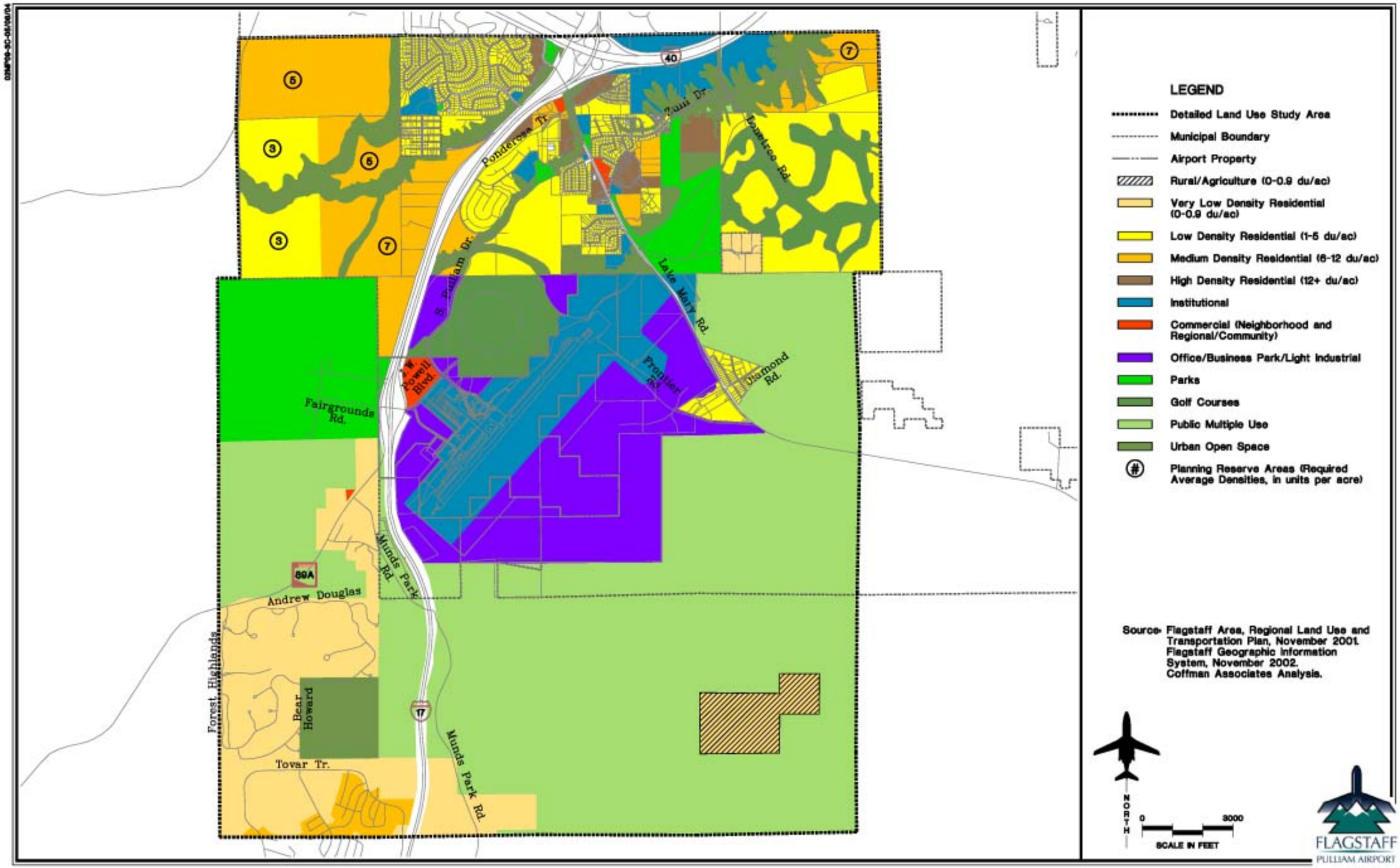

Exhibit 3C
GENERALIZED COMPREHENSIVE LAND USE

picted on the exhibit, future land uses are anticipated to be primarily industrial and commercial in nature to the north, east, and west, with open space to the south.

Within the Community Facilities and Services Element of the *Flagstaff Area Regional Land Use and Transportation Plan,* Strategy CFS1.3(b) - Continue Services at Flagstaff Pulliam Airport states the following. "The Flagstaff Pulliam Airport shall continue its development as a local service general aviation and commercial airport. The city shall seek to mitigate noise, safety, and other impacts of airport operations while assuring that new development in its proximity shall be compatible with existing and planned use of the airport per approved Airport Master Plan's usage and zoning."

This element also defines the Airport Noise Sensitive Zone as the areas within the 60 Ldn (DNL) noise contour established within the *1991 Flagstaff Pulliam Airport Master Plan*. Residential development is discouraged within this zone in the interest of protecting not only the airport, but also the general public.

3.3.2.2 Zoning Ordinances

While general plans are intended to establish policies to guide development and land use, cities and counties actually control land use through zoning ordinances and development codes. **Exhibit 3D** depicts the generalized zoning for the study area. The City of Flagstaff's zoning ordinance has established guidelines especially for those areas located in proximity to the airport. The following paragraphs summarize those guidelines. The zoning ordinance for Coconino County does not contain recommendations specific to the airport.

The zoning ordinance for the City of Flagstaff is contained within the Land Development Code. This code was adopted by the Flagstaff City Council on April 8, 1991. Within the code are a total of 35 zoning districts, including two overlay zones, one of which pertains to the airport, and an avigation easement zone.

Airport Overlay District. The purpose of this district is to ensure compatible development within airport environs. Both land use and height restrictions are outlined within the overlay district. Furthermore, the district is provided to inform land-owners and future landowners of the potential effect of airport operations on their property.

Three Airport Noise Impact Areas and one Clear Zone Area are established within these overlay zones. The purpose of the Clear Zone Area is to regulate the height of structures within the airport environs. The boundaries of the Airport Noise Impact Areas regulate land uses within the three impact areas. These impact areas change automatically as new contours are developed as part of the Airport Master Plan Updates. The boundaries of the three impact areas are described as follows:

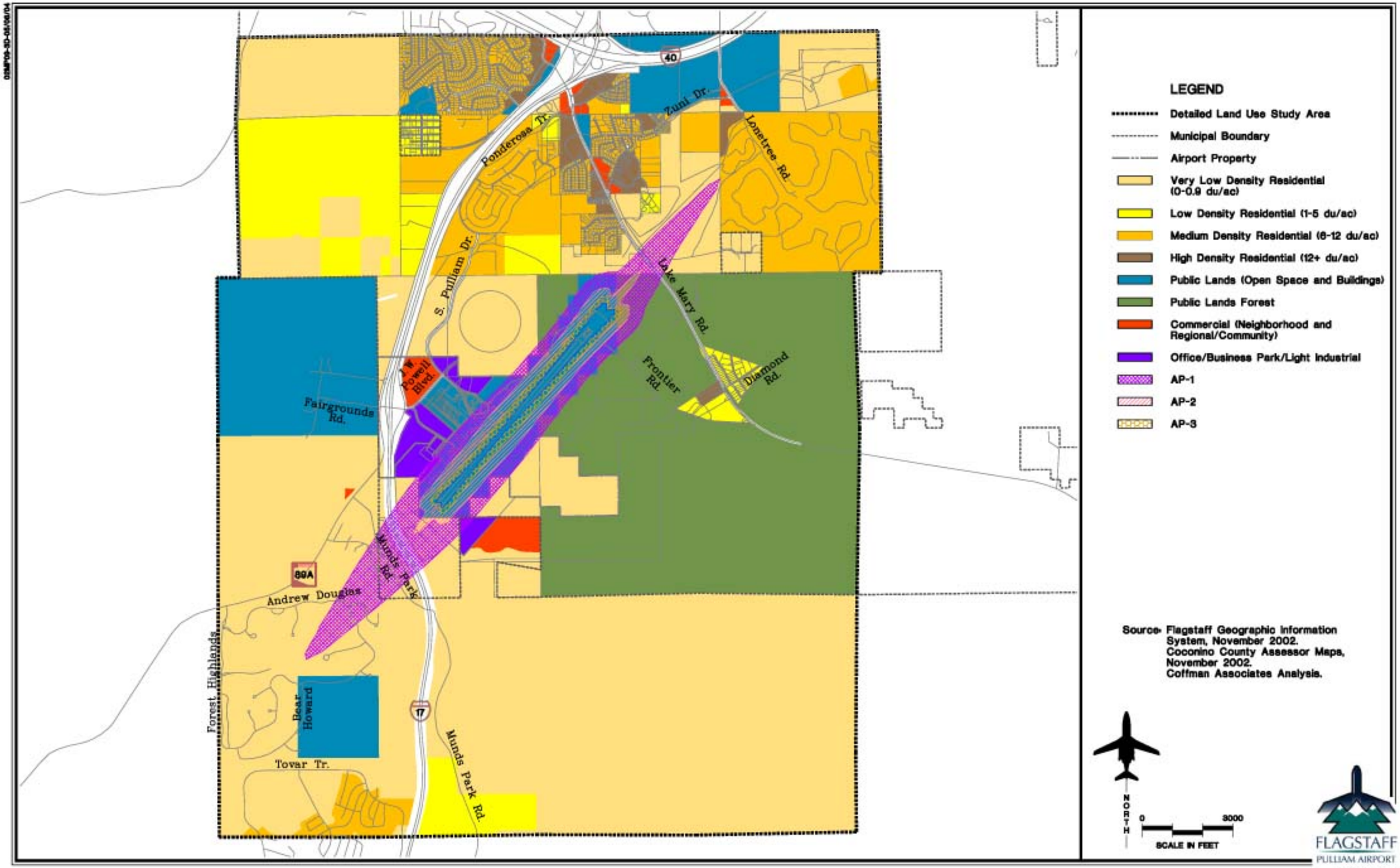

Exhibit 3D
GENERALIZED ZONING MAP

- AP-1 contains the areas within the 60 to 65 DNL noise contour.
- AP-2 contains the areas within the 65 to 70 DNL noise contour.
- AP-3 contains the areas within the 70 to 75 DNL noise contour.

Most types of development are allowed within zones AP-1 and AP-2; however, the construction of noise-sensitive development (i.e., residences) requires sound insulation be incorporated into the design of the structure. Development within zone AP-3 is limited to non-noise-sensitive development, such as industrial or commercial land uses.

Avigation Area Zone. The Avigation Area Zone (also referred to as the airport influence area) was established to protect the airport from continued encroachment and development, as well as to make existing and potential landowners aware of the impact the airport may have on property. The owners of property within the Avigation Area Zone shall dedicate an avigation easement to the City of Flagstaff upon one or more of the following events:

- Annexation into the City of Flagstaff.
- Rezoning for uses allowed under the Land Development Code.
- Approval of a subdivision plat or replat.
- Approval of a conditional use permit.
- Approval of a variance.
- Approval of a lot split.
- Approval of an amendment to the General Plan.
- Issuance of a building permit for a residential dwelling when the proposed construction is equal to either 50 percent of the square footage of the dwelling or 50 percent of the appraised value of the dwelling.

3.3 EXISTING ENVIRONMENT

This section provides background information on the existing natural and cultural environment within and surrounding Flagstaff Pulliam Airport. Sources of this include coordination received from various resource agencies (copies contained within **Appendix B**) as well as numerous surveys and studies. Further descriptions of the existing environment surrounding the airport are contained within Chapter Four of this Environmental Assessment (EA).

3.3.1 NATURAL RESOURCES

Wetlands/Waters of the U.S./Floodplains – In September 2004, the U.S. Army Corps of Engineers delineated the jurisdictional limits of the Waters of the U.S. for the areas proposed for development. A copy of this delineation is included within **Appendix G** of this EA. **Exhibit 3E** depicts the results of the jurisdictional deter-

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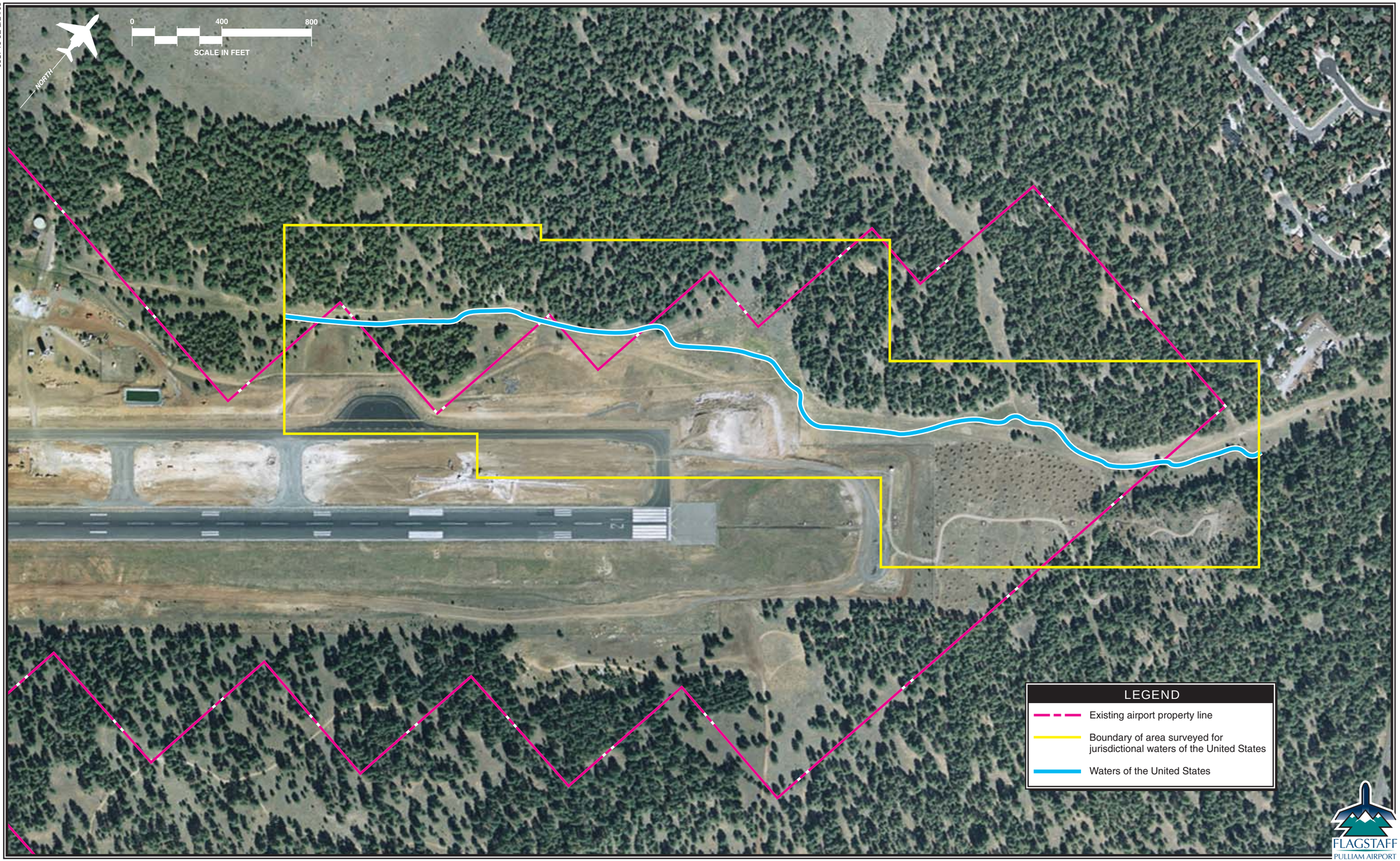


Exhibit 3E
WETLANDS AND WATERS OF THE U.S.

mination. As indicated on the exhibit, the defined Waters of the U.S. extend along the northwestern edge of Taxiway A. According to the Flood Insurance Rate Maps prepared by the Federal Emergency Management Agency, the airport is located outside a 100-year floodplain.

Air Quality – The Flagstaff area is classified as being in attainment for all criteria pollutants.

Biotic/Threatened and Endangered Species – The airport property consists primarily of flat to gently sloping terrain. Vegetation within the project area is dominated by herbaceous species such as yellow sweet clover, white clover, scarlet gaura, and sunflower. Ponderosa pine trees are the most common tree and grow in nearly pure stands outside the airport fencing. A Biological Assessment was completed by Aztec Research & Consulting for portions of airport property which would be affected by the proposed airport improvements, as well as the areas north of the airport which would be included within the extended runway protection zone. This document is included in **Appendix F** of this EA. Within this study, a number of federally and state listed species were identified which are listed as known to occur, or having the potential to occur, in Coconino County. A list of these species is contained within **Table 3B**.

TABLE 3B
Species of Concern Potentially Found in Project Area

Common Name	Scientific Name	Federal Status	State Status
Mexican Spotted Owl	Strix occidentalis lucida	Threatened	Wildlife of special concern
Bald Eagle	Haliaeetus leucoephalus	Threatened	Wildlife of special concern
Northern Goshawk	Accipiter gentilis	Species of concern	Wildlife of special concern
Allen's Big-eared Bat	Idionycteris phyllotis	Species of concern	Not listed
Flagstaff Pennyroyal	Hedeoma diffusum	Not listed	Salvage restricted species
Mogollon Columbine	Aquilegia desertorum	Not listed	Salvage restricted species

Source: *Biological Assessment for Pulliam Airport Master Plan Improvements*, Aztec Research & Consulting, LLC

Potential impacts to these species are evaluated for the no action and proposed action alternatives in Chapter Four of this EA.

Wild and Scenic Rivers – The Verde River is the only river listed as wild and scenic in the State of Arizona. This river is located approximately 25 miles west of the airport.

Wilderness Areas – A number of wilderness areas are present within north-central Arizona. Locations of these wilderness areas are depicted on Exhibit 2D located in Chapter Two.

Farmland/Coastal Resources – These resources are not present within the Flagstaff area.

3.3.2 CULTURAL RESOURCES

A pedestrian cultural resource survey was undertaken for the areas potentially impacted by the proposed development by Northland Research, Inc. Portions of the survey finding records are included in **Appendix D** of this document. Results of this survey indicated that no cultural, architectural, or archaeological resources are present within the surveyed areas.

3.4 SOCIOECONOMIC CHARACTERISTICS

Information regarding the socioeconomic characteristics of the study was obtained from the City of Flagstaff, the Arizona Department of Economic Security, and the U.S. Census Bureau. The purpose of this section is to provide background material which will be utilized in the social and socioeconomic discussions within Chapter Four of this EA.

3.4.1 ECONOMIC PROFILE

The City of Flagstaff classifies itself as a governmental, educational, transportation, cultural, and commercial center. Various forms of the government make up the primary employment sector of the city; however, tourism is also a large employer as the city entertains over five million visitors a year.

Northern Arizona University (NAU) is the largest employer in the city. The campus is used year-round for educational purposes and also hosts many professional athletic organizations such as the Phoenix Cardinals, Phoenix Suns, and Olympic athletes. These organizations chose Flagstaff as a training site because of the climate, altitude, and the renowned High Altitude Sports Training Center. The Center invites athletes worldwide to train at the 7,000 feet elevation, which has proven to offer a competitive advantage. The Center offers facilities, health assessments, and other services to these international athletes.

Tourism is a year-round industry attracting skiers in the winter, vacationers in the summer, and sightseers viewing the aspen turning gold in the fall. Non-city residents provided an estimated 50 percent of sales tax revenue in 2004.

The city is also home to four business and industrial parks which are situated in close proximity to Interstates 40 and 17. Major manufacturers in the area include W.L. Gore & Associates (of Gortex renown), manufacturer of medical equipment;

Nestle Purina Petcare Products, manufacturer of pet food; SCA Tissue, manufacturer of tissue paper; and Joy Cone, manufacturer of ice cream cones. Joy Cone is located within the airport's industrial park.

3.4.2 POPULATION

Historical and forecasted population estimates for the City of Flagstaff, Coconino County, and the State of Arizona are presented in **Table 3C**. As indicated in the table, the population of the city, county, and state have dramatically increased since 1970, with the State of Arizona having the greatest average annual increase. The forecasts indicate that growth in the area is expected to slow and maintain the increase experienced during the 1990s.

TABLE 3C
Population Trends (1970-2020)

Year	City of Flagstaff	Average Annual Increase (%)	Coconino County	Average Annual Increase (%)	State of Arizona	Average Annual Increase (%)
Historical Population						
1970	26,117	NA	48,326	NA	1,775,399	NA
1980	34,641	2.86	75,008	4.50	2,716,546	4.34
1990	45,857	2.84	96,591	2.56	3,665,339	3.05
2000	52,894	1.44	116,320	1.88	5,130,632	3.43
Forecast Population						
2005	66,552	NA	135,595	NA	5,553,849	NA
2010	71,981	1.58	147,352	1.68	6,145,108	2.09
2020	81,975	1.31	169,343	1.40	7,363,604	1.85

Source: Arizona Department of Economic Security, 2000 U.S. Census

Table 3D provides a further breakdown of the City of Flagstaff's 2000 population by race. This information is important as it will assist with the environmental justice impact analysis contained within Chapter Four of this EA. According to the 2000 census, five census tracts are located in close proximity to the airport. The table provides a further breakdown of the minority makeup of those areas surrounding the airport.

TABLE 3D
Study Area Population Breakdown by Race

Location	Total Population	Minority Population	Minority Percentage
Coconino County	116,320	49,351	42.4%
City of Flagstaff	52,894	20,180	38.1%
Tract #9	2,984	791	26.5%
Tract #10	4,495	1,032	22.9%
Tract #11	8,669	2,667	30.8%
Tract #14	4,744	686	14.5%
Tract #15	3,640	527	14.5%

Source: Arizona Department of Economic Security, 2000 U.S. Census

3.5 PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS

The purpose of this section is to outline those projects which will need to be considered during the cumulative impact analysis in Chapter Four of this EA. *Council on Environmental Quality* (CEQ) Section 1508.7 defines cumulative impact as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Past projects are defined as those which have been undertaken over the past few years. Foreseeable future actions are defined as those which are likely to become a reality and have begun the approval design or construction processes. Projects which are conceptual in nature are not considered as they may or may not be undertaken. For example, the *2005 Flagstaff Pulliam Airport Master Plan* provides for a parallel runway at the airport. This runway may or may not become a reality based on the operations at the airport. If operations do not reach a specified level, the runway will not be constructed. Since that operational threshold is not anticipated to be reached within the near term (i.e., five to ten years out), the potential impacts of construction of the parallel runway will not be included within this analysis. Another example is the designated business/industrial park which is located next to the airport. This area has been divided into parcels for development. Only those parcels which have been reserved and are currently being either constructed on, or building permits are being obtained for, will be evaluated for cumulative impacts.

3.5.1 AIRPORT DEVELOPMENT

Over the past five years, a number of projects have been undertaken at Flagstaff Pulliam Airport. These projects include runway safety area improvements and the removal of obstructions to the airport's Part 77 surface. Projects planned for development in the near term include those outlined within this EA: construction of an aircraft rescue and fire fighting building, widening of JW Powell and Pulliam Drive, development of airport perimeter roads, construction of the east parallel taxiway, and airport maintenance projects such as apron preservation.

3.5.2 U.S. FOREST SERVICE LAND EXCHANGE

A land exchange is currently ongoing between the U.S. Forest Service and the Yavapai Ranch Limited Partnership. This land exchange will consolidate 110 square miles of "checkerboard," alternating sections of federal and private lands within the Prescott National Forest, and bring under U.S. Forest Service manage-

ment approximately 35,000 acres of the Yavapai Ranch. The 35,000 acres of Yavapai Ranch lands include old growth woodlands, rare wildlife habitats, a vital watershed, and important cultural and archaeological sites. In exchange for this ranch land, approximately 21,250 acres of U.S. Forest Service parcels will be conveyed to Yavapai Ranch who then, in turn, has committed to sell portions of the property to various cities, towns, and youth camps. The City of Flagstaff will have the opportunity to purchase much of the land surrounding the airport, including the area contained within the proposed action's runway safety area and runway protection zone. The city has indicated interest in the acquisition of this land after the land exchange is complete to allow for future airport development, as well as the acquisition of the safety areas associated with the extended runway. The acquisition of this land by the city will also allow for the creation of planned parks and the outright acquisition of the city's water treatment plan which is currently located on U.S. Forest Service property.

This land exchange is outlined in detail within Senate Bill 161, *Northern Arizona Land Exchange and Verde River Basin Partnership Act of 2005.* This bill was introduced before the U.S. Senate on January 25, 2005 and passed in July 2005. A similar bill was presented before the House of Representatives on January 26, 2005 and was passed on November 17, 2005. The bill is now awaiting the signature of the President of the United States. It is anticipated that the property needed for the runway extension will be available in 2007.

3.5.3 OTHER DEVELOPMENT

The City of Flagstaff's capital improvement program and the Arizona Department of Transportation's (ADOT) current and planned projects list was consulted to determine if any projects were planned in the vicinity of Flagstaff Pulliam Airport. The City of Flagstaff anticipates beginning construction on various segments of the Flagstaff Urban Trails System. The new segments would begin approximately one mile north of the airport and would tie in with other existing trails near the NAU campus. Other than routine maintenance projects, ADOT has scheduled no other major undertakings.

FLAGSTAFF
PULLIAM AIRPORT

Chapter Four

ENVIRONMENTAL CONSEQUENCES

Chapter Four
ENVIRONMENTAL CONSEQUENCES

FAA Orders 1050.1E, *Environmental Impacts: Policies and Procedures*, and 5050.4A, *Airport Environmental Handbook*, defines the form and content of Environmental Assessments (EAs), and requires that an impact analysis be conducted for a number of specific categories to determine whether a potential for significant environmental impact from the proposed improvements exists. Impacts are determined by comparing the anticipated local environmental condition after development (implementation of the proposed action alternative) to the conditions on and around the airport should no project be developed (implementation of the no action alternative). Data regarding the existing condition is provided as background and supplemental information. Where necessary, mitigation measures are discussed which would reduce or eliminate anticipated environmental impacts for each of the alternatives.

For the purposes of this EA, the environmental consequences were determined for the following:

- No action alternative; and,

- Proposed action alternative (Alternative A), resulting in the extension of Runway 3-21 and Taxiway A 1,800 feet to the northeast. Implementation of this alternative will require the filling and grading for the required runway safety area

(RSA), extension of the high intensity runway lights (HIRL) and medium intensity taxiway lights (MITL), relocation and extension of the existing airport service road, and use of borrow materials from the southeastern portions of airport property. To provide for the resulting extended runway safety area (RSA) and runway protection zone (RPZ), these areas will be acquired in fee by the airport as described in Section 1.1 of Chapter One.

In accordance with the *Council on Environmental Quality* (CEQ) guidance, as contained within 40 CFR 1508, the environmental consequences of each impact category include consideration of the following:

- *Direct effects and their significance.* Direct effects are defined as those which are caused by the action and occur at the same time and place.

- *Indirect effects and their significance.* Indirect effects are defined as those which are caused by the action and are later in time or further removed in distance.

- *Cumulative effects and their significance.* Cumulative impacts are defined as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes the other actions. Past, present, and reasonably foreseeable future actions which will be evaluated were described within Chapter Three, Section 3.5 of this EA. *Only those past, present, and future actions that incrementally contribute to the cumulative effects on resources affected by the proposed action will be considered.* Therefore, resources which are not significantly affected by the proposed action will not be evaluated for cumulative impacts, unless such an evaluation was requested by a resource agency. A detailed cumulative impacts discussion is contained within Section 4.20.

Where necessary, mitigation measures are discussed which would reduce or eliminate anticipated environmental impacts for each of the alternatives. The no action alternative establishes the baseline impact level for the environmental consequences analysis.

The following sections contain a detailed impact analysis for those categories as defined within Appendix A of FAA Order 1050.1E and paragraph 47(e) of FAA Order 5050.4A. The order of the impact categories deviates from what is presented within the appendix in order to allow for a more streamlined presentation of the potential impacts.

4.1 NOISE

Aircraft sound emissions are often the most noticeable environmental impact an airport will produce on a surrounding community. If the sound is sufficiently loud or frequent in occurrence, it may interfere with various activities or otherwise be considered objectionable. To determine noise-related impacts that the proposed action could have on the environment surrounding the airport, noise exposure patterns based on projected future aviation activity were analyzed.

4.1.1 AIRCRAFT NOISE ANALYSIS METHODOLOGY

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

INM describes aircraft noise in the *Yearly Day-Night Average Sound Level* (DNL). DNL accounts for the increased sensitivity to noise at night (10:00 p.m. to 7:00 a.m.) and is the metric preferred by the FAA, Environmental Protection Agency (EPA), and Department of Housing and Urban Development (HUD), among others, as an appropriate measure of cumulative noise exposure.

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

In addition to the mathematical procedures defined in the model, the INM has another very important element. This is a database containing tables correlating noise, thrust settings, and flight profiles for most of the civilian aircraft and many common military aircraft operating in the United States. This database, often referred to as the noise curve data, has been developed under FAA guidance based on rigorous noise monitoring in controlled settings. In fact, the INM database was developed through more than a decade of research, including extensive field measurements of more than 10,000 aircraft operations. The database also includes performance data for each aircraft to allow for the computation of airport-specific flight profiles (rates of climb and descent). The most recent version of the INM, Version 6.1, was used for modeling the noise condition for the purposes of this EA.

4.1.1.1 INM Input

A variety of user-supplied input data is required to use the INM. This includes the airport elevation, average annual temperature, airport area terrain, a mathematical definition of the airport runways, the mathematical description of ground tracks above which aircraft fly, and the assignment of specific take-off weights to individual flight tracks. In addition, aircraft not included in the model's database may be defined for modeling, subject to FAA approval.

Activity Data

Airport activity is defined as the take-offs and landings by aircraft operating at the facility; this is also referred to as aircraft operations. Activity is further described as either *local*, indicating aircraft practicing take-offs and landings (i.e., performing touch-and-go's), or *itinerant*, referring to the initial departure from or final arrival at the airport.

Existing airport activity (i.e., take-offs and landings, or operations by aircraft) was estimated using data prepared by Coffman Associates during the development of the *2005 Flagstaff Pulliam Airport Master Plan Update*. **Table 4A** provides a breakdown of operations for the existing condition as well as the two forecast years (2006 and 2011) for the no action and proposed action alternatives.

Fleet Mix

The selection of individual aircraft types is important to the modeling process because different aircraft types generate different noise levels. The aircraft fleet mix was derived from the forecasts developed for the 2004 Master Plan Update. **Table 4A** summarizes the generalized fleet mix data input into the noise analysis.

It must be noted that forecast operations are slightly higher for the no action alternative. This is because the no action passenger aircraft, the Beech 1900, has only 19 seats versus the regional jet which has 50 seats. Even though the no action passenger level is 55 percent of the proposed action passenger level in 2008, the seating capacity of the Beech 1900 aircraft is 38 percent smaller than the regional jet. Therefore, it would take more Beech 1900 flights to meet the passenger demand forecasted for the airport than the regional jet. Without the proposed improvements, the regional jet would not be able to operate at the airport and the Beech 1900 would be the likely alternative aircraft.

Database Selection

In order to select the proper aircraft from the INM database, a review of the current fleet mix for Flagstaff Pulliam Airport was conducted. Different aircraft types generate different noise levels; therefore, selection of individual aircraft plays an important role in the noise modeling process. The following paragraphs outline the database selections used for input into the INM.

- **Air Carrier/Commuter**. Regional jet and turbo-prop aircraft in the commuter fleet are represented by the INM designators CL601, CL600, DHC8, and DHC6.

- **Air Taxi/Air Cargo**. Air taxi and air cargo operations are distributed between six generalized aircraft types. The single-engine piston, multi-engine piston, light turbo-prop, heavy turbo-prop, Lear 35, and Boeing 737 are modeled with INM designators GASEPF, BEC58P, CNA441, HS748A, LEAR35, and 737-300, respectively.

- **Business Jet Aircraft**. For the business jet fleet, the CNA500 effectively represents the Cessna Citation I, II, and V series aircraft. The LEAR25 is used to represent the LearJet 23, 24, and 25 series aircraft. Aircraft such as the Lear 30, 40, 50, and 60 series, in addition to the Hawker 800 and 1000, are effectively represented by the LEAR35 designator. Both the Canadair Challenger 600 and Falcon 2000 are modeled using the CL600. The GV represents the Gulfstream V series of aircraft.

- **Turbo-Prop Aircraft**. The CNA441, typically the Cessna 441, effectively represents the light turbo-prop aircraft such as the Beech King Air, Cessna 402, Gulfstream Commander, and others.

- **Multi-Engine Aircraft**. The database list recommends the BEC58P, the Beech Baron, to represent the light twin-engine aircraft such as the Piper Navajo, Beech Duke, Cessna 31, and others.

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

- **Military**. Military fixed wing aircraft are modeled with INM designators C-12. Military helicopter operations are modeled with the Bell 212 (B212) helicopter.

- **Helicopter**. The FAA's Helicopter Noise Model (HNM) provided information for helicopter modeling. Data extracted from the HNM for the B206L, typically the Jet Ranger, served to simulate helicopter operations at the airport.

All the above choices conform to the Pre-Approved Substitution List published by the FAA Office of Environment and Energy (AEE) branch in Washington, D.C.

TABLE 4A
Operations Summary and Fleet Mix Data
Flagstaff Pulliam Airport

Aircraft Type	INM Designator	2003[1] Existing	2006[2] No Action	2006[2] Proposed Action	2011[2] No Action	2011[2] Proposed Action
AIRLINES						
CRJ-200/700	CL601	0	0	3,200	0	6,078
EMB-135	CL600	0	0	0	0	0
DH-8	DHC8	3,324	1,108	1,108	0	0
B-1900	DHC6	0	3,667	0	6,018	0
Subtotal		***3,324***	***4,775***	***4,308***	***6,018***	***6,078***
AIR TAXI/CARGO						
B737	737300	37	46	46	147	147
Heavy Turbo-prop	HS748A	90	130	130	229	229
Lear 35	Lear 35	800	933	933	1,159	1,159
Light Turbo-prop	CNA441	3,100	3,233	3,233	3,494	3,494
MEP	BEC58P	2,100	2,100	2,100	2,012	2,012
C208	GASEPF	1,000	1,067	1,067	1,047	1,047
Subtotal		***7,127***	***7,509***	***7,509***	***8,088***	***8,088***
GA ITINERANT						
Single-Engine Piston - Fix Pitch	GASEPF	11,900	12,767	12,767	13,694	13,694
Single-Engine Piston - Var. Pitch	GASEPV	11,900	12,768	12,768	13,694	13,694
Multi-Engine Piston	BEC58P	2,059	2,286	2,286	2,506	2,506
Turbo-prop	CNA441	1,500	1,833	1,833	2,176	2,176
Citation 500	CNA500	400	533	533	724	724
Lear 24	LEAR25	1,000	1,000	1,000	859	859
Lear 35	LEAR35	200	400	400	641	641
CL600	CL600	400	533	533	741	741
G-V	GV	100	167	167	271	271
Helicopter	B206L	1,200	1,333	1,333	1,471	1,471
Subtotal		***30,659***	***33,620***	***33,620***	***36,777***	***36,777***
GA LOCAL						
Single-Engine Piston - Fix Pitch	GASEPF	7,500	8,833	8,833	9,809	9,809
Single-Engine Piston – Var. Pitch	GASEPV	7,500	8,834	8,834	9,809	9,809
Multi-Engine Piston	BEC58P	1,000	1,133	1,133	1,235	1,235
Turbo-prop	CNA441	488	563	563	635	635
Helicopter	B206L	1,000	1,133	1,133	1,253	1,253
Subtotal		***17,488***	***20,496***	***20,496***	***22,741***	***22,741***
MILITARY						
Helicopter	B212	550	550	550	550	550
C-12	C12	330	343	343	350	350
Subtotal		***880***	***893***	***893***	***900***	***900***
Total		**59,478**	**67,293**	**66,826**	**74,524**	**74,584**

[1] Year 2003 operations are based on calendar year 2002 ATCT counts, with an adjustment for nighttime operations when the ATCT is closed.
[2] *2005 Flagstaff Pulliam Airport Master Plan, F.A.R. Part 150 Noise Compatibility Study*

Time-of-Day

The time-of-day at which operations occur is important as input to the INM due to the 10 decibel weighting of nighttime (10:00 p.m. to 7:00 a.m.) flights. In calculating airport noise exposure, one operation at night has the same noise emission value as 10 operations during the day by the same aircraft. While Flagstaff Pulliam Airport does have an airport traffic control tower (ATCT), it is closed between 7:00 p.m. and 7:00 a.m., October 1 to May 31, and from 9:00 p.m. to 6:00 a.m., April 1 to September 31. Specific counts for nighttime activity were derived from air carrier and cargo flight schedules, instrument flight rule (IFR) flight plans, as well as interviews with airport users and airport staff. Information obtained from these sources and interviews were used to determine nighttime aircraft operations (between 10:00 p.m. and 7:00 a.m.) for modeling the 2003 noise exposure contours. This percentage of operations was applied to both the proposed action and no action scenarios.

Runway Use

Runway usage data is another essential input to the INM. For modeling purposes, wind data analysis usually determines runway use percentages. Aircraft will normally land and take-off into the wind. However, wind analysis provides only the directional availability of a runway and does not consider pilot selection, primary runway operations, or local operating conventions.

The runway usage at Flagstaff Pulliam Airport was established through discussions with the ATCT manager and staff. In addition, a supplemental wind analysis was conducted which supported that wind conditions are consistent for runway use as stated by the ATCT. **Table 4B** summarizes the runway use percentages for existing and future conditions. The runway use percentages are expected to remain the same for both the no action and proposed action alternatives.

TABLE 4B
Existing and Future Runway Use

Runway	Commercial	Business Jet	Military	G.A. Turbo-Prop & Piston
Arrivals and Departures				
3	30%	30%	30%	30%
21	70%	70%	70%	70%
Touch-and-Go Operations				
3	NA	NA	NA	20%
21	NA	NA	NA	80%

Flight Tracks

Flight track data utilized for input into the INM is depicted on **Exhibit 4A**. A review of local and regional air traffic control procedures, as well as interviews with ATCT staff, was used to develop consolidated flight tracks. Although the consolidated flight tracks appear as distinct paths in the INM, they actually represent average flight routes and illustrate areas of the surrounding community where aircraft operations can be expected most often. At airports such as Flagstaff Pulliam Airport, aircraft traffic is expected over most areas around the airport. Air traffic density generally increases nearer the airport as it is funneled to and dispersed from the runway system. The consolidated tracks were developed to reflect these common patterns and to account for the variety of flight track dispersions around the airport.

Flight Profiles

The standard arrival profile used in the INM program is a three-degree approach. No indication was given by airport staff that there was any variation on this standard procedure; therefore, the standard approach was included in the model as representative of local operating conditions.

INM Version 6.1 computes the take-off profiles based on the user-supplied airport elevation and average annual temperature entries in the input batch. At Flagstaff Pulliam Airport, the elevation is 7,014 feet mean sea level (MSL) and the average annual temperature is 45.8 degrees Fahrenheit (F). If other than standard conditions (temperature of 59 degrees F and elevations of zero feet MSL) are specified by the user, the profile generator automatically computes the take-off profiles using the airplane performance coefficients in the database and equations in the Society of Aeronautical Engineers, *Aerospace Information Report 1845* (SAE/AIR 1845).

The INM computes separate departure profiles (altitude at a specified distance from the airport with associated velocity and thrust settings) for each of the various types of aircraft using the airport.

4.1.1.2 INM Output

Output data selected for calculation by the INM were annual average noise contours in DNL. The DNL is a measure of the 24-hour noise level of a community to allow for comparison between the no action and proposed action alternatives.

Computer files developed from data described in the previous section provided input to the INM, which generated output files for years and alternatives being evaluated. In accordance with FAA Orders 1050.1E and 5050.4A, the 65, 70, and 75 DNL noise

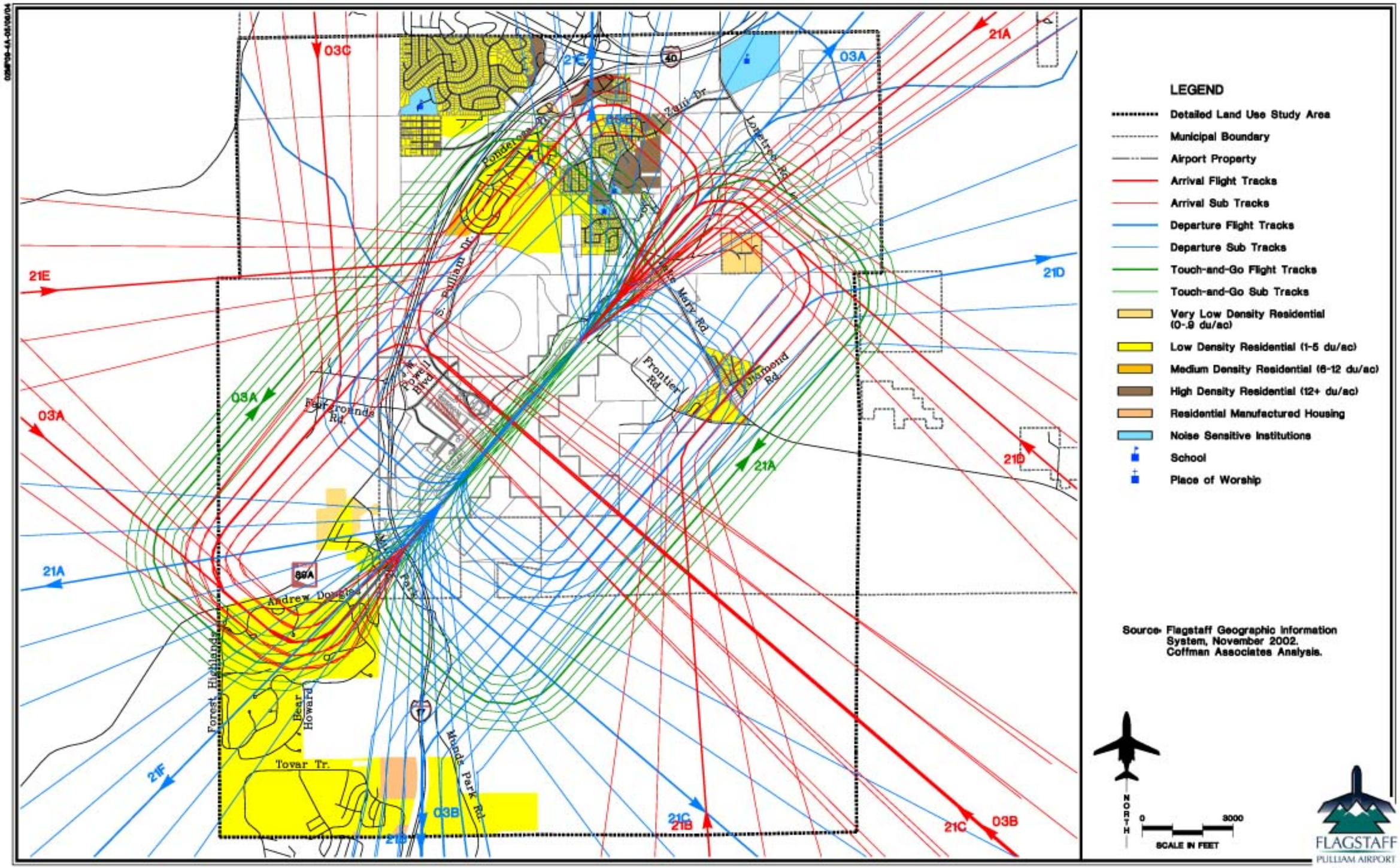


Exhibit 4A
GENERALIZED CONSOLIDATED FLIGHT TRACKS

contours were produced for each alternative. Contours were prepared for the following: existing conditions (2003); proposed action alternative, year of implementation (2006) and five years beyond (2011); and the no action alternative for the years 2006 and 2011.

4.1.2 THRESHOLDS OF SIGNIFICANCE

FAA Orders 1050.1E and 5050.4A define a significant noise impact as one which would occur if the proposed action would cause noise-sensitive areas to experience an increase in noise of 1.5 DNL or more, at or above the 65 DNL noise exposure level when compared to the no action alternative for the same timeframe.

4.1.3 EXISTING CONDITION

The location of existing noise-sensitive land uses, in relation to the 2003 noise contours at Flagstaff Pulliam Airport, is shown on **Exhibit 4B**. Noise-sensitive land uses shown on the exhibit are based on Part 150 land use compatibility guidelines and include uses considered incompatible with noise above 65 DNL.

The shape and extent of the 2003 noise exposure contours reflect the underlying flight track assumptions. The outermost noise contour represents the 65 DNL contour. This contour is asymmetrical off the ends of Runway 3-21, reflecting the predominate flow to the southwest. To the northeast of Runway 3-21, the two bulges in the contour reflect arrival patterns, the straight-in approach, and the circling approach. To the southwest, the noise contour extends southward, across Interstate Highway 17. To the northeast, the contour becomes thinner and longer as the two approach paths merge into one.

At its longest point, the 65 DNL contour extends approximately 3,000 feet from the end of Runway 3 to the south. To the northeast, the contour extends approximately 2,200 feet from the end of Runway 21. The 70 DNL noise contour is smaller and similar in general shape to the 65 DNL contour. To the southwest, the 70 DNL contour extends approximately 1,400 feet off the end of Runway 3. To the northeast, the 70 DNL contour is completely contained within airport property. The 75 DNL contour remains close to the runway and is contained entirely on airport property.

The number of dwelling units within each noise contour range is determined by computer-generated counts based on an underlying housing database. (Dwelling units, for the purposes of this study, include single-family homes, mobile homes, and apartment and condominium units.) This database was developed with the use of geographical information system (GIS) data provided by the Flagstaff Planning Department in November 2002, aerial photography taken in October 2002, and field surveys conducted in late September and early October 2003. The 2003 land use

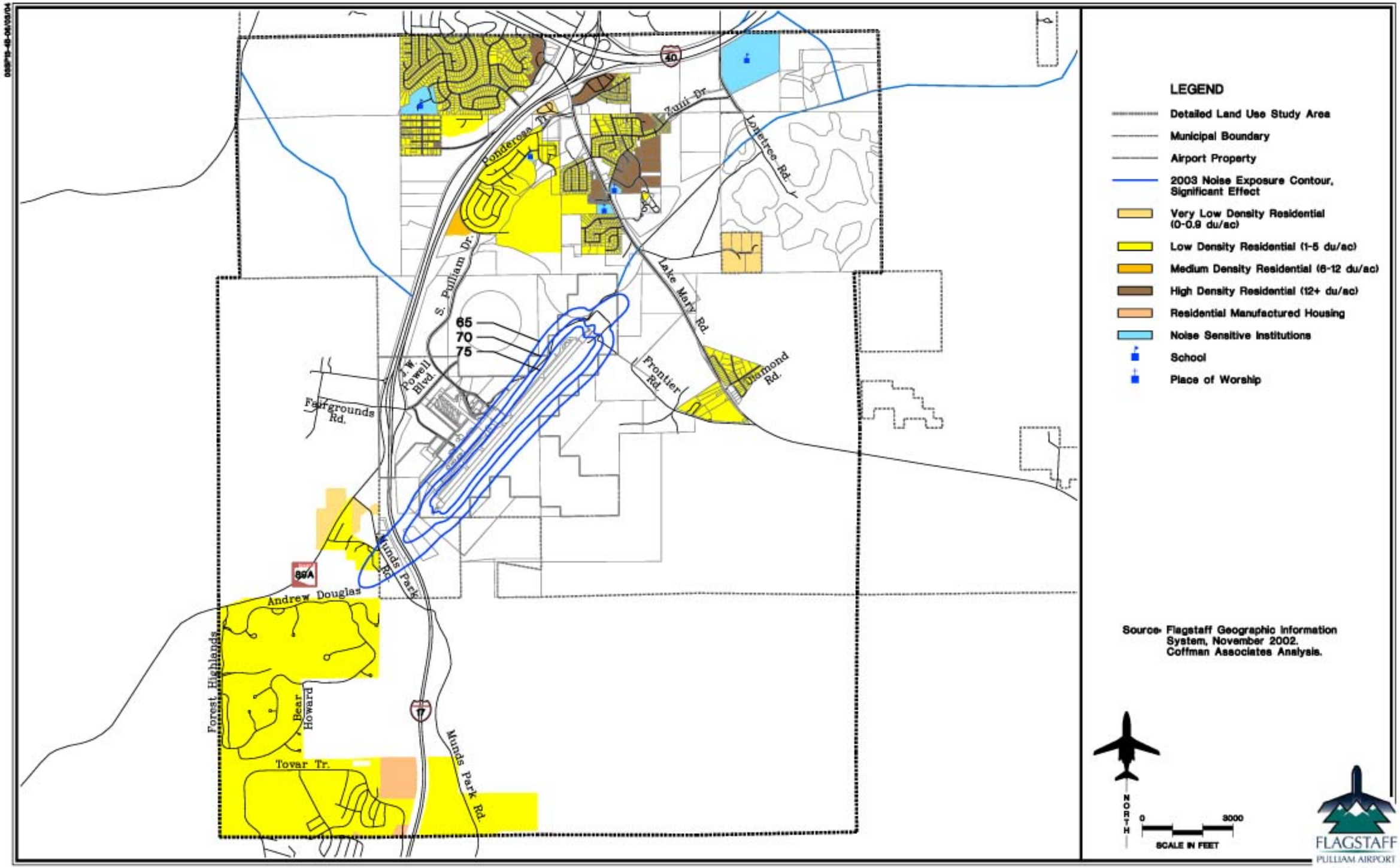


Exhibit 4B
2003 NOISE EXPOSURE CONTOUR

impacts are summarized in **Table 4C.** A total of fourteen dwelling units are located within the 2003 65 DNL noise contour. These units are all located southwest of the airport and consist of single-family homes.

No noise-sensitive institutions are contained within the various noise contours.

4.1.4 ENVIRONMENTAL CONSEQUENCES

In accordance with FAA Orders 1050.1E and 5050.4A, the anticipated noise condition for both the proposed action and no action alternatives has been developed for the anticipated year of project implementation (2006) and five years from the implementation date (2011).

As outlined within **Table 4A**, noise modeling input assumptions for the proposed action and no action alternatives assumed different commercial service fleet mixes. Under the proposed action alternative, the regional jet is introduced in 2006. The no action alternative assumes the continued use of Dash 8 and the introduction of the Beech 1900 aircraft in 2006. By 2011, the proposed action assumes sole use of the regional jet for commercial airline service and the no action alternative assumes sole use of the Beech 1900 for commercial airline service. Due to the smaller number of seats available on the Dash 8 and Beech 1900 aircraft, it was assumed that a higher number of operations by these aircraft would be required to meet the commercial airline service demands. Therefore, the total number of commercial service operations in 2006 is higher under the no action alternative than the proposed action alternative.

Flight track input assumptions for the two alternatives also differed. It was determined that, as the market for commercial airline service grows, demand for additional destinations other than Phoenix for travelers to and from Flagstaff would likely grow; therefore, a commercial service provider would likely realize a benefit should additional destinations be offered. Under the proposed action alternative, additional markets such as Salt Lake City, Los Angeles, and Denver could be accommodated with the use of the regional jet. The no action alternative also assumes that additional destinations could be served; however, service is limited to the Beech 1900 or Saab 340 aircraft. These aircraft are slower than the regional jet and fly at lower altitudes; therefore, the only likely market which could be added would be Salt Lake City. Introduction of these additional markets resulted in a slight change to the flight track assumptions as aircraft were added to the flight tracks which would take the traveler to the additional destinations.

The following sections outline the results of the noise modeling efforts for the proposed action and no action alternatives.

4.1.4.1 Proposed Action

2006 Noise Impacts. The proposed action 2006 noise contours are depicted on **Exhibit 4C.** For comparison purposes, the no action 2006 noise contours are also depicted on this exhibit. The no action contours are discussed in detail within the following section.

The 2006 proposed action 65 DNL noise contour extends southwest approximately 3,000 feet from the end of Runway 3. To the northeast, the contour remains within the proposed acquisition area and extends approximately 600 feet off the end of extended Runway 21. The 70 and 75 DNL noise contours are contained within the airport's avigation easements.

Two dwelling units are contained within the 2006 proposed action 65 DNL noise contour. These dwelling units consist of single-family homes and are located southwest of the airport.

2011 Noise Impacts. The proposed action 2011 noise contours are depicted on **Exhibit 4D.** As was described for the 2006 noise condition, the no action 2011 noise contours are also depicted on this exhibit for comparison purposes.

Even with the forecasted increase in operations at the airport, the 2011 proposed action noise contours are smaller than those prepared for 2006. This is primarily a result of the gradual nationwide reduction in the number of older, louder aircraft. The 65 DNL noise contour extends southwest approximately 2,700 feet from the end of Runway 3. To the northeast, the contour remains within the proposed property acquisition area and extends approximately 600 feet off the end of extended Runway 21. The 70 and 75 DNL noise contours are contained within the airport's avigation easements.

No dwelling units are contained within the 2011 proposed action 65 DNL noise contour.

Indirect noise impacts primarily relate to those that occur during construction of the proposed airport improvements. These impacts are discussed further within Section 4.18.

As described in Chapter Three, a number of development projects are anticipated to occur in the future. These projects include occasional on-airport projects, road widening projects, nearby ADOT routine maintenance projects, and the development of various segments of the Flagstaff Urban Trails System. Noise impacts related to these development projects consist primarily of construction-related noise impacts which are discussed within Section 4.18. The result of the proposed action, when considered with these other development actions in the area, is not anticipated to result in significant cumulative impacts to neither the existing noise condition nor

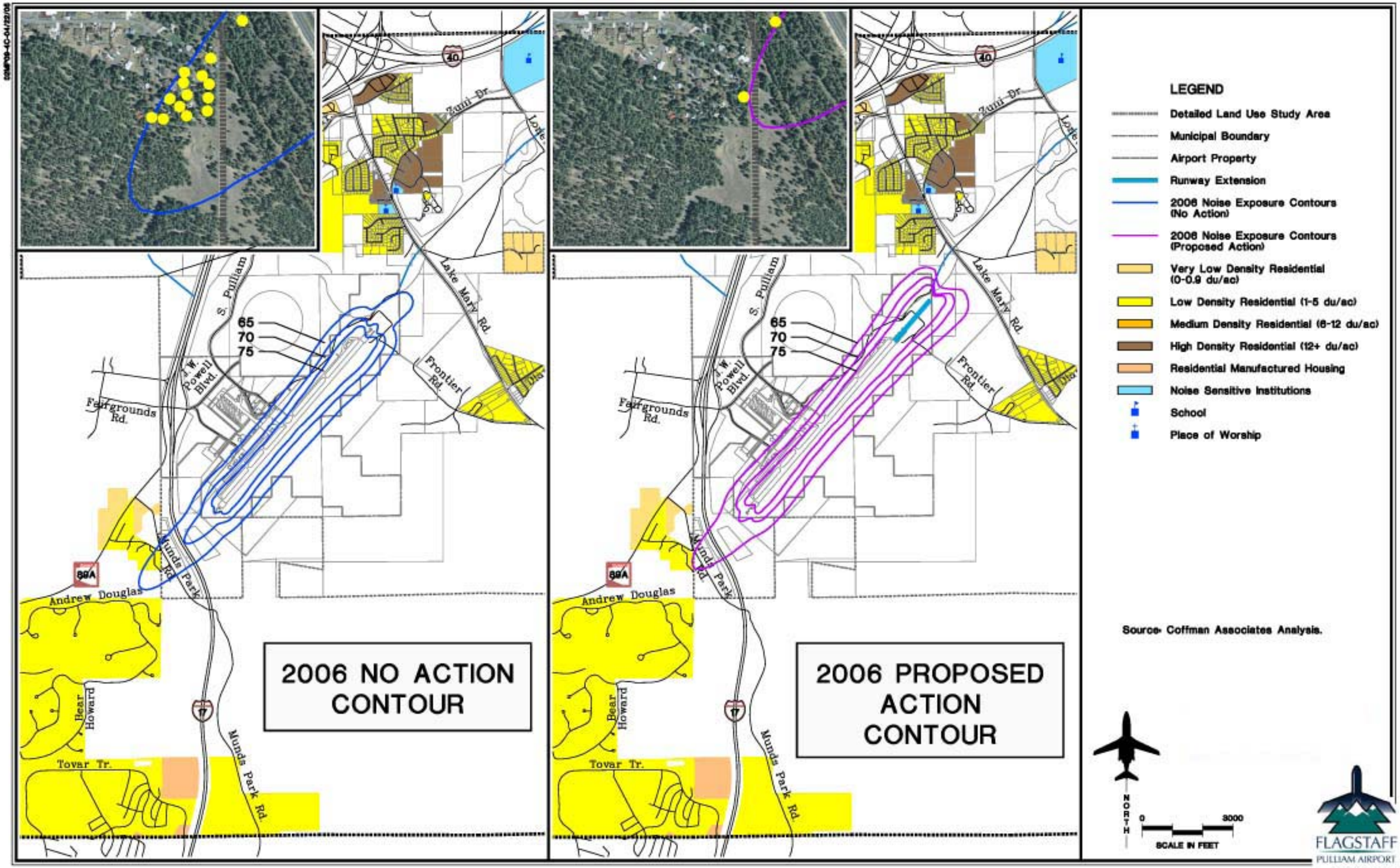


Exhibit 4C
2006 ACTION-NO ACTION CONTOURS WITH NOISE SENSITIVE LAND USE

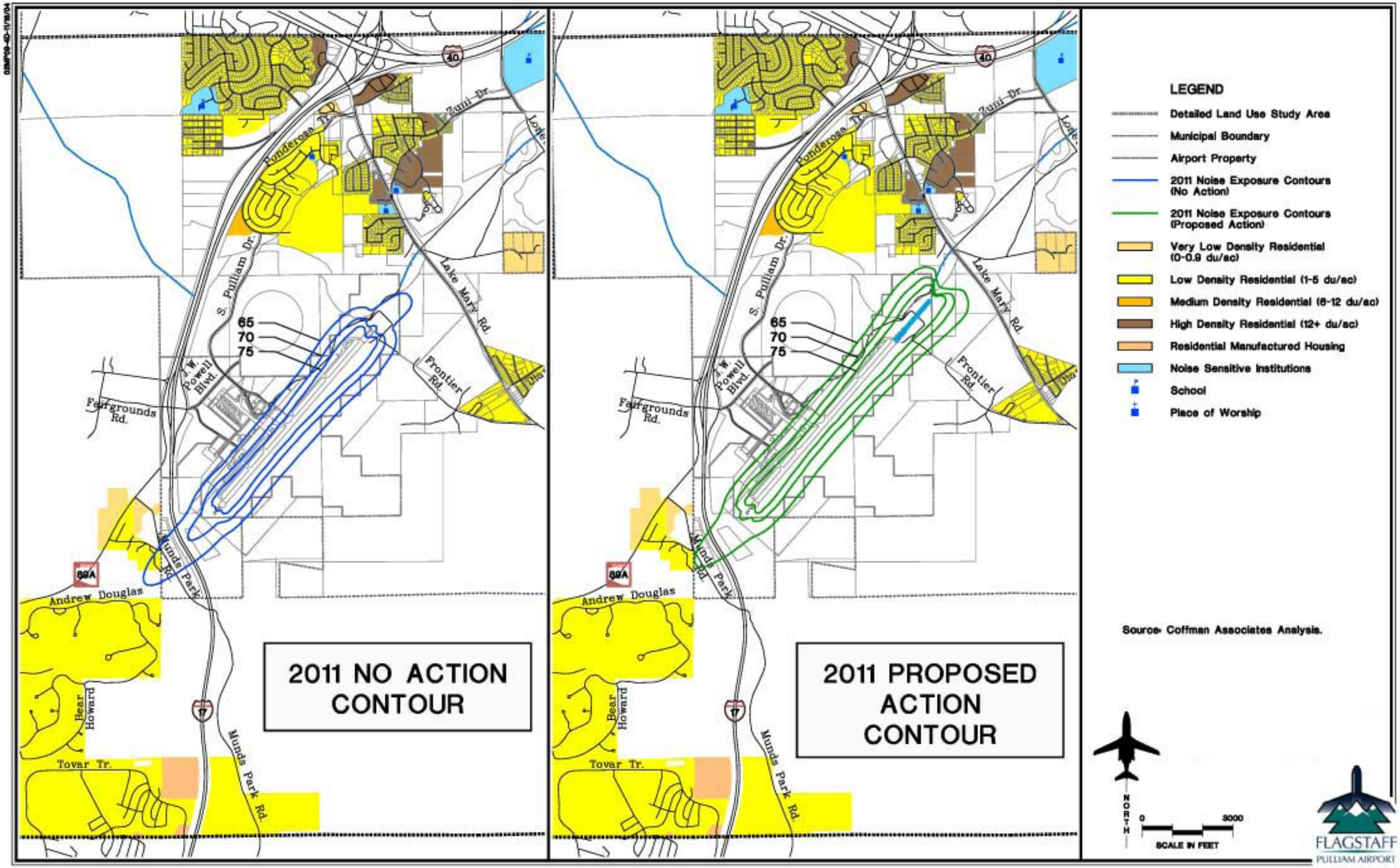


Exhibit 4D
2011 ACTION-NO ACTION CONTOURS
WITH NOISE SENSITIVE LAND USE

the anticipated noise condition. Section 4.2 contains a supplemental noise analysis which analyzes potential cumulative noise impacts over the Flagstaff area National Parks as well as Grand Canyon National Park.

4.1.4.2 No Action

2006 Noise Impacts. The no action 2006 noise contours are depicted on **Exhibit 4C**. The contours are shaped differently than the proposed action alternative due not only to the runway extension, but also the change in the commercial service fleet mix. The 65 DNL noise contour extends approximately 4,000 feet from the end of Runway 3 to the southwest and approximately 2,200 feet from the end of Runway 21 to the northeast. The 70 DNL noise contour extends approximately 1,900 feet from the end of Runway 3 to the southwest. The contour remains on airport property to the northeast. The 75 DNL noise contour is contained entirely on airport property.

Fourteen dwelling units are contained within the 2006 no action 65 DNL noise contour. These dwelling units consist of single-family homes and are located southwest of the airport.

2011 Noise Impacts. As described for the proposed action 2011 noise contours, the 2011 no action noise contours are smaller than the 2006 no action noise contours. The 65 DNL noise contour extends approximately 3,700 feet from the end of Runway 3 to the southwest and approximately 2,100 feet from the end of Runway 21 to the northeast. The 70 DNL noise contour extends approximately 1,700 feet from the end of Runway 3 to the southwest. The contour remains on airport property to the northeast. The 75 DNL noise contour is contained entirely on airport property. **Exhibit 4D** depicts the 2011 no action alternative noise contours.

Thirteen dwelling units are contained within the 2006 no action 65 DNL noise contour. These dwelling units consist of single-family homes and are located southwest of the airport.

4.1.5 ANALYSIS

The 1,800-foot runway extension to the northeast, proposed as part of the proposed action alternative, allows aircraft more distance to gain altitude before leaving airport property, thereby resulting in fewer noise impacts when compared to the no action alternative. As indicated in **Table 4C**, implementation of the proposed action alternative reduces the number of dwelling units in the 65 DNL noise contour under both the 2006 and 2011 modeling scenarios. Twelve residences fall outside the 65 DNL noise contour in 2006 under the proposed action and 13 are removed in

2011. No new homes are contained within the 65 DNL noise contour with implementation of the proposed action.

TABLE 4C
Noise Impacts within the 65 DNL Noise Contour
Flagstaff Pulliam Airport

	Number Of Dwelling Units Impacted				
Contour	**2003**	**2006 Proposed Action**	**2006 No Action**	**2011 Proposed Action**	**2011 No Action**
65 DNL	14	2	14	0	13
70 DNL	0	0	0	0	0
75 DNL	0	0	0	0	0

As stated previously, a significant noise impact is defined as one which would occur if the proposed action would cause noise-sensitive areas to experience an increase in noise of 1.5 DNL or more, at or above the 65 DNL noise exposure level, when compared to the no action alternative for the same timeframe. Based on the analysis presented within this section, with implementation of the proposed action, no noise-sensitive areas would experience an increase in noise of 1.5 DNL or greater, at or above the 65 DNL noise contour when compared to the no action alternative. The number of dwelling units within the 65 DNL noise contour significantly decreases with implementation of the proposed action alternative; therefore, no significant noise impacts would result with implementation of the proposed action alternative. Implementation of the no action alternative results in a significant noise impact when compared to the proposed action alternative as noise-sensitive development is subject to a 1.5 DNL increase in noise when compared to the proposed action alternative.

4.1.6 MITIGATION

No mitigation measures are required.

4.2 SUPPLEMENTAL NOISE ANALYSIS

FAA Order 1050.1E, Appendix A, Section 14.5, allows for the preparation of supplemental noise analyses for select projects. These analyses are prepared at the direction of the FAA and are tailored to enhance understanding of the pertinent facts surrounding the potential environmental changes which could result with implementation of the proposed project. Supplemental noise analyses allow for the use of additional noise descriptors other than the DNL descriptor discussed previously in Section 4.1 of this chapter. Some of the supplemental descriptors discussed within Order 1050.1E include the following:

- Single event maximum sound level: L_{max} (maximum sound level), a single event descriptor that is the highest A-weighted aircraft sound level, considering all events within a 24-hour average annual day.

- Cumulative sound energy: Leq (equivalent sound level), a cumulative level of a steady tone that provides an equivalent amount of aircraft sound energy for any specific period.

- Time that aircraft sound level is greater than ambient: TAA (time above ambient), a time-based descriptor that gives the duration, in minutes, for which aircraft-related noise exceeds the average ambient sound level.

During the initial scoping process for this EA, which included both resource agencies and public interest groups, a number of comments were received regarding concerns about increased noise over national park units resulting from the proposed airport improvements. A letter dated September 18, 2003 from the National Park Service (NPS) (included in **Appendix B**) indicated concerns regarding the increase in overflights of a number of NPS units ranging from Walnut Canyon, located approximately eight miles from Flagstaff Pulliam Airport, to the Grand Canyon National Park (GCNP), which, at its closest point, is located approximately 55 miles from the airport. As a result of the NPS concerns, as well as the interest of other public groups concerned about noise over the park units, the FAA determined that a supplemental noise analysis was warranted for inclusion into this EA.

The supplemental noise analysis focused on quantifying the potential cumulative impact of the proposed airport improvements, principally the introduction of regional jets into the airport's fleet mix (proposed action alternative). The remaining fleet mix using the airport would be the same regardless of whether the proposed airport improvements are undertaken. As discussed previously within Chapter One, introduction of the regional jet could allow the airport to serve additional markets such as Los Angeles, Salt Lake City, and Denver; therefore, the modeling efforts would include trips to these destinations.

For comparative purposes, the future no action alternative was modeled. The future no action alternative assumes that additional markets would be introduced to the Flagstaff area. As discussed in Chapter One, the additional potential destinations included Salt Lake City and Denver. For flights between Salt Lake City and Flagstaff, the no action alternative assumes the Beech 1900 would be utilized in lieu of the regional jet. These fleet mix changes were incorporated into the cumulative overflight fleet mix experienced at the park units.

To best analyze the potential changes on the cumulative impacts of the proposed action and no action alternatives, two tiers of supplemental analyses were developed. These analyses used Cartesian coordinate systems (i.e., grid points) to determine the potential impacts by the proposed airport improvements on NPS units.

The first tier is a cumulative analysis of potential noise changes for those areas where the regional jets or Beech 1900s, departing from Flagstaff Pulliam Airport, would be below an altitude of 10,000 feet above ground level (AGL The 10,000-foot elevation was selected for several reasons. First, according to paragraph 14.5e of Appendix A of FAA Order 10501E, for airspace actions where the study area is larger than the immediate vicinity of the airport, noise impacts will be determined from the ground to 10,000 feet AGL. Second, the FAA revised Air Traffic Noise Screening (ATNS) policy (January 5, 2001), which was created to address airspace changes that may cause controversy on environmental grounds, uses 10,000 feet as an altitude cut-off when evaluating departure procedures. Finally, the aircraft profile data used for FAA noise modeling have been developed and validated to 10,000 feet.

The second tier analysis was focused on the cumulative impacts of the proposed project, primarily as they relate to the potential impacts of additional overflights of the GCNP. This analysis also focused on the impacts of both the proposed action alternative, which allows introduction of the regional jet, and the no action alternative, which uses the Beech 1900. This analysis was conducted in the East End of GCNP, using grid points at five nautical mile increments.

According to guidance contained within paragraphs 14.5d and 14.5e of Appendix A of FAA Order 1050.1E, sound level increases or decreases were reported in both tiers of analysis on the basis of a minimum 5 dBA change of exposure for cumulative descriptors (Leq_{12}, Leq_{24}) and on a minimum 3 dBA change in single event maximum sound level (L_{max}). Regarding the latter indicator for maximum sound level, scientific studies have shown the human ear cannot generally distinguish changes in sound level of less than two or three decibels.

The following sections outline the modeling assumptions followed by the results of each tier of analysis. The analysis findings are not, by themselves, a measure of adverse aircraft noise or significant aircraft noise impacts.

4.2.1 INPUT ASSUMPTIONS

Model Use

The INM Version 6.1 was used for the supplemental noise analysis. The INM has been the FAA's standard noise modeling tool since 1978 for predicting noise impacts in the vicinity of airports and other areas. The INM is a flexible tool with the capacity to provide a wide range of analytical results. For this study, it was determined that utilizing four noise descriptors would be appropriate. $\mathbf{L_{max}}$ is beneficial as it provides the peak noise level that an individual may hear during an aircraft overflight, minus any interference from background noise. **TAA** was also found to be a potentially suitable descriptor for this analysis as it provides a time-based compari-

son of the number of minutes the aircraft noise exceeds an ambient sound level during a 24-hour day. **Leq(12-hour)** and **Leq(24-hour)** were determined to be suitable versus the 24-hour noise descriptor DNL (which penalizes nighttime aircraft noise events), as the national parks are often only open to the public during daytime hours.

The FAA identified 26 dBA as a reasonable and representative average ambient sound level to apply to the regional Tier One analysis based on available 2000 data for quiet conditions in sparse conifer forest areas near the Grand Canyon National Park (GCNP) and the proximity of GCNP to Flagstaff. It is notable that the Tier Two analysis of GCNP takes advantage of variable ambient sound levels that are specific to GCNP and cover the Tier Two study area. The GCNP variable ambient sound levels are based on different terrain and vegetation categories also in accordance with the available 2000 data (e.g., desert scrub, pinion juniper, coniferous forest, and water-affected areas).

Operations

Implementation of the proposed action alternative will allow the commercial service airlines to use regional jets for scheduled service. The airline currently providing scheduled service to the airport intends to change to an all-regional jet fleet in the near future. Presently, commercial service is provided to only one destination, Phoenix, utilizing Dash 8 aircraft. Initially, it is expected that these flights will be converted to regional jets. Those most likely to consider implementing service in the future would be Delta Connections, with service to Salt Lake City, and United Express, with service to Los Angeles and Denver.

For the purposes of this analysis, a "worst case" operational scenario was assumed for overflights of national parks. The long range forecast within the *2005 Flagstaff Pulliam Airport Master Plan* indicates a potential for 20 scheduled flights per day into and out of Flagstaff. This could translate to four destinations, at four to six flights per day or more flights to fewer destinations. In a non-hub market like Flagstaff, eight flights per destination would be the maximum that one airline would typically operate. For the purpose of analyzing the "worst case" potential impacts of the proposed action alternative, eight daily flights to and from Salt Lake City (sixteen total flights) will be modeled along with six daily flights between Flagstaff to Phoenix (twelve total flights). All will assume the use of the CRJ-200. The remaining flights will be split between Denver and Los Angeles. It must be noted that more flights were assigned to Salt Lake City due to the overflight of the GCNP with the use of this destination.

The no action alternative also has the potential to introduce new destinations to the Flagstaff area, most likely Salt Lake City. As the market for commercial service grows, demand for additional destinations other than Phoenix for travelers to and

from Flagstaff would likely grow; therefore, a commercial service provider would likely realize a benefit should additional destinations be offered. Since the runway length at Flagstaff would limit the use of regional jets, travel to additional destinations would likely use a Beech 1900 or Saab 340 aircraft. These aircraft are slower than regional jet aircraft and fly at a lower altitude. Based on this information, the no action alternative analysis includes five daily flights to and from Salt Lake City (ten total flights) utilizing the Beech 1900 aircraft.

4.2.2 ANALYSIS RESULTS

4.2.2.1 Tier One Analysis

The INM profile data were used to determine the distance required by the regional jet and Beech 1900 to reach an elevation of 10,000 feet on departure. The aircraft generating the longest distance departure profile to 10,000 feet above ground level (AGL) was used to define a radius for creating a distance ring to determine which NPS units would be considered for the Tier One analysis. Based on Flagstaff Pulliam Airport's elevation of 7,014 feet above mean sea level (MSL) and annual average temperature of 45.8 degrees Fahrenheit (F), the regional jet generated the longest distance departure profile to 10,000 feet with a distance of approximately 135,500 feet (25 miles). The Tier One 10,000-foot distance ring is shown on **Exhibit 4E**.

Flight tracks for Flagstaff arrivals and departures for this analysis were assumed to follow Victor Airways that emanate from the Flagstaff VOR/DME. These include the Victor Airway 291 to the east and west, 572 to the northeast, and 327 to the south. Flight tracks were dispersed along the Victor Airways to better represent actual conditions. Flight track dispersion generally ranged from one half to two miles on either side of the centerline of the Victor Airway. Flight tracks for the high-altitude overflights were developed using flight track data provided by the Albuquerque Air Route Traffic Control Center (ARTCC). To provide for a cumulative impact analysis, a five-day sample of overflight track data was obtained to allow for the analysis of not only the Flagstaff aircraft, but also all other aircraft flying over the National Park Units. The flight tracks which were obtained are depicted on **Exhibit 4F**. The Albuquerque ARTCC provided the number of operations by aircraft type and altitude. From this sample, it was estimated that approximately 680 daily high altitude overflights occur over the Tier One study area for the current condition. Lower altitude overflight information for the Tier One study area was obtained from phone surveys of area airports, fixed base operators, and flight schools. The FAA provided the number of permitted annual air tour operations over the Walnut Canyon National and Sunset Crater National Monuments. A 4.1 percent average annual growth rate was assumed for long range growth.

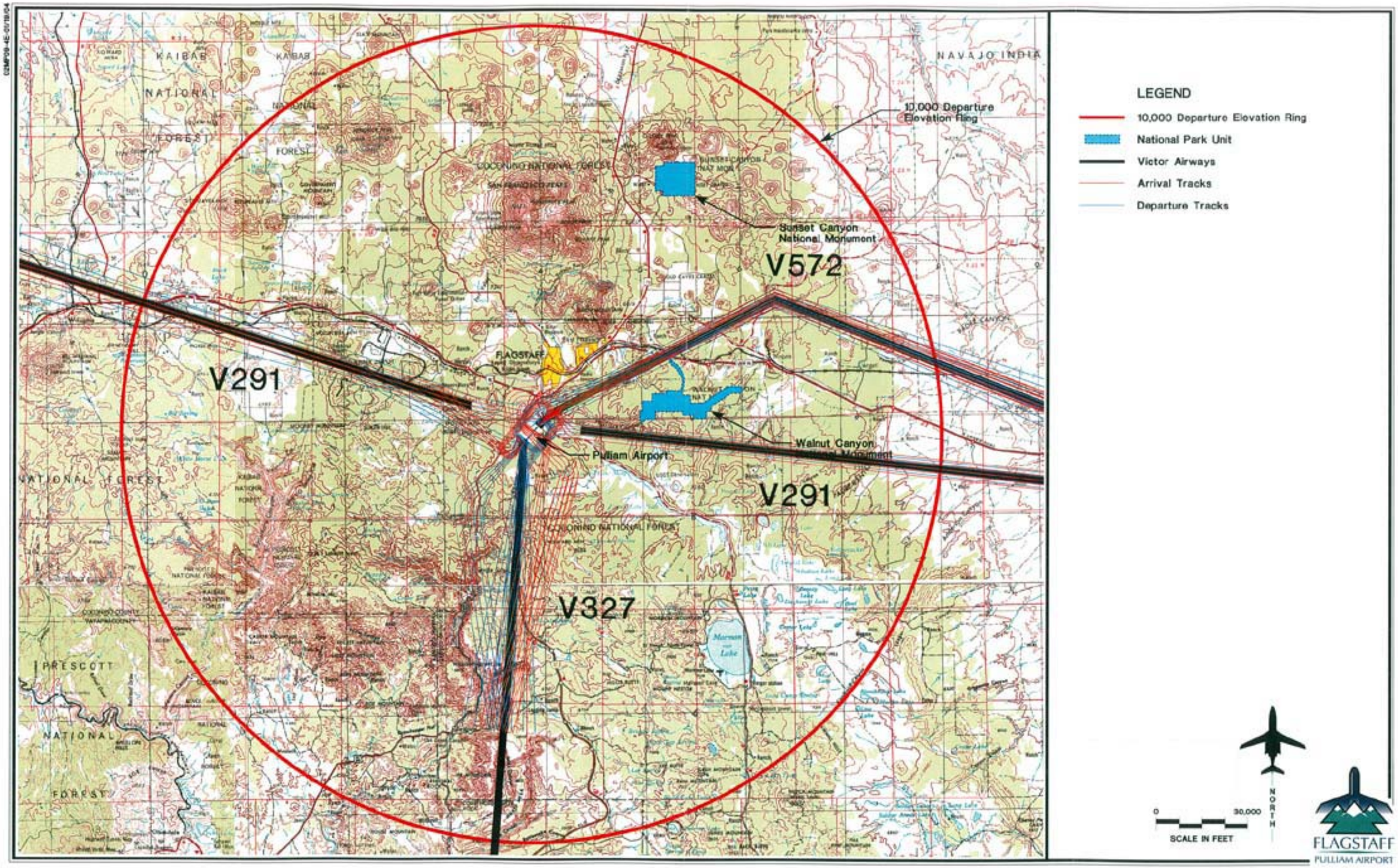
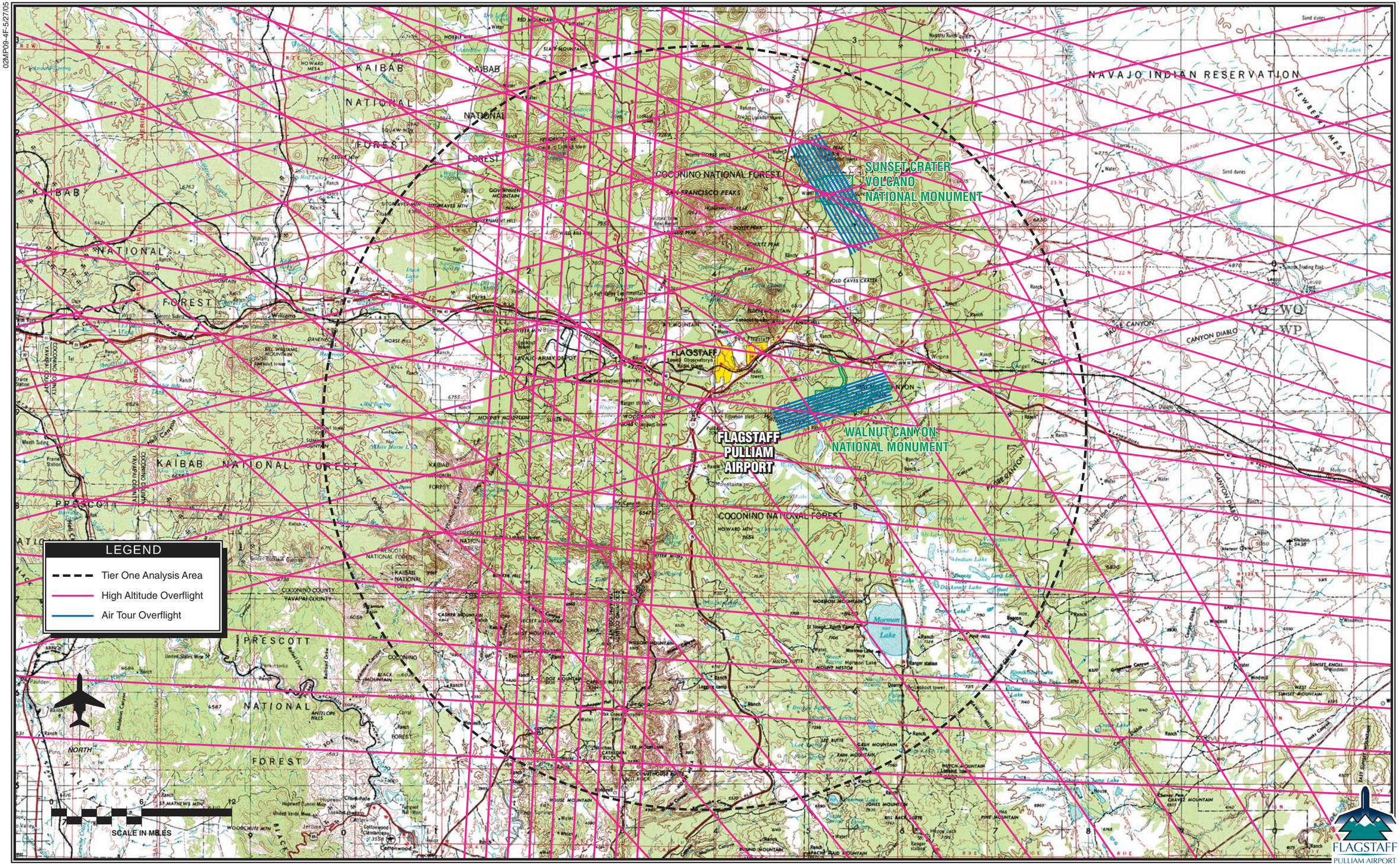


Exhibit 4E
TIER ONE SUPPLEMENTAL NOISE ANALYSIS
FLIGHT TRACKS AND NATIONAL PARK UNIT LOCATIONS

02MP09-4F-5/27/05



FLAGSTAFF PULLIAM AIRPORT

Exhibit 4F
FLIGHT TRACKS

Two NPS units, Walnut Canyon National Monument and Sunset Crater National Monument, are within the Tier One 10,000-foot distance ring. Grid point sites within each monument were selected based upon input from the local National Park personnel and were generally located near activity areas such as trail heads, visitor centers, as well as the highest elevation points. A set of six grid points were established for the Walnut Canyon National Monument. Three grid points were located along the monument access road and near the monument headquarters. Three other grid points were located near the southwest corner of the park, the cliff dwellings near the center of the park, and a peak in the southeastern portion of the park. Five grid points were located within the Sunset Crater National Monument. Three grid points were located on crater peaks. The remaining two were located near a trail access point and campground located adjacent to the western boundary of the Sunset Crater National Monument. **Exhibits 4G and 4H** show the location of the gridpoint locations used in this analysis.

Table 4D summarizes the cumulative results of several supplemental noise descriptors, L_{max}, TAA, Leq_{12}, and Leq_{24} at each gridpoint for the existing condition, no action, and proposed action alternatives. L_{max} values within both NPS units received a minimal change when the proposed action and no action alternatives were compared. L_{max} values increased at only two sites ranging from 0.1 to 0.2 dBA. L_{max} values <u>decreased</u> at seven sites ranging from 1.2 to 5.4 dBA.

The TAA level in minutes per day above 26 dBA showed increases only within Walnut Canyon National Monument. This time increase ranged from 3.7 to 6.9 minutes. There was negligible difference in the TAA level at the five grid point locations in or near Sunset Crater National Monument (0.0 to 0.1 minutes).

Leq_{12}, and Leq_{24},values within both monuments decreased slightly at all but two grid points when the proposed action and no action alternatives were compared. Decreased Leq_{12},and Leq_{24},values at nine grid points ranged from 0.1 to 0.3 dBA. Increased Leq_{12}, and Leq_{24},values at the two grid points ranged from 0.1 to 0.2 dBA.

4.2.2.2 Tier Two Analysis

The Tier Two portion of the supplemental analysis was conducted with the assistance of the Environmental Measurement and Modeling facility of the John A. Volpe National Transportation Systems Center (Volpe Center). The Volpe Center used comprehensive air tour and commercial air transport operations data for GCNP developed by the independent Federal Interagency Committee on Aviation Noise (FICAN) and the most current version of the INM (6.1) that was available at the time of the analysis.

02MP09-4G-09/07/05

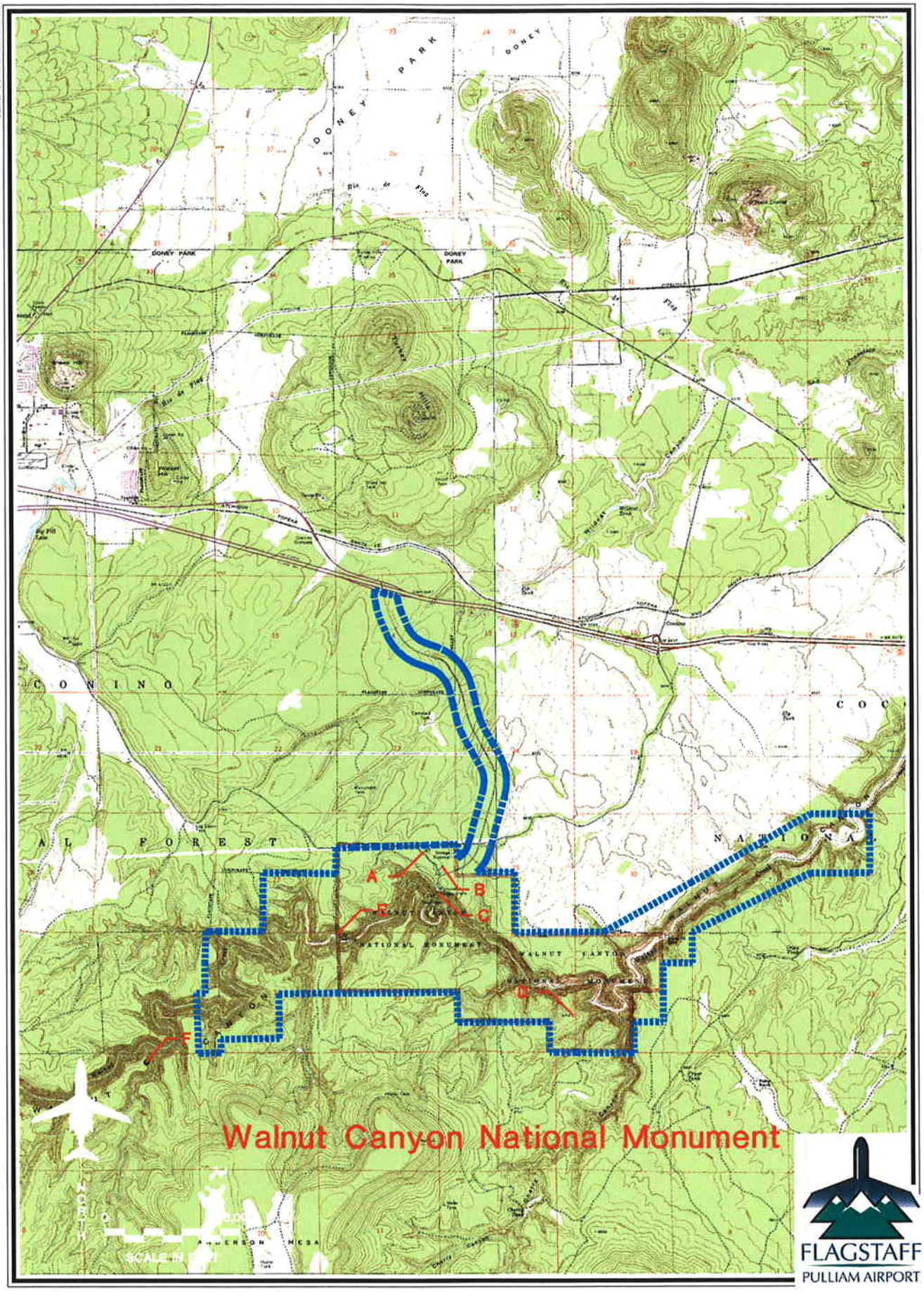


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Exhibit 4G
TIER TWO SUPPLEMENTAL NOISE ANALYSIS
GRID POINT LOCATIONS

02MP09-4H-11/02/04

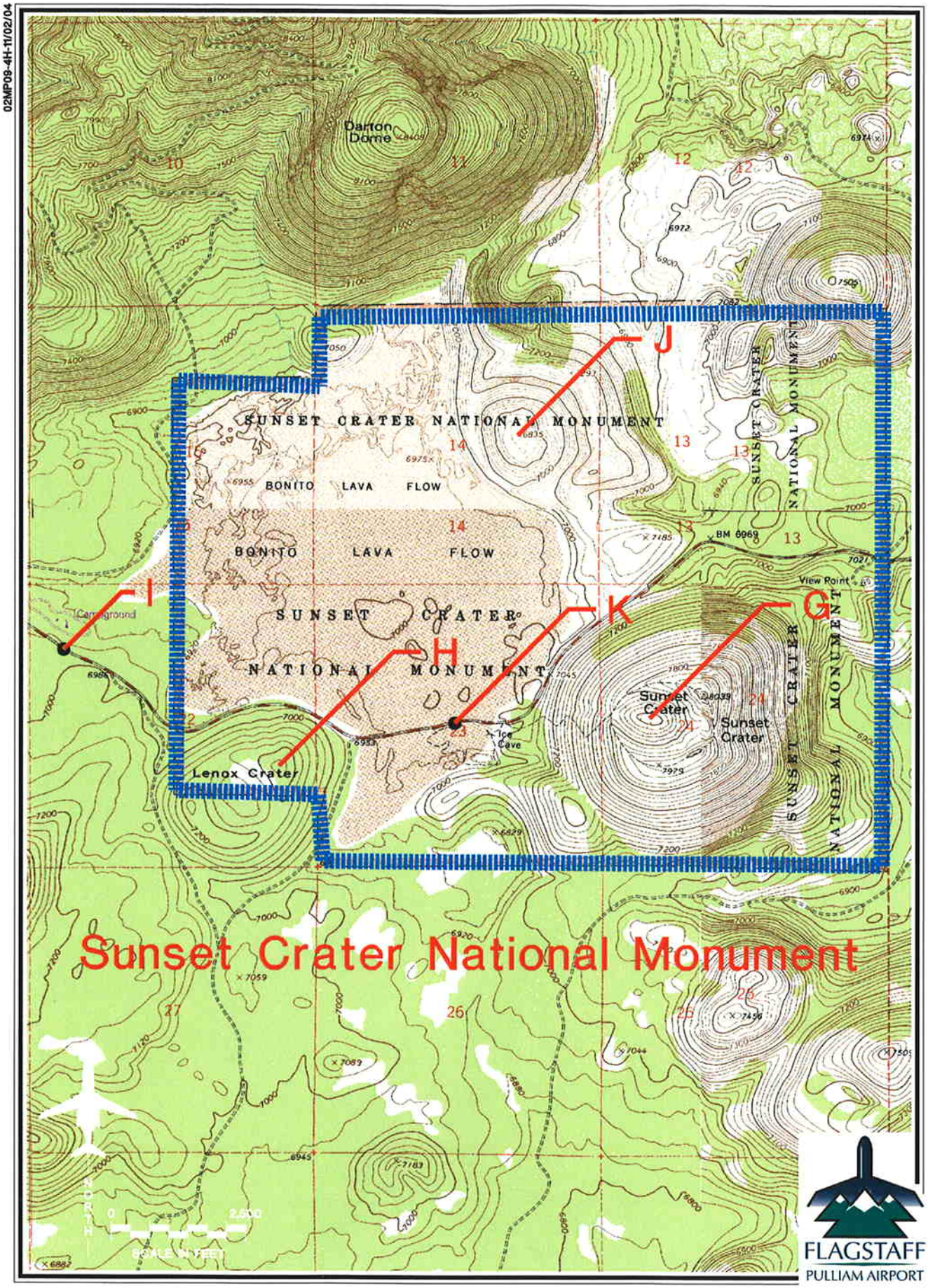

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Exhibit 4H
TIER TWO SUPPLEMENTAL NOISE ANALYSIS
GRID POINT LOCATIONS

TABLE 4D
Tier One Supplemental Noise Analysis

Grid Point	Existing (2004)	No Action (2025)	Proposed Action (2025)	Existing (2004)	No Action (2025)	Proposed Action (2025)
Walnut Creek National Monument						
	L_{max}			**Time Above Ambient (26 dBA)[1]**		
A	65.9	65.9	64.5	72.4	129.9	134.3
B	65.6	65.6	63.4	72.6	131.8	135.5
C	64.5	64.5	63.1	75.6	136.6	141.3
D	66.5	66.5	66.6	73.0	137.9	141.8
E	65.0	65.0	65.2	77.8	139.7	145.2
F	70.6	70.6	70.6	85.7	150.7	157.6
	Leq_{12}			**Leq_{24}**		
A	28.4	30.2	30.1	25.5	27.3	27.2
B	28.2	30.3	30.1	25.3	27.3	27.1
C	28.6	30.7	30.6	25.6	27.7	27.6
D	29.1	31.1	31.2	26.2	28.2	28.3
E	29.6	31.9	31.8	26.7	29.0	28.9
F	33.2	35.5	35.7	30.3	32.6	32.8
Sunset Crater National Monument						
	L_{max}			**Time Above Ambient (26 dBA)[1]**		
G	71.1	71.1	67.4	118.6	257.7	257.8
H	66.0	66.0	64.875	113.4	246.3	246.4
I	66.9	66.9	66.9	110.8	240.5	240.4
J	64.7	64.7	59.3	118.6	257.8	257.8
K	66.6	66.6	66.6	114.4	248.4	248.5
	Leq_{12}			**Leq_{24}**		
G	34.5	37.9	37.6	31.5	34.8	34.6
H	34.2	37.6	37.5	31.2	34.6	34.5
I	34.0	37.4	37.3	31.0	34.4	34.3
J	31.4	34.8	34.6	28.4	31.7	31.6
K	34.7	38.1	38.0	31.7	35.1	34.9

[1] Time Above Ambient 26 dBA in minutes.

The Volpe Center undertook responsibility for this analysis to insure consistency with other GCNP noise analyses. Minor differences in the format, alternatives evaluated, and presentation of analysis results between the Tier Two Analysis and the Tier One Analysis are due to the additional level of detail associated with the level of concern conveyed by parties interested in potential overflight impacts at GCNP. The complete analysis undertaken by the Volpe Center is contained in **Appendix L**.

The boundaries of the analysis were based on the potentially affected area of the GCNP using a five-nautical-mile analysis grid that is depicted in **Exhibit 4J**. At each grid point, noise descriptors (L_{max}, TAA [minutes], TAA [percent], Leq_{12}, and Leq_{24}) were calculated for the existing condition as well as five additional scenarios as described below:

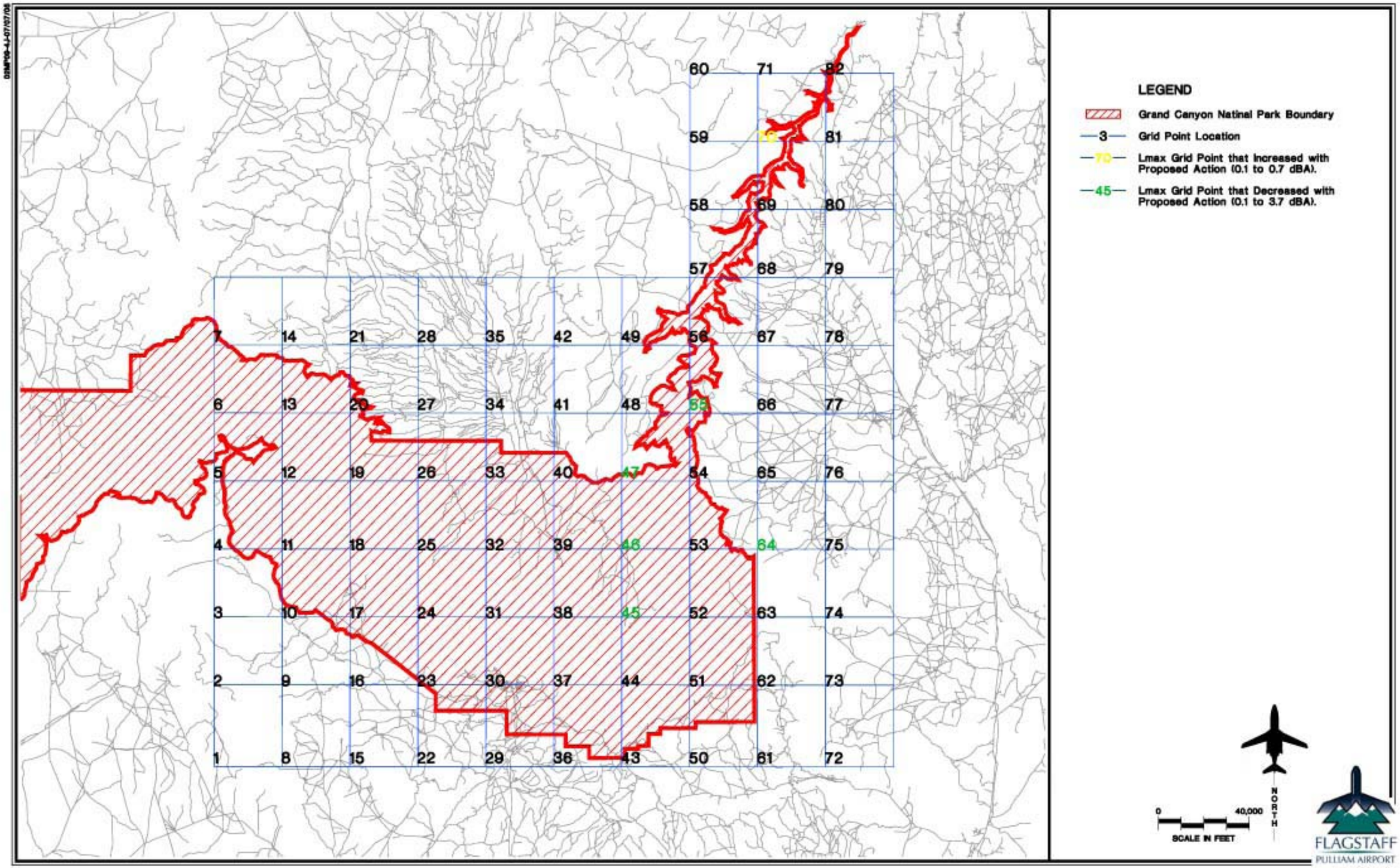

Exhibit 4J
GRAND CANYON NATIONAL PARK
GRID POINT ANALYSIS

- Alternative One – Existing Condition. This scenario was prepared for the year 2003 and is considered a cumulative noise run. It incorporates all East End commercial air tours over GCNP, other operations in support of air tours over GCNP, general aviation, military, and civil air carrier activity. (The results of the Alternative One analysis are contained within Table 1 in **Appendix L**.)

- Alternative Two – Long-range No Action Alternative. This scenario assumes the introduction of Beech 1900 activity to and from Flagstaff and Salt Lake City. This is not a cumulative noise run. (The results of the Alternative Two analysis are contained within Table 2 in **Appendix L**.)

- Alternative Three – Long-range Proposed Action Alternative. This scenario assumes the introduction of regional jet activity to and from Flagstaff and Salt Lake City. This is not a cumulative noise run. (The results of the Alternative Three analysis are contained within Table 3 in **Appendix L**.)

- Alternative Four – Cumulative Long-range No Action Alternative. This scenario analyzes the introduction of the Beech 1900 aircraft as well as all activity over GCNP (defined in Alternative One). The analysis assumed a 4.1 percent growth per year in operations not subject to the GCNP operations cap. (The results of the Alternative Four analysis are contained within Table 4 in **Appendix L**.)

- Alternative Five – Cumulative Long-range Proposed Action Alternative. This scenario analyzes the introduction of the regional jet as well as all activity over GCNP (defined in Alternative One). The analysis assumed a 4.1 percent growth per year in operations not subject to the GCNP operations cap. (The results of the Alternative Five analysis are contained within Table 5 in **Appendix L**.)

- Alternative Six – Cumulative Forecast Existing Condition. This scenario analyzed the noise condition should commercial service to Salt Lake City not be introduced at Flagstaff. A 4.1 percent growth rate was applied to operations not subject to the GCNP operations cap. (The results of the Alternative Six analysis are contained within Table 6 in **Appendix L**.)

Table 4E presents a summary of information from the TAA analysis.. The findings show that the assumption of 4.1 percent compound annual growth (for 21 years) in cumulative operations over the GCNP results in notable TAA increases. However, the results also show that future operations for Flagstaff Pulliam Airport represent a minor incremental factor and that the Proposed Action Alternative reduces noise at GCNP when compared with the Future No Action Alternative.

TABLE 4E
Tier Two Supplemental Noise Analysis
Time Above Ambient for Existing and Future Conditions on a Cumulative Basis

Grid Point ID	2004 Existing Condition TAA (minutes)[1]	2004 Existing Condition TAA (percent)[1]	2025 Forecast Existing Condition (minutes)[2]	2025 Forecast Existing Condition (percent)[2]	2025 Cumulative Change in TAA for No Action Alt. Versus the Forecast Existing Conditions[3]	2025 Cumulative Change in TAA for Proposed Action Alt. Versus the Forecast Existing Conditions[4]	2025 Cumulative Change in TAA for the Proposed Action versus the No Action Alternative[5]
04	421.0	29.2%	1,018.3	70.7%	0.0%	0.0%	0.0%
05	351.1	24.4%	849.7	59.0%	0.0%	0.0%	0.0%
06	354.6	24.6%	858.3	59.6%	0.0%	0.0%	0.0%
07	396.6	27.5%	960.0	66.7%	0.0%	0.0%	0.0%
10	549.0	38.1%	1,327.1	92.2%	0.0%	0.0%	0.0%
11	466.4	32.4%	1,125.3	78.1%	0.0%	0.0%	-0.1%
12	418.4	29.1%	1,009.4	70.1%	0.0%	0.0%	0.0%
13	6.8	0.5%	16.5	1.1%	0.0%	0.0%	0.0%
17	587.5	40.8%	1,401.1	97.3%	0.3%	0.0%	-0.2%
18	481.3	33.4%	1,157.9	80.4%	0.3%	0.0%	-0.3%
19	76.1	5.3%	184.3	12.8%	0.0%	0.0%	0.0%
20	415.5	28.9%	1,003.9	69.7%	0.3%	0.0%	-0.4%
23	1,722.8	100.0%	3,167.2	100.0%	0.0%	0.0%	0.0%
24	2,018.0	100.0%	3,506.4	100.0%	0.0%	0.0%	0.0%
25	1,289.1	89.5%	2,352.2	100.0%	0.0%	0.0%	0.0%
26	507.2	35.2%	1,166.9	81.0%	0.6%	0.2%	-0.5%
30	231.5	16.1%	467.7	32.5%	0.2%	0.1%	-0.2%
31	1,699.9	100.0%	3,017.7	100.0%	0.0%	0.0%	0.0%
32	2,066.6	100.0%	3,511.0	100.0%	0.0%	0.0%	0.0%
33	156.8	10.9%	310.0	21.5%	0.3%	0.1%	-0.2%
37	131.7	9.1%	307.1	21.3%	0.2%	0.0%	-0.2%
38	643.1	44.7%	1,449.2	100.0%	0.0%	0.0%	0.0%
39	212.0	14.7%	458.4	31.8%	0.6%	0.1%	-0.5%
40	273.5	19.0%	517.0	35.9%	0.5%	0.1%	-0.4%
43	263.3	18.3%	508.5	35.3%	0.5%	0.2%	-0.3%
44	196.3	13.6%	415.2	28.8%	0.6%	0.2%	-0.4%
45	287.0	19.9%	621.5	43.2%	1.0%	0.4%	-0.6%
46	128.3	8.9%	263.8	18.3%	0.6%	0.2%	-0.4%
47	1,019.6	70.8%	1,891.4	100.0%	0.0%	0.0%	0.0%
51	1,035.9	71.9%	2,014.1	100.0%	0.0%	0.0%	0.0%
52	1,029.6	71.5%	1,977.5	100.0%	0.0%	0.0%	0.0%
53	1,118.9	77.7%	2,068.4	100.0%	0.0%	0.0%	0.0%
54	180.5	12.5%	306.8	21.3%	0.4%	0.1%	-0.3%
55	379.5	26.4%	859.4	59.7%	2.4%	1.0%	-1.4%
56	371.5	25.8%	883.4	61.3%	2.5%	1.2%	-1.4%
57	362.7	25.2%	873.4	60.7%	2.4%	1.1%	-1.4%
62	564.8	39.2%	1,293.7	89.8%	2.7%	1.6%	-1.1%
63	621.7	43.2%	1,349.5	93.7%	2.6%	1.5%	-1.1%
64	649.1	45.1%	1,344.5	93.4%	2.4%	1.4%	-1.0%
68	355.8	24.7%	857.9	59.6%	2.1%	1.3%	-0.8%
69	348.8	24.2%	844.3	58.6%	2.0%	1.3%	-0.8%
70	377.6	26.2%	914.1	63.5%	2.0%	1.3%	-0.7%

TABLE 4E (Continued)
Tier Two Supplemental Noise Analysis
Time Above Ambient for Existing and Future Conditions on a Cumulative Basis

Grid Point ID	2004 Existing Condition TAA (minutes)[1]	2004 Existing Condition TAA (percent)[1]	2025 Forecast Existing Condition (minutes)[2]	2025 Forecast Existing Condition (percent)[2]	2025 Cumulative Change in TAA for No Action Alt. Versus the Forecast Existing Conditions[3]	2025 Cumulative Change in TAA for Proposed Action Alt. Versus the Forecast Existing Conditions[4]	2025 Cumulative Change in TAA for the Proposed Action versus the No Action Alternative[5]
81	361.5	25.1%	875.1	60.8%	1.3%	0.8%	-0.5%
82	15.4	1.1%	37.2	2.6%	0.0%	0.0%	0.0%

[1] Data obtained from Table 3 in Appendix L.
[2] Data obtained from Table 6 in Appendix L.
[3] These data presents the cumulative impact of the No Action alternative by comparing the forecasted existing condition (Table 8 in Appendix L) to the forecasted cumulative No Action alternative (Table 6)
[4] These data presents the cumulative impact of the Proposed Action alternative by comparing the forecasted existing condition (Table 8 in Appendix L) to the forecasted cumulative Proposed Action alternative (Table 7)
[5] These data presents the true potential cumulative impact of the project by comparing the results of the Proposed Action alternative (Table 7) to the results of the No Action alternative (Table 6).

In interpreting the cumulative predictions, it is important to note that the INM is not a time-based simulation. Times for individual events are added sequentially in the INM. As a consequence, it tends to overpredict cumulative TAA in areas of frequent overflight activity, such as the GCNP. This effect is evidenced in the TAA estimates for 2025 where the resulting values reach 100 percent of the time for a number of grid points. These numbers do not reflect the fact that quiet periods are present at these GCNP locations for some of the time.

The Volpe Center employed the radar-based Enhanced Traffic Management System (ETMS) to develop flight tracks over GCNP. ETMS uses information from the Air Traffic Control automated system to assess the efficiency and routing structure of the air transportation system. ETMS was used in this application to identify aircraft flight tracks between Salt Lake City and Flagstaff and to determine flight tracks for aircraft flying over GCNP. An exhibit depicting the locations of modeled flight tracks is contained in **Appendix L**.

Details and results of the analysis completed by the Volpe Center are contained in **Appendix L**. The analysis results indicate that implementation of the Proposed Action alternative will result in lesser noise impacts when compared to the No Action alternative. As depicted on **Exhibit 4J**, all of the grid points analyzed illustrate a decrease in noise with the introduction of the regional jet versus the Beech 1900, except for four points which illustrate no change.

In comparison with the forecast cumulative existing condition (Alternative 6) the introduction of the regional jet (Alternative 5) results in the following:

- No change in Lmax.
- Change in TAA (minutes) ranging from zero to 5.6 minutes in the western and central portions of the study area (gridpoints 4 through 46) to 11 to 23 minutes in the far eastern and northern portions of GCNP (gridpoints 47 through 81). Gridpoint locations are depicted on **Exhibit 4J**.
- Maximum change in TAA (percent) of 1.6 percent. This maximum change occurs in gridpoint 62. No change is realized in the western portions of GCNP (at this precision level) and the change in TAA (percent) ranges from 0.0 to 0.4 in the central portions of GCNP.
- Change in Leq_{12}, of 0.1 dB in the easternmost portions of GCNP, specifically gridpoints 62, 64, 69, and 70. No change was noted in the remaining gridpoints.
- Change in Leq_{24} of 0.1 dB in the easternmost portions of GCNP, specifically gridpoints 62, 69, and 70. No change was noted in the remaining gridpoints.

4.2.3 SUMMARY

In conclusion, using regional jet aircraft, which climb faster and cruise at higher altitudes than Beech 1900 aircraft, will result in an overall decrease in noise for both the Tier One and Tier Two analyses.

The Tier One analysis did not find a sound level (L_{max}, Leq_{12}, or Leq_{24},) increase discernable to the human ear within the Walnut Canyon or Sunset Crater National Monuments when the proposed action and no action alternatives were compared. The time above ambient levels increased slightly with implementation of the proposed action alternative in Walnut Canyon National and Sunset Crater National Monuments.

The Tier Two analysis showed an overall decrease in L_{max}, TAA, Leq_{12}, and Leq_{24} levels with implementation of the proposed action alternative versus the no action alternative.

4.3 COMPATIBLE LAND USE

An airport's compatibility with surrounding land uses is usually associated with the extent of the airport's noise impacts. Airport projects such as those needed to accommodate fleet mix changes, an increase in operations at the airport, or air traffic changes are examples of activities which can alter noise impacts and affect surrounding land uses. Typically, if the noise analysis concludes that there is no significant impact, a similar conclusion usually can be made with respect to compatible land use. However, if the proposed action would result in other impacts exceeding thresholds of significance which have land use ramifications, such as disruption of communities, relocation of businesses or residences, and induced socioeconomic impacts, the effects of the land use impacts shall also be discussed within this section.

49 USC 47107(a)(10), formerly referred to as Section 511(a)(5) of the *Airport and Airway Improvement Act of 1982*, requires the inclusion of a Sponsor's Land Use Assurance for jurisdictional areas in the vicinity of an airport. The purpose of this assurance is to provide documentation that the sponsor will undertake appropriate action to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities that are compatible with normal airport operations. The assurance relates not only to existing land uses, but also planned future land uses around the airport. The City of Flagstaff's Land Use Assurance letter will be included in **Appendix C** of this document.

4.3.1 THRESHOLDS OF SIGNIFICANCE

The degree of annoyance which people suffer from aircraft noise varies depending on their activities at any given time. People rarely are as disturbed by aircraft noise when they are shopping, working, or driving, as when at home. Transient hotel and motel residents seldom express as much concern with aircraft noise as do permanent residents of an area.

The concept of *land use compatibility* has arisen from this systematic variation in human tolerance to aircraft. **Exhibit 4K** contains compatible land use information as a function of day-night sound events. Yearly day-night average sound level (DNL) accounts for the increased sensitivity to noise at night (10:00 p.m. to 7:00 a.m.) and is the metric preferred by the FAA, Environmental Protection Agency (EPA), and Department of Housing and Urban Development (HUD), among others, as an appropriate measure of cumulative noise exposure. The range of DNL values in the exhibit reflects the statistical variability for the response of large groups of people to noise. Any particular DNL level may not, therefore, accurately assess an individual's perception of an actual noise environment. Compatible or noncompatible land use is determined by comparing the predicted or measured DNL values at a site to the values listed in the exhibit.

The guidelines provided on **Exhibit 4K** are generalized for use across the country. Some people, even entire communities, may be more or less sensitive to noise than others. Noise sensitivity within an individual land use class may also vary. For example, occupants of an older, poorly insulated home, or occupants of a mobile home may be more sensitive to noise than those in a new, well-insulated, energy-efficient home.

Experience has shown that new residential development should be prohibited in areas subject to noise exceeding 65 DNL, unless local conditions indicate that soundproofing residences would prevent homes from being adversely impacted. The most obvious exception would be the presence of high background noise levels which are often found in high-density urban areas or adjacent to major arterial streets or highways.

03SP13-4K-2/24/05

LAND USE	Yearly Day-Night Average Sound Level (DNL) in Decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
RESIDENTIAL						
Residential, other than mobile homes and transient lodgings	Y	N[1]	N[1]	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N[1]	N[1]	N[1]	N	N
PUBLIC USE						
Schools	Y	N[1]	N[1]	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Government services	Y	Y	25	30	N	N
Transportation	Y	Y	Y[2]	Y[3]	Y[4]	Y[4]
Parking	Y	Y	Y[2]	Y[3]	Y[4]	N
COMMERCIAL USE						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail-building materials, hardware and farm equipment	Y	Y	Y[2]	Y[3]	Y[4]	N
Retail trade-general	Y	Y	25	30	N	N
Utilities	Y	Y	Y[2]	Y[3]	Y[4]	N
Communication	Y	Y	25	30	N	N
MANUFACTURING AND PRODUCTION						
Manufacturing, general	Y	Y	Y[2]	Y[3]	Y[4]	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y[6]	Y[7]	Y[8]	Y[8]	Y[8]
Livestock farming and breeding	Y	Y[6]	Y[7]	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
RECREATIONAL						
Outdoor sports arenas and spectator sports	Y	Y[5]	Y[5]	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts, and camps	Y	Y	Y	N	N	N
Golf courses, riding stables, and water recreation	Y	Y	25	30	N	N

The designations contained in this table do not constitute a federal determination that any use of land covered by the program is acceptable under federal, state, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally-determined land uses for those determined to be appropriate by local authorities in response to locally-determined needs and values in achieving noise compatible land uses.

See other side for notes and key to table.

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Exhibit 4K

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KEY

Y (Yes)	Land Use and related structures compatible without restrictions.
N (No)	Land Use and related structures are not compatible and should be prohibited.
NLR	Noise Level Reduction (outdoor-to-indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
25, 30, 35	Land Use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated into design and construction of structure.

NOTES

1 Where the community determines that residential or school uses must be allowed, measures to achieve outdoor-to-indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.

2 Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

3 Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

4 Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

5 Land use compatible provided special sound reinforcement systems are installed.

6 Residential buildings require a NLR of 25.

7 Residential buildings require a NLR of 30.

8 Residential buildings not permitted.

Source: ***F.A.R. Part 150***, Appendix A, Table 1.

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Exhibit 4K (Continued)

4.3.2 EXISTING CONDITION

As discussed within Chapter Three, existing land uses surrounding Flagstaff Pulliam Airport consist of a mix of open space, industrial, and residential development. Areas immediately to the west and south of the airport are managed by the U.S. Forest Service and are currently undeveloped. Land uses to the north include a mixture of open space and low- and medium-density residential land uses. East of the airport are large tracts of open space as well as low-density residential development.

Fourteen single-family dwelling units are contained within the 2003 65 DNL noise contour. These residences are all located southwest of the airport, just south of Munds Park Road. No noise-sensitive institutions are located within the 65 DNL noise contour.

4.3.3 ENVIRONMENTAL CONSEQUENCES

4.3.3.1 Proposed Action

As discussed within Section 4.1, Noise, with implementation of the proposed action alternative, the number of residences within the 65 DNL noise contour is reduced from 14 in 2003 to zero by the year 2011.

Additionally, the proposed project does not conflict with local/state regulatory land use compatibility plans, as the planned future land uses surrounding the airport will be compatible with airport operations. No noise-sensitive development is planned within the 65 DNL noise contour for the proposed action. The city will be acquiring the property contained within the extended runway RPZ as a result of the land exchange between the U.S. Forest Service and the Yavapai Ranch Limited Partnership.

The proposed action is consistent with local land use plans, policies, and controls for the airport environs.

Indirect and impacts within this impact category are not applicable as none of the development projects would affect existing or planned future land uses. The proposed action alternative will reduce noise experienced within the 65 DNL noise contour.

4.3.3.2 No Action

Implementation of the no action alternative results in the removal of only one residence from the 65 DNL noise contour by 2011. Thirteen residences are contained within the 2011 no action 65 DNL noise contour.

As described within Chapter One of this EA, should the no action alternative be implemented, Flagstaff Pulliam Airport's ability to fulfill its role within the National Plan of Integrated Airport Systems (NPIAS) as well as the Arizona Aviation System could be compromised. While the airport could continue to provide commercial air service with implementation of the no action alternative, the level of service would not be what is needed for north-central Arizona. Additionally, the *Flagstaff Area Regional Land Use and Transportation Plan* states that the airport "shall continue its development as a local service general aviation and commercial airport." Implementation of the no action alternative could be construed as hindering development at the airport, thereby jeopardizing the full potential for future commercial service.

4.3.4 ANALYSIS

Implementation of the proposed action alternative results in the removal of all currently impacted residences from the 65 DNL noise contour by the year 2011. Conversely, implementation of the no action alternative results in the removal of only one residence from the 65 DNL noise contour. Additionally, the proposed action is consistent with plans, policies, and controls for the area. The no action compromises the airport's ability to meet the goals and objectives of national, state, and local planning tools.

The proposed action alternative results in no land use impacts. Due to the continued presence of residences within the 2011 65 DNL noise contour, the no action alternative results in less-than-significant land use impacts.

4.3.5 MITIGATION

No mitigation measures are required.

4.4 SOCIOECONOMIC IMPACTS, ENVIRONMENTAL JUSTICE, AND CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS

Socioeconomic impacts known to result from airport improvements are often associated with relocation activities or other community disruptions, including alterations

to surface transportation patterns, division or disruption of existing communities, interferences with orderly planned development, or an appreciable change in employment related to the project. Social impacts are generally evaluated based on areas of acquisition and/or areas of significant project impact, such as areas encompassed by noise levels in excess of 65 DNL.

Executive Order 12898, *Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations,* and the accompanying Presidential Memorandum, and Order DOT 5610.2, *Environmental Justice*, require FAA to provide for meaningful public involvement by minority and low-income populations as well as analysis that identifies and addresses potential impacts on these populations that may be disproportionately high and adverse.

Pursuant to Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks,* federal agencies are directed to identify and assess environmental health and safety risks that may disproportionately affect children. These risks include those that are attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products they may be exposed to.

4.4.1 THRESHOLDS OF SIGNIFICANCE

The thresholds of significance for this impact category are reached if the project negatively affects a disproportionately high number of minority or low-income populations or if children would be exposed to a disproportionate number of health and safety risks. Significant socioeconomic impacts would result if an extensive number of residents need to be relocated and sufficient replacement housing is unavailable; if extensive relocation of business is required and this relocation would create a severe economic hardship for the affected communities; if disruptions of local traffic patterns would substantially reduce the level of service of the roads serving the airport and the surrounding community; or, if there would be a substantial loss in the community tax base.

4.4.2 EXISTING CONDITIONS

Chapter Three provides a detailed description of the socioeconomic environment for the City of Flagstaff. The following sections provide a summary of the information as it relates to this impact category as well as additional information regarding the financial impact of the airport on the community as well as factors which may affect children's health or safety.

4.4.2.1 Financial Impact of Airport on Community

According to studies completed by the Arizona Department of Transportation, Aeronautics Division, the total direct economic impact of Flagstaff Pulliam Airport was $53.3 million in 2002. This impact originates from a variety of aviation-related activities including commercial air service, general aviation activities, cargo transport, military activities, and travel and tourism. Of the $53.3 million, $31.9 million are monies which are a direct result of the operation of the airport; the remaining $21.4 million are classified as "visitor spending" dollars.

4.4.2.2 Demographic Breakdown of Area Potentially Impacted by Proposed Improvements

Chapter Three provides information regarding the population of the Flagstaff area, as well as the racial breakdown of the area surrounding the airport. As indicated in Table 3C, the population of the City of Flagstaff, Coconino County, and the State of Arizona have historically grown at a steady pace. The growth of these areas is anticipated to continue in the future.

As indicated in Table 3D, the areas surrounding the airport contain a lower percentage of minority persons when compared to the city as a whole, Coconino County, and the State of Arizona.

4.4.2.3 Factors Which May Affect Children's Health or Safety

Due to the industrial nature of an airport, a number of substances which could affect a child's health or safety are present. However, measures are in place at the airport which would make it very hard for a child, or an adult, to access these substances.

The airport is located away from schools, playgrounds, athletic fields, and other areas attractive to children. The airport runway and land and airside facilities are secured by a perimeter security fence to restrict wildlife and un-authorized people, including children, from accessing the airport. Runway access is achieved through locked maintenance gates in the fence, from the airport T-hangars, and through the airport terminal building. The fence also restricts access to fuel storage, maintenance, and material/chemical storage areas.

4.4.3 ENVIRONMENTAL CONSEQUENCES

The following discussions address the direct and indirect impacts of implementation of the proposed action and no action alternatives.

4.4.3.1 Proposed Action

Socioeconomic Impacts

Direct socioeconomic impacts resulting from implementation of the proposed action alternative are primarily related to potential changes in employment related to the project. An increase in the number of markets served by the airport has the potential to introduce new airline service providers to the airport, such as Delta Airlines or United Airlines. This would likely result in an increase in the number of individuals employed at the airport. The increase in markets served also has the potential to increase the number of individuals which choose to fly into or out of Flagstaff Pulliam Airport. Direct service to cities such as Denver or Salt Lake City is appealing to those individuals who prefer to fly directly to their destination, or limit their number of aircraft changes. Indirect impacts resulting from the proposed improvements would most likely be realized in the tourism-related businesses.

Alterations to surface transportation patterns, division or disruption of existing communities, or interference with orderly planned development is not anticipated to occur with implementation of the proposed action alternative.

Environmental Justice Impacts

As described in Table 3D, areas which would be impacted by the proposed improvements, such as those contained within the 65 DNL noise contour, do not contain a higher percentage of minority populations than what exists at the city, county, or state levels. Therefore, a disproportionately high and adverse impact to minority populations is not anticipated.

Children's Environmental Health and Safety

After implementation of the proposed airport improvements, the airport will continue to operate in a manner similar as it does today. Therefore, access to substances which could affect a child's health or safety will still be limited. The perimeter fence would be relocated around the proposed improvements and maintained to restrict unauthorized persons from gaining access to the runway and other areas of potential health and safety risks. Potential elevated health and safety risks to children could result during construction of the proposed projects as disturbed soils and stockpiled materials pose potential pathways for increased fugitive soil/dust inhalation and ingestion by children. Additionally, the construction site, including areas of excavation, soil, and materials stockpiles, and construction equipment pose potential physical safety risks. Air quality and noise impacts resulting from the proposed development are considered less-than-significant. The

area surrounding the airport will receive a noise benefit with project implementation as no residences are contained within the 2011 65 DNL noise contour.

4.4.3.2 No Action

Socioeconomic Impacts

Implementation of the proposed action alternative would likely result in a change in the provider of commercial air service at the airport. This could result in a temporary loss of employment for those that are employed by the current commercial air service provider. Additionally, the economic benefit of the airport, as described in Section 4.4.2.1, would be affected should the airport have a lapse in commercial air service. Negative indirect impacts resulting from the no action alternative could also be realized in the tourism-related businesses.

Environmental Justice Impacts

Areas surrounding the airport do not contain a higher percentage of minority populations than what exists at the city, county, or state levels; therefore, a disproportionately high and adverse impact to minority populations is not anticipated.

Children's Environmental Health and Safety

With implementation of the no action alternative, the airport will continue to operate in a manner similar as it does today. Therefore, access to substances which could affect a child's health or safety will still be limited. While a number of homes are contained within the 2006 and 2011 65 DNL noise contour, the noise impacts on these residences are not considered to be disproportionate to children.

4.4.4 ANALYSIS

Impacts resulting from implementation of the proposed action or no action alternatives are anticipated to be less-than-significant. Implementation of the proposed action alternative would likely result in positive socioeconomic benefits to the Flagstaff area due to the enhancement of the commercial airline service. This enhancement would likely result in job creation and potential benefits to the tourism-related businesses. The no action alternative could potentially result in temporary negative socioeconomic impacts due to the anticipated transition in the commercial airline service provider at the airport.

The mitigation measures presented in the following section will alleviate potential impacts to children's health and safety with implementation of the proposed action alternative.

4.4.5 MITIGATION

Potential health and safety risks to children will be minimized through adherence to standard construction and safety practices implemented by the construction contractor. The disturbance and/or stockpiling of contaminated soils are not anticipated. Fugitive dust will be controlled by the application and maintenance of standard erosion and sedimentation control measures. The airport security fence will be relocated during construction; however, a secure perimeter would be maintained at all times.

The construction contractor will employ best management practices (BMPs) to restrict children from the construction site. These practices may include the posting of signs around the construction site, prohibiting access, fencing, warnings posted around areas of open excavation, and site policing.

4.5 SECONDARY (INDUCED) IMPACTS

Major development proposals often involve the potential for induced or secondary impacts on surrounding communities. When such potential exists, the EA shall describe in general terms such factors. Examples include: shifts in patterns of population movement and growth; public service demands; and changes in business and economic activity to the extent influenced by the airport development. Induced impacts will normally not be significant except where there are also significant impacts in other categories, especially noise, land use, or direct social impacts.

4.5.1 EXISTING CONDITION

The existing condition for the Flagstaff area, including planned growth, anticipated population increases, and the existing business and economic conditions, are described in detail within Chapter Three.

4.5.2 ENVIRONMENTAL CONSEQUENCES

4.5.2.1 Proposed Action

Direct and indirect secondary impacts anticipated to result from implementation of the proposed action alternative primarily relate to the potential financial impacts to

the existing business and economic conditions of the Flagstaff area. The existing airport is a major employer in the Flagstaff area and a catalyst for employment and future economic growth within the surrounding community, county, and state. The proposed action alternative is being advanced by the City of Flagstaff and is consistent with the airport master planning objectives and the city's planning and economic development objectives. The development of the projects contained within the proposed action would maintain the airport's competitiveness for the transportation of people for business and leisure, as well as the movement of materials produced in the region. Additionally, the implementation of this alternative would not result in the direct displacement of residences, businesses, agricultural operations, or result in the disruption of established communities.

The cumulative impact of the potential extension of John Wesley Powell Avenue primarily relates to potential shifts in patterns of population movement. The connection of John Wesley Powell Avenue to Lake Mary Road will provide an additional point of access to residences and businesses located east of the airport. Public service demands will also increase slightly due to required road maintenance, including plowing during snow events. This planned extension is contained within the City of Flagstaff Regional Land Use and Transportation Plan and has, therefore, been evaluated in terms of future land use planning and transportation planning for the City of Flagstaff. The extension is also evaluated within the Airport Master Plan and is compatible with the planned future development of the airport.

Based on the above analysis, the proposed airport development would result in less-than-significant direct and indirect induced socioeconomic impacts including impacts to population and growth trends, land use and development plans, and service and infrastructure improvement plans of the city. The proposed projects are consistent with the planning and development objectives of the City of Flagstaff and support the airport's position of prominence in the regional air service industry and its positive influence on the local economy.

4.5.2.2 No Action

Implementation of the no action alternative would not address the need to upgrade the airport runway to accommodate the transition from turbo-prop to regional jet aircraft and would, therefore, hinder future air service for the Flagstaff area. This is not consistent with the airport's defined roles in the national and state aviation systems.

The no action alternative is not consistent with the City of Flagstaff's planning goal, which is to maintain its prominence in the regional air service industry, or its master plan for capital improvements to the airport. The loss of the airport's regional competitiveness would potentially adversely affect the local and regional economies.

Under this alternative, employment, income, population patterns, and land use and development plans of the city and region would potentially be adversely affected.

4.5.3 ANALYSIS

Less-than-significant secondary impacts would result from implementation of the proposed action or no action alternatives. Implementation of the proposed action alternative would likely result in positive impacts to the business and economic condition of the area. The no action alternative would result in the airport's potential inability to fulfill its assigned role in the national and state aviation systems.

4.5.4 MITIGATION

No mitigation measures are required.

4.6 AIR QUALITY

The FAA is responsible for ensuring that appropriate analysis be contained within *National Environmental Policy Act* (NEPA) documents to disclose the potentially significant impact of a proposed action on the attainment and maintenance of air quality standards established by law or administrative determination. It is also the FAA's responsibility to assure that proposed actions conform with applicable State Implementation Plans (SIPs) when they have been prepared and adopted.

Air quality in a given location is described by the concentrations of various pollutants in the atmosphere. The significance of a pollutant concentration is determined by comparing it to the state and federal ambient air quality standards. The United States Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for six pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), sulphur dioxide (SO_2), lead (Pb), ozone (O_3), and particulate matter (PM-10 and PM-2.5).

Based upon both federal and state air quality standards, a specific geographic area can be classified under the federal and state *Clean Air Act* (CAA) as either being an "attainment," "non-attainment," or "maintenance" area for each criteria pollutant. The criterion for non-attainment designation varies by pollutant.

4.6.1 AIR QUALITY STANDARDS AND REGULATORY SETTING

The U.S. Environmental Protection Agency (EPA) has adopted air quality standards that specify the maximum permissible near-term and long-term concentrations of

various air contaminants. The National Ambient Air Quality Standards (NAAQS) consist of primary and secondary standards for each pollutant as presented in **Table 4G**. Primary air quality standards are established at levels to protect the public health from harm with an adequate margin of safety. Secondary standards are set at levels necessary to protect the public health and welfare from any known or anticipated adverse effects of a pollutant. All areas of the country are required to demonstrate attainment with the NAAQS. Arizona has adopted the federal ambient air quality standards.

The federal air quality standards focus on limiting the quantity of six criteria pollutants:

- Ozone (O_3)
- Carbon Monoxide (CO)
- Sulfur Dioxide (SO_x)
- Nitrogen Dioxide (NO_x)
- Particulate Matter (PM_{10} and $PM_{2.5}$)
- Lead (Pb)

TABLE 4G
State Ambient Air Quality Standards

Pollutant	Averaging Time	Primary Standard	Secondary Standard
Carbon Monoxide (CO) in parts per million (ppm)	8-hour 1-hour	9 35	– –
Nitrogen Dioxide (NO_x) in ppm	Annual	0.053	0.053
Ozone (O_3) in ppm	1-hour 8-hour	0.12 0.08	0.12 0.08
Lead (Pb) in micrograms per cubic meter	Quarterly Average	1.5	1.5
Particulate Matter (PM_{10}) in micrograms per cubic meter	Annual 24-hour	50 150	50 150
Particulate Matter ($PM_{2.5}$) in micrograms per cubic meter	Annual 24-Hour	65 15	65 15
Sulfur Dioxide (SO_x) in ppm	Annual 24-hour 3-hour	0.03 0.14 –	– – 0.50

Source: U.S. Environmental Protection Agency and Arizona Department of Environmental Quality

Air contaminants increase the aggravation and production of respiratory and cardiopulmonary diseases. The standards also establish the level of air quality which is necessary to protect the public health and welfare including, among other things, affects on crops, vegetation, wildlife, visibility, and climate, as well as affects on materials, economic values, and on personal comfort and well-being.

Within the Flagstaff area, the air quality programs are coordinated through the Arizona Department of Environmental Quality (ADEQ). Air quality programs are coordinated at the federal level by the EPA, Region IX. The *Clean Air Act* requires states with areas that exceed the NAAQS to develop plans for each area that, when implemented, will reduce air pollutants sufficiently for the standards to be attained. These attainment plans must be adopted by the state and submitted to the EPA in the form of a SIP. The ADEQ has the responsibility for developing a SIP that meets the goals of the *Clean Air Act*. Such plans outline the strategies the state expects to implement to achieve the required reductions.

4.6.2 EXISTING CONDITION

Coordination received from ADEQ, Air Quality Division (see **Appendix B**), states that the project is located in an Arizona attainment area. Consequently, there are no SIP requirements or specific control measures with respect to ambient air quality in the Flagstaff area as the area currently meets federal and state health standards for air pollution levels, including particulates.

4.6.3 EMISSIONS INVENTORY

Air pollutant emissions at Flagstaff Pulliam Airport were calculated using the FAA and U.S. Air Force's (USAF) Emissions and Dispersion Modeling System (EDMS), version 4.2. The EDMS model is listed among the EPA's preferred guideline models and has been identified by the FAA as the only acceptable model for estimating aircraft emissions at airports. It calculates emissions of pollutants associated with an airport, including aircraft, ground support equipment (i.e., fuel trucks), and automobiles. The emissions modeling element of EDMS summarizes pollutant levels in tons per year.

The emissions model does not calculate lead emissions; therefore, an assessment of these impacts cannot be made. Additionally, ozone emissions are not calculated by EDMS, however, volatile organic compounds (VOC) are a precursor to ozone. VOC combine with sunlight and oxides of nitrogen (NO_x) to form ozone. As a result, VOC emissions are used to estimate ozone emissions.

Regarding aircraft operations, EDMS addresses emissions during the four stages of flight: approach, taxiing and idling, take-off, and climb-out. Operations are defined as landing/take-offs or LTOs. One LTO is equivalent to two operations. Touch-and-go operations are treated differently because there are no taxiing and idling stages in the flight. The fleet mix utilized for the preparation of noise contours (Section 4.1) was also utilized for the emissions analysis.

Automobile trips associated with Flagstaff Pulliam Airport were also included in the analysis. For purposes of this study, the annual vehicle trips associated with the airport were calculated according to the Institute of Transportation Engineer's *Trip Generation Manual, 7th Edition*. Road length for the existing condition was estimated at one mile to include airport access. Vehicle speed was estimated at 35 miles per hour to account for the faster speeds on the state highway.

4.6.4 ENVIRONMENTAL CONSEQUENCES

Output data provided by the EDMS program are in tons per year. **Table 4H** provides the projected air pollutant emissions associated with the operations at Flagstaff Pulliam Airport under the 2006 and 2011 no action alternative and the 2006 and 2011 proposed action alternative. This includes emissions from aircraft, automobiles, ground support equipment, and fueling operations.

TABLE 4H
Emissions Inventory – Operational Emissions

	2006		2011	
Pollutant[1]	**No Action (tons/year)**	**Proposed Action (tons/year)**	**No Action (tons/year)**	**Proposed Action (tons/year)**
CO	591.39	599.23	647.87	668.27
VOC	21.01	21.96	22.89	25.02
NO_X	35.01	44.25	31.35	37.07
SO_X	4.59	5.73	5.07	5.55
PM_{10}	1.51	1.55	1.58	1.66
$PM_{2.5}$	5.80	7.14	6.86	6.93

[1] EDMS does not calculate emissions for Lead
Source: Coffman Associates analysis.

4.6.4.1 Proposed Action

The proposed action alternative air pollutant emissions were estimated using operations forecasts developed as part of the *2005 Flagstaff Pulliam Airport Master Plan*. These estimates include aircraft, ground support equipment, vehicle traffic, and stationary sources. As illustrated in **Table 4H**, the proposed action is not expected to increase the overall forecasted number of operations, but is expected to accommodate greater numbers of operations by corporate aircraft. As mentioned above, road length for 2006 and 2011 was estimated at one mile to include airport access. As was the case for the no action alternative, the EDMS program was directed to use the corresponding year's vehicle emissions data, as determined by the EPA and included in its database.

Construction-related emissions are included with the 2006 proposed action emission estimates. These emissions, which would be directly associated with implementation of the proposed action alternative, were forecasted utilizing the exhaust emis-

sion factors contained within the EPA's AP-42 Report published in September 1985. In calculating the emission factors, a number of "worst case scenario" assumptions were made, as follows.

- Construction of the proposed action improvements would take approximately three months.

- Construction equipment would include two off-highway trucks, two scrapers, two wheeled dozers, one tracked tractor, one tracked loader, one wheeled loader, two rollers, one motor grader, and two miscellaneous pieces of construction equipment.

- All the construction equipment would be utilized for eight hours per day.

Construction-related (indirect) emissions would be short-term and are presented in **Table 4J**. Various construction-related air quality mitigation measures are available during the construction of the proposed improvement. These measures were not incorporated into the analysis and are discussed within Sections 4.19.3 and 4.21 of this chapter.

TABLE 4J
Emissions Inventory — Construction Emissions

	Proposed Action
Pollutant[1]	**tons/year[2]**
CO	2.43
NO_x	6.30
SO_x	0.94
PM_{10}	0.63

[1] Construction emission factors are not available for $PM_{2.5}$ or VOC.
[2] It is anticipated that construction will last approximately three months.
Source: Coffman Associates analysis.

4.6.4.1.1 General Conformity Evaluation

The regulations implementing Section 176(c) of the *Clean Air Act* apply to areas designated as non-attainment or maintenance for the various criteria pollutants. Flagstaff Pulliam Airport is located in an area designated as attainment for the criteria pollutants of the NAAQS. To determine whether a formal General Conformity Determination is required for the proposed project, a conformity evaluation was undertaken. As part of this evaluation, the net project emissions (proposed action alternative operation and construction emissions minus no action alternative emissions) were compared to the threshold emission rates contained within 40 CFR 93.153(b). If the net project rates are below the threshold emission rates, the project emissions are considered de minimis and a General Conformity Determination is not required.

Based on the evaluation contained in **Table 4K**, the forecasted net emissions of the proposed project are below the threshold emission rates. Therefore, the emissions are considered de minimis and the project is presumed to conform. Further air emissions analysis is not required.

TABLE 4K
Conformity Evaluation

Pollutant[1]	Threshold Emission (tons/yr)[2]	Construction and Operation Net Emission Rates (tons/yr)
CO	100	22.84
NO_x	100	12.02
SO_x	100	1.14
PM_{10}	100	0.70

[1] Construction emission factors are not available for $PM_{2.5}$ or VOC.
[2] The Flagstaff area is in attainment for all criteria pollutants; therefore, the maintenance classifications were used for the conformity determination.
Source: Coffman Associates analysis.

4.6.4.2 No Action

Under federal air quality modeling and analysis guidelines, the no action alternative represents the baseline condition to which the proposed action alternative is compared. The no action alternative air pollutant emissions were estimated using operations forecasts developed as part of the *2005 Flagstaff Pulliam Airport Master Plan;* as such, these estimates represent total impacts of the airport and include the emissions from aircraft, ground support equipment, vehicle traffic, and stationary sources (fuel tanks and solvents). The no action alternative is not expected to have construction-related air quality impacts as no new development at the airport would take place under this scenario. Road length for the 2006 and 2011 no action alternative was estimated as one mile to include airport access. The EDMS program was directed to use the corresponding year's vehicle emissions data, as determined by the EPA and included in its database.

4.6.5 ANALYSIS

With implementation of the mitigation measures discussed in Section 4.19, Construction, the proposed action alternative will result in less-than-significant air quality impacts. The no action alternative will result in less-than-significant air quality impacts as the airport will continue to operate in a manner similar to what it does today.

4.6.6 MITIGATION MEASURES

Mitigation measures for the proposed action alternative are discussed in Sections 4.19.3 and 4.21.

4.7 WATER QUALITY

The *Clean Water Act* provides the authority to establish water quality standards, control discharges, develop waste treatment management plans and practices, prevent or minimize the loss of wetlands, and regulate other issues concerning water quality. Water quality concerns related to airport development most often relate to the potential for surface runoff and soil erosion as well as the storage and handling of fuel, petroleum products, solvents, etc.

4.7.1 THRESHOLDS OF SIGNIFICANCE

Water quality regulations and issuance of permits will normally identify any deficiencies in the proposed development with regard to water quality or any additional information necessary to make judgments on the significance of impacts. Difficulties in obtaining needed permits for the project, such as National Pollutant Discharge Elimination System (NPDES) or Section 404 permits, typically indicates a potential for significant water quality impacts.

4.7.2 EXISTING CONDITION

Currently, storm water runoff associated with the airport drains from the Wiseman Aviation fixed base operator facility area into the detention basin located northwest of the terminal area. Storm water runoff south of the fixed base operator facility drains towards the south end of the airfield into either the Joy Cone Company detention basin or into the Pumphouse Wash.

Water resources surrounding the airport facility drain into three surface water systems. A small portion of the airport facility (west and south end) drains into the Pumphouse Wash and ultimately into the Verde River via Oak Creek. The area located on the north side of the airport facility drains into the Rio de Flag, a first order tributary that drains into the San Francisco Wash and ultimately into the Little Colorado River. The area located on the east side of the airport facility drains into a first order tributary of Skunk Creek, which drains into Walnut Canyon and ultimately into the Little Colorado River via the San Francisco Wash.

Flagstaff Pulliam Airport operates in conformance with Section 402(p) of the *Clean Water Act*. The City of Flagstaff holds an Arizona Pollutant Discharge Elimination System (AZPDES) General Permit for storm water discharges.

The airport's fuel storage facilities are located at three areas on the airfield. Wiseman Aviation, the fixed base operator, owns and operates two 12,000-gallon above ground storage tanks for Jet A fuel and 100LL avgas. Guardian Air Ambulance owns and operates one, 10,000-gallon above ground storage tank for Jet A fuel. Peabody Coal Company owns and operates one, 10,000-gallon above ground storage tank for Jet A fuel. Fuel is dispensed through mobile fuel trucks owned by Wiseman Aviation. There are no automobile gasoline or diesel fuel storage tanks located at the airport. A mobile diesel fuel truck, used to fuel airport-owned vehicles, is housed at the airport maintenance hangar and is replenished via a City of Flagstaff diesel fuel truck. Rental cars must obtain automobile fuel off-airport property.

Aircraft deicing activities at the airport generally take place at the apron area near the fixed base operator and the terminal building. Wiseman Aviation provides deicing services for both general aviation and commercial users. Runoff from these activities flows north or northwest into the detention basin. Because the airport only uses between 25,000 and 35,000 gallons of deicing material (ethylene glycol) a year, well below the 100,000-gallon annual threshold, the airport is not required to monitor outfalls from the airport facility that collect runoff from the areas in which deicing activities occur (EPA's NPDES Storm Water Multi-Sector General Permit MSGP, Table S-1).

4.7.3 ENVIRONMENTAL CONSEQUENCES

4.7.3.1 Proposed Action

Implementation of the proposed action alternative will result in an increase in impermeable surfaces on the site, thereby resulting in an increase in surface water runoff at the airport. Additionally, construction of the proposed improvements may have limited, short-term affects on surface water quality, particularly an increase in suspended sediments during and shortly after precipitation events in the construction phase.

Based on a telephone conversation (July 15, 2004) with Mr. Drew Swieczkowski (602 / 417 – 2448) of the Arizona Department of Water Resources, the nature of the improvements to the airport are not anticipated to adversely affect surface water resources or ground water recharge.

As discussed within the existing condition, the City of Flagstaff maintains an AZPDES General Permit for continuing operation of an industrial facility. Implementation of the proposed action alternative will require a modification of this per-

mit to reflect the additional impervious surfaces and any mitigation measures which could be implemented during the final design of the project. Additionally, a construction-related AZPDES permit will be required prior to construction of the proposed improvements. This permit requires a Notice of Intent for all construction activities disturbing one acre or more of land. Construction-related water quality impacts are discussed under Section 4.19, Construction, and will be minimized through the use of best management practices.

There are no permanent bodies of water within the project area. However, there are several small first order tributaries (dry washes) that are considered "waters of the U.S." by the U.S. Army Corps of Engineers. Construction of the proposed airport improvements will directly impact the first order tributary of Rio de Flag. The location of this wash is depicted on Exhibit 3E. Approximately 2,700 feet of this wash will need to be channelized to allow for the proposed airport improvements. A U.S. Army Corps of Engineers 404 Permit will need to be obtained to comply with the *Clean Water Act*. These impacts are discussed further within Section 4.8, Wetlands and Waters of the U.S.

Changes to fueling or maintenance facilities are not proposed within the proposed action alternative. An increase in the use of deicing material is anticipated as operations at the airport increase; however, it is not anticipated that the airport will exceed the 100,000-gallon threshold. (Exceeding this threshold would require the installation of a deicing collection system)

Indirect impacts may occur to water quality as an increase in impermeable surfaces occurs in the area; however, these impacts can be mitigated through proper design and permitting.

4.7.3.2 No Action

Implementation of the no action alternative will result in no development activities at the airport; therefore, no impacts to water quality are anticipated.

4.7.4 ANALYSIS

Implementation of the proposed action alternative will require a number of permits be obtained to alleviate potential water quality impacts. These permits include an AZPDES construction permit (discussed further within Section 4.19), a Section 404 permit from the U.S. Army Corps of Engineers (discussed further in Section 4.8), and the City of Flagstaff's existing AZPDES operating permit will need to be modified to include the additional impervious surfaces at the airport. Additionally, a water quality certificate, in accordance with the 1982 Airport Act, will be required. This will be pursued during the project permitting processes. It is anticipated that

impacts to water quality will be mitigated through the various permitting processes; therefore, implementation of the proposed action alternative is anticipated to result in less-than-significant impacts to water quality.

The no action alternative will result in no impacts to water quality, as no construction would occur.

4.7.5 MITIGATION

Mitigation measures for the proposed action alternative relate primarily to construction-related impacts and impacts to designated waters of the U.S. Therefore, mitigation measures are discussed within Sections 4.8 and 4.19.

4.8 WETLANDS AND WATERS OF THE U.S.

The U.S. Army Corps of Engineers (COE) regulates the discharge of dredged and/or fill material into waters of the United States, including adjacent wetlands, under Section 404 of the *Clean Water Act*.

Wetlands are defined by Executive Order 11990, *Protection of Wetlands*, as those areas that are inundated by surface or groundwater with a frequency sufficient to support, and under normal circumstances, does or would support a prevalence of vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Categories of wetlands include swamps, marshes, bogs, sloughs, potholes, wet meadows, river overflows, mud flats, natural ponds, estuarine areas, tidal overflows, and shallow lakes and ponds with emergent vegetation. Wetlands exhibit three characteristics: hydrology, hydrophytes (plants able to tolerate various degrees of flooding or frequent saturation), and poorly drained soils.

4.8.1 THRESHOLDS OF SIGNIFICANCE

As outlined within FAA Orders 1050.1E and 5050.4A, a significant impact to wetlands would occur when the proposed action causes any of the following.

- The action would adversely affect the function of a wetland to protect the quality or quantity of municipal water supplies, including sole source, potable water aquifers.

- The action would substantially alter the hydrology needed to sustain the functions and values of the affected wetland or any wetlands to which it is connected.

- The action would substantially reduce the affected wetland's ability to retain floodwaters or storm-associated runoff, thereby threatening public health, safety, or welfare.

- The action would adversely affect the maintenance of natural systems that support wildlife and fish habitat or economically-important timber, food, or fiber resources in the area or surrounding wetlands.

- The action would be inconsistent with applicable state wetland strategies.

4.8.2 EXISTING CONDITION

A jurisdictional determination was undertaken for the northeastern portion of airport property in September 2004. A copy of this delineation is included within **Appendix G** of this EA. The results of this jurisdictional determination are depicted on Exhibit 3E in Chapter Three. As depicted on the exhibit, the jurisdictional areas are located along, and north of, existing Taxiway A.

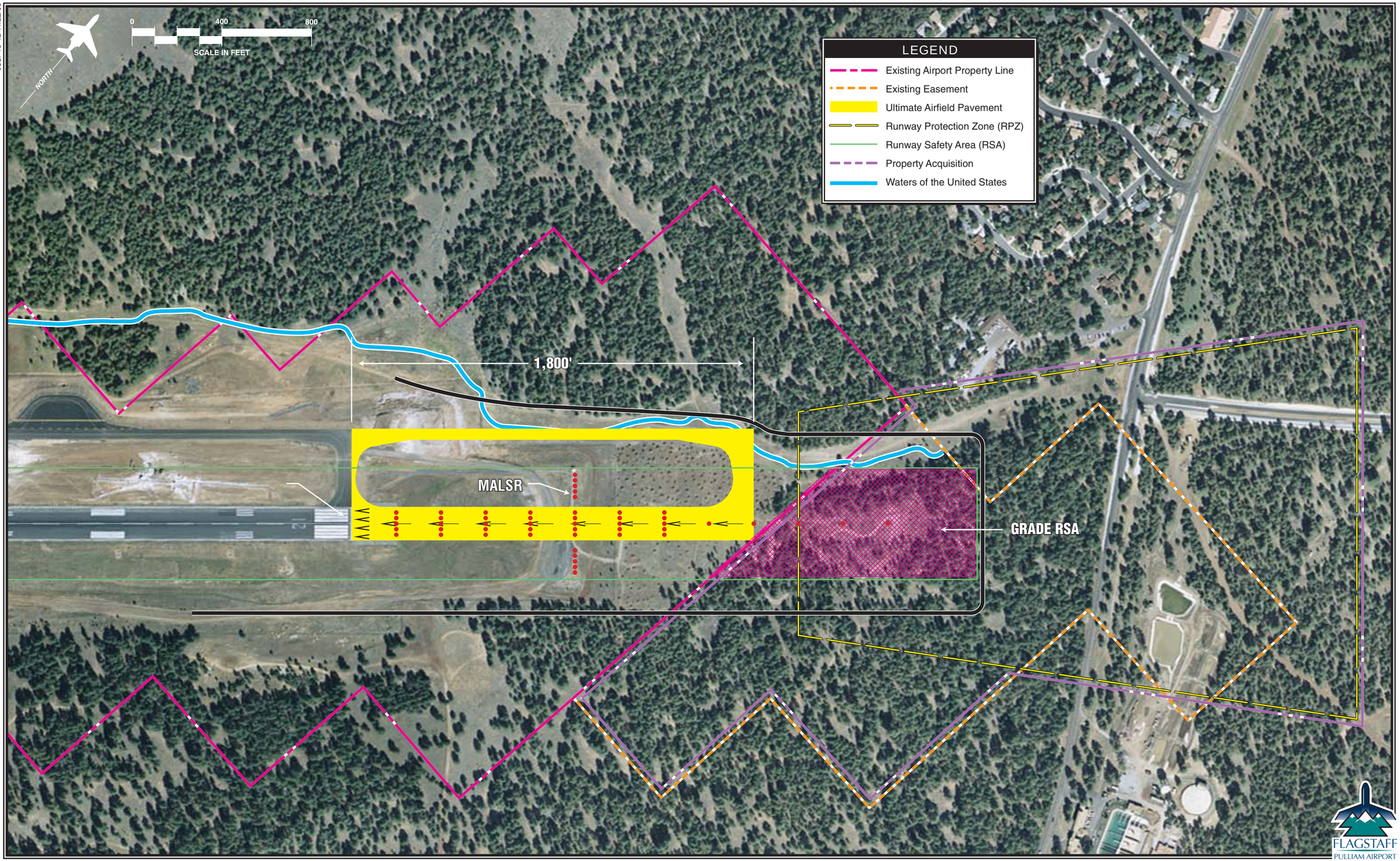
4.8.3 ENVIRONMENTAL CONSEQUENCES

4.8.3.1 Proposed Action

Direct wetland impacts resulting from implementation of the proposed action alternative are limited to the areas along, and north of, existing Taxiway A. As discussed within Section 4.7, Water Quality, approximately 2,700 feet of the first order tributary of the Rio de Flag will need to be channelized to allow for the proposed airport improvements. **Exhibits 4L and 4M** depict the impact of the proposed development on the delineated area. The width of the water course is approximately six (6) feet and therefore would involve a relocation of approximately 0.30 acre which is less than the 0.50 acre threshold for Section 404 Nationwide Permit Program. Nationwide permit (NWP) 14 for Linear Transportation Projects allows "activities required for the construction, expansion, modification, or improvement of linear transportation crossings (e.g., highways, railways, trails, airport runways, and taxiways) in waters of the U.S. ..." providing that certain limitations are not exceeded and specific conditions are met.

Due to design requirements for runway and taxiway systems, no practicable alternative exists to avoid impacting this jurisdictional area. During final design of the proposed development, efforts will be made to minimize the direct and indirect wetland impacts to the fullest extent possible. Direct wetland impacts would result from the actual modification of the jurisdictional area. Indirect impacts would result from construction impacts. Measures which can be utilized to minimize indirect impacts primarily include the use of BMPs during construction.

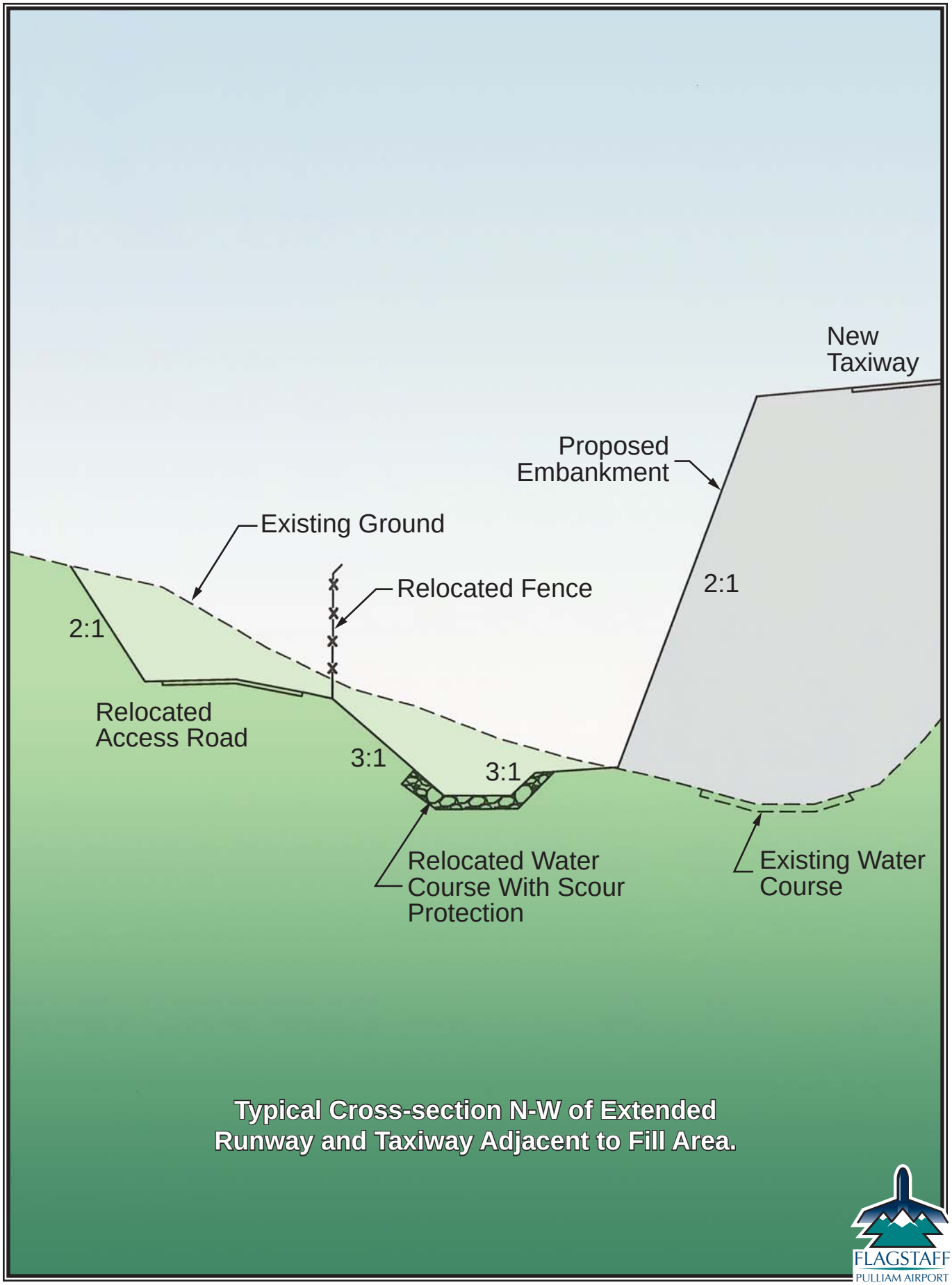
03SP13-4L-11/22/05



FLAGSTAFF
PULLIAM AIRPORT

Exhibit 4L
IMPACTS TO WETLANDS AND WATERS OF THE U.S.

03SP13-4M-11/22/05



FLAGSTAFF
PULLIAM AIRPORT

Exhibit 4M
TYPICAL CROSS-SECTION N-W OF EXTENDED
RUNWAY & TAXIWAY ADJACENT TO FILL AREA

During design of the proposed airport improvements, coordination with the U.S. Army Corps of Engineers will be required to determine the level of Section 404 permitting which will be required.

4.8.3.2 No Action

Implementation of the no action alternative will result in no development activities at the airport; therefore, no impacts to wetlands or waters of the U.S. are anticipated.

4.8.4 ANALYSIS

Implementation of the proposed action alternative will result in impacting approximately 2,700 feet of the delineated waters of the U.S. located along, and north of, Taxiway A. Project design will allow for this area to be relocated along the extended Taxiway A; therefore, it is not likely the action would substantially alter the hydrology needed to sustain the functions and values of the affected wetland or any wetlands to which it is connected. Additionally, the impact would likely not reduce the jurisdictional area's ability to retain floodwaters or storm-associated runoff; not affect fish or wildlife habitat, as the area to be disturbed is already subject to landscape maintenance and aviation activities; and would not adversely affect the function of a wetland to protect the quality or quantity of municipal water supplies. Based on this information, implementation of the proposed action alternative is anticipated to result in less-than-significant impacts to wetlands or waters of the U.S.

No construction would occur with implementation of the no action alternative; therefore, no impacts to wetlands or waters of the U.S. would occur.

4.8.5 MITIGATION

No mitigation required.

4.9 FLOODPLAINS

Executive Order 11988 directs federal agencies to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by the floodplains. Department of Transportation (DOT) Order 5650.2 contains DOT's policies and procedures for implementing the executive order. Agencies are required to make a finding that there is no practicable alternative before taking action that would encroach on a base floodplain based on a 100-year flood.

4.9.1 THRESHOLDS OF SIGNIFICANCE

Floodplain impacts would be considered significant if the encroachment would result in either: (1) a high probability of loss of human life; or (2) substantial encroachment-associated costs or damage, including interrupting aircraft service or loss of a vital transportation facility; or (3) adverse impacts on natural and beneficial floodplain values.

Mitigation measures for base floodplain encroachments may include committing to special flood-related design criteria, elevating facilities above base flood level, locating nonconforming structures and facilities out of the floodplain, or minimizing fill placed in floodplains.

4.9.2 EXISTING CONDITION

The project area does not contain any designated 100- or 500-year floodplains.

4.9.3 ENVIRONMENTAL CONSEQUENCES

No direct or indirect impacts to floodplain resources would be experienced with implementation of the proposed action or no action alternatives as no floodplains are present within the project area.

4.9.4 ANALYSIS AND MITIGATION

No floodplain resources are present in the project area; therefore, no mitigation measures are required.

4.10 HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Determination of a project's environmental impact to historic and cultural resources is made under guidance in the *National Historic Preservation Act (NHPA) of 1966*, as amended, the *Archaeological and Historic Preservation Act (AHPA) of 1974*, the *Archaeological Resources Protection Act (ARPA)*, and the *Native American Graves Protection and Repatriation Act (NAGPRA) of 1990*. In addition, the *Antiquities Act of 1906*, the *Historic Sites Act of 1935*, and the *American Indian Religious Freedom Act of 1978* also protect historical, architectural, archaeological, and cultural resources.

Section 106 of the NHPA of 1966, as amended, requires federal agencies to take into account the effects of their undertakings on historic properties and determine if any properties in, or eligible for inclusion in, the National Register of Historic Places are present in the area. In addition, it affords the Advisory Council on Historic Preservation a reasonable opportunity to comment. The historic preservation review process mandated by Section 106 is outlined in regulations issued by the council.

The ARPA is triggered by the presence of archaeological resources on federal or Indian lands. The AHPA describes the process when consultation with resource agencies indicates that there may be an impact on significant scientific, prehistoric, historic, archaeological, or paleontological resources. The process provides for the preparation of a professional resource survey of the area. Should the survey identify significant resources, the National Register process described above will be followed. Should the survey be inconclusive, a determination is made whether it is appropriate to provide a commitment to halt construction if resources are recovered, in order for a qualified professional to evaluate their importance and provide for data recovery, as necessary.

The NAGPRA is triggered by the possession of human remains or cultural items by a federally-funded repository or by the discovery of human remains or cultural items on federal or tribal lands and provides for the inventory, protection, and return of cultural items to affiliated Native American Groups. The Act includes provisions that, upon inadvertent discovery of remains, the action will cease in the area where the remains were discovered and the appropriate agency will be notified.

The *Antiquities Act of 1906* was the first general law providing protection for archaeological resources. It protects all historic and prehistoric sites on federal lands and prohibits excavation or destruction of such antiquities without the permission of the Secretary of the department having jurisdiction.

The *Historic Sites Act of 1935* declares as national policy the preservation for public use of historic sites, buildings, objects, and properties of national significance. It gives the Secretary of the Interior authority to make historic surveys, to secure and preserve data on historic sites, and to acquire and preserve archaeological and historic sites. This Act also establishes the National Historic Landmarks program for designating properties having exceptional value in commemorating or illustrating the history of the United States.

The *American Indian Religious Freedom Act of 1978* requires consultation with Native American groups concerning proposed actions on sacred sites, on federal land, or affecting access to sacred sites. It establishes federal policy to protect and preserve for American Indians, Eskimos, Aleuts, and Native Hawaiians their right to free exercise of their religion. It allows these peoples to access sites, use and possess sacred objects, and freedom to worship through ceremonial and traditional rites. The Act requires federal agencies to consider the impacts of their actions on religious sites and objects that are important to Native Americans regardless of the

eligibility for the NRHP. Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments,* and the Presidential Memorandum of April 29, 1994, *Government to Government Relations with Native American Tribal Governments,* outline the government-to-government consultation process between the federal agency and the potentially affected tribe.

4.10.1 THRESHOLDS OF SIGNIFICANCE

The action would affect a property that is on or eligible for inclusion in the NHRP if it has the potential to alter the characteristics of the property which make it eligible for listing. Federal agencies can make one of three types of "effects findings" for an action: "no properties effected," "no adverse effect," and "adverse effect." The level of finding depends upon how severely a project would alter the characteristics of a property that make it eligible for the NRHP. Although the FAA works closely with the State Historic Preservation Officer (SHPO) and/or the Tribal Historic Preservation Officer (THPO), the FAA is ultimately responsible for the effect decision, not the SHPO or THPO.

The Section 106 consultation process includes consideration of alternatives to avoid adverse effects on National Register listed or eligible properties; of mitigation measures; and of accepting adverse effects. The FAA makes the final determination on the level of effect and advice from the SHPO/THPO may assist FAA in making that determination.

4.10.2 EXISTING CONDITION

To inventory existing historical, architectural, archaeological, and cultural resources, an Area of Potential Effect (APE) was defined. The APE is the geographical area or areas within which an undertaking may directly or indirectly cause changes in the character of historic resources, if any such resources exist. For airport projects, the APE is generally defined as the area to be disturbed by, or acquired under, the proposed action alternative. The APE for this EA is depicted on **Exhibit 4N** and was agreed upon through coordination between the FAA and the SHPO. The APE includes those areas which would be physically impacted by development of the proposed airport improvements (i.e., runway extension areas and borrow area) as well as those areas which are contained within the proposed action's 65 DNL noise contour.

Appendix D contains a copy of the cultural resource studies and surveys which were conducted as part of this EA. Class I project and site records searches were conducted in December 2003 at various locations to determine the presence of previously identified resources. This background research was followed up by a Class III intensive survey for the 279 acres of land contained within the defined APE.

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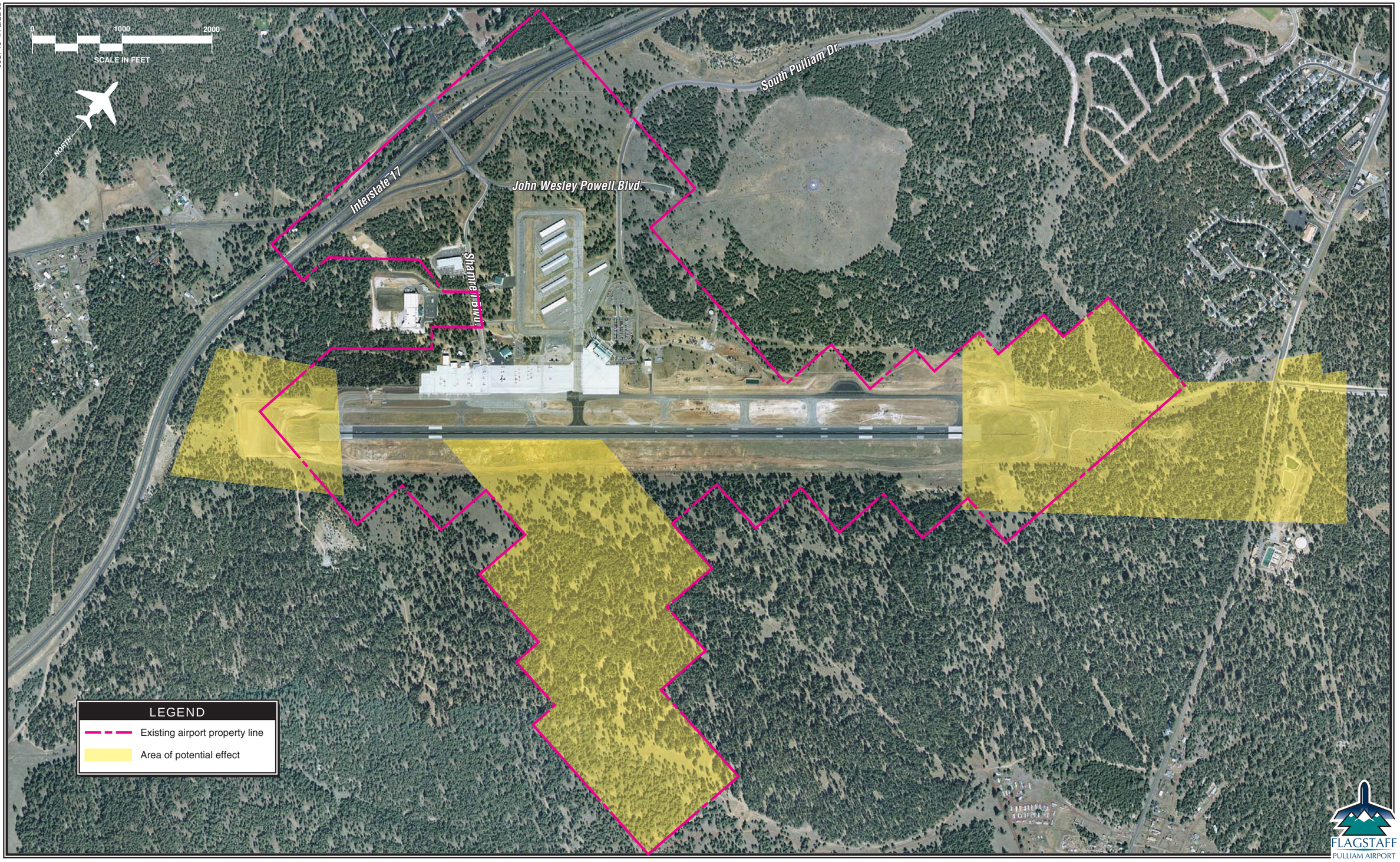

FLAGSTAFF
PULLIAM AIRPORT

Exhibit 4N
AREA OF POTENTIAL EFFECT

(This survey partially relied on the findings of two additional surveys which were completed in August 2000. Copies of these surveys are also included in **Appendix D**.) The surveys were conducted by walking parallel transects across the areas spaced at 15 meter intervals. All historic remains greater than 50 years of age were recorded. Portions of three previously recorded historic timer railroads were identified, but these resources were determined not to be eligible for listing within the NRHP. Isolated historic artifacts were noted within the APE as were circa 1950s-1960s dump cites; however, none of these materials were deemed significant or eligible for listing. The results of the survey indicated that no eligible cultural resources are located within the APE. The FAA concurred with this determination.

As part of the Section 106 process for this project, the FAA forwarded a copy of the cultural resources surveys as well as their determination of no significant effect to the SHPO. The SHPO concurred with FAA's determination that the proposed projects at Flagstaff Pulliam Airport will not affect any historic properties listed, or eligible for listing, on the NHRP. A copy of the letter from the SHPO is contained within **Appendix B**.

Tribal coordination was undertaken at the onset of the project, as well as at the conclusion of the cultural resources surveys, to identify any concerns related to potential impacts to tribal resources. No Native American tribes indicated concerns regarding impacts to potential tribal resources. Copies of the correspondence received from the tribes are contained within **Appendix B**.

4.10.3 ENVIRONMENTAL CONSEQUENCES

4.10.3.1 Proposed Action

Based on the survey findings, the FAA determined that the proposed airport improvements would not affect any historic properties listed, or eligible for listing, on the NHRP. The SHPO concurred with FAA's findings in a letter dated August 3, 2004. A copy of this letter is contained within **Appendix B**.

The Hopi Tribe, in a letter dated July 29, 2004, stated that the proposed improvements are unlikely to effect cultural resources significant to the Hopi Tribe, and concurred that a finding of no historic properties affected is appropriate for the project.

Both the SHPO and Hopi Tribe indicated that if any cultural features or deposits are encountered during construction, all construction activities in the vicinity of the find will cease until a determination can be made as to its/their significance and, if necessary, a data recovery plan be implemented. If further on-site investigation is required, all subsequent recommendations shall conform to Section 106 of the NHPA.

Due to the lack of impacts to this resource category, indirect impacts are not anticipated.

4.10.3.2 No Action

Implementation of the no action alternative will result in no development activities at the airport; therefore, no impacts to historic or cultural resources are anticipated.

4.10.4 ANALYSIS

Results of surveys of the proposed project site as well as agency and tribal coordination have indicated that the proposed action alternative is not anticipated to result in significant impacts to cultural resources; therefore, a less-than-significant impact to cultural or historic resources would likely occur with implementation of the proposed action alternative. No impact to these resources would occur with implementation of the no action alternative as no construction would occur.

4.10.5 MITIGATION

No mitigation measures are required.

4.11 DEPARTMENT OF TRANSPORTATION ACT: SECTION 4(f)

Section 4(f) of the DOT Act, which was recodified and renumbered as Section 303(c) of 49 USC, provides that the Secretary of Transportation will not approve any program or project that requires the use of any publicly owned land from a historic site, public parks, recreation areas, or waterfowl and wildlife refuges of national, state, regional, or local importance unless there is no feasible and prudent alternative to the use of such land, and the project includes all possible planning to minimize harm resulting from the use.

4.11.1 THRESHOLDS OF SIGNIFICANCE

A significant impact would occur when a proposed action either involves more than a minimal use of a Section 4(f) property or is deemed a “constructive use,” thereby substantially impairing the 4(f) property, and mitigation measures do not eliminate or reduce the effects. Substantial impairment would occur when impacts to Section 4(f) lands are sufficiently serious so that the value of the site in terms of its prior significance and enjoyment are reduced or lost.

4.11.2 EXISTING CONDITION

The following sections outline those resources in the vicinity of Flagstaff Pulliam Airport which may be considered Section 4(f) properties.

4.11.2.1 Publicly Owned Parks and Recreation Areas

As described in Chapter Three, Section 3.2.1.2, a number of parks and recreation areas are located within the immediate study area. These include Fort Tuthill County Park, portions of the Flagstaff Urban Trail System, University Highlands Park, Ponderosa Trails Park, and the Bow and Arrow Trail Community Park. The nearest National Park Unit is Walnut Canyon National Monument which is located approximately nine miles east of the airport.

During the agency scoping process initiated at the start of this EA, the National Park Service indicated concerns regarding the impact of aircraft operations at the airport on various National Park Units including Walnut Canyon National Monument, Sunset Crater National Monument, Wupatki National Monument, Grand Canyon National Park, and Montezuma and Tuzigoot National Monuments. A copy of the letter received from the National Park Service is included within **Appendix B**.

4.11.2.2 Wildlife or Waterfowl Refuges

No wildlife or waterfowl refuges are located in the vicinity of Flagstaff Pulliam Airport.

4.11.2.3 Historic Sites

According to the cultural resources survey completed by NORTHLAND Research Group, Inc. (included in **Appendix D**), no historic sites are located in the vicinity of Flagstaff Pulliam Airport.

4.11.3 ENVIRONMENTAL CONSEQUENCES

4.11.3.1 Proposed Action

To determine potential impacts on Section 4(f) resources, consultation with the City of Flagstaff and the National Park Service was undertaken. Within a response letter, dated September 9, 2004, the City of Flagstaff indicated that the proposed project "would not result in the direct acquisition or real property from existing park

land or the substantial impairment or proposed recreational properties in the vicinity of the airport."

In response to the National Park Service's concerns regarding the cumulative impact of the proposed airport improvement on various National Park Units, the Supplemental Noise Analysis contained within Section 4.2 was undertaken. Results of this analysis indicated that the park units would not likely be substantially impaired. Substantial impairment occurs when impacts to Section 4(f) lands are sufficiently serious so that the value of the site in terms of its prior significance and enjoyment are reduced or lost. While the gridpoint analysis at Walnut Canyon National Park indicated that noise levels would increase with implementation of the proposed improvements, these increases are minimal and likely not even perceptible by the human ear. Please refer to the findings of Section 4.2 for a full description of the cumulative impact analysis completed to address the concerns of the National Park Service.

4.11.3.2 No Action

No development would occur with implementation of the no action alternative; therefore, no impacts to Section 4(f) resources are anticipated.

4.11.4 ANALYSIS

Coordination undertaken with the City of Flagstaff, and analysis completed for the National Park Units, indicate that less-than-significant impacts to Section 4(f) resources would occur with implementation of the proposed action alternative. The no action alternative would result in no impacts to Section 4(f) resources.

While, the City of Flagstaff has no direct control over aircraft utilizing their airport once the aircraft have left the ground, the city will make every effort to encourage pilots utilizing the airport to avoid overflight of the Grand Canyon National Park (GCNP). Should a commercial service provider choose to service the Salt Lake City market, the city will lobby this provider to select a high altitude victor route which will avoid the GCNP.

4.11.5 MITIGATION

No mitigation measures are necessary.

4.12 FISH, WILDLIFE, AND PLANTS

Section 7 of the Endangered Species Act (ESA), as amended, applies to federal agency actions and sets forth requirements for consultation to determine if the proposed action "may affect" a federally-endangered or threatened species. If an agency determines that an action "may affect" a federally-protected species, then Section 7(a)(2) requires each agency to consult with the U.S. Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (MNFS), as appropriate, to ensure that any action the agency authorizes, funds, or carries out is not likely to jeopardize the continued existence of any federally-listed endangered or threatened species or result in the destruction or adverse modification of critical habitat. If a species has been listed as a candidate species, Sec. 7 (a)(4) states that each agency must confer with the FWS and/or MNFS.

The *Sikes Act* and various amendments authorize states to prepare statewide wildlife conservation plans, and the Department of Defense (DOD) to prepare similar plans, for resources under their jurisdiction. Airport improvement projects should be checked for consistency with the State or DOD Wildlife Conservation Plans where such plans exist.

The *Fish and Wildlife Coordination Act* requires that agencies consult with the state wildlife agencies and the Department of the Interior concerning the conservation of wildlife resources where the water of any stream or other water body is proposed to be controlled or modified by a federal agency or any public or private agency operating under a federal permit.

The *Migratory Bird Treaty Act* (MBTA) prohibits private parties and federal agencies in certain judicial circuits from intentionally taking a migratory bird, their eggs, or nests. The MBTA prohibits activities which would harm migratory birds, their eggs, or nests unless the Secretary of the Interior authorizes such activities under a special permit.

Executive Order 13112, *Invasive Species*, directs federal agencies to use relevant programs and authorities, to the extent practicable and subject to available resources, to prevent the introduction of invasive species, and provide for restoration of native species and habitat conditions in ecosystems that have been invaded. FAA is to identify proposed actions that may involve risks of introducing invasive species on native habitat and populations. "Introduction" is the intentional or unintentional escape, release, dissemination, or placement of a species into an ecosystem as a result of human activity. "Invasive Species" are alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health.

4.12.1 THRESHOLDS OF SIGNIFICANCE

A significant impact to federally-listed threatened or endangered species would occur when the FWS or NMFS determines that the proposed action would likely jeopardize the continued existence of the species in question, or would result in the destruction or adverse modification of critical habitat for the species. However, an action need not involve a threat to extinction to federally-listed species to result in a significant impact, lesser impacts including impacts on non-listed species could also constitute a significant impact. Consultation with agencies or organizations having jurisdiction or special expertise concerning the protection and/or management of the species should be utilized in cases such as this.

4.12.2 EXISTING CONDITION

Flagstaff Pulliam Airport is located in an area of flat to gently sloping terrain. Soils in the project area are of a silty texture derived from Kaibab limestone. Some limestone cobbles and pebbles exist on the soil surface naturally, and other rocks and boulders have been spilled into the area, probably from past construction activities.

Vegetation within the project area is dominated by herbaceous species such as the yellow sweet clover, white clover, scarlet gaura, and sunflower. Ponderosa pine trees are the most common trees and grow in nearly pure stands outside existing airport fencing. The stands appear to be last harvested in the early decades of the 20th century and have regenerated as dense, stunted trees 60 to 80 feet tall and up to 80 years old. To the east of the airport, the canopy is nearly complete, except for infrequent openings in a few drainages that support a mix of native grasses. A heavy forest litter has accumulated, with little or no herbaceous cover in the denser stands.

As part of this EA, the U.S. Fish and Wildlife Service (FWS) and the Arizona Game and Fish Department (AGFD) were contacted for information regarding potential impacts to wildlife, plants, and native habitat as a result of the proposed project. These agencies provided a list of protected species for Coconino County.

To further define the existing environmental condition, two surveys were completed: a biological assessment (BA) and a noxious weed assessment. The findings of these two surveys are described within the following sections.

4.12.2.1 Biological Assessment

The purpose of the BA is to present the results of surveys for species of concern identified by the U.S. Forest Service (USFS), U.S. Fish and Wildlife Service (FWS), and the State of Arizona Game and Fish Department (AZGFD). A copy of the BA in

its entirety is contained within **Appendix F**. Field surveys were completed on approximately 315 acres of land in those areas which would be potentially disturbed by development of the proposed airport improvements. Within the BA study, a number of federally and state listed species were identified which are known to occur, or having the potential to occur, in Coconino County. A list of these species is contained within **Table 4L**.

TABLE 4L
Species of Concern With Potential to Be Impacted by Proposed Improvements
Flagstaff Pulliam Airport

Common Name	Federal Status	State Status	Forest Service Status
Mexican Spotted Owl	Threatened	Wildlife of special concern	Sensitive
Bald Eagle	Threatened	Wildlife of special concern	Not listed
Northern Goshawk	Species of concern	Wildlife of special concern	Sensitive
Allen's Big-eared Bat	Species of concern	Not listed	Not listed
Flagstaff Pennyroyal	Not listed	Salvage restricted species	Sensitive
Mogollon Columbine	Not listed	Salvage restricted species	Not listed
Flagstaff Beardtongue	Not listed	Not listed	Sensitive
Rusby's Milkvetch	Not listed	Not listed	Sensitive
Arizona Sneezeweed	Not listed	Not listed	Sensitive

Source: *Biological Assessment for Pulliam Airport Master Plan Improvements*, Aztec Research & Consulting, LLC

Results of the field surveys and analysis indicated that a number of the listed species were not present within the study area. Species not present within the study area include the following:

- Rusby's Milkvetch
- Flagstaff Beardtongue
- Arizona Sneezeweed
- Allen's Big-eared Bat
- Northern Goshawk
- Mongollon Columbine

Species which were identified as occurring or having habitat present within the project area included:

- **Flagstaff Pennyroyal**. One population of this species was identified. The population consisted of approximately 30 plants on two natural limestone outcroppings comprising a total area of less than 50 meters square.

- **Bald Eagle**. Bald eagles are known to winter at Lake Mary and Mormon Lake, located about five miles southeast of the airport. It was determined that the forested area around the airport could be used for roosting or foraging; however, no nests were found on, or within ¼-mile of the project area. There are no known nesting records of the species in this location and no individuals were observed during the surveys.

- **Mexican Spotted Owl**. Approximately 200 of the 315 acres of property which were surveyed are considered forested. The forested areas are considered potential habitat for the owl. During the survey, no currently occupied nests were

found on or within ¼-mile of the project area. The nearest protected activity center for the owl is located approximately three miles southeast of the airport.

4.12.2.2 Noxious Weed Assessment

The purpose of the Noxious Weed Assessment was to identify the existence of noxious weeds within the project area. Surveys for noxious weeds were completed in the same areas as the surveys which were conducted for the BA. A copy of the Noxious Weed Assessment is contained within **Appendix F**.

To help outline the parameters of the survey, the Coconino National Forest provided a copy of the survey protocol provided in *A Method of Assessing the Risk of Introducing Noxious Weeds* as well as the *Coconino National Forest Noxious Weed List for 2003*. Results of the survey indicated that four species of weeds are prevalent within the surveyed areas. Dalmation toadflax, Cheatgrass, Bull thistle, and Mullein were identified in localized areas of previous disturbance. Two of the species were also found outside and adjacent to existing airport fencing. These species appeared to have invaded some of the forest and grassland areas.

4.12.3 ENVIRONMENTAL CONSEQUENCES

4.12.3.1 Proposed Action

Within the BA and the Noxious Weed Assessment, the potential impact of the proposed airport improvements was assessed. The BA concluded the following for those protected species within the project area.

- **Flagstaff Pennyroyal**. Populations of this species were identified in areas which would not be disturbed by construction of the proposed airport improvements. No impact to this species would occur with project implementation.

- **Bald Eagle**. It was determined that the proposed action *may affect, but will not likely adversely affect,* this species. Eagles foraging along the Interstate 17 corridor have already adapted to the noise levels associated with traffic on the interstate and would most likely continue to forage in the area. Eagles would be much more susceptible to colliding with vehicular traffic than air traffic. Additionally, no significant cliff sites for nesting or large bodies of water, preferred by the eagle for foraging, were found within the project area. Additionally, no nests were found within the project area or within a ¼-mile buffer zone.

- **Mexican Spotted Owl**. It was determined that the proposed action *may affect, but will not likely adversely affect,* the Mexican spotted owl. This determination

was made based on a number of factors which are outlined in detail on pages 12 and 13 of the BA contained in **Appendix F**.

Based on the results of the BA, the FAA made a determination that the proposed airport improvements may affect, but will not likely adversely affect, any listed species. This determination was communicated to the FWS in a letter dated October 26, 2004. The FWS concurred with the FAA's findings in a letter dated January 14, 2005. Copies of these letters are contained within **Appendix B** of this EA.

Within their response letter, the FWS requested that the airport provide them with yearly operational data which will allow the FWS to monitor the increase in flights. The data will help the agency to better understand potential future impacts to listed species in the surrounding area.

As a result of the noxious weed survey, a number of mitigation measures were developed to prevent the introduction or spread of noxious weeds. These mitigation measures are discussed within Section 4.12.5.

The proposed airport action, along with other development actions in the area, are consistent with planning and zoning for the area. These regulatory plans were developed with consultation with agencies who oversee and protect biotic resources. Indirect impacts within the resource category are anticipated to be less-than-significant as it was determined that the proposed action would not likely adversely affect any listed species.

4.12.3.2 No Action

No construction will occur with implementation of the no action alternative; therefore, no impacts to biological resources are anticipated.

4.12.4 ANALYSIS

Through coordination with the FWS, it was determined that implementation of the proposed action alternative will result in a less-than-significant impact to protected species. Additionally, with the mitigation measures discussed within the following sections, impacts to noxious weeds are also considered less-than-significant. Implementation of the no action alternative will result in no impact to biological resources.

4.12.5 MITIGATION

The following identifies mitigation measures for controlling invasive species/noxious weeds. According to the USFS's *Noxious Weed Strategic Plan Working Guidelines, Coconino, Kaibab and Prescott National Forests*, use of the following BMPs will decrease the spread of the identified invasive species.

- Prior to construction taking place, dig up any bull thistle plants in the construction areas. Dig a hole a minimum of five feet below the surface level in an area that will be paved over and place noxious weed plant material in the hole. Fill hole with weed free soil or gravel.

- Wet all soil before scraping or moving it in order to prevent soil containing seeds of noxious weeds from becoming airborne or spread otherwise.

- In areas with Dalmatian toadflax, Mullein and Cheatgrass, vehicles and equipment that are driven through, or parked in, weed-infested areas must be spray-washed each time the vehicle leaves the area. A high pressure hose will be used to clear the undercarriage, tire tread, grill, radiator, and beds of any mud, dirt, and plant parts that may potentially spread the seeds or viable parts of noxious plants. Wash sites should be shown on a 1:24,000 scale map and should be monitored for future weed infestation.

- All construction vehicles and equipment will be washed before coming onto national forest system land as described above.

- When construction is complete, all disturbed areas will be reseeded with a certified weed-free, native plant mix.

- The use of off-site fill materials in the project areas is discouraged. Excavated substrate from on-site will be used whenever fill substrate is needed. If on-site substrate is used, and if it contains weed seed, this soil should not be part of the top three inches of soil. Rather, weed-free soil will be used in the top three inches. If material is imported from off-site, the origin site of the fill will be surveyed for noxious weeds. Fill material will not come from a source infested with noxious weeds.

- Water used for dust abatement and other construction activities should be obtained from a source that is free of noxious weeds.

- The locations of all Class A plants will be mapped on a 1:24,000 scale map for entry into the Southwest Exotic Plant Mapping Program (SWEMP) database. Copies of all survey forms and maps will be given to the lead Forest Service district.

As stated within Section 4.12.3.1, Flagstaff Pulliam Airport will provide the FWS with yearly operational data to allow them to monitor the increase in activity at the airport.

4.13 COASTAL RESOURCES

Federal activities involving or affecting coastal resources are governed by the *Coastal Barriers Resources Act* (CBRA), the *Coastal Zone Management Act* (CZMA), and Executive Order 13089, *Coral Reef Protection*. The CBRA prohibits, with some exceptions, federal financial assistance for development within the Coastal Barrier Resource System that contains undeveloped coastal barriers along the Atlantic and Gulf coasts and the Great Lakes. The CMZA and the National Oceanic and Atmospheric Administration (NOAA) implementing regulations (15 CFR Part 930) provide procedures for ensuring that a proposed action is consistent with approved coastal zone management programs. Executive Order 13089 requires federal agencies to ensure any actions that they authorize, fund, or carry out will not degrade the conditions of coral reef ecosystems. These plans/programs are intended to preserve, protect, and enhance designated coastal areas.

No specific impact thresholds have been established for this resource category.

4.13.1 EXISTING CONDITION

The project area is not located near coastal resource areas.

4.13.2 ENVIRONMENTAL CONSEQUENCES

No direct or indirect impacts to coastal resources would occur with implementation of the proposed action or no action alternatives as none are present within the project area.

4.13.3 ANALYSIS AND MITIGATION

No coastal resources are present in the project area; therefore, no mitigation measures are required.

4.14 WILD AND SCENIC RIVERS

The *Wild and Scenic Rivers Act*, as amended, describes those rivers or segments of rivers which are listed, or eligible for listing, in the Wild and Scenic Rivers System.

These rivers are free flowing and possess "outstanding remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values" (PL 90-542 as amended by PL 96-487).

The National Park Service (NPS) maintains a Nationwide River Inventory (NRI) of river segments which appear to qualify for inclusion in the National Wild and Scenic River System, but which have not been designated as a Wild and Scenic River or studied under a Congressional authorized study. The President's 1979 *Environmental Message Directive on Wild and Scenic Rivers* directs federal agencies to avoid or mitigate adverse effects on rivers identified in the NRI as having potential for designation under the *Wild and Scenic Rivers Act*.

No specific impact thresholds have been established for this resource category.

4.14.1 EXISTING CONDITION

The National Wild and Scenic Rivers System was consulted to determine whether any designated Wild and Scenic Rivers are located in proximity to Flagstaff Pulliam Airport. Only one river in the State of Arizona is currently designated as Wild and Scenic. This river, the Verde River, is located in central Arizona. This stretch of the Verde River, which is designated as Wild and Scenic, is located approximately 45 miles south of Flagstaff Pulliam Airport. The cities of Cottonwood, Clarkdale, and Camp Verde are located along the sections of the river currently classified as Wild or Scenic.

The NRI was also consulted to determine the locations of river segments which appear to qualify for inclusion in the National Wild and Scenic River System, but which have not been designated as a Wild and Scenic River. Forty-five rivers within the State of Arizona are currently contained within the NRI database. Of these rivers, 29 are located in Coconino or neighboring Yavapai counties. Most of the listed river segments, totaling 16, are located in, or in close proximity to, the Grand Canyon National Park (GCNP), which is located approximately 100 miles north of the City of Flagstaff. The remaining segments are located more than 60 miles from the City of Flagstaff in east-central Yavapai County. No NRI rivers are located within 30 miles of the airport.

4.14.2 ENVIRONMENTAL CONSEQUENCES

4.14.2.1 Proposed Action

The nearest Wild and Scenic River and NRI river segments are located from 45 to 60 miles south of the airport. During the agency scoping process, no concerns were raised by the National Park Service regarding potential impacts to these resources.

Due to the distance from the river segments to the airport, it is not anticipated the proposed action would result in any direct or indirect impacts to these resources or negatively affect the scenic or recreational attributes of these river systems.

4.14.2.2 No Action

Impacts to Wild or Scenic Rivers or NRI river segments are not anticipated with implementation of the no action alternative.

4.14.3 ANALYSIS

Due to the distance from Flagstaff Pulliam Airport to the listed Wild or Scenic River and NRI river segments, impacts to these resources are anticipated to be less-than-significant. Concerns have, historically, not been raised regarding the impact of the airport on these resources.

4.14.4 MITIGATION

No mitigation measures are required.

4.15 FARMLAND

Under the *Farmland Protection Policy Act* (FPPA), federal agencies are directed to identify and take into account the adverse effects of federal programs on the preservation of farmland, to consider appropriate alternative actions which could lessen adverse effects, and to assure that such federal programs are, to the extent practicable, compatible with state or local government programs and policies to protect farmland. The FPPA guidelines developed by the Department of Agriculture apply to farmland classified as prime or unique, or of state or local importance as determined by the appropriate government agency, with concurrence by the Secretary of Agriculture.

4.15.1 THRESHOLDS OF SIGNIFICANCE

A significant impact to farmland would occur when the total combined score on Form AD 1006 ranges between 200 and 260 points. Impact severity increases as the total combined score approaches 260 points.

4.15.2 EXISTING CONDITION

Coordination received from the Natural Resources Conservation Service (NRCS) on July 16, 2003 indicated that the land surrounding the airport is already in, or committed to, urban development, currently used as water storage, or land that is not prime or unique farmland. A copy of the NRCS letter is included within **Appendix B.**

4.15.3 ENVIRONMENTAL CONSEQUENCES

As outlined within the letter received from the NRCS, development at Flagstaff Pulliam Airport is exempt from the requirements of the FPPA. Therefore, neither the proposed action nor the no action alternative will result in impacts to prime or unique farmland.

As airport development projects are exempt from the requirements of FPPA, indirect impacts to this resource category are not expected to occur as a result of the proposed action.

4.15.4 MITIGATION

No mitigation measures are required.

4.16 NATURAL RESOURCES AND ENERGY SUPPLY

Energy requirements associated with the proposed action alternative generally fall into two categories: (1) those that relate to changed demands for stationary facilities (i.e., airfield lighting and terminal building heating); and (2) those that involve the movement of air and ground vehicles (i.e., fuel consumption). In addition to fuel, the use of natural resources includes construction materials, water, and manpower.

4.16.1 THRESHOLDS OF SIGNIFICANCE

An impact arises where a project will have a measurable effect on local energy supplies or would require the use of an unusual material or one in short supply. Increased consumption of fuel by aircraft is examined where ground movement or runup times are increased substantially without offsetting efficiencies in operational procedures, or if the faction includes a change in flight patterns. Ground vehicles' fuel consumption is examined only if the action would add appreciably to access time, or if there would be a substantial change in movement patterns for on-airport service or other vehicles.

4.16.2 EXISTING CONDITION

The existing condition for this resource category is described within Chapter Three of this EA.

4.16.3 ENVIRONMENTAL CONSEQUENCES

4.16.3.1 Proposed Action

Implementation of the proposed action alternative would not result in changes to the manner in which the terminal building or other support services are utilized. The primary impact on natural resources resulting from alternative implementation is related to an increase in fuel consumption as well as additional runway and taxiway lighting.

Fuel consumption at the airport would likely increase with implementation of the proposed action alternative. This impact would be directly realized by increased fuel sales at the airport and indirectly realized on a national scale as the demand for aircraft fuel would rise. Regional jet aircraft typically utilize more fuel than turbo-prop aircraft. Quantifying the increase in fuel consumption is not feasible due to the large number of assumptions which would have to be made. Temperatures, changes in how different pilots fly aircraft, and air traffic control procedures all dramatically impact the amount of fuel an aircraft utilizes.

While fuel consumption at Flagstaff Pulliam Airport would increase, fuel usage in other modes of transportation could decrease with implementation of the proposed action alternative. As the airport serves additional markets, the number of passengers which opt to utilize Flagstaff Pulliam Airport instead of Phoenix Sky Harbor International Airport may increase. This translates to fewer automobile trips between Flagstaff and Phoenix for air service.

Finally, a slight increase in energy usage would be realized due to the extended runway and taxiway lighting systems. This increase would not be significant.

Indirect impacts attributed to construction activities could temporarily increase the use of some or all of the following: electricity, fuel, oil, chemicals, water, and other forms of energy and resources needed to construct the proposed improvements.

4.16.3.2 No Action

The primary result of implementation of the no action alternative is the gradual increase in the number of vehicle trips that will be made to Phoenix Sky Harbor International Airport for commercial air service. As discussed within Chapter One,

the Flagstaff area currently experiences a large amount of “leakage” to Phoenix for air service. The inability of the airport to serve regional jet aircraft would continue the leakage trend.

4.16.4 ANALYSIS

Regional jet aircraft typically utilize more fuel than their turbo-prop counterparts; therefore, implementation of the proposed action alternative would result in increased aircraft fuel usage when compared to the no action alternative. However, as the airport begins service to additional markets, and improves service to Phoenix Sky Harbor International Airport, the number of vehicle trips to Phoenix could decrease, thereby offsetting the increased aircraft fuel usage.

Less-than-significant impacts to energy supply and natural resources are anticipated with implementation of either alternative.

4.16.5 MITIGATION

No mitigation measures are required.

4.17 LIGHT EMISSIONS AND VISUAL IMPACTS

Airport lighting is characterized as either airfield lighting (i.e., runway, taxiway, approach and landing lights) or landside lighting (i.e., security lights, building interior lighting, parking lights, and signage). Generally, airport lighting does not result in significant impacts unless a high intensity strobe light such as a Runway End Identifier Light (REIL) would produce glare on any adjoining site, particularly residential uses.

Visual impacts relate to the extent that the proposed development contrasts with the existing environment and whether a jurisdictional agency considers this contrast objectionable. The visual sight of aircraft, aircraft contrails, or aircraft lights at night, particularly at a distance that is not normally intrusive, should not be assumed to constitute an adverse impact.

No specific impact thresholds have been established for this resource category.

4.17.1 EXISTING CONDITION

Lighting

The City of Flagstaff is well known for the various observatories located in and around the city. The community's night skies remain naturally dark, thereby enhancing aesthetics and sustaining astronomical activities. To ensure the night sky is protected, the city has established Astronomical Zones within the Land Development Code. Three zones have been established. Zone I consists of two 2.5-mile rings which are centered around the Lowell Observatory and the Naval Observatory. Zone II extends from the outer boundaries of Zone I to approximately seven miles from the observatories. Zone III is all remaining property within the city limits. Various requirements have been established for each zone.

Flagstaff Pulliam Airport is located in Astronomical Zone II. Special requirements of this zone include limitations on the allowable lumens per acre, signage lighting requirements, and a provision that selected lighting must be extinguished at 11:00 p.m. Subchapter 10-08-002-0009 of this ordinance exempts some airport activities from these requirements. Lighting that is associated with the safe and efficient movement of aircraft during flight, take-off, landing, and lighting associated with aircraft loading, unloading, and servicing areas, is exempt from these requirements. All other outdoor lighting at airport facilities needs to comply with the requirements of the ordinance.

Light sources at the airport include runway and taxiway lighting, approach lighting, a rotating beacon, and various landside lights including signage, parking lot, and security lighting.

Aesthetics

Land immediately surrounding the airport consists of a mix of open space and industrial land uses. The nearest residential subdivisions are located more than one mile from the airport.

4.17.2 ENVIRONMENTAL CONSEQUENCES

4.17.2.1 Proposed Action

The proposed action alternative includes lighting improvements which would be similar to what already exists at the airport. Extension of the runway and taxiway will not involve any substantial changes to the types or intensity of lighting currently utilized. The number of runway and taxiway edge lights will increase to accommodate the extension. Typically, these lights are only activated at night or dur-

ing inclement weather to assist with landing and some take-off operations. The runway end identifier lighting (REILs) and medium intensity approach lighting system with runway alignment indicator lights (MALSR) would be placed in pavement as the landing point for Runway 21 will not change. There are no residential land uses or uses sensitive to lights located in close proximity to the airport, specifically near the proposed lighting improvements. Land uses around the airport are compatible with the types and intensities of lighting used at the airport. Development of the proposed action alternative will not violate the requirements of the City of Flagstaff's Astronomical Zones.

Aesthetic impacts which could result from development of the proposed action primarily relate to the fill required for the runway extension and extended runway safety areas. To develop these components of the project, tree clearing will need to occur and the area will need to be leveled. Aesthetic impacts are not anticipated to be significant as there will be a buffer between the developed areas and Lake Mary Road, the point at which citizens may see the results of the runway extension.

As discussed previously, the lighting improvements are similar to those which currently exist at the airport. As defined within the Land Development Code, airport lighting which is necessary for the safe and efficient movement of aircraft is exempt from certain light restrictions. As a result of the similarity of the improved lighting to that which currently exists, along with the presence of the regulatory tools governing light emissions in the area, less-than-significant indirect impacts are expected to result.

4.17.2.2 No Action

As no development would occur with implementation of the no action alternative, no lighting or visual impacts are anticipated.

4.17.3 ANALYSIS

Implementation of the proposed action alternative is anticipated to result in less-than-significant impacts to lighting or visual resources. There is currently a buffer between the airport and residential land uses; this buffer would remain after alternative implementation.

4.17.4 MITIGATION

No mitigation measures are required.

4.18 HAZARDOUS MATERIALS, POLLUTION PREVENTION, AND SOLID WASTE

Four primary laws have been passed governing the handling and disposal of hazardous materials, chemicals, substances, and wastes. The two statutes of most importance to the FAA in proposing actions to construct and operate facilities and navigational aids are the *Resource Conservation Recovery Act* (RCRA) (as amended by the *Federal Facilities Compliance Act of 1992*) and the *Comprehensive Environmental Response, Compensation, Liability Act* (CERCLA), as amended (also known as Superfund). RCRA governs the generation, treatment, storage, and disposal of hazardous wastes. CERCLA provides for cleanup of any release of a hazardous substance (excluding petroleum) into the environment.

Consideration should be given regarding the hazardous nature of any materials or wastes to be used, generated, or disturbed by the proposed action, as well as the control measures to be taken.

4.18.1 THRESHOLDS OF SIGNIFICANCE

Thresholds of significance are typically only reached when the resource agency has indicated that it would be difficult to issue a permit for the proposed development. A significant impact may also be realized if the proposed action would affect a property listed on the National Priorities List (NPL).

4.18.2 EXISTING CONDITION

Hazardous Materials

No known hazardous materials are located on-site other than those used for typical operation of the airport including aircraft fuel and maintenance materials.

A search of federal and state waste-related databases has been conducted to identify sites where regulatory agency actions have occurred. These actions by regulatory agencies may include reviews, permits, approvals, violations, etc. As a result of the search, records for three underground storage tanks (UST) were identified at the airport. However, upon coordination with the airport operator, it was determined that each referred UST has been removed. No underground storage tanks remain on the Flagstaff Pulliam Airport property. Additionally, the records search revealed records for one spill incident. On November 4, 1999, approximately 610 gallons of Jet A fuel were spilled. The spill was subsequently remediated. No other incident reports for the airport were identified.

Pollution Prevention

As discussed within Section 4.7, Water Quality, the City of Flagstaff operates in conformance with Section 402(p) of the *Clean Water Act*. The City of Flagstaff holds an Arizona Pollutant Discharge Elimination System (AZPDES) General Permit for storm water discharges. Additionally, plans have been developed by the fuel providers for use in case of spills.

Solid Waste

Flagstaff Pulliam Airport generates approximately 100 cubic yards, or 145,000 tons, of solid waste annually. The solid waste generated at the airport is collected twice a week by the City of Flagstaff and taken to the Cinder Lake Landfill, located approximately 15 miles northeast of the airport. The Cinder Lake Landfill, which is covered daily, accepts municipal wastes including: construction, household, and non-regulated wastes. Cinder Lake Landfill is a 343-acre site with 110 acres of used landfill and a potential 233 acres that will be lined and available for future use. The remaining capacity of the landfill is 23.7 million cubic yards, or 14 million tons. According to Ron Long, Landfill Project Manager, based on existing capacity the landfill can continue to operate for another 38 years.

4.18.3 ENVIRONMENTAL CONSEQUENCES

4.18.3.1 Proposed Action

Hazardous Materials

Construction of the proposed action alternative will result in some earthwork disturbances; however, based on research conducted by Environmental Data Resources, Inc. (EDR), it is unlikely that earthwork will expose any hazardous materials. A copy of EDR's report is contained in **Appendix E**.

Pollution Prevention

As discussed within the existing conditions for this impact category, as well as Section 4.7, Water Quality, the City of Flagstaff maintains an AZPDES General Permit for continuing operation of an industrial facility. Implementation of the proposed action alternative will require a modification of this permit to reflect the additional impervious surfaces and any mitigation measures which could be implemented during the final design of the project. Additionally, a construction-related AZPDES permit will be required prior to construction of the proposed improvements. This permit requires a Notice of Intent for all construction activities disturbing one acre

or more of land. Construction-related water quality impacts are discussed under Section 4.19, Construction, and will be minimized through the use of best management practices.

Solid Waste

Under the proposed action alternative, the 2011 projection is 74,584 annual take-offs and landings, or 2.5 percent growth per year. Assuming a proportionate increase in solid waste, Flagstaff Pulliam Airport would produce 954 cubic yards of solid waste between 2003 and 2011. This is a nominal amount of waste when compared to the remaining capacity at Cinder Lake Landfill. Less-than-significant impacts will result from the implementation of the proposed action alternative.

With the implementation of this alternative, no known hazardous materials would be directly or indirectly impacted. In addition, solid waste generated during construction or after the improvements are completed will not result in a significant indirect impact.

4.18.3.2 No Action

Hazardous Materials

No construction would occur with implementation of the no action alternative; therefore, no impacts to hazardous materials are anticipated to result from alternative implementation.

Pollution Prevention

Implementation of this alternative would result in the airport continuing to operate in a manner similar as it does today. No construction would occur. Therefore, no additional permits or permit modifications are anticipated.

Solid Waste

Under the 2003 conditions, airport operations totaled 59,500 annual take-offs and landings. Under the no action alternative, the 2008 projection is 71,200 take-offs and landings, or 3 percent growth annually. Assuming a proportionate increase in solid waste, Flagstaff Pulliam Airport would produce a total of 767.11 cubic yards of solid waste between 2002 and 2008. This is a nominal amount of solid waste when compared to the remaining capacity at Cinder Lake Landfill.

4.18.4 ANALYSIS

Development of the proposed action alternative is anticipated to result in less-than-significant impacts to hazardous materials, pollution prevention, or solid waste. Obtaining and modifying necessary permits for operation of the airport and construction of the proposed improvements will help to ensure that any potential impacts are properly mitigated. The no action alternative will result in no impacts, as no construction will occur with project implementation.

4.18.5 MITIGATION

No mitigation measures are necessary.

4.19 CONSTRUCTION IMPACTS

Temporary environmental impacts may occur as a result of construction activities. Primarily, these impacts would relate to noise resulting from heavy construction equipment, fugitive dust emissions, and potential impacts on water quality from runoff and soil erosion from exposed surfaces.

4.19.1 THRESHOLDS OF SIGNIFICANCE

Construction impacts alone are rarely significant. Refer to the air quality, water, fish, plants, and wildlife, and other relevant impact categories for discussions regarding potential construction impacts.

4.19.2 ENVIRONMENTAL CONSEQUENCES

4.19.2.1 Proposed Action

Impacts related to the proposed action alternative would be associated with construction of the proposed development. All construction-related impacts are expected to be temporary in nature.

Noise

Noise-related construction impacts at airports result from the use of construction equipment. Noise impacts from construction activities are closely related to the type of construction equipment being used during each phase of construction. The construction phases are expected to include earthwork/grading, paving, building

construction, and landscaping. Each phase necessitates different types of construction equipment.

At Flagstaff Pulliam Airport, construction of the proposed action alternative is not expected to result in significant construction equipment noise impacts as the construction activities will be occurring away from residential areas and are considered short-term. The construction site is buffered by industrial areas as well as undeveloped land.

Air Quality

The generation of fugitive dust as a result of construction activities is anticipated due to the movement of heavy construction equipment and the exposure and disturbance of surface soils. This impact is expected to be both temporary and localized. Mitigation measures, as outlined below, can reduce this impact to levels below significance.

Construction-related air quality impacts resulting from the proposed action alternative will be short-term and are expected to be less-than-significant.

Water Quality

Construction activities also have the potential to result in temporary water quality impacts, particularly suspended sediments, during and shortly after precipitation events in the construction phase. Recommendations established in FAA Advisory Circular 150/5371-10, *Standards for Specifying Construction of Airports, Item P-156, Temporary Air and Water Pollution, Soil Erosion and Siltation Control,* will be incorporated in project design specifications to further mitigate potential impacts. These standards include temporary measures to control water pollution, soil erosion, and siltation through the use of berms, fiber mats, gravels, mulches, slope drains, and other erosion control methods.

In addition, the airport sponsor will comply with the federal National Pollutant Discharge Elimination System (NPDES) program regarding filing Notice of Intent prior to construction activities affecting more than one acre. This program is managed by the State of Arizona Department of Environmental Protection through the AZPDES permit program.

The project design and construction of the proposed action alternative will incorporate BMPs to reduce erosion, minimize sedimentation, and control non-storm water discharges in order to protect the quality of surface water features on and off the airport. BMPs are defined as nonstructural and structural practices that provide

the most efficient and practical means of reducing or preventing pollution of storm water. These are described below under Section 4.20.4, Mitigation Measures.

4.19.2.2 No Action

No development is proposed under the no action alternative; therefore, no construction impacts will occur.

4.19.3 MITIGATION

The following preventive and mitigative measures are recommended during construction:

Site Preparation

- Minimize land disturbance.
- Use watering trucks to minimize dust.
- Cover trucks when hauling dirt.
- Stabilize the surface of dirt piles if not removed immediately.
- Use windbreaks to prevent accidental dust pollution.
- Limit vehicular paths and stabilize these temporary roads.
- Grade to prevent soil from washing onto paved roadways.
- Pave all unpaved construction roads and parking areas to road grade for a length no less than 50 feet where such roads and parking areas exit the construction site, to prevent dirt from washing onto paved roadways.

Construction

- Cover trucks when transferring materials.
- Use dust suppressants on traveled paths which are not paved.
- Minimize unnecessary vehicular and machinery activities.
- Minimize dirt track-out by washing or cleaning trucks before leaving the construction site.

Post Construction

- Revegetate any disturbed land not used.
- Remove unused material.
- Remove dirt piles.
- Revegetate all vehicular paths created during construction to avoid future off-road vehicular activities.

Construction Scheduling

- Sequence construction activities so that areas void of vegetation are not exposed for long periods of time.

- Schedule landscaping and other work that permanently stabilizes the area, to be done immediately after the land has been graded to its final contour.
- Alter the project schedule to minimize the amount of denuded areas during wet months.
- Construct permanent storm water control facilities early in the project schedule and then utilize these structures for controlling erosion and sedimentation.

Limiting Exposed Areas

- Divert up-slope water from entering the denuded areas of the construction site by constructing dikes and swales.
- Divert or intercept storm water before it reaches long and/or steep slopes.
- Release captured storm water at a slow and controlled rate to prevent damage to downstream drainageways and structures.
- Increase the soil's ability to absorb moisture through vegetative means, surface roughening, and/or mulching.
- Stage grading so that the native vegetation provides a buffer to slow and disperse runoff.

Runoff Velocity Reduction

- Build check dams or other energy dissipation structures in unlined drainage channels to slow runoff velocity and encourage settlement of sediments.
- Limit slopes to 3:1 wherever practical.
- Intercept runoff before it reaches steep slopes using diversion dikes, swales, or other barriers.
- Protect slopes with mulches, matting, or other types of temporary or permanent soil stabilization.
- Provide velocity-reducing structures or rip rap linings at storm water outfalls.

Sediment Trapping

- Direct sediment-laden storm water to temporary sediment traps.
- Construct temporary sediment traps or basins at the drainage outlet for the site.
- Use temporary sediment barriers such as silt fences, straw bale barriers, sand bag barriers, and gravel filter barriers for construction sites with relatively flat slopes that produce sheet flow runoff.

Good Housekeeping

- Schedule regular inspections of storm water and sediment control devices.
- Repair and/or replace storm water and sediment control devices as often as necessary to maintain their effectiveness.

4.20 CUMULATIVE IMPACTS

Analysis of the cumulative overall impact of a proposed action and the consequences of subsequent related actions is required to determine the significance of the impact on the environment resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of the actions' originator.

Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time. Cumulative impact analysis considers connected actions, projects related and dependent upon the completion of the proposed airport project; cumulative actions, reasonably foreseeable independent projects planned for completion by 2010; and similar actions or projects having a common geography or timing that provide a basis for considering their impact together with the proposed airport project.

As discussed within Chapter Three, Section 3.5 a number of projects, either on or off airport property, have been undertaken or are planned to be undertaken in the near-term. These projects include the following.

Completed projects:

- Runway safety area improvements
- Removal of obstructions to the airport's Part 77 surface

Projects to be undertaken in the near-term:

- Construction of an aircraft rescue and fire fighting (ARFF) building
- Widening of JW Powell and Pulliam Drive
- Connection of JW Powell Drive with Lake Mary Road
- Development of airport perimeter roads
- Construction of the east parallel taxiway
- Miscellaneous airport improvement projects
- Land exchange between the U.S. Forest Service and the Yavapai Ranch Limited Partnership
- Development of various sections of the Flagstaff Urban Trails System
- Routine road maintenance projects

4.20.1 ENVIRONMENTAL CONSEQUENCES

4.20.1.1 Proposed Action

The proposed airport improvements proposed under the Proposed Alternative would maintain the airport's competitiveness in the regional air service industry. The proposed and recently completed airport improvements are consistent with the Flag-

staff Pulliam Airport Master Plan and the city of Flagstaff's Land Development Code and Zoning Ordinance.

Preview of applicable resource materials and coordination with appropriate agencies has resulted in the determination that the following resources are not present and require no further analysis. These resources include:

- Floodplains
- Farmland
- Coastal Resources
- Wild and Scenic Rivers
- Historical, Architectural, Archaeological, and Cultural Resources

Resources issues that are appropriate for analysis under a cumulative impact assessment are addressed below. Much of the discussion contained within the following sections is also reflected within the various impact analyses in Sections 4.1 through 4.19. The discussions have been consolidated within this section to summarize the qualitative cumulative impact analysis which was completed for the project.

- NOISE

Please refer to the findings of Section 4.2 for a full description of the cumulative impact analysis completed to address the noise concerns of the National Park Service.

- COMPATIBLE LAND USE

The proposed airport runway expansion is being advanced by the City of Flagstaff. which has land use and zoning jurisdiction over lands adjacent to the airport. The City's zoning and land use policies and ordinances encourage land use and development that is compatible with the airport operations. Reasonably foreseeable development adjacent to the airport would be subject to the City's land use and zoning policies and would therefore be compatible with the operation of the airport. The reasonably foreseeable development would be subject to the City's land use and zoning provisions. The widening of JW Powell and Pulliam Drive and the extension of JW Powell Drive is reflected within the city's comprehensive land use plan as is the development of various segments of the Flagstaff Urban Trails System. Based on this information, no significant cumulative land use or zoning impacts are anticipated and all reasonably foreseeable development in the area around the airport would be compatible with the airport operations.

- SOCIOECONOMIC AND SECONDARY (INDUCED) IMPACTS

The Proposed Alternative does not result in the displacement of residences, businesses, or agricultural operations, or result in the division or disruption of established communities. No disruption of orderly or planned development is anticipated as a result of the Proposed Alternative or other projects planned within the airport environs. Additionally, neither the Proposed Action or other development projects planned in the area would result in induced development impacts including shifts in pattern of population and growth, demand for public services, or changes in business and economic activity.

Current and reasonably foreseeable development within the Flagstaff area is being planned under the current population, employment, income and economic growth trends. The Flagstaff Pulliam Airport directly and indirectly influences the land use and economic structure of the Flagstaff region. The Proposed Alternative is anticipated to keep the airport competitive in the regional air service industry. The population of the Flagstaff area is forecast to continue to grow as it has for the past 30 years. It is reasonable to assume that the population, income, and economic growth trends of the past will continue into the future under the Proposed Alternative, consistent with the city's land use and development planning policies and objectives.

As discussed within Section 4.5.2.1, potential connection of JW Powell Drive with Lake Mary road could result in potential shifts in patterns of population movement. The connection of JW Powell to Lake Mary Road will provide an additional point of access to residences and businesses located east of the airport. Public service demands will also increase slightly due to required road maintenance, including plowing during snow events. This planned extension is contained within the City of Flagstaff Regional Land Use and Transportation Plan and has, therefore, been evaluated in terms of future land use planning and transportation planning for the City of Flagstaff. The extension is also evaluated within the Airport Master Plan and is compatible with the planned future development of the airport.

Based on the information above, no significant cumulative social or socioeconomic impacts will occur.

- ENVIRONMENTAL JUSTICE

The Proposed Alternative does not result in disproportionate impacts to minority or low-income populations. The Proposed Alternative will aid in keeping the airport competitive in the regional air service industry and continue to support the regional and local economy. The reasonably foreseeable projects are being planned to meet the needs of the growing population and economy. These projects are not anticipated to contribute to the increase of low-income populations that currently exist within the city of Flagstaff at percentage levels above those for Coconino County.

Minority populations for the city are currently at levels below those for the county. Neither the Proposed Alternative nor the reasonably foreseeable projects are anticipated to impact low-income or minority populations or to result in an increase of these population groups. Therefore, no significant cumulative disproportional impact to low-income or minority populations is anticipated.

- AIR QUALITY

The airport environs is in attainment for all criteria pollutants. The analysis conducted for the proposed runway extension for the associated transition from turboprop to jet aircraft, indicate that there would be less-than-significant air quality impacts. Additionally, in consideration of the reasonably foreseeable projects, no violations of the National Ambient Air Quality Standards (NAAQS) or increases in the frequency or severity of an existing violation (no violations recorded) are anticipated. Therefore, since the analysis already includes all reasonable and foreseeable changes resulting from the Proposed Alternative, no significant cumulative air quality impacts are anticipated.

- WATER QUALITY, WETLANDS, AND WATERS OF THE U.S.

The proposed runway extension would result in the channelization of approximately 2,700 ft of a first order tributary (dry wash) of Rio de Flag, requiring a US Army Corps of Engineers Section 404 permit. Additionally, due to the project's proposed increase of impervious runway surface, a modification of an existing National Pollution Discharge Elimination Systems (NPDES) permit would be required as well as a NPDES construction permit. Reasonably foreseeable projects may also have individual impacts on water supply and water quality. These impacts would be subject to regulatory agency permit review and approval. Permit issuance verifies agency concurrence with the proposed resource impacts as not being individually significant.

During this process of obtaining and modifying permits, review by agencies having jurisdiction over water supply and quality issues would be conducted. The permit programs implemented by these agencies take into account the cumulative impact of actions and projects on the regulated resources. Periodic program reviews are conducted to ensure that the loss of regulated resources authorized through the permit programs do not constitute an individual or cumulatively unacceptable impact. The Proposed Alternative, as well as all reasonably foreseeable actions will be subject to this regulatory review process, as applicable. The required Section 404 permit and the modification of the existing NPDES permits are anticipated to be issued for this project; therefore, no significant cumulative impacts to water supply and quality are anticipated.

- DEPARTMENT OF TRANSPORTATION ACT: SECTION 4(f)

Please refer to the findings of Section 4.2 for a full description of the cumulative impact analysis completed to address the noise concerns of the National Park Service.

- FISH, WILDLIFE, AND PLANTS

The Proposed Action would not impact unique or significant biological features or habitat that supports rare species or promote the spread of invasive species or noxious weeds. The reasonably foreseeable projects are proposed for locations that are consistent with the airport's master plan and the city's zoning and land use policies. These plans and policies have been developed in consultation with the Arizona State Lands Department, Arizona Game and Fish Department, National Parks Service and Coconino National Forest. These agencies have varied oversight and protection powers over significant biotic communities under their respective jurisdictions. The Proposed Alternative and reasonably foreseeable projects are consistent with the airport master plan and zoning and land use policies. No significant cumulative impact to biotic communities is anticipated.

Likewise, the Proposed Action will have a less-than-significant impact, or is not likely to result in a trend toward federal listing or loss of species viability, for the list of species identified through coordination with the U.S. Fish and Wildlife Service and the Arizona Game and Fish Department (See Section 4.12 Fish, Wildlife, and Plants). The reasonably foreseeable projects are proposed for areas currently zoned for respective development, on airport property, and on or adjacent to existing development. Most of this development would occur within the city's designated Urban Growth Boundary. No significant cumulative impact to endangered and threatened species is anticipated.

- NATURAL RESOURCES AND ENERGY SUPPLY

The Proposed Alternative would not result in a significant increase in use of energy or natural resources over current trends. Current and projected growth trends for the county and city indicate a 23 and 25 percent population growth, respectively, between 2005 and 2020. These growth projections take into consideration reasonably foreseeable development as well as less quantifiable future development. Projected demands for energy and natural resources will increase commensurate with the growth of population. The Proposed Alternative and reasonably foreseeable projects would account for only a minor portion of the projected growth and therefore would not result in a significant cumulative impact on energy and natural resources.

- LIGHT EMISSIONS AND VISUAL IMPACTS

The proposed runway extension under the Proposed Alternative would include the extension of existing runway lights and the relocation of the runway end identification lighting. Additional taxiway lighting will be added to the improved taxiway. The proposed lighting will not involve any substantial changes to the type or intensity of the lights currently used at the airport. The location of the existing rotating beacon light will not be changed.

Included in Flagstaff's Land Development Code is an Airport Overlay District that ensures that development conducted in the vicinity of the airport is compatible with airport operations. Current land use surrounding the airport is compatible with airport operations. Additionally, the Code includes an Outdoor Lighting Ordinance that, among other intents, will minimize light pollution and curtail the degradation of the night-time visual environment.

As result of the Proposed Alternative's lighting similarity with the existing airport lighting conditions and the presence of existing Code and Ordinance provisions governing light emissions, no significant cumulative impact due to light emissions are reasonably foreseeable.

- HAZARDOUS MATERIALS AND SOLID WASTE

According to Section 4.18 the Proposed Action would result in no impact to hazardous waste and an annual increase of solid waste production of less than 0.01% of the airport's current production requiring disposal. The nearest disposal facility has a projected capacity to continue operations for an additional 38-years. The reasonably foreseeable projects account for only a minor portion of the projected regional growth. No significant cumulative impact on hazardous materials or the production or disposal of solid waste is anticipated.

- CONSTRUCTION IMPACTS

Construction activities result in temporary impacts with recovery of the natural and social environments after construction is completed. Issues of more long-term cumulative impacts to the natural, social, economic, and cultural environments are discussed previously under this section. During construction, temporary construction-related increases in noise levels, fugitive dust, erosion and sedimentation, traffic congestion are anticipated with recovery upon completion of construction. No significant cumulative construction impacts are anticipated.

4.20.1.2 No Action

The No Action Alternative does not involve any improvements to the existing airport facility. Due to the lack of proposed runway improvements under the No-Build Alternative, the airport would continue to operate with limited capacity to serve business and regional jet aircraft and would become less competitive over time in the regional airport service sector. A probable result of the airport' s decline in competitiveness would be a decrease of the airport's support of and contribution to the local and regional economy. Development and growth trends of the area could suffer and adverse impacts to population patterns, employment and incomes could result. Alternative modes of transportation, such as car usage, may increase. Adverse social impacts are reasonably foreseeable under the No-Build Alternative due to the airport's probable decline in competitiveness in the regional air service industry.

4.21 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

The previous sections outlined the potential impacts of the proposed action alternative and the no action alternative. **Table 4M** summarizes these findings.

TABLE 4M
Summary of Environmental Impacts
Flagstaff Pulliam Airport

Impact Category	Proposed Action Alternative	No Action Alternative
Noise	**No impact.** No noise-sensitive development experiences a 1.5 DNL increase in noise.	**Significant impact.** Noise-sensitive development experiences a 1.5 DNL increase in noise when compared to the proposed action alternative.
Compatible Land Use	**No impact.** No dwellings are contained within the 2011 65 DNL noise contour. Proposed project is consistent with local and state land use compatibility plans.	**Less-than-significant impact.** Thirteen dwellings are contained within the 2011 65 DNL noise contour. Alternative is not consistent with the goals and objectives of federal, state, or local plans and policies.
Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks	**Less-than-significant with mitigation.** Positive socioeconomic benefits would be realized from airport improvements. Mitigation measures are required to mitigate potential health and safety risks to children during construction.	**Less-than-significant impact.** Financial impact on the community could be jeopardized due to alternative's potential impacts on commercial air service.
Secondary (Induced) Impacts	**Less-than-significant impact.** Induced impacts would be likely realized within the business and economic community.	**Less-than-significant impact.** Employment, incomes, population patterns, and land use and development plans would be adversely affected.
Air Quality	**Less-than-significant impact.** Pollutants would increase as operations at the airport increase. Analysis indicated that the increase would not be significant.	**Less-than-significant impact.** Pollutants would increase as operations at the airport increase. Analysis indicated that the increase would not be significant.
Water Quality	**Less-than-significant with mitigation**. Development will result in an increase in impermeable surfaces on the site resulting in an increase in storm water runoff. Construction may have limited short-term impacts. Mitigation measures include the use of BMPs during construction.	**No impact.** No construction would occur.
Wetlands and Waters of the U.S.	**Less-than-significant.** Development will impact approximately 2,700 feet of designated waters of the U.S. located along, and north of, Taxiway A. The U.S. Army Corps of Engineers has not indicated concerns regarding permitting this impact.	**No impact.** No construction would occur.
Floodplains	**No impact**. Airport is not located in, or in close proximity to, a 100- or 500-year floodplain.	**No impact**. Airport is not located in, or in close proximity to, a 100- or 500-year floodplain.
Historical, Architectural, Archeological, and Cultural Resources	**Less-than-significant.** No eligible resources were identified within the APE.	**No impact.** No construction would occur.

TABLE 4M (Continued)
Summary of Environmental Impacts
Flagstaff Pulliam Airport

Impact Category	Proposed Action Alternative	No Action Alternative
Department of Transportation Act: Section 4(f)	**Less-than-significant.** Substantial impairment of Section 4(f) resources is not anticipated. This was confirmed through coordination with the City of Flagstaff as well as additional analysis undertaken for National Park Units.	**No impact.** No construction would occur.
Fish, Wildlife, and Plants	**Less-than-significant with mitigation**. No protected species will be significantly impacted by development. Mitigation measures are required to ensure noxious weeds are controlled prior to and after construction.	**No impact.** No construction would occur.
Coastal Resources	**No impact**. Airport is not located in, or in close proximity to, any coastal resources.	**No impact**. Airport is not located in, or in close proximity to, any coastal resources.
Wild and Scenic Rivers	**Less-than-significant.** Airport is not located in close proximity to any wild and scenic rivers. Nearest wild and scenic river is located approximately 45 miles south of the airport.	**No impact.** No construction would occur.
Farmland	**No impact.** According to the NRCS, the FPPA does not apply.	**No impact.** According to the NRCS, the FPPA does not apply.
Natural Resources and Energy Supply	**Less-than-significant.** Introduction of regional jets will result in an increase in aviation fuel used; however, the number of automobile trips to Phoenix for air service would likely decline.	**Less-than-significant.** The number of automobile trips to Phoenix would likely increase as the number of air travelers in the region increases.
Light Emissions and Visual Impacts	**Less-than-significant.** Development will require an increase in runway and taxiway lighting as well as a large amount of fill to the north.	**No impact**. No construction would occur.
Hazardous Materials, Pollution Prevention, and Solid Waste	**Less-than-significant.** Obtaining and modifying necessary permits for operation of the airport and construction of the proposed improvements will ensure that any potential impacts are properly mitigated.	**No impact**. No construction would occur.
Construction Impacts	**Less-than-significant with mitigation.** Use of BMPs and acquisition of proper permits will mitigate potential construction impacts to noise, air quality, and water quality.	**No impact**. No construction would occur.

FLAGSTAFF
PULLIAM AIRPORT

Appendix A

DOCUMENT PREPARERS

Appendix A
PREPARERS

Persons responsible for preparation of this Environmental Assessment document and significant supporting background analysis and materials are listed below.

Federal Aviation Administration	
Michelle Simmons	*Environmental Protection Specialist*, Airports Division, B.S. Public Health Science (Environmental Health Minor), M.S. Environmental Studies. 25 years experience. Responsible for detailed FAA evaluation of all parts of the Draft Environmental Assessment (EA), in addition to coordination of comments from various federal and state agencies.
David Kessler	*Regional Environmental Protection Specialist*, Airports Division, Western-Pacific Region. B.A., Physical Geography (Geology Minor). Twenty-five (25) years experience. Responsible for overall preparation and coordination of federal environmental disclosure documents for the Airports Division, Western Pacific Region.
Jennifer Mendelsohn	*Environmental Protection Specialist*, Airports Division, Western-Pacific Region. B.S., Environmental Science, M.A., Environmental Management. Nine years experience. Responsible for detailed FAA evaluation of all parts of the Draft Environmental Assessment (EA) as well as coordination of comments from various federal and state agencies.

Jake A. Plante	*Environmental Protection Specialist*, National Resource Advisor for Noise and Air Quality, Headquarters Office of Airports, Planning and Environmental Division (APP-400), B.A. Planning, M.Ed., Ed.D., Education, twenty-nine (29) years experience. Responsible for noise analysis.
Jim Byers	*Environmental Protection Specialist*, Planning and Environmental Division (APP-400). B.S. degree in Urban and Regional Planning and M.R.P. in Regional Planning. 18 years experience. Responsible for detailed FAA review.
City of Flagstaff	
Michael Covalt	*Airport Manager*
William Menard	*Public Works Director*
Coffman Associates	
Steve Benson	*Principal.* B.S., Civil Engineering, twenty-five years experience in airport master planning, airport site selection, and environmental documentation.
James Harris	*Principal.* B.S., Civil Engineering. Twenty-four years experience in Airport Master Planning, Design, and Project Administration.
David Fitz	*Associate.* M.A., Community and Regional Planning. Nine years experience in airport master planning, noise modeling, and land use management.
Molly Waller	*Airport Environmental Planner.* Masters, Community and Regional Planning. Seven years experience in NEPA environmental evaluations of development projects.
Volpe Center	
Gregg G. Fleming	*Chief of the Environmental Measurement and Modeling Division.* Oversaw all aspects of the noise model assessment related to Grand Canyon National Park
Christopher J. Roof	Led the study design component of the noise model assessment related to Grand Canyon National Park
David A. Senzig, P.E.	Developed the IMN studies for the Grand Canyon and Flagstaff projects.
Michael Baker Jr., Inc.	
Shelly Adams	*Environmental Planner/Biologist.* B.S. degree in Biology and M.S degree in Applied Biological Sciences. Six years experience.
Karen Apple	*Environmental Planner.* B.S. degree in Public Affairs (Transportation) and M.E.P. in Urban and Regional Planning. Twelve years experience.
Tracey Cullen, AICP	*Environmental Planner.* B.A. degree in Political Science; MURP, Urban and Regional Planning. Fifteen years experience.
Sam Darghous, P.E.	*Engineer.* B. S. degree in Civil Engineering. Fourteen years experience.
Lisa Folb, R.P.A.	*Senior Archaeologist.* B.A. and M.A. degree in Anthropology with an emphasis in Archaeology. MBA degree in Global Management. Thirteen years experience.
Andrew Kuchta	*Environmental Planner.* B.A. degree in Geography, Community, Regional and Urban Planning [conc.] Twenty-two years experience.

Ray Maginness	*Environmental Manager*. B.S. degree in Environmental Science (Interdisciplinary Tract) and M.A. degree in Environmental Management. Twenty-four years experience.
Jack McCandless	*Environmental Manager*. B.S. degree in Forestry. Thirty-three years experience.
Dave McFayden, P.E.	*Environmental Practice Director*. B.S. degree in Engineering and Chemical Engineering. Seventeen years experience.
Jim Moorcroft, P.E.	*Aviation Practice Director*. M.S.C.E. degree in Transportation and Urban Planning, B.S. degree in Civil Engineering. Thirty-five years experience.
Michael Baker Jr., Inc. (Continued)	
Mara Pritchard, P.E.	*Environmental Manager*. B.S. degree in Civil Engineering. Seventeen years experience.
Eric Sheehan	*Systems Analyst* II, B.S. degree in Recreation Education, M.A. degree in Geography. Ten years experience.
Ed Siemon	*Cultural Resource Specialist*. B.S. degree in Anthropology. Twenty-seven years experience.
Mark Turner	*Environmental Planner/Biologist*. B.A. degree in Ecology, M.S. degree in Biology. Twenty-two years experience.
Aztec Research & Consulting	
Sonny Kuhr	*Biologist*

FLAGSTAFF
PULLIAM AIRPORT

Appendix B

AGENCY CONTACT LIST AND PROJECT COORDINATION LETTERS

Appendix B
AGENCY CONTACT LIST

Letters were sent to the following entities at the onset of the Environmental Assessment seeking input regarding potential environmental resources which could be impacted by the proposed airport improvements.

FEDERAL AGENCIES:

Ms. Cindy Lester, Chief
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Natural Resources Conservation Service
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Flagstaff, AZ 86004

Ms. Christine Turk
Regional Environmental Quality Coordinator
NATIONAL PARK SERVICE
12795 West Alemeda Parkway
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Sirs
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Soundscape Coordinator
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Mr. Jim McCarthy
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Flagstaff, AZ 86001-2843

Ms. Jenny Blue
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Flagstaff, AZ 86001

Ms. Aleia O'Reilly
470 Dinnebito Trail
Flagstaff, AZ 86001

The following letters were received from interested agencies and parties during the preparation of this EA.

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United States Department of Agriculture

NRCS

Natural Resources Conservation Service
3003 N. Central Avenue, Suite 800
Phoenix, Arizona 85012-2946
(602) 280-8801
FAX (602) 280-8809

JUL 16 2003

RECEIVED
JUL 17 2003
MICHAEL BAKER JR., INC.

Ms. Karen Apple
Michael Baker Corporation
1313 E. Osborn Rd., Ste. 150
Phoenix, Arizona 85014

Dear Ms. Apple:

This response is in regard to your letter dated July 9, 2003, regarding the proposed airfield improvements at Flagstaff Pulliam Airport in Flagstaff, Arizona.

The Natural Resources Conservation Service (NRCS) has general responsibility, nationwide, for implementing the Farmland Protection Policy Act (FPPA) and to review projects that may affect prime farmland and/or wetlands associated with agriculture. After reviewing the information provided, the following is noted:

1- The proposed new projects if implemented as planned, are exempt from the requirements of the FPPA - as revised in 1994, that excludes land which is already in or is committed to urban development, currently used as water storage, or land that is not prime or unique farmland.

2- We do not see any immediate concerns or impacts that would directly affect wetland areas associated with agriculture.

We recommend that any future development projects receive a prime farmland determination prior to any construction activities. Should you have questions, please feel free contact Jeff Schmidt, Community Assistance Coordinator at 602.280.8818. Thank you again for the chance to review the proposed project.

Sincerely,

Steven Banks Acting for

JAMES A. BRIGGS
Assistant State Conservationist (T)

cc:
Gary Parrott, Acting DC, Flagstaff, AZ
Jeff Schmidt, Community Assistance Coordinator, NRCS, Phoenix, Arizona

The Natural Resources Conservation Service provides leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment.

An Equal Opportunity Provider and Employer

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
ARIZONA-NEVADA AREA OFFICE
3636 NORTH CENTRAL AVENUE, SUITE 900
PHOENIX, ARIZONA 85012-1939

July 22, 2003

REPLY TO

Office of the Chief
Regulatory Branch

RECEIVED

JUL 23 2003

MICHAEL BAKER JR., INC.

Ms. Karen Apple
Michael Baker Jr., Inc.
1313 East Osborn Road, Suite 150
Phoenix, Arizona 85014

File Number: 2003-01332-DE

Dear Ms. Apple:

It has come to our attention that you plan to extend Runway 3-21, extend parallel Taxiway A, clear and grade areas within the airport property, and perform related improvements at the Flagstaff Pulliam Airport in the unnamed washes within Sections 4, 5, & 8, T20N, R7E, Flagstaff, Coconino County, Arizona.

This activity may require a Department of the Army permit issued under Section 404 of the Clean Water Act. A Section 404 permit is required for the discharge of dredged or fill material into the "waters of the United States," including adjacent wetlands. Examples of activities requiring a permit are placing bank protection, temporary or permanent stock-piling of excavated material, grading roads, grading (including vegetative clearing operations) that involves the filling of low areas or leveling the land, constructing weirs or diversion dikes, constructing approach fills, and discharging dredged or fill material as part of any other activity.

Enclosed you will find a permit application form and a pamphlet that describes our regulatory program. If you have questions, please contact Daisy Eldridge at (602) 640-5385, x268. Please refer to file number 2003-01332-DE in your reply.

Sincerely,

Cindy Lester

Cindy Lester P.E.
Chief, Arizona Section
Regulatory Branch

Enclosures

Janet Napolitano
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.adeq.state.az.us

Stephen A. Owens
Director

RECEIVED

JUL 25 2003

MICHAEL BAKER JR., INC.

July 23, 2003

Ms. Karen Apple
Environmental Planner
Michael Baker, Jr., Inc.
1313 East Osborn Road, Suite 150
Phoenix, Arizona 85014

Re: Environmental Impact Review for Proposed Airfield Improvements at Flagstaff Pulliam Airport

Dear Ms. Apple:

Thank you for your July 16, 2003, letter to Ms. Nancy Wrona requesting an air quality environmental impact review of the proposed airfield improvements project at Flagstaff Pulliam Airport. I have been asked to respond on behalf of Ms. Wrona.

The proposed project is not located in an Arizona nonattainment area, as designated by EPA pursuant to Section 107 of the Clean Air Act. Consequently, the requirements of 40 Code of Federal Regulations (CFR) 93, Determining Conformity of Federal Actions to State or Federal Implementation Plans, do not apply. In addition, there are no specific control measures required with respect to the ambient air quality in the Flagstaff area.

Although the project is not expected to result in any air quality violations, nevertheless, the proposed project may increase ambient particulate matter (dust) levels. Particulate matter is one of the criteria pollutants identified in the Clean Air Act. The following steps may minimize the amount of particulate matter generated, including incidental emissions caused by strong winds, as well as tracking dirt off the construction site by machinery and trucks.

I. Site Preparation

A. Minimize land disturbance;
B. Wetting down, using watering trucks, dust suppressants, or other reasonable precautions to minimize dust;
C. Cover trucks when hauling soil;
D. Stabilize the surface of soil piles if not removed immediately;
E. Use windbreaks to prevent any accidental dust pollution; and
F. Limit vehicular paths and stabilize temporary roads.

II. Site Construction
   A. Cover trucks when transferring materials;
   B. Use dust suppressants on traveled paths which are not paved;
   C. Minimize unnecessary vehicular and machinery activities; and
   D. Minimize dirt track-out by washing or cleaning trucks before leaving the construction site.

III. Site Restoration
   A. Revegetate any disturbed land not used;
   B. Remove unused material;
   C. Remove soil piles; and
   D. Revegetate all vehicular paths created during construction to avoid future off-road vehicular activities.

Enclosed please find a copy of the applicable State rules contained in the Arizona Administrative Code R18-2-604 through 607. R18-2-604 through 606 specifically relate to taking reasonable precautions to reduce dust during construction, demolition, and earth moving activities. In addition, please be aware that concrete batch, crushing and screening, and hot mix asphalt operations may be required to receive permits from Arizona Department of Environmental Quality. For further information regarding permitting requirements, please contact Eric Massey, Manager, Permits Section, at (602) 771-2288.

Should you have further questions, please contact me at (602) 771-2375, or Andra Juniel of my staff at (602) 771-4417.

Sincerely,

Theresa Pella, Manager
Air Quality Planning Section

Enclosure

cc: Mike Howeth, Supervisor, ADEQ Northern Regional Office (w/o enclosure)

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

ARIZONA ADMINISTRATIVE CODE

R18-2-604, 605, 606, 607

fire is allowed. The setting of any such fire shall be constructed in a manner and at such time as approved by the Director, unless doing so would defeat the purpose of the exemption.

E. The following fires may be excepted from the provisions of this Section when permitted in writing by the Director of the Department of Environmental Quality or the control officer of the county, district or region in which such fire is allowed:
1. Fires set for the disposal of dangerous materials where there is no safe alternative method of disposal.
   a. "Dangerous material" is any substance or combination of substances which is able or likely to inflict bodily harm or property loss unless neutralized, consumed or otherwise disposed of in a controlled and safe manner.
   b. Fires set for the disposal of dangerous materials shall be permitted only when there is no safe alternative method of disposal, and when the burning of such materials does not result in the emission of hazardous or toxic substances either directly or as a product of combustion in amounts which will endanger health or safety.
2. Open outdoor fires for the disposal of ordinary household trash in an approved waste burner in nonurban areas of less than 100 well spread out dwelling units per square mile where no refuse collection and disposal service is available.
   a. An "approved waste burner" is an incinerator constructed of fire resistant material with a cover or screen which is closed when in use having openings in the sides or top no greater than 1 inch in diameter.
   b. Open burning of the following materials is forbidden: Garbage resulting from the processing, storage, service or consumption of food; asphalt shingles; tar paper; plastic and rubber products (such as waste crankcase oil, transmission oil and oil filters); transformer oils; and hazardous material containers including those that contained inorganic pesticides, lead, cadmium, mercury, or arsenic compounds.

F. The Director of the Department of Environmental Quality or the air pollution control officer, if any, of the county, district, or region may delegate the authority for the issuance of allowable open burning permits to responsible local officers. Such permits shall contain conditions limiting the manner and the time of the setting of such fires as specified in the Arizona Guidelines for Open Burning and shall contain a provision that all burning be extinguished at the discretion of the Director or his authorized representative during periods of inadequate atmospheric smoke dispersion, periods of excessive visibility impairment which could adversely affect public safety, or periods when smoke is blown into populated areas so as to create a public nuisance. Any local officer delegated the authority for issuance of open burning permits shall maintain a copy of all currently effective permits issued including a means of contacting the person authorized by the permit to set an open fire in the event that an order for extinguishing of open burning is issued.

G. Nothing in this rule is intended to permit any practice which is a violation of any statute, ordinance, rule or regulation.

Historical Note

Adopted effective May 14, 1979 (Supp. 79-1). Amended effective October 2, 1979 (Supp. 79-5). Correction, subsection (C) repealed effective October 2, 1979, not shown (Supp. 80-1). Former Section R9-3-602 renumbered without change as Section R18-2-602 (Supp. 87-3). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-602 renumbered to R18-2-802, new Section R18-2-602 renumbered from R18-2-401 effective November 15, 1993 (Supp. 93-4).

R18-2-603. Repealed

Historical Note

Adopted effective May 14, 1979 (Supp. 79-1). Former Section R9-3-603 renumbered without change as Section R18-2-603 (Supp. 87-3). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-603 renumbered to R18-2-803, new Section R18-2-603 renumbered from R18-2-403 effective November 15, 1993 (Supp. 93-4). Repealed effective October 8, 1996 (Supp. 96-4).

R18-2-604. Open Areas, Dry Washes or Riverbeds

A. No person shall cause, suffer, allow, or permit a building or its appurtenances, or a building or subdivision site, or a driveway, or a parking area, or a vacant lot or sales lot, or an urban or suburban open area to be constructed, used, altered, repaired, demolished, cleared, or leveled, or the earth to be moved or excavated, without taking reasonable precautions to limit excessive amounts of particulate matter from becoming airborne. Dust and other types of air contaminants shall be kept to a minimum by good modern practices such as using an approved dust suppressant or adhesive soil stabilizer, paving, covering, landscaping, continuous wetting, detouring, barring access, or other acceptable means.

B. No person shall cause, suffer, allow, or permit a vacant lot, or an urban or suburban open area, to be driven over or used by motor vehicles, trucks, cars, cycles, bikes, or buggies, or by animals such as horses, without taking reasonable precautions to limit excessive amounts of particulates from becoming airborne. Dust shall be kept to a minimum by using an approved dust suppressant, or adhesive soil stabilizer, or by paving, or by barring access to the property, or by other acceptable means.

C. No person shall operate a motor vehicle for recreational purposes in a dry wash, riverbed or open area in such a way as to cause or contribute to visible dust emissions which then cross property lines into a residential, recreational, institutional, educational, retail sales, hotel or business premises. For purposes of this subsection "motor vehicles" shall include, but not be limited to trucks, cars, cycles, bikes, buggies and 3-wheelers. Any person who violates the provisions of this subsection shall be subject to prosecution under A.R.S. § 49-463.

Historical Note

Adopted effective May 14, 1979 (Supp. 79-1). Former Section R9-3-604 renumbered without change as Section R18-2-604 (Supp. 87-3). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-604 renumbered to R18-2-804, new Section R18-2-604 renumbered from R18-2-404 and amended effective November 15, 1993 (Supp. 93-4).

R18-2-605. Roadways and Streets

A. No person shall cause, suffer, allow or permit the use, repair, construction or reconstruction of a roadway or alley without taking reasonable precautions to prevent excessive amounts of particulate matter from becoming airborne. Dust and other particulates shall be kept to a minimum by employing temporary paving, dust suppressants, wetting down, detouring or by other reasonable means.

B. No person shall cause, suffer, allow or permit transportation of materials likely to give rise to airborne dust without taking reasonable precautions, such as wetting, applying dust suppressants, or covering the load, to prevent particulate matter from

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

ARIZONA ADMINISTRATIVE CODE

R18-2-604, 605, 606, 607

fire is allowed. The setting of any such fire shall be constructed in a manner and at such time as approved by the Director, unless doing so would defeat the purpose of the exemption.

E. The following fires may be excepted from the provisions of this Section when permitted in writing by the Director of the Department of Environmental Quality or the control officer of the county, district or region in which such fire is allowed:

1. Fires set for the disposal of dangerous materials where there is no safe alternative method of disposal.
   a. "Dangerous material" is any substance or combination of substances which is able or likely to inflict bodily harm or property loss unless neutralized, consumed or otherwise disposed of in a controlled and safe manner.
   b. Fires set for the disposal of dangerous materials shall be permitted only when there is no safe alternative method of disposal, and when the burning of such materials does not result in the emission of hazardous or toxic substances either directly or as a product of combustion in amounts which will endanger health or safety.
2. Open outdoor fires for the disposal of ordinary household trash in an approved waste burner in nonurban areas of less than 100 well spread out dwelling units per square mile where no refuse collection and disposal service is available.
   a. An "approved waste burner" is an incinerator constructed of fire resistant material with a cover or screen which is closed when in use having openings in the sides or top no greater than 1 inch in diameter.
   b. Open burning of the following materials is forbidden: Garbage resulting from the processing, storage, service or consumption of food; asphalt shingles; tar paper; plastic and rubber products (such as waste crankcase oil, transmission oil and oil filters); transformer oils; and hazardous material containers including those that contained inorganic pesticides, lead, cadmium, mercury, or arsenic compounds.

F. The Director of the Department of Environmental Quality or the air pollution control officer, if any, of the county, district, or region may delegate the authority for the issuance of allowable open burning permits to responsible local officers. Such permits shall contain conditions limiting the manner and the time of the setting of such fires as specified in the Arizona Guidelines for Open Burning and shall contain a provision that all burning be extinguished at the discretion of the Director or his authorized representative during periods of inadequate atmospheric smoke dispersion, periods of excessive visibility impairment which could adversely affect public safety, or periods when smoke is blown into populated areas so as to create a public nuisance. Any local officer delegated the authority for issuance of open burning permits shall maintain a copy of all currently effective permits issued including a means of contacting the person authorized by the permit to set an open fire in the event that an order for extinguishing of open burning is issued.

G. Nothing in this rule is intended to permit any practice which is a violation of any statute, ordinance, rule or regulation.

Historical Note

Adopted effective May 14, 1979 (Supp. 79-1). Amended effective October 2, 1979 (Supp. 79-5). Correction, subsection (C) repealed effective October 2, 1979, not shown (Supp. 80-1). Former Section R9-3-602 renumbered without change as Section R18-2-602 (Supp. 87-3). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-602 renumbered to R18-2-802, new Section R18-2-602 renumbered from R18-2-401 effective November 15, 1993 (Supp. 93-4).

R18-2-603. Repealed

Historical Note

Adopted effective May 14, 1979 (Supp. 79-1). Former Section R9-3-603 renumbered without change as Section R18-2-603 (Supp. 87-3). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-603 renumbered to R18-2-803, new Section R18-2-603 renumbered from R18-2-403 effective November 15, 1993 (Supp. 93-4). Repealed effective October 8, 1996 (Supp. 96-4).

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Historical Note

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N. ERIC BORG
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RECEIVED
JUL 29 2003
MICHAEL BAKER JR., INC.

25 July 2003

Ms. Karen Apple
Environmental Planner
Michael Baker Jr., Inc.
1313 East Osborn Road, Suite 150
Phoenix, AZ 85014

RE: Flagstaff Pulliam Airport

Dear Ms. Apple:

This office has reviewed the information provided regarding the proposed expansion of the Flagstaff Pulliam Airport property. The review was for compliance with the Arizona State Fire Code. We find no information that negatively impacts the fire code.

Please contact this office if you have any questions.

Sincerely,

Duane Pell

Duane Pell
State Fire Marshal

C:MD/03gencorr/ltr dpflagairportexpansion 072503.doc

From: <Shaula_Hedwall@fws.gov>
To: <kapple@mbakercorp.com>
Date: 7/31/03 3:18PM
Subject: Proposed Airfield Improvements at Flagstaff Pulliam Airport

Mr. Baker,

We were unable to attend the Resource Agency Scoping Meeting for the Environmental Assessment for the proposed airfield improvements at Flagstaff Pulliam Airport and do not have any comments at this time. However, we would very much appreciate receiving information as the project progresses. We would appreciate it if you would please keep us on your mailing list and ensure that we receive a copy of the Environmental Assessment. Thank you.

Shaula Hedwall

U.S. Fish & Wildlife Service
Flagstaff Sub-Office
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AUG 14 2003

MICHAEL BAKER JR., INC.

13 August 2003

Karen Apple
Michael Baker Jr., Inc.
1313 East Osborn Road, Suite 150
Phoenix, AZ 85014

Ms. Apple:

On behalf of the Executive Committee and 12,000 thousand members of the Grand Canyon Chapter of the Sierra Club, I wish to provide scoping comments regarding possible changes at Flagstaff's Pulliam Airport. These comments apply to both the possible runway extension and the update to the airport master plan. We assume that you will be handling comments for both the runway extension and the master plan; if that is not true, please let me know as soon as possible.

I attended the resource agency scoping meeting and the public scoping workshop held on 30 July in Flagstaff. Thank you for letting me attend the agency meeting as an observer.

The reason that the Sierra Club is interested in Flagstaff airport issues is that the airport has certain environmental impacts on the community and the surrounding region. The airport has benefits to the city and is part of the region's transportation infrastructure, along with the railroad and highway system. However, these benefits must be weighed against the environmental and financial costs.

The Federal Aviation Administration (FAA) has a responsibility to control and minimize the impacts from airports and aircraft operating from the airports. Public Law 106-181, Section 802, Finding 2 states that "the Federal Aviation Administration has the authority to preserve, protect, and enhance the environment by minimizing, mitigating, or preventing the adverse effects of aircraft overflights on public and tribal lands."

Apparently, Michael Baker Jr., Inc. is working with the FAA on these projects to write the environmental assessments (EAs). Baker and the FAA must evaluate the incremental and cumulative impacts of any airport expansion, either a runway extension or other expansion elements. At the meetings, it was apparent that the planning agencies are anticipating FONSI's (findings of no significant impact) for the proposed projects. We question the appropriateness on the FAA issuing a FONSI without first evaluating the <u>cumulative impacts</u> of airport expansion elements.

In discussions at the 30 July meetings, it was clear that the runway extension would affect the number and type of flights into and from Pulliam. Therefore, the extension would

affect aircraft noise levels and durations in the area. Taking into account incremental and cumulative impacts, it is clear that there will be environmental impacts. As the number of operations gradually increases, the impact gradually increases to the point that it is more significant than is was just a short time before.

We suggest that noise impacts should be evaluated over a 100 mile scope radius from the airport. The reason for this is that there are valuable national parks, national monuments, wilderness areas, and other sensitive lands within this radius. Impacts could affect lands 100 miles away. Many of these lands are sensitive to aircraft noise. For instance, the National Parks Overflights Act of 1987 (PL 100-91) specifically calls for aircraft noise reduction efforts for Grand Canyon National Park. The Federal Appeals Court for the District of Columbia recently ruled that the effects of both tour aircraft and other aircraft must be considered and evaluated (*United States Air Tour Association v. FAA*).

Besides the no-action alternative and the various extension alternatives, the EA should include aviation noise abatement alternatives. These would include long range flight path, takeoff, and approach mitigations. For instance, the FAA should include alternatives that route aircraft away from the Grand Canyon and other sensitive areas. This could be an important and complex issue because of the many sensitive areas, including several quite close to Flagstaff.

Although flight paths were shown on charts at the public meeting, they were only shown over a very short distance from the airport. It would be appropriate to show the flight paths over at least 100 miles. Redirecting flight paths away from sensitive areas is an appropriate noise abatement strategy that should be included in the EA.

We trust that the FAA will consult, communicate, and cooperate with the Bureau of Land Management, the National Park Service (NPS), and the tribal governments before completion of the EA. While aircraft noise issues were largely ignored just a few years ago, except in the close proximity to airports, noise issues are now understood to be significant.

Natural quiet and natural sounds are intrinsic elements of the national park and national monument environments. They are recognized as critical resources that the NPS is mandated to protect. Tranquility and solitude are becoming more valuable resources in America as the country becomes increasingly mechanized and developed. On 24 May 2002, the Federal Appeals Court for the District of Columbia found that the FAA must evaluate the cumulative impact of noise pollution on Zion National Park as a result of a proposed airport project near the park (*Grand Canyon Trust v. FAA*).

The EA should not just determine the areas above which the noise level and duration exceeds some arbitrary threshold, e.g. 65 dB(A) DNL, but should consider the impact in areas where background noise levels are very low, like areas in and around Flagstaff, and the Grand Canyon. Projected noise contours for the foreseeable future should be shown in the EA that include lower noise levels because many feel that lower noise levels are significant.

In summary, we trust that Michael Baker Jr., Inc. and the FAA will fully evaluate the cumulative noise impacts of the airport proposals as part of the environmental assessment.

We also trust that you will fully evaluate appropriate mitigation possibilities, including preferred aircraft routes with respect to regional land uses, with full consultation with the appropriate land use agencies. These are the very purposes of environmental assessments.

Thank you for your time and consideration.

Sincerely,

Jim McCarthy
Chapter Chair

cc:
William Menard
(Flagstaff public works director)

August 15, 2003

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Stewart L. Udall
Counselor

Ms. Karen Apple
Michael Baker Jr., Inc.
1313 East Osborn Road, Suite 150
Phoenix, AZ 85014

RECEIVED
'03
MICHAEL BAKER JR., INC.

Dear Karen Apple:

The Grand Canyon Trust is a regional conservation group dedicated to protecting the canyon country of the Colorado Plateau. Beginning with the passage of the 1987 Overflights Act, and later with the passage of the 2000 National Parks Overflights Act, we have had a continuous and focused interest in restoring natural quiet to the canyon country.

We are submitting the comments herein for consideration during the scoping process for the Flagstaff, Arizona Pulliam Airport's environmental assessment (EA).

The Grand Canyon Trust suggests as a priority that the FAA assist in developing a "preferred" alternative that includes noise mitigation and impacts avoidance for *Grand Canyon National Park.* We request alternative(s) that reroute air traffic from and to this airport around Grand Canyon National Park, so that visitors to the park, including visitors to its back-country zones, may have more extended opportunities to experience the Park's natural quiet unimpaired. (Similar mitigation and abatement should be considered for Wupatki National Monument, Sunset Crater National Monument, Walnut Canyon National Monument, and Petrified Forest National Park.)

The FAA can achieve mitigation and impact avoidance through re-design of current flight patterns of air traffic near and over Grand Canyon National Park and other, nearer NPS units. We ask that the FAA convene a "route design workshop" as part of the Flagstaff airport EA scoping so that members of the community and other interested parties could offer suggestions on protecting the natural soundscape of Grand Canyon National Park and/or other nearby sensitive areas. (Please see more detailed comments below on the "workshop.")

Applicable and Relevant Laws and Policy

Public Law 106-181, "The National Parks Air Tour Management Act", signed into law on April 5, 2000, contains Congress' determination that the Federal Aviation Administration "has the authority to preserve, enhance and protect the environment by minimizing, mitigating, or preventing the adverse effects of aircraft overflights on public lands."

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www.grandcanyontrust.org

Here is another opportunity for the FAA to effectively use its authority on behalf of national parks, one of which (Grand Canyon), has been specially identified by the Park Service and the Congress for natural quiet restoration and protection. Further, regarding the Grand Canyon natural quiet restoration mandate, the U.S. Court of Appeals (D.C. Circuit), made it clear in its August 2002 opinion *(USATA vs. FAA)* that all types of aviation noise – commercial, military, air tours, general aviation, must be considered when defining noise levels.

The FAA Draft Noise Abatement Policy 2000 (FAA Docket No. 30109) – issued July 14, 2000 – signaled its intent to update its policy with respect to the national parks and other noise-sensitive areas, specifically with respect to mitigation. (*What is the draft policy's status?*)

In any event, the Grand Canyon and other national park concerns afford another opportunity for the FAA to work together with the NPS in the public interest, to meet the mandates of both agencies where possible, and to resolve, cooperatively, any differences where that may not be entirely possible. [See also *40 CFR 1500.2 (f)*]. The Park Service's "special expertise" and related values will need to be fully honored re appropriate thresholds, metrics, and analyses.

The National Park Service has succinctly summarized its authorities, policies, and responsibilities re natural quiet protection in a paper, "National Park Service Noise Issues", presented at the Federal Interagency Committee on Aviation Noise (FICAN) "Symposium on the Preservation of Natural Quiet" (1998.) These authorities include:

- The Park Service's *Organic Act*, Title 16 U.S. Code Section 1 *et seq*;
- The Grand Canyon National Park Enlargement Act of 1975, PL 93-620
- The National Parks Overflights Act of 1987, PL 100-91;
- The NPS Report to Congress (1994) on noise associated with aircraft;
- The NPS General Management Policies 2000; and
- NPS Director's Order 47 (2000) re Soundscape Preservation and Noise Management.

The Flagstaff airport is not far from many designated federal wilderness areas. One example is the USFS' Kachina Peaks Wilderness Area, which additionally contains traditional cultural properties with sacred significance to Native Americans.

The Wilderness Act of 1964 is highly relevant in this scoping. It states that:

"A wilderness... is hereby recognized as an area where the earth and its community of life are untrammeled by man..."

It goes on to define an area of wilderness as

[U]nderdeveloped Federal land retaining its primeval character and influence without permanent improvements so as to preserve its natural conditions and which... has outstanding opportunities for solitude or a primitive and unconfined type of recreation..."

Visitors in affected areas – particularly backcountry and wilderness zones – are keenly attuned to their full range of subtle, often tenuous natural sounds, punctuated with equally impressive silences. These enhance the majestic visual experience and their psychological "power of place." Unimpaired *audibility* here is a genuine need, a spiritual value. Individuals within such areas and zones are entitled to consistently enjoy fully extended opportunities to experience its natural quiet unimpaired. Continual or repetitious noise can derogate the natural aural resource itself, which is important also to wildlife.

This is no different, really, than the way people – with care and relaxation – experience a symphony or cathedral concert. The reward is peace, enchantment, wonder, feeling – the actual **aura.** They paid the ticket price; they want and deserve the extended auditory as well as visual range un-intruded and unpolluted. They don't come – in fact would likely not come – only for scattered minutes of quality listening here and there. They deserve the entire experience.

Route Design Workshop and *Geographic Scope*

As mentioned earlier, the Contractor with the assistance of the FAA should try a "Route Design Workshop" as part of scoping. They should invite representatives of the interested parties and groups, including local community representatives, to try their hand at designing – for high and low level traffic – alternative airplane routes, with particular emphasis on national park and wilderness area protections. Participants would first receive design constraints and evaluation criteria, develop alternatives and rank them.

As the national parks and established wilderness units in this area are all extremely noise sensitive – exhibiting extremely low ambient sound environments – we suggest that the Region of Accommodation for this workshop, and for the scope of this DEIS, recognize all national park units within 100 miles from the airport site. Congressionally-designated Wilderness units within forty miles should also be so recognized.

The major, iconic Park unit thus recognized is of course the Grand Canyon. Three nearby National Monuments (Wupatki, Sunset Crater, and Walnut Canyon) would also be recognized, together with the Petrified Forest National Park.

New Studies for Review

We ask that the Contractor review and utilize the following acoustic reports during scoping and development of the DEIS:

- National Park Service Report on "Aircraft Noise Model Validation Study" (HMMH Report No. 295860.29 – January, 2003), which determined which of four computer models best calculate tour aircraft audibility in the Grand Canyon. (This study confirms natural ambient levels well below 20 dBA for wilderness soundscapes in the Grand Canyon National Park and in adjacent "Indian Country" generally.)

- The Contractor should also review the Park Service's April 2003 paper, "The Importance of Natural Soundscapes in National Parks: Soundscape Preservation and Noise Management Planning" (National Park Service—Natural Sounds Program Center, Fort Collins, CO).

Metrics and Maps
We ask that the Contractor consider the following requests regarding metrics and maps to be used in the development of the EA.

DNL Not Appropriate for National Parks
We request that DNL not be utilized as a metric for National Park areas, for reasons which have been repeatedly stated for the Record by the Park Service itself. DNL is inappropriate for such noise-sensitive locations.

Other Supplemental Metrics
The Contractor should therefore carefully review the February, 2002 Recommendation and Finding of the FICAN, based on its February 2001 "Symposium on the Value of Supplemental Noise Metrics in Aircraft Noise Analysis", along with all symposium papers (available on the Web: *http://www.fican.org/pages/sympos03.html*). *See also "Reference Appendix, "1." below.*

Maps
Please provide Maps of "Flight Paths" for all GCNP areas and other federal protected areas within the Radius of Scope, similar to what was provided by the FAA in its January, 2001 SDEIS for "Cal Black Memorial Airport, Halls Crossing, Utah", listed as Fig. IV. 9, "IFR Flight Paths for Cal Black Memorial Airport, June 3, 1998", at page 4-24.

These charts would help the reader grasp the typical daily distribution of the aircraft noise load on various affected noise-sensitive sites. The maps chosen would be based on (1) the 24-hour day, and (2) daylight hours only and nighttime hours only, for appropriate comparison.

Psycho-Acoustic Review
Since contemplative recreational opportunity during extended periods of natural quiet is at the heart and soul of the back-country or wilderness visitor experience, the

affected parties, including the Contractor, should review new studies utilizing psychological scales for assessing noise impacts on back-country or on contemplative-recreation users. These go beyond the standard "Annoyance" or "Interference" paradigms. (See Reference Appendix, ("2.", "3.")

Consistent with these studies, the EA should list and qualify psychological impacts on said backcountry park and wilderness users exposed to hours and/or days of unmitigated, unceasing and increasing overflight noise.

City of Flagstaff's (F.A.R. Part 150) Noise Compatibility Study
Flagstaff is being afforded the opportunity under the Part 150 Noise Compatibility Study to define its own noise exposure criteria for compatible land use around the airport.

Airport officials, in connection with such a study, must plan far, far into the future, examine the long-term demand for aviation services, and develop future, full capacity noise contours. Then local government must either adopt FAA compatible land use *guidelines* (they are guidelines only), or set their own standards based on public input and economic considerations.

Therefore, the need exists to prepare noise maps that include at minimum DNL 60 dB, and 55 dB, and preferably lower for the Flagstaff area. This is especially true given the extremely low ambient natural sound levels which exist on most of the Colorado Plateau.

A useful reference on re the Noise Compatibility issue is:

- William Albee, "The Compatible Land Use-Noise Challenge", *Airport Magazine*, March/April 2001.

Other impacts for consideration:
The contrails produced by high-altitude overflights can represent significant degradation or impairment of scenic landscape (visual) resources. On bad days, weather-wise, these streaming contrails cross the skies above soaring Canyon rock architecture, and last up to 15 minutes or more. They mar primeval skyscapes integral to the Grand Canyon National Park visitor experience, as well as (particularly) above certain spectacular red rock wilderness units, such as those near Sedona.

The EA should assess the prevalence of these contrails over selected Park and/or wilderness units at different altitudes, times, seasons and meteorological conditions. It should recognize that route re-design would mitigate not only aircraft noise but also the corresponding visual intrusions (often principally related to the contrails, individually or aggregated.)

Forecasting

The following questions are generally predicated on what the existing conditions are and how they may be affected by the changes the Flagstaff Pulliam Airport project proposal will bring, possibly bring, or allow for. The EA should cover these questions in these categories:

(1) Reference/Baseline Conditions (2000, 1997, etc.); (2) Airport Forecast Predictions
(Years 2012, 2018, 2030, and 2050); (3) Airport Maximum Capacity. Forecasts have been inaccurate in the past, and will continue to be so in the future. Draft EA analyses ("no-action" vs. "expansion") should be based on maximum capacities under existing or presumed future safety rules for all airport flight configurations.

A. In order to make sound decisions and to adequately inform the public, the first major question is: *What is the total change in number of all landing and departing aircraft, based on both forecasts AND maximum capacities, i.e. FAA-defined maximums, based on existing or expected safety regulations?*

(Airport flight operations *forecasts* for, say, even 10 years hence are merely guesses. Most weight should be given to safety regulation-based *"maximum capacity" definitions* that will always be larger than or equal to forecasts.)

B. *What are the current total numbers of all types of aircraft taking off and landing to or from the Flagstaff Airport?* Show a history of the last five years (to date, if possible). If history to date is unavailable, please provide history through year 2002. Include in a separate category all touch-and-gos, wave offs, etc. Include all passenger, cargo, military, business, leased, private, civil, and other aircraft. Include all air tour operators, or prospective air tour operators and aircraft, as per PL 106-181.

C. *Similarly, what are the numbers of all types of aircraft flying near and over Grand Canyon National Park from the Flagstaff Airport during the current and last five years? (Likewise, for other specified NPS units?)*

D. *What are the total number forecasted and the maximum safe capacity numbers of all types of aircraft taking off and landing from the Flagstaff Airport?* Show how many flights will be added to the existing burden, by year.

Note: We believe that all environmental impact analyses should be based on maximum capacity of the proposed Airport configuration, and that maximum should become the legally enforceable maximum in the future, independent of any future FAA rules, changes, or airline industry "re-interpretation." Otherwise, these environmental analyses are meaningless. Similarly, if "forecasted" activity levels are used instead of maximums, those levels should become legally enforceable as maximums.

E. Similarly, what are the current and last five years numbers of all types of aircraft flying near and over Grand Canyon National Park, irrespective of airport of origin? What are the total number forecasted and the maximum safe capacity numbers of all such aircraft flying over Grand Canyon National Park, irrespective of airport of origin?

(The U.S. Court of Appeals, D.C. Circuit, in its opinion of May 24, 2002, re *Grand Canyon Trust vs. FAA* clarified that under NEPA, cumulative impact noise analysis for the St. George (UT) Replacement Airport must include current and projected *noise* evaluation for all aircraft overflying nearby Zion National Park, irrespective of airport of origin. This would also logically extend to the current and projected NEPA-based analyses, pursuant to the National Parks Overflights Act of 1987, for all aircraft overflying Grand Canyon National Park.)

F. What are the expected shifts from existing commercial aircraft fleet mix to increased size aircraft? Show average passengers per flight and type/quantity of new aircraft, e.g. A-380, in five-year increment categories as characterized currently: five years out, ten years out, 15 years out, etc.

G. Historical/Inspirational Park Sites and Formations:

Identify and assess noise impact for specific park areas/sites especially sensitive to noise and/or visual intrusion: e.g., (for Grand Canyon): "Yaki Point", "Horseshoe Mesa", "Plateau Point", "Cape Royal", "Cape Final", "Point Sublime", "Bright Angel Point", "Point Imperial", etc.

H. Agreements: *List and explain all agreements with airport lessees regarding all of the above-mentioned projects, including all segmented expansion projects not listed.* (An example might be a new helicopter flight training school.)

We recognize that the FAA and the Park Service's mission differ greatly. The FAA has a great challenge in managing our nation's air traffic so that our airspace operates safely and efficiently. While the Park Service faces a different set of challenges, they are no less important to our country; NPS must preserve the lands, sites, structures, and artifacts that represent our nation's shared natural and cultural heritage so that these treasures can be enjoyed *unimpaired* by current and future generations. When they vacation and travel, Americans seek to experience the natural wonders of our national parks, wonders such as soundscapes. Our grandchildren should be able to enjoy the sounds and sights of some of these iconic and storied parks as did our grandparents decades ago. That type of experience will be a re-assuring, living connection to the past, and the FAA and the aviation industry has an important role in helping the Park Service protect it.

On behalf of the Grand Canyon Trust, I thank you for considering the above comments as part of the official record on scoping for the Flagstaff Pulliam Airport EA. Please feel free to contact me directly if you have any questions about the Grand Canyon Trust's position or suggestions.

Sincerely,

Tom Robinson,
Director of Government Affairs

REFERENCE APPENDIX, with notes:

1. **FICAN SYMPOSIUM ON "The Value of Supplemental Metrics in Aircraft Noise Analysis" (2001)**

   Specifically, we suggest that the Sponsor and the Contractor review (1) the *Discussion Paper "Expanding Ways to Describe and Assess Aircraft Noise"*, by the Australian Department of Transport and Regional Services (March 2000); the Report of Nov. 22, 1999, *"Community Efforts to Design Supplemental Noise Metrics"*, by the Hanscom Noise Working Group (Bedford, Massachusetts: see esp., PP 55-75; and (3) Single Event Metrics, as discussed in the FICAN presentation by Vince Mestre, *"The Application of Single Event Metrics in Airport Noise Analyses."*

   The latter paper points to the utility of the Single Event Noise Exposure Level/Sound Exposure Level (SENEL/SEL), the Maximum Noise Level (Lmax, dBA), and Time Above (TA, minutes).

   All of the above papers are on the FICAN website. See a recent review of the Australian efforts in *Airport Noise Report 14* (20), June 7, (page 1): Noise Metrics: Australians Issue Draft Guidelines on Providing Information About Noise". The article references newly released methodology on *"Draft Guidelines for Selecting and Providing Aircraft Noise Information,"* available at http://www.dotars.gov.au, or by contacting David.Southgate@dotars.gov.au.

   The new Australian descriptors "provide information on numbers, times, locations, and loudness of aircraft noise events, and are based on flight paths rather than averaged noise energy. (They) treat aircraft noise as a series of single events, rather than computing average noise energy. They also move beyond the conventional thinking of describing noise impacts as "acceptable" or "unacceptable", and provide people with the information they need to make that determination for themselves.

2. **RESEARCH PAPERS – Psycho-Acoustics**
   - A recent study, *"Aesthetic, Affective, and Cognitive Effects of Noise on Natural Landscape Assessment"*, by Britton Mace, Paul Bell, and Ross Loomis, was published in *Society and Natural Resources, 12: 225-242 (1999).* This paper should be

reviewed in detail as part of this scoping. The lead author should be consulted: e-mail to mace@suu.edu (Britton L. Mace, Department of Psychology, Southern Utah University, Cedar City, UT 84720). Phone: 435-865-8569. The study concludes (p. 236) that "air flights in wilderness areas represent undesirable sounds of civilization and will be evaluated negatively even at low levels of noise, since these interfere with the attainment of tranquility and solitude."

- See also the *Letter* of Britton Mace to Superintendent, Zion National Park, dated Feb. 25, 2000, re Draft General Management Plan for the Park, and subsequent comments offered by the same author on the DEIS (now in preparation) for the St. George (UT) Replacement Airport. The letter highlighted new research on "inspirational, contemplative states of experience, and on the psycho-acoustical impacts to that Park experience resulting from noise encounters. *(The list of references attached to the letter should be reviewed fully and in depth.)*

See Also the following new Research Papers:

- Britton Mace, Paul Bell, Ross Loomis, Glenn Haas, "Source Attribution of Helicopter Noise in Pristine National Park Landscapes", *J. of Parks and Recreation Administration* (Fall, 2003), Vol. 21 (3), 97-119

- Britton Mace, Paul Bell, Ross Loomis, "Visibility and Natural Quiet in National Parks and Wilderness Areas: Psychological Considerations", *Environment and Behavior* (in press, Fall, 2003)

United States Department of the Interior
NATIONAL PARK SERVICE
WUPATKI – SUNSET CRATER VOLCANO – WALNUT CANYON
NATIONAL MONUMENTS
6400 N. Highway 89,
Flagstaff, Arizona 86004

IN REPLY REFER TO:N3615

September 18, 2003

Karen Apple
Environmental Planner
Michael Baker Jr., Inc.
1313 East Osborn Road, suite 150
Phoenix, AZ 85014

Dear Ms. Apple:

The National Park Service and the Flagstaff Area National Monuments thank you for the opportunity to provide comment in response to the public scoping notice for the Pulliam Airport, Flagstaff, AZ – Airport Expansion and Master Planning process. Comments are provided with the understanding that the rationale for engaging in this environmental assessment (EA) process is to address the issues resulting from recent U. S. Circuit Court of Appeals and Congressional Legislation regarding aircraft overflights and noise impacts as part of Federal Aviation Administration (FAA) supported airport expansions or modifications.

The National Park Service manages a number of parks and monuments within northern Arizona: Walnut Canyon, Sunset Crater, and Wupatki National Monuments, as well as Grand Canyon National Park are all located within Coconino County and Montezuma and Tuzigoot National Monuments are located in Yavapai County, each of these park units is located less than 65 air miles from Pulliam Airport. Our biggest concern in the preparation of any analysis of, or proposal for altering existing conditions, at nearby airports is the potential for noise impacts and cumulative impacts of the airport and its use on any unit of the National Park System.

We want to encourage the use of available acoustical data and aircraft noise sampling opportunities in the area of Grand Canyon National Park early in the process. The NPS assumes that the FAA will attend to the instructions of recent court decisions as necessary in the environmental review process. Since lands within the jurisdiction of the National Park Service are potentially affected by the proposed action, NPS notes for the record that it has special expertise in evaluating impacts on the park resources like natural soundscapes, visitor experiences, and other related values.

Specific comments, questions, and concerns about specific NPS are given below.

Grand Canyon National Park (GCNP)

Proposed Action and Scope of Analysis

We are very interested in the potential for aircraft overflight from these types of airport expansion projects because Grand Canyon, Zion and Bryce Canyon National Parks are all presently affected by air tour overflights and aircraft noise impacts. Zion and Bryce Canyon are slated for air tour management planning as a cooperative effort between NPS and FAA within the next two years, and GCNP has been

working with the FAA for 20 years to resolve aircraft noise and overflight issues at the Grand Canyon. Managers in all parks are concerned about existing impacts of air tours and general aviation on the parks and on visitors. Clearly, this action has the potential for impacts on common resources – national park soundscapes. I want to ensure that GCNP is included on any future mailings regarding this effort, the Pullman Airport Master Plan development, or associated environmental documents.

We at GCNP think that the scope of analysis should include the full range of likely impacts that might be expected over and above the existing conditions. We know that aircraft noise impacts will result not only from airport construction, but also from connected actions. Connected actions could include: similar airport expansions in adjacent cities and counties; increased air traffic; different types of air traffic that may be accommodated; increased air tour demand; and alterations in flight paths, altitudes, overflight frequencies, and other such flight operations. Any unit of the national park system that may be impacted by actions connected to any new airport alternative should be within the scope of analysis. In this area, this could include Zion, Bryce Canyon, and Grand Canyon National Parks; and the Flagstaff Area National Monuments (see below), Montezuma Castle, Tuzigoot, Cedar Breaks, Pipe Spring, and Grand Canyon Parashant National Monuments.

To the extent possible, the total cumulative impact of the proposed action, similar and connected actions, and other noise sources should be quantified for each affected park area. The analysis should reveal the total cumulative impact in a way that allows comparison between alternatives. The NPS suggests that adequate disclosure can be provided in looking at total numbers, types, altitudes, routes, and temporal distribution of flights, along with numbers and types of other noise sources. Further, disclosure of the total cumulative area within the parks where noise is likely to be audible, the level at which noise occurs where audible, and the temporal distribution of noise (day and night), would also be very meaningful.

Flagstaff Area National Monuments

Wupatki, Sunset Crater Volcano, and Walnut Canyon National Monuments collectively comprise the Flagstaff Area National Monuments. These three monuments are the closest National Park Service (NPS) units to Pulliam Airport and are all located within 30 air miles of the runway.

These monuments like all units within the National Park Service, are concerned with the protection of cultural and natural resources including natural quiet or soundscapes, archeological sites, federally listed threatened and endangered species as well as the protection of the visitor experience at each park.

We have a number of specific questions in addition to the concerns generated by GCNP. We would like to see an analysis of the total number of increased flights resulting from the airport expansion including increased commercial flights. The arrival and departing flight path models would be more useful for us if they were expanded to include the monument boundaries.

Since it appears that Pulliam Airport is approximately only 5 or 6 air miles from Walnut Canyon National Monument and the park's enabling legislation specifies protection of archeological sites, we would request any potential vibration impacts flights approaching or leaving the airport be part of the impact analysis, including information about flight altitudes as they pass over the monument. Walnut Canyon has experienced some problems with low-flying aircraft in the past on a number of occasions. Since Walnut Canyon has been designated as Critical Habitat for the threatened Mexican Spotted Owl, we would like potential affects on both Spotted Owl habitat and breeding success analyzed as well. We are very concerned about specific noise levels that will be generated that could impact the quality of visitor experience at Walnut Canyon, Wupatki, and Sunset Crater Volcano National Monuments.

Mitigation of Impacts
Following the analysis of direct, indirect and cumulative impacts on parks, there is a need to consider how and to what extent the impacts can be mitigated. The clearest and most obvious mitigation would consist of an alternative routing of all flights into areas that do not contain national parks or monuments, while providing sufficient horizontal buffers around those units in closest proximity. Mitigation of other alternatives could consist of limiting the number of flights over such unique areas, scheduling flights so they do not occur over the parks during critical times of day, and prescribing a flight path or minimum altitude which can be judged by the NPS as having an acceptable impact on the parks or monument resources.

Conclusion
The proposed action represents a potential for significant, adverse, direct and indirect impacts on National Park Service natural soundscape resources, or other resources, visitor experiences, and values that are dependent upon a natural quiet setting. Such impacts could result from the proposed action or other alternative actions that might be considered in the upcoming environmental documents and plans. Further, these negative impacts could exacerbate the total impact of other noise sources that currently affect the park soundscape, wildlife habitat, or visitor experiences. All sources are important in the analysis from the standpoint of cumulative impacts. The purpose and need for this proposed action should incorporate a desire to decrease the total noise load in affected park units and around local communities. The analysis should then provide an alternative that meets desired conditions, other than in a "no build" or "no overflight" scenarios. Minimally, analysis of the actions should disclose the anticipated effects of all alternatives on all potentially affected NPS units, and local communities, and how those effects conflict with park plans, policies or controls, and city/county planning documents.

To assist in this effort, the NPS is willing to provide clarification, information, data, analysis, or other assistance, as you may need to perform the requested tasks. The initial contact person for such assistance is: Steven Mitchelson, Natural Resource Specialist, Flagstaff Area National Monuments, 6400 N. Hwy. 89, Flagstaff, AZ 86004; (928) 526-1157 x235; or e-mail - steven_mitchelson@ nps.gov. An additional National Park Service contact with specialized expertise is Ken McMullen, Overflights and Natural Soundscape Program Manager, Grand Canyon National Park Science Center, 823 N San Francisco St, Suite B, Flagstaff, AZ 86001; (928) 779-2095; or e-mail - ken_mcmullen@nps.gov.

We appreciate this opportunity to work with the City of Flagstaff and Michael Baker Jr., Inc. and we look forward to sharing in the future planning of the Pulliam Airport.

Sincerely,

for Nancy J. Schultz
Sam Henderson
Superintendent

cc: Superintendent, Grand Canyon National Park

United States Department of Agriculture
Forest Service
Peaks/Mormon Lake Ranger Districts
5075 N. Highway 89
Flagstaff, AZ 86004-2852
Phone: (928) 526-0866
Fax: (928) 527-8288

File Code: 2720
Date: July 23, 2004

Ms Mara Pritchard
Michael Baker Jr., Inc.
Airside Office Park
100 Airside Drive
Moon Township, PA 15108

RECEIVED
AUG 13 2004

Dear Ms. Pritchard:

In response to your telephone conversation of June 30, 2004 with Ken Jacobs and at your request, I am providing this information concerning the proposed Flagstaff Pulliam Airport Project, its impact upon lands of the Coconino National Forest and issues related to Section 4(f) of the US DOT Act of 1966.

Section 4(f) protects publicly owned lands that are significant for use as parks, recreation areas, and wildlife and waterfowl refuges from impacts by transportation projects. In the case of multi-use properties, only those portions of the property that are significant for recreation are covered under Section 4(f).

The City of Flagstaff's proposed runway expansion project involves the lengthening of Runway 3-21 by 1,801 ft to 8,000 ft to accommodate the air carrier's transition from turboprop aircraft to jet aircraft. The runway expansion does not require the acquisition of land by the City, however, a runway protection zone (RPZ) easement is required from the Forest Service to ensure that future land use and development in the runway approach area is consistent with airport operations. Specifically, the RPZ would place restrictions on future building heights and noise sensitive land uses.

As a follow-up to the telephone conversation and the information provided, the facts concerning the USFS property in area of the proposed runway and RPZ easement extension are as follows:

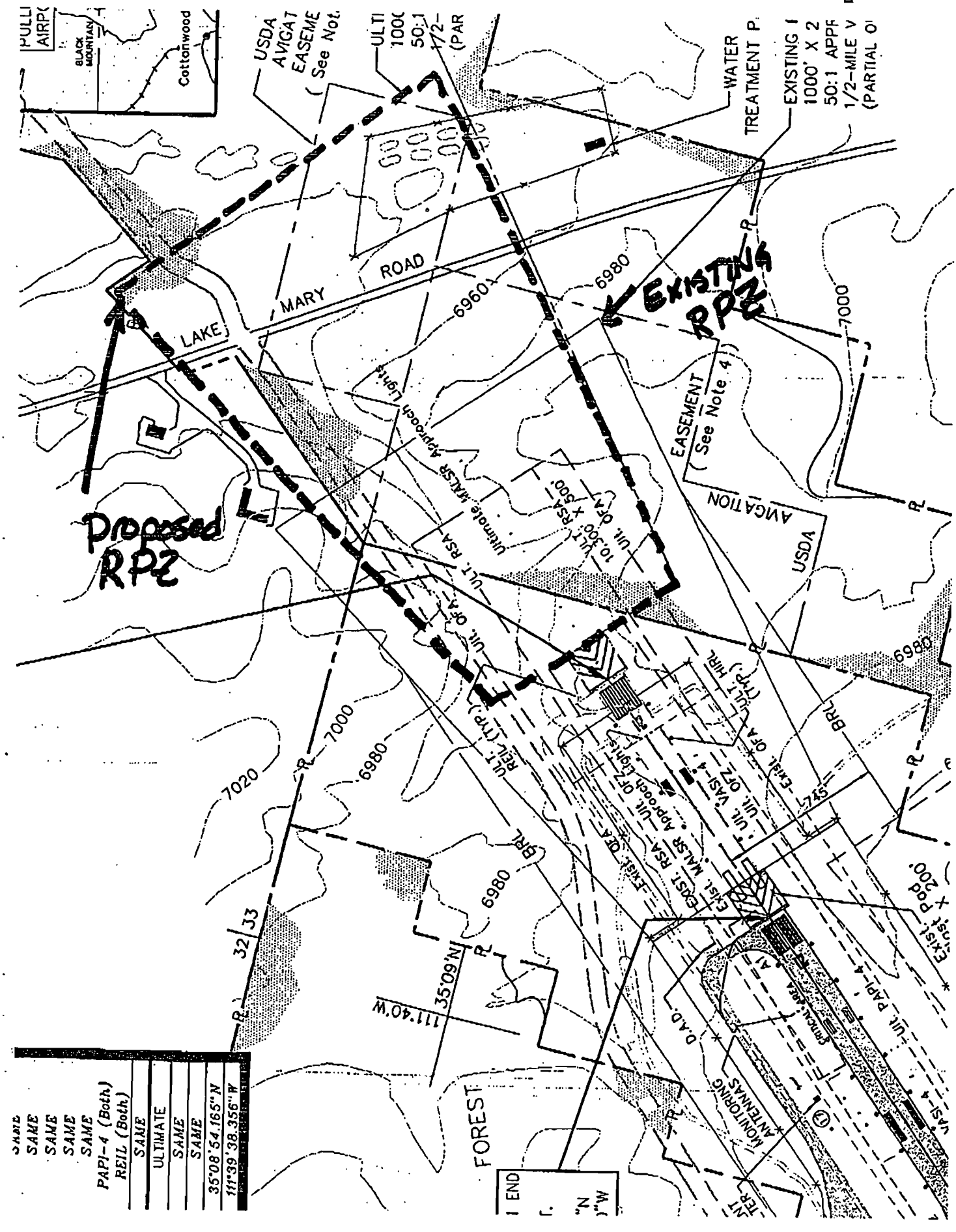
- The Coconino National Forest is managed under the National Forest Management Act of 1976 (NFMA), enacted by Congress, requiring the US Department of Agriculture, Forest Service to manage the National Forest System lands according to land and resource management plans.
- Flagstaff Pulliam Airport was constructed in 1949 on US Forest Service (USFS) land deeded to the City through the Federal Airport Act. Originally constructed to a length of 5,300 feet, the runway was lengthened to 6,300 feet in 1955 and to its present length of 6,999 feet in 1969. Recent improvements at the airport include the construction of a new terminal building, new parking facilities, a parallel taxiway, as well as new facilities for fixed base operations.

- The National Forest System lands to be impacted by the proposed RPZ easement, related to the runway expansion, are located within the boundaries of the City of Flagstaff and are within the Flagstaff/Lake Mary Ecosystem Analysis Area which made specific amendments to the Coconino National Forest Land Management Plan for management of this area. Specifically, our Forest land management plan now requires that management activities be consistent with the Regional Land Use and Transportation Plan and the City of Flagstaff's Open Spaces and Greenways Plan. The area to be impacted by the RPZ easement is identified in those plans as lands available for land ownership adjustment (acquisition by the City of Flagstaff).

In summary, the USFS manages National Forest lands for multiple uses. The portion of the Coconino National Forest to be impacted by the RPZ easement extension is not specified by the Coconino National Forest Land Management Plan as significant for recreational (or other Section 4(f) values listed above), and is located adjacent to the Flagstaff Pulliam Airport, a facility that is located on what was formerly National Forest land. Because Forest Service and local planning documents identify this land to be acquired by the City of Flagstaff, it is recommended that coordination be conducted with the City of Flagstaff planners for final determination whether Section 4 (f) protection is applicable to the property impacted by the RPZ easement extension.

Sincerely,

TERRI MARCERON
District Ranger


Proposed RPZ
EXISTING RPZ
LAKE MARY ROAD
USDA AVIGATION EASEMENT See Note 4
WATER TREATMENT P
EXISTING 1000' X 2 50:1 APPR 1/2-MILE V (PARTIAL O
Cottonwood
BLACK MOUNTAIN
Ultimate MALSR Approach Lights
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EXIST. MALSR Approach Lights
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PAPI-4 (Both)
REIL (Both)
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ULTIMATE
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SAME
35°08'54.165"N
111°39'38.356"W

THE HOPI TRIBE

Wayne Taylor, Jr.
CHAIRMAN

July 29, 2004

Michelle Simmons, Environmental Protection Specialist
Federal Aviation Administration, Airports Division
P.O. Box 92007
Los Angeles, California 90009-2007

Dear Ms. Simmons,

This letter is in response to your correspondence July 13, 2004, regarding the Federal Aviation Administration and City of Flagstaff proposing airfield improvements at Flagstaff Pulliam Airport in Flagstaff, Arizona. The Hopi Tribe claims cultural affiliation to prehistoric cultural groups in Arizona, and we consider our ancestral villages, referred to as archaeological sites, to be Hopi Traditional Cultural Places. Therefore, we support the identification and avoidance of prehistoric archaeological sites, and therefore, we appreciate your solicitation of our input and your efforts to address our concerns.

The Hopi Cultural Preservation Office is aware of numerous Hopi Traditional Cultural Properties in Flagstaff and the surrounding area, including but not limited to Elden Pueblo, the San Francisco Peaks, and Walnut Canyon, Sunset Crater, and Wupatki National Monuments.

We have reviewed the enclosed cultural resources survey reports of the area of potential effect by Northland Research that identify no prehistoric sites in this project area. We are not aware of any Hopi Traditional Cultural Properties in this project area. Therefore, we have determined that this proposal is unlikely to effect cultural resources significant to the Hopi Tribe, and concur that a recommendation for a finding of no historic properties affected is appropriate for this undertaking.

However, we note numerous prehistoric sites in the vicinity of the project area. Therefore, we also recommend that if any cultural features or deposits are encountered during project activities, these activities must be discontinued in the immediate area of the remains, and a qualified archaeologist must be consulted to evaluate their nature and significance. If any Native American human remains or funerary objects are discovered they shall be immediately reported as required by law.

Should you have any questions or need additional information, please contact Terry Morgart at the Cultural Preservation Office at 928-734-3619. Thank you for your consideration.

Respectfully,

Leigh J. Kuwanwisiwma, Director
Hopi Cultural Preservation Office

xc: Arizona State Historic Preservation Office

RECEIVED
AUG 17 2004
AIRPORTS DIVISION
AWP-610

P.O. BOX 123 — KYKOTSMOVI, AZ. — 86039 — (520) 734-3000

"Managing and conserving natural, cultural, and recreational resources"

Arizona State Parks

August 3, 2004

Michelle Simmons
Environmental Protection Specialist
Western-Pacific Region, Airports Division
Federal Aviation Administration
U.S. Department of Transportation
P.O. Box 92007
Los Angeles, CA 90009-2007

RE: Flagstaff Pulliam Airport, Flagstaff, Arizona
Section 106 Consultation
SHPO-2003-1550 (20668)

Janet Napolitano
Governor

State Parks
Board Members

Chair
John U. Hays
Yarnell

Elizabeth Stewart
Tempe

William C. Porter
Kingman

William Cordasco
Flagstaff

Gabriel Beechum
Florence

Janice Chilton
Payson

Mark Winkleman
State Land
Commissioner

Kenneth E. Travous
Executive Director

Arizona State Parks
1300 W. Washington
Phoenix, AZ 85007

Tel & TTY: 602.542.4174
www.azstateparks.com

800.285.3703 from
(520 & 928) area codes

General Fax:
602.542.4180

Director's Office Fax:
602.542.4188

Dear Ms. Simmons:

Thank you for consulting with the Arizona State Historic Preservation Office (SHPO) regarding the above project pursuant to Section 106 of the National Historic Preservation Act as implemented by 36 CFR Part 800, and submitting documentation supporting the impact determinations of the proposed airfield improvements at the Flagstaff Pulliam Airport in Flagstaff, Arizona. We have reviewed the submitted materials and offer the following comments.

Thank you for submitting copies of the three separate cultural resources survey reports for the area of potential effect (APE) of the proposed project. These three reports are adequate; their records searches did not identify any known historic properties within the APE and no new historic properties were identified within the APE during the surveys. We concur with FAA's determination that the proposed undertaking at Flagstaff Pulliam Airport will not affect any historic properties listed or eligible for listing on the National Register of Historic Places.

We appreciate your cooperation with this office in considering the impacts of federal undertakings on cultural resources situated in Arizona. If you have any questions or comments, please contact me at (602) 542-7140 or electronically via djacobs@pr.state.az.us.

Sincerely,

David Jacobs
Compliance Specialist/Archaeologist
State Historic Preservation Office

RECEIVED
AUG - 9 2004
AIRPORTS DIVISION
AWP-610

S.H.P.O.- 2003 - 1550 (16588)

Baker

Michael Baker Jr., Inc.
A Unit of Michael Baker Corporation

1313 East Osborn Road, Suite 150
Phoenix, Arizona 85014

(602) 279-1234
FAX (602) 279-1411

July 9, 2003

MICHAEL BAKER JR., INC.
JUL 23 2003
RECEIVED

Mr. Jim Garrison
State Historic Preservation Officer
State Historic Preservation Office
Arizona State Parks
1300 West Washington Street
Phoenix, AZ 85007

RECEIVED
JUL 11 2003
DO 7/15/03
ARIZONA STATE PARKS/S.H.P.O.

Project: Flagstaff Pulliam Airport

Subject: Notice of the Proposed Action to Prepare an Environmental Assessment for Flagstaff Pulliam Airport

Dear Mr. Garrison:

The City of Flagstaff is preparing an Environmental Assessment (EA) to study potential environmental and related impacts that may result from the proposed airfield improvements at Flagstaff Pulliam Airport in Flagstaff, Arizona. The purpose of the runway extension is to provide a runway length capable of accommodating the larger business jets and forecasted commuter regional jet aircraft to operate without weight restrictions, and to enhance the operational safety of the aircraft using the airport. The proposed improvements to be assessed in the EA are shown in Figure 1 and include the following:

- Extend Runway 3-21 to 8,800 feet,
- Extend Parallel Taxiway A to 8,800 feet,
- Extend the High Intensity Runway Lights (HIRL) and Medium Intensity Taxiway Lights (MITL),
- Replace Visual Approach Slope Indicator (VASI-4) on the Runway 21 end with a Precision Approach Indicator (PAPI-4),
- Adjust approach lighting system on Runway 21 end,
- Clear and grade area for extended Runway Safety Area and Runway Protection Zone located within avigation easement over US Forest Service property, and
- Cut 225,000 cubic yards, fill 1,000,000 cubic yards, clear and grade area within airport boundary located in the Future Eastside Aviation Development area to borrow 775,000 cubic yards.

Alternatives assessed in the EA may include, but may not be limited to: No-Action (Figure 2); extensions to alternative runway ends (Figures 3-4); and off-airport alternatives.

Challenge Us.

In accordance with the requirements of the National Environmental Policy Act (NEPA), a **Resource Agency Scoping Meeting for the EA will be held at 3:30 p.m. on Wednesday, July 30, 2003.** The meeting will be held in the Staff Conference Room located on the second floor at the Flagstaff City Hall.

The purpose of the scoping meetings is to involve agencies and the community in the proposed airport improvement project. Agency and community involvement is intended to achieve a dual purpose. The first purpose is to educate the public about the need for the proposed project and to inform them about the alternatives under consideration. The second purpose is to provide members of the public a formal opportunity to express their views about the project.

In addition, a **Public Scoping Workshop will be held on the same day from 6:00 p.m. - 7:30 p.m.** The Public Scoping Workshop will be held in the Flagstaff City Hall Council Chambers located at 211 W. Aspen, Flagstaff, Arizona.

If you are unable to attend the Resource Agency Scoping Meeting, we encourage you to submit written comments and recommendations by **August 15, 2003,** to me at Michael Baker Jr., Inc. 1313 East Osborn Road, Suite 150, Phoenix, Arizona 85014, phone at 602-798-7555, facsimile to 602-279-1411, or e-mail at kapple@mbakercorp.com.

Sincerely,

MICHAEL BAKER JR., INC.

Karen Apple

Karen Apple
Environmental Planner

This NEPA submittal does not constitute consultation under Section 106 of the National Hist. Preservation Act. Provisions at 36 CFR Part 800.8 must be followed in order for this Office to accept NEPA documentation as Section 106 compliance consultation.

David Jacobs 21 JUL 03

Enclosures

cc: JM/CF, KJA

City of Flagstaff

September 3, 2004

Michael Baker, Jr., Inc.
Attn: Raymond Maginness
Airside Business Park
100 Airside Drive
Moon Township, PA 15108

Subject: Flagstaff Pulliam Airport
Runway 3-21 Extension
Section 4(f) City Coordination

Dear Ray:

In response to your request concerning the proposed Flagstaff – Pulliam Airport runway extension project and its impact on Section 4(f) properties, the following project understanding and impact determination is offered.

Project Understanding

The proposed project involves the lengthening of Runway 3-21 by 1,801 ft, to 8,800 ft to accommodate the air carrier's transition for turboprop aircraft to regional jet aircraft. Also included under this project are the relocation of the existing unimproved service road, construction of an access road for construction vehicles, and an extension of the existing runway protection zone (RPZ) avigation easement. The existing service road provides emergency access to the area and FAA access to the medium-intensity approach lighting system (MALSR). The service road would be relocated to maintain emergency access for airport vehicles and FAA access to the relocated MALSR. In addition, a construction haul road will be used to provide access from Lake Mary Road to the construction area. The existing RPZ avigation easement would be extended across Lake Mary Road to the northeast to accommodate the RPZ for the runway extension, along with the runway end lighting. As a result of the proposed runway extension, a revised 65 DNL noise contour would occur.

211 West Aspen Avenue, Flagstaff, Arizona 86001
Main & TDD (928) 774-5281 • Fax (928) 779-7696

Project Impact on Recreational Resources

According to the Flagstaff Area Regional Land Use and Transportation Plan, no existing recreational resources are located in the area to be impacted currently by the proposed runway protection zone (RPZ) avigation easement extension. Additionally, there are no existing recreational resources within the proposed 65 DNL noise contour associated with the Proposed Alternative for the runway extension project. The Plan identifies a proposed regional park in the area to the northeast of Lake Mary Road as well as an extension of the Flagstaff Urban Trail System (FUTS) located around the airport and roadside of the proposed major connector road between J.W. Powell Boulevard and Lake Mary Road. The proposed regional park would be impacted by the PRZ avigation easement extension and acquisition of real property is currently under negotiation for City uses; however, the avigation easement extension would restrict future property development within the area affected by the easement. The proposed regional park would not be impacted by the proposed 65 DNL noise contour. The proposed project would not substantially diminish the recreational attributes of the proposed regional park.

A section of the proposed extension of the Flagstaff Urban Trails System (FUTS) located roadside along the proposed major connector roadway would be within the proposed 65 DNL noise contour in the area to the north of the runway. In consideration of the transportation nature of the trail system (pedestrian and bicycle traffic) and its proposed location roadside of the proposed major connector road, the impact of the proposed 65 DNL noise contour would not result in a substantial impairment of the proposed recreational urban trail facility. The proposed trails and regional park plan are capable with the proposed runway extension project.

It is the conclusion of the City of Flagstaff's Public Works Department that the Proposed Alternative, including the RPZ avigation easement extension and the proposed 65 DNL noise contour, would not result in the direct acquisition of real property from existing park land or the substantial impairment to proposed recreational properties in the vicinity of the airport.

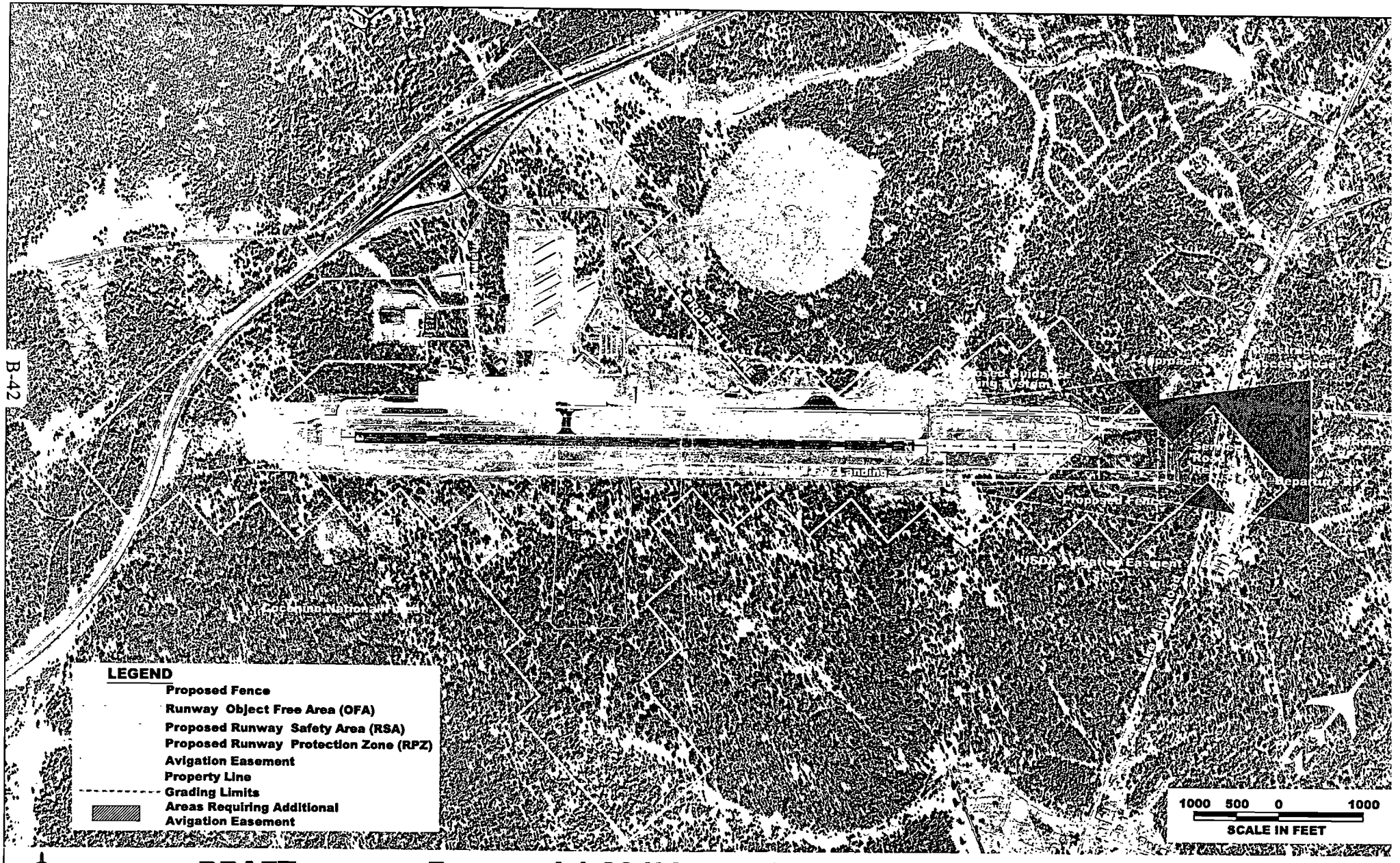
Sincerely,

Wm L Menard

William L. Menard
Public Works Director

Attachment

cc: Michael Covalt, Airport Manager



DRAFT **Proposed 1,801' Extension to Runway 21 Approach End**

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

CONCURRENCES
ROUTING SYMBOL 623A
INITIALS/SIGNATURE
DATE 10-26-04
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October 26, 2004

Mr. Steve Spangel
Field Supervisor
U.S Fish and Wildlife Service
Phoenix Main Office
2321 W. Royal Palm Road, Suite 103
Phoenix, AZ 85021

Dear Mr. Spangle:

Flagstaff Pulliam Airport
Flagstaff, Coconino County, Arizona
Revised Biological Assessment

The Federal Aviation Administration (FAA) and the City of Flagstaff are in the process of preparing a Draft Environmental Assessment for proposed airfield improvements at the Flagstaff Pulliam Airport in Flagstaff, Coconino County, Arizona (Attachment labeled figure 1). The proposed undertaking would occur on land on existing airport property. The scope of the proposed undertaking includes extending the runway in order to provide a runway length capable of accommodating the larger business jets and forecasted commuter regional jet aircraft to operate without weight restrictions, and to enhance the operational safety of the aircraft using the airport. The major features of the proposed undertaking include:

- Extend Runway 3-21 to 8,800 feet,
- Extend Parallel Taxiway A to 8,800 feet,
- Extend the High Intensity Runway Lights (HIRL) and Medium Intensity Taxiway Lights (MITL),
- Replace Visual Approach Slope Indicator (VASI-4) on the Runway 21 end with a Precision Approach Indicator (PAPI-4),
- Relocate approach lighting system on Runway 21 end,
- Clear and grade area for extended Runway Safety Area and Runway Protection Zone located within avigation easement over US Forest Service property, and
- Cut 225,000 cubic yards soil, fill 1,000,000 cubic yards soil, clear and grade area within airport boundary located in the Future Eastside Aviation Development area to borrow 775,000 cubic yards soil.

In an effort to ensure compliance with the Endangered Species Act of 1973, as amended, the FAA prepared the enclosed Biological Assessment (BA) to evaluate the proposed project's potential impact on federally listed threatened and endangered species. The BA titled *Biological Assessment, Pulliam Airport Master Plan Improvements, Runway Extension*, was prepared in April 2004, by Aztec Research and Consulting, LLC of Flagstaff, Arizona.

Two federally listed species were identified as having the potential for being in the vicinity of the proposed project; the Mexican Spotted Owl (Strix occidentalis lucida) and the Bald Eagle (Haliaeetus leucocephalus). The BA states there were no observations of either species on site. A third parcel south of the existing runway known, as the "Sawtooth Parcel" is part of the project area, but was previously surveyed for species of concern in 2001.

The BA states that impacts to the Mexican Spotted Owls would be habitat disturbance and destruction, particularly from tree removal. Approximately 200 acres of the 315 within the project areas are considered forested. The sawtooth parcel, and the north parcel north of the wildlife fence. The proposed action would remove 200 acres of potential habitat for the Mexican Spotted Owls.

The Bald Eagle prefers cliff sites and large bodies of water for foraging. The BA notes that these two elements are not present at the airport.

Based on the information in the revised BA, the FAA has determined that while the proposed improvements at Flagstaff Pulliam Airport, may affect species identified in the project area, it will not adversely affect the species identified. Since there have been no observations of any federally listed species within the proposed project area, the FAA believes that formal Section 7 consultation is not necessary.

We request your concurrence on FAA's determination at your earliest convenience. If needed, the FAA and the Flagstaff Pulliam Airport Manager are available to meet to discuss this Section 7 consultation.

Please contact me at 310/725-3614 if you have any questions concerning this matter or require additional information.

Sincerely,
Original Signed By:
Michelle Simmons
Michelle Simmons, MS
Environmental Protection Specialist

Enclosures

File: Flagstaff Pulliam Airport EA
AWP-623.4:msimmons:ms:3614:10/25/04

United States Department of the Interior
U.S. Fish and Wildlife Service
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951
Telephone: (602) 242-0210 FAX: (602) 242-2513

In Reply Refer to:

AESO/SE
02-21-04-I-0394

January 14, 2005

Ms. Michelle Simmons, MS
Environmental Protection Specialist
U.S. Department of Transportation
Federal Aviation Administration
Western-Pacific Region Airports Division
Post Office Box 92007
Los Angeles, California 90009-2007

Dear Ms. Simmons:

Thank you for your request for informal consultation with the U.S. Fish and Wildlife Service pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). On November 4, 2004, we received your October 28, 2004, request for informal consultation on the effects of the proposed runway expansion at Flagstaff Pulliam Airport, Coconino County, Arizona. Flagstaff Pulliam Airport (FLG) would like to accommodate regional jets that currently cannot fully utilize the airport due to runway-length limitations. In order to accommodate these planes, the City of Flagstaff and the Federal Aviation Administration (FAA) propose to increase the length of Runway 3-21 from 6,999 feet to 8,800 feet. This action will include runway construction and other actions associated with construction. The FAA requests our concurrence that the proposed project "may affect, but will not likely adversely affect" the threatened Mexican spotted owl (*Strix occidentalis lucida*) (MSO) or the threatened bald eagle (*Haliaeetus leucocephalus*). Critical habitat for the MSO was designated on August 31, 2004 (USDI 2004). However, there is no designated critical habitat within the project area; therefore, we will not address critical habitat further in this letter.

Included in the request for consultation was a copy of the Biological Assessment (BA) for the project. We have reviewed this document and discussed the projects, determinations, and need for more information regarding project specifics with you and the project consultants at Aztec Research & Consulting, LLC and Michael Baker, Jr. Inc.

Project Description

The purpose of the proposed runway expansion is to accommodate the transition of the airport's primary airline, Mesa Airlines, from the turboprop aircraft currently in use to the operation of regional jets that will not have weight restrictions on departure. Analysis conducted for the 2004 Master Plan Update indicates that the existing runway length is not adequate for FLG to accommodate regional commercial jets without implementing weight restrictions due to the

airport's elevation. In addition, FLG would also like to accommodate the potential demand for longer haul flights by business aircraft that are currently restricted in weight and, therefore, range. Currently the airport serves over 2,100 corporate jet operations annually, yet the existing 6,999-foot runway does not meet the requirements for 75% of corporate jets operating at 60% useful load. Due to the high elevation of the airport and summer temperatures, business jets currently take-off with less than a full load, necessitating an intermediate stop on long-haul flights.

The proposed project will include the following actions in order to meet the purpose and need of expanding the runway:

- Extension of Runway 21 by 1,801 feet and a corresponding taxiway extension.
- Relocation of FLG's security fence.
- Acquisition of an easement area from the Forest Service to accommodate the Runway Protection Zones associated with the proposed project. Relocation of residences or businesses is not anticipated.
- Relocation of a service road located on FLG's property.
- Relocation of navigational aids.
- Installation of high-intensity runway-edge lighting and medium-intensity taxiway-edge lighting.
- Potential modification of approach and departure procedures due to the expanded runway.

The Flagstaff Pulliam Airport is located a few miles south of Flagstaff, Arizona and is east of Interstate 17. There are two parcels of land that were analyzed and surveyed for the proposed project. Approximately 200 acres of the 315 acres within the project area are considered forested. The first parcel is located on the northeast end of the airport and the second parcel is located southeast of the airport. The parcel to the southeast is owned entirely by the City of Flagstaff. Approximately half of the northeastern parcel is owned by the City and the other half is managed by the Coconino National Forest. The Forest Service has granted an aviation easement to the City of Flagstaff for this parcel. This portion of the parcel is part of the proposed Yavapai Land Exchange currently being considered by the U.S. Congress. If this land exchange is approved by Congress, the parcel would become privately owned, at which time the City could purchase it for the airport expansion.

A third parcel that is part of the project area was previously surveyed for listed and sensitive species in 2001. No threatened or endangered species, listed species habitat, or designated critical habitats occur within this parcel, and it was not re-surveyed for this project.

The BA predicts the potential increase in flights, resulting from the proposed action, through the year 2008. These numbers are based on projected user increases, but the true increase in the number of flights resulting from the runway expansion is unknown. FLG personnel have agreed to provide the Fish and Wildlife Service with yearly operations data so that we can monitor the increase in the number of flights yearly. These data will help us to better understand potential future impacts to listed species in the surrounding area and will insure adequate communication between the FAA and the FWS regarding actual FLG operations.

Mexican spotted owl

The Mexican spotted owl was listed as a threatened species on April 15, 1993 (USDI 1993) and critical habitat was designated on August 31, 2004 (USDI 2004). The primary threats to the species cited were even-aged timber harvest and the threat of catastrophic wildfire; although grazing, recreation, and other land uses were also mentioned as possible factors influencing the MSO population. The Fish and Wildlife Service appointed the Mexican Spotted Owl Recovery Team in 1993, which produced the Recovery Plan for the Mexican Spotted Owl (Recovery Plan) in 1995 (USDI 1995). A detailed account of the taxonomy, biology, and reproductive characteristics of the MSO is found in the Final Rule listing the MSO as a threatened species (USDI 1993) and in the Recovery Plan (USDI 1995). The information provided in those documents is included herein by reference.

The Forest Service has conducted MSO surveys in the forested areas surrounding the airport. Surveys have not located any MSO in the areas immediately surrounding the airport. The BA states that MSO habitat exists in both parcels of land surveyed for this project. However, based on our knowledge of the area, the majority of forested acres consist of pure ponderosa pine on relatively flat terrain. Although it is possible that MSO use or have used this area for foraging, we do not believe that the area contains nesting and/or roosting habitat for MSO. In addition, most of the forested area is adjacent to residential and commercial development. The closest MSO protected activity center (PAC) is approximately three miles southeast of the airport. In addition, Walnut Canyon National Monument, located approximately four miles northeast of the airport, has designated four MSO PACs within its boundary.

The flight paths of aircraft landing and taking off from FLG have the potential to fly over Walnut Canyon National Monument. Existing flight track data for FLG indicate that approximately 10 to 20% of flights turn north or south prior to reaching Walnut Canyon. However, that means that the majority of flights use a route over Walnut Canyon. The height of aircraft that continue over the canyon was determined using the database information from the FAA's Integrated Noise Model. The model shows that aircraft should be approximately 3,950 feet to 4,440 feet above Walnut Canyon when flights cross the canyon either approaching or departing the airport. Noise levels were also calculated from the model based on aircraft altitudes of approximately 4,000 feet above the Walnut Canyon area. According to the model, noise at ground level would be less than 65 dBA DNL. Based on FAA's model and previous noise disturbance research on MSO, we conclude that aircraft altitudes over Walnut Canyon are nearly double the distance, and noise levels are less than, the values that have been shown to elicit responses in MSO (Delaney et al.1999).

The runway expansion is expected to increase the number of flights into FLG. The increased number of flights may affect MSO that occur within aircraft arrival and departure paths, which currently includes the Walnut Canyon area. As of 2002, the number of flights-per-year at FLG was 59,478. By 2008, the forecasted number of flights-per-year is expected to increase to 70,500. This would be an increase of approximately 15 flights per day for all aircraft using the airport. The increase in operations is attributed to the FAA's projected growth in air traffic, as well as the potential for FLG to capture a greater market share of potential passengers to Phoenix Sky Harbor International Airport with the larger regional jets. Approximately seven of the predicted increases of 15 flights-per-day are expected to result from the runway expansion and subsequent use of regional jets. However, the BA states that, due to the increased seating capacity of the regional jets versus the turbo prop aircraft currently used, this forecasted increase is less than it would be without the larger regional jets. In addition, the regional jets are quieter and can gain altitude more quickly than the turbo prop aircraft. At this time, based on the expected increase in flights and analysis in the BA, we do not expect any adverse affects to MSO. However, we will continue to monitor this situation based on the yearly flight data and expect to continue to communicate with the FAA regarding any future potential impacts to MSO, especially in Walnut Canyon National Monument.

We concur with the FAA's determination that the proposed action may affect, but will not likely adversely affect, the MSO. We base this determination on the following:

1) No MSO were located on or within 0.25 mile of the airport properties surveyed and the closest PAC is approximately three miles southeast of the airport.

2) Based on topography, aircraft flying over PACs at Walnut Canyon National Monument should be between 3,950 and 4,400 feet above the canyon. Based on noise-level monitoring, noise levels within Walnut Canyon should be less than 65 dBA DNL.

3) Forecasted operation increases should be less with the regional jets than with the currently used turbo prop aircraft due to greater seating capacity in the jets. Additionally, the jets are quieter and can gain altitude more quickly than the turbo prop aircraft.

4) There will be no impacts to MSO nesting and/or roosting habitat.

<u>Bald eagle</u>

The bald eagle south of the 40th parallel was listed as endangered under the Endangered Species Preservation Act of 1966, on March 11, 1967 (USFWS 1967), and was reclassified to threatened status on July 12, 1995 (USFWS 1995). No critical habitat has been designated for this species. The bald eagle was proposed for delisting on July 6, 1999 (USFWS 1999). The bald eagle is a large bird of prey that historically ranged and nested throughout North America except extreme northern Alaska and Canada, and central and southern Mexico.

Bald eagles are primarily winter visitors to northern Arizona, occupying all habitat types and elevations. Wintering eagles arrive in the fall, usually late October or early November, and leave

in early to mid-April. They feed on fish, waterfowl, terrestrial vertebrates, and carrion. Eagles are often seen perched in trees or snags near roadways where they feed on road-killed animals. At night, small groups or individual eagles roost in clumps of large trees in protected locations such as drainages or hillsides. Key habitat components include nighttime roosts and prey availability. Roost trees are usually large ponderosa pine trees, (live or dead) with open canopies on slopes that provide protection from inclement weather. Bald eagles do not breed within the action area and no bald eagle roosts have been identified within the action area. However, bald eagles are known to winter around Lake Mary and Mormon Lake southeast of Flagstaff and are frequently sighted along the Interstate 17 corridor, adjacent to the airport. Bald eagles use the Interstate 17 corridor and adjacent areas for foraging, feeding on road-killed animals.

We concur with the FAA's determination that the proposed action may affect, but will not likely adversely affect, the bald eagle. We base this determination on the following:

1) No winter roost habitat is present within the proposed project area. Therefore, potential effects from construction activities and increased flights will be insignificant and discountable.

2) Increased noise and disturbance to wintering bald eagles foraging along the Interstate 17 corridor from the increase in flights associated with the proposed action will be insignificant and discountable.

We appreciate your patience and effort to answer our questions regarding the project and your willingness to discuss and solve potential issues. If you have any questions or concerns about this consultation, or the consultation process in general, please contact Shaula Hedwall or Brenda Smith of our Flagstaff Suboffice at (928) 226-0614.

Sincerely,

Steven L. Spangle
Field Supervisor

cc: Field Supervisor, Fish and Wildlife Service, Albuquerque, NM
Superintendent, Flagstaff Area National Monuments, National Park Service, Flagstaff, AZ
Bob Broscheid, Habitat Branch, Arizona Game and Fish, Phoenix, AZ
Regional Supervisor, Arizona Game and Fish Department, Flagstaff, AZ

W:\Shaula Hedwall\Pulliam Airport Master Plan Improvements.doc:cgg

LITERATURE CITED

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SkyWest AIRLINES

June 15, 2005

Mike Covalt
Director
Flagstaff Pulliam Airport
Flagstaff, AZ 86001

Dear Mr. Covalt,

SkyWest's Vice President-Flight Operations, Brad Holt, requested that I send you a letter regarding possible runway expansion you're considering there in Flagstaff. We appreciate your giving us an opportunity to consider your future plans.

While SkyWest has no current or immediate plans to add service at Flagstaff, our ability to consider such service would certainly be enhanced with an extension to the existing runway. Regional Jet service to nearby hubs where our partners maintain operations would only be economically feasibly with a longer runway. Runway-related weight restrictions currently limit our ability to carry a full load of passengers to either United's hubs at Los Angeles, San Francisco or Denver or Delta's hub at Salt Lake City. Providing additional runway capacity would help minimize such restrictions should either of our partners wish to consider service at some point down the road.

Please don't hesitate to contact us should you require any additional information or support.

Sincerely,

Steven Hart

Steven Hart
Vice President-Market Development

Cc:

Chuck Curan
Wilbur Smith Associates
6600 Cough Heights
Cincinnati, OH 45244-4028

444 South River Road
St. George, Utah 84790
435.634.3000
Fax: 435.634.3505
www.skywest.com

Great Lakes Airlines

June 21, 2005

Mr. Michael Covalt
Airport Director
Flagstaff Pulliam Airport
City of Flagstaff
6200 S. Pulliam Drive, Suite 204
Flagstaff, AZ 86001

Dear Mike:

First of all, let me say what a pleasure it was to meet you and your staff recently at the Arizona Airport Directors' Meeting in your fine city. We were favorably impressed with the growth of your community.

We also appreciate your interest in Great Lakes Airlines possibly providing service into your airport. Now that we serve five cities in your state, we would consider expanding our network into Flagstaff. However, after reviewing the operational performance of our Brasilia EMB 120 - 30 seat aircraft, your current runway length and altitude of the airport present limitations that would render it unfeasible both financially and operationally to provide service today.

We hope that as you make long range plans, you and your Board will consider the possibility of adding length to your runway in order to facilitate our equipment and ability to serve your community.

Once again, it was a pleasure to meet you. Please feel free to stay in contact with us regarding any progress you may have with this project.

Sincerely,

Charles R. Howell IV
CEO

1022 Airport Parkway ♦ Cheyenne, Wyoming 82001 (307) 432-7000 ♦ Fax (307) 432-7001

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

July 13, 2004

Mr. James Garrison
State Historic Preservation officer
Arizona State Parks
1300 W. Washington
Phoenix, Arizona 85007

Dear Mr. Garrison:

Flagstaff Pulliam Airport
Flagstaff Arizona
Section 106 Coordination

The Federal Aviation Administration (FAA) and the City of Flagstaff are in the process of preparing a Draft Environmental Assessment for proposed airfield improvements at the Flagstaff Pulliam Airport in Flagstaff, Coconino County, Arizona (Figure 1). The proposed undertaking would occur on land on existing airport property. The scope of the proposed undertaking includes extending the runway in order to provide a runway length capable of accommodating the larger business jets and forecasted commuter regional jet aircraft to operate without weight restrictions, and to enhance the operational safety of the aircraft using the airport. The major features of the proposed undertaking include:

- Extend Runway 3-21 to 8,800 feet,
- Extend Parallel Taxiway A to 8,800 feet,
- Extend the High Intensity Runway Lights (HIRL) and Medium Intensity Taxiway Lights (MITL),
- Replace Visual Approach Slope Indicator (VASI-4) on the Runway 21 end with a Precision Approach Indicator (PAPI-4),
- Adjust approach lighting system on Runway 21 end,
- Clear and grade area for extended Runway Safety Area and Runway Protection Zone located within avigation easement over US Forest Service property, and
- Cut 225,000 cubic yards, fill 1,000,000 cubic yards, clear and grade area within airport boundary located in the Future Eastside Aviation Development area to borrow 775,000 cubic yards.

The Area of Potential Effect (APE) consists of three parcels of land adjacent to the current airport. Area 1 is comprised of 88 acres located northeast of the existing Runway 3-21. An 1,800-foot pavement approach extension will be added to the runway in this area. The APE in Area 1 generally corresponds to the area impacted by pavement construction plus a proposed increase in the Runway Protection Zone (RPZ) for this project. Changes in Area 1 will also include modification and relocation of the approach lighting, and relocation of

the airport access road from Lake Mary Road. Construction in Area 1 will require a cut of 225,000 cubic yards, the addition of 1,000,000 cubic yards of fill, and mechanical grading and leveling. Area 2 consists of 11 acres southwest of the existing runway, corresponding to a proposed increase in the RPZ, and will be graded and cleared for an extended Runway Safety Area. There will also be an acquisition of an aerial easement area within the Coconino National Forest. Area 3 is a 180-acre parcel located southeast of the current runway. Area 3 is located within the Future Eastside Aviation Development Area and will be used as a borrow source for the additional 775,000 cubic yards of fill required for Area 1. Altogether, the APE consists of 279 acres (Figure 2).

Examination of forecast data relating to projected modifications in airport operations indicate that these proposed changes are unlikely to affect the character or use of historic properties beyond the proposed APE boundaries. The projected 65 DNL (noise) contour for the Preferred Alternative 2008 condition would be reduced to the southwest, only minimally expanded to the east and west, and expanded approximately 500 feet to the northwest when compared to the Future No-Build Alternative's 65 DNL contour for the current condition. Likewise, the proposed lighting improvements would be similar to what is already in use at the airport. Extending the runway and taxiway will not involve any substantial changes to the type or intensity of lights currently employed at the airport. Therefore, changes in auditory or visual effects should be minimal.

Northland Research, Inc. (Northland) has conducted Class I literature reviews and Class III cultural resources surveys of the APE in conjunction with this project. Northland's research and survey covers the entire APE. The results are reported in three separate reports: *Cultural Resources Survey for a Proposed New Taxiway and Proposed Expansion of the South ERSA at Flagstaff Pulliam Airport, Flagstaff, Arizona* (Zyniecki 2000a); *Results of a Cultural Resources Literature Review for the Proposed North Fill Area at Flagstaff Pulliam Airport, Flagstaff, Arizona* (Zyniecki 2000b); and *Cultural Resources Studies and Survey, Pulliam Air Field Extension, City of Flagstaff, Coconino County, Arizona* (Dongoske 2004), which are enclosed for your review and comment. No known historic properties are within the APE and no new historic properties were recorded within the APE during the surveys.

Consulting parties include the FAA, the City of Flagstaff, Arizona State Historic Preservation Office (SHPO), the Hopi Tribe, the Pueblo of Zuni, the Yavapai-Prescott Indian Tribe, the Yavapai-Apache Nation, the Hualapai Tribe, the White Mountain Apache Tribe, the Fort Mojave Tribe, the Havasupai Tribe, and the Navajo Nation. Based on the information in the Cultural Resources Survey, the FAA has determined that the proposed undertaking at Flagstaff Pulliam Airport, will not affect any historic properties listed or eligible for listing on the National Register of Historic Places.

We request your written concurrence with the APE and Cultural Resource Survey. Please contact Michelle Simmons at 310/725-3614 if you have any questions or require additional information.

Original Signed By:
Michelle Simmons

Michelle Simmons, MS
Environmental Protection Specialist

Enclosures

File: Flagstaff Pulliam Airport EA
AWP-623.4:msimmons:md:3614:7/06/04

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

July 13, 2004

Mr. Leigh Kuwanisiwima
Chairman
Hopi
P.O. Box 123
Kykotsmovi, Az 86039

Dear Mr. Taylor:

**Flagstaff Pulliam Airport
Flagstaff Arizona
Section 106 Coordination**

The Federal Aviation Administration (FAA) and the City of Flagstaff are in the process of preparing a Draft Environmental Assessment for airfield improvements at the Flagstaff Pulliam Airport in Flagstaff, Coconino County, Arizona (Figure 1). In conjunction with the City of Flagstaff the FAA is initiating Section 106 Consultation with your office. This project would occur on land under the jurisdiction of the FAA and the City of Flagstaff. Consulting parties include the FAA, the City of Flagstaff, Arizona State Historic Preservation Office (SHPO), the Hopi Tribe, the Pueblo of Zuni, the Yavapai-Prescott Indian Tribe, the Yavapai-Apache Nation, the Hualapai Tribe, the White Mountain Apache Tribe, the Fort Mojave Tribe, the Havasupai Tribe, and the Navajo Nation.

The scope of the project would include extending a runway in order to provide a runway length capable of accommodating the larger business jets and forecasted commuter regional jet aircraft to operate without weight restrictions, and to enhance the operational safety of the aircraft using the airport. The major features of the proposed undertaking include:

- Extend Runway 3-21 to 8,800 feet,
- Extend Parallel Taxiway A to 8,800 feet,
- Extend the High Intensity Runway Lights (HIRL) and Medium Intensity Taxiway Lights (MITL),
- Replace Visual Approach Slope Indicator (VASI-4) on the Runway 21 end with a Precision Approach Indicator (PAPI-4),
- Adjust approach lighting system on Runway 21 end,
- Clear and grade area for extended Runway Safety Area and Runway Protection Zone located within avigation easement over US Forest Service property, and
- Cut 225,000 cubic yards, fill 1,000,000 cubic yards, clear and grade area within airport boundary located in the Future Eastside Aviation Development area to borrow 775,000 cubic yards.

The Area of Potential Effect (APE) consists of three parcels of land adjacent to the current airport. Area 1 is comprised of 88 acres located northeast of the existing Runway 3-21. An 1,800-foot pavement approach extension will be added to the runway in this area. The APE in Area 1 generally corresponds to the area impacted by pavement construction plus a proposed increase in the Runway Protection Zone (RPZ) for this project. Changes in Area 1 will also include modification and relocation of the approach lighting, and relocation of the airport access road from Lake Mary Road. Construction in Area 1 will require a cut of 225,000 cubic yards, the addition of 1,000,000 cubic yards of fill, and mechanical grading and leveling. Area 2 consists of 11 acres southwest of the existing runway, corresponding to a proposed increase in the RPZ, and will be graded and cleared for an extended Runway Safety Area. There will also be an acquisition of an aerial easement area within the Coconino National Forest. Area 3 is a 180-acre parcel located southeast of the current runway. Area 3 is located within the Future Eastside Aviation Development Area and will be used as a borrow source for the additional 775,000 cubic yards of fill required for Area 1. Altogether, the APE consists of 279 acres (Figure 2).

Examination of forecast data relating to projected modifications in airport operations indicate that these proposed changes are unlikely to affect the character or use of historic properties beyond the proposed APE boundaries. The projected 65 DNL (noise) contour for the Preferred Alternative 2008 condition would be reduced to the southwest, only minimally expanded to the east and west, and expanded approximately 500 feet to the northwest when compared to the Future No-Build Alternative's 65 DNL contour for the current condition. Likewise, the proposed lighting improvements would be similar to what is already in use at the airport. Extending the runway and taxiway will not involve any substantial changes to the type or intensity of lights currently employed at the airport. Therefore, changes in auditory or visual effects should be minimal.

Northland Research, Inc. (Northland) has conducted Class I literature reviews and Class III cultural resources surveys of the APE in conjunction with this project. Northland's research and survey covers the entire APE. The results are reported in three separate reports: *Cultural Resources Survey for a Proposed New Taxiway and Proposed Expansion of the South ERSA at Flagstaff Pulliam Airport, Flagstaff, Arizona* (Zyniecki 2000a); *Results of a Cultural Resources Literature Review for the Proposed North Fill Area at Flagstaff Pulliam Airport, Flagstaff, Arizona* (Zyniecki 2000b); and *Cultural Resources Studies and Survey, Pulliam Air Field Extension, City of Flagstaff, Coconino County, Arizona* (Dongoske 2004), which are enclosed for your review and comment. No known historic properties are within the APE and no new historic properties were recorded within the APE during the surveys.

Based on the information in the Cultural Resources Survey, the FAA has determined that the proposed undertaking at Flagstaff Pulliam Airport, will not affect any historic properties.

We request your written concurrence with the APE and Cultural Resource Survey. Please contact Michelle Simmons at 310/725-3614 if you have any questions or require additional information.

Sincerely,

Original Signed By:
Michelle Simmons

Michelle Simmons, MS
Environmental Protection Specialist

Enclosures

File: Flagstaff Pulliam Airport EA
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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

July 13, 2004

Ms. Loretta Jackson
Cultural Resources Director
Hualapai Tribe
P.O. Box 179
Peach Springs, AZ 86434

Dear Ms. Jackson:

Flagstaff Pulliam Airport
Flagstaff Arizona
Section 106 Coordination

The Federal Aviation Administration (FAA) and the City of Flagstaff are in the process of preparing a Draft Environmental Assessment for proposed airfield improvements at the Flagstaff Pulliam Airport in Flagstaff, Coconino County, Arizona (Figure 1). The proposed undertaking would occur on land on existing airport property. The scope of the proposed undertaking includes extending the runway in order to provide a runway length capable of accommodating the larger business jets and forecasted commuter regional jet aircraft to operate without weight restrictions, and to enhance the operational safety of the aircraft using the airport. The major features of the proposed undertaking include:

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We request your written concurrence with the APE and Cultural Resource Survey. Please provide your response within thirty days, or we will presume you have no comments regarding the proposed undertaking. If you have any questions or require additional information, Please contact Michelle Simmons at 310/725-3614

Sincerely,
Original Signed By:
Michelle Simmons

Michelle Simmons, MS
Environmental Protection Specialist

Enclosures

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

July 13, 2004

Mr. Roland Manakaja
Natural Resources Director
Havasupai Tribe
P.O. Box 10
Supai, Arizona 86435

Dear Mr. Manakaja:

**Flagstaff Pulliam Airport
Flagstaff Arizona
Section 106 Coordination**

The Federal Aviation Administration (FAA) and the City of Flagstaff are in the process of preparing a Draft Environmental Assessment for proposed airfield improvements at the Flagstaff Pulliam Airport in Flagstaff, Coconino County, Arizona (Figure 1). The proposed undertaking would occur on land on existing airport property. The scope of the proposed undertaking includes extending the runway in order to provide a runway length capable of accommodating the larger business jets and forecasted commuter regional jet aircraft to operate without weight restrictions, and to enhance the operational safety of the aircraft using the airport. The major features of the proposed undertaking include:

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Original Signed By:
Michelle Simmons

Michelle Simmons, MS
Environmental Protection Specialist

Enclosures

File: Flagstaff Pulliam Airport EA
AWP-623.4:msimmons:md:3614:7/13/04

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

July 13, 2004

Mr. Johnny Levi, Sr.
President
San Juan Southern Paiute Tribe
P.O. 1989
Tuba City, AZ 86045

Dear Mr. Levi:

Flagstaff Pulliam Airport
Flagstaff Arizona
Section 106 Coordination

The Federal Aviation Administration (FAA) and the City of Flagstaff are in the process of preparing a Draft Environmental Assessment for proposed airfield improvements at the Flagstaff Pulliam Airport in Flagstaff, Coconino County, Arizona (Figure 1). The proposed undertaking would occur on land on existing airport property. The scope of the proposed undertaking includes extending the runway in order to provide a runway length capable of accommodating the larger business jets and forecasted commuter regional jet aircraft to operate without weight restrictions, and to enhance the operational safety of the aircraft using the airport. The major features of the proposed undertaking include:

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Sinc Original Signed By:
Michelle Simmons

Michelle Simmons, MS
Environmental Protection Specialist

Enclosures

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AWP-623.4:msimmons:md:3614:7/13/04

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

July 14, 2004

Mr. Jamie Fullmer
Chairman
Yavapai-Apache Nation
2400 Datsi St.
Camp Verde, AZ 86322

Dear Mr. Fullmer:

**Flagstaff Pulliam Airport
Flagstaff Arizona
Section 106 Coordination**

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Michelle Simmons

Michelle Simmons, MS
Environmental Protection Specialist

Enclosures

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

July 14, 2004

Mr. Arvin Trujillo
Executive Director of Natural Resources
Navajo Nation
P.O. Drawer 9000
Window Rock, AZ 86515

Dear Mr. Trujillo:

Flagstaff Pulliam Airport
Flagstaff Arizona
Section 106 Coordination

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Sincerely,

Original Signed By:
Michelle Simmons

Michelle Simmons, MS
Environmental Protection Specialist

Enclosures

GORE
Creative Technologies Worldwide

W. L. GORE & ASSOCIATES, INC.

1505 NORTH FOURTH STREET • P.O. BOX 2400 • FLAGSTAFF, ARIZONA 86003-2400
PHONE: 928/526-3030 • FAX: 928/527-0584

September 26, 2005

Ms. Michelle Simmons
Environmental Specialist
FAA - Western-Pacific Region Airports Division
AWP 611.4
15000 Aviation Boulevard
Hawthorn, CA 90261

Re: Need for an extended runway at Flagstaff Pulliam Airport

Dear Ms. Simmons:

I am writing to you on behalf of W. L. Gore and Associates, Inc., a privately held Fortune 500 sized company with major research, development, and manufacturing facilities in Flagstaff, AZ. Gore is currently the largest private employer in northern Arizona, and Pulliam Airport is essential to both our current operations and future growth.

Operations at Pulliam Airport affect Gore in two ways: first, in the reliability and variety of commercial aviation service; and second, in the operation of corporate aircraft, which fly in and out of Pulliam Airport at least three days a week.

On the commercial side, Gore is concerned that air service will continue to degrade as runway length limits the use of regional jets. Already, service has suffered as the commercial airline serving Flagstaff decreases its fleet of planes that can land in Flagstaff, leading to flight delays and cancellations due to lack of planes, lack of trained crew, and lack of interchangeability in their operations. A longer runway will facilitate more reliable service by providing greater operational flexibility. The runway extension will allow direct, non-stop service to additional destinations. A third benefit will be increased attractiveness to other commercial providers in the future.

On the general aviation side, Gore currently supports three scheduled round trip flights weekly between Flagstaff and New Castle County Airport in Delaware. The flight distance between these two airports is approximately 1,990 nautical miles. Over the course of a typical year, only a few of these trips can be flown without refueling. This is directly attributable to the current runway length, as adequate fuel cannot be taken on.

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GORE-TEX is a trademark of W. L. Gore & Associates, Inc.

Additionally, longer runway length will allow greater flexibility in choice of corporate aircraft in the future.

For these reasons, Gore is supportive of the City of Flagstaff's plan to extend the runway. An 8,800-foot runway could benefit our operations due to increased commercial air service and more efficient use of corporate aircraft.

I appreciate the opportunity to comment on this proposal, and urge your approval of the City of Flagstaff's runway extension at Pulliam Airport. Please do not hesitate to contact me if you have any questions: 928.864.4736.

Sincerely,

Eve Ross
Counsel

c: John Sininger, W.L. Gore & Associates, Inc.
Michael Covalt, Flagstaff Pulliam Airport Manager

FLAGSTAFF
PULLIAM AIRPORT

Appendix C

LAND USE ASSURANCE LETTER

City of Flagstaff

OFFICE OF THE CITY MANAGER
(928) 779-7604

February 23, 2005

Ms. Michelle Simmons
Western-Pacific Region Airports Division
AWP-611.4
P.O. Box 92007
Los Angeles, CA 90009

RE: ***Land Use Assurance for Flagstaff Pulliam Airport, Flagstaff, Arizona***

Dear Ms. Simmons:

The City of Flagstaff makes the following statement of compatible land use assurance as required by Section 511(a)(5) of the *Airport and Airway Improvement Act of 1982*.

> The City of Flagstaff provides assurance that appropriate action, including the enforcement of zoning laws, has been or will be taken, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of Flagstaff Pulliam Airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft. This action includes the consideration of both existing and planned land uses.

If you have any questions or comments please feel free to contact me at your earliest convenience.

Sincerely,

DAVID W. WILCOX
City Manager

cc: William Menard, Public Works Director
Mike Covalt, Airport Manager
Stacey Brechler-Knaggs, Grants Manager

C-1

dwilcox@ci.flagstaff.az.us

Arizona Relay Service 7-1-1
211 West Aspen Avenue, Flagstaff, Arizona 86001
Main & TDD (928) 774-5281 • Fax (928) 779-7696

Coffman Associates
Airport Consultants

KANSAS CITY
(816) 524-3500

237 N.W. Blue Parkway
Suite 100
Lee's Summit, MO 64063

PHOENIX
(602) 993-6999

4835 E. Cactus Road
Suite 235
Scottsdale, AZ 85254