



U.S. DEPARTMENT OF TRANSPORTATION

**Federal Aviation Administration
Southern Region
Atlanta, Georgia**

RECORD OF DECISION

**THE DEVELOPMENT AND EXPANSION OF
RUNWAY 9R/27L
AND OTHER ASSOCIATED AIRPORT PROJECTS
AT
FORT LAUDERDALE-HOLLYWOOD
INTERNATIONAL AIRPORT
BROWARD COUNTY, FLORIDA**

December 2008

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INTRODUCTION

This Record of Decision (ROD) provides final agency determination and approvals for certain federal actions by the Federal Aviation Administration (FAA) necessary for the implementation of proposed airport development at the Fort Lauderdale-Hollywood International Airport (FLL) in Broward County, Florida. Broward County, the Airport Sponsor, has proposed airport development at FLL to address existing and forecast aviation demand. A description of the Airport Sponsor's Proposed Action is provided in **Section 1 Description of Airport Sponsor's Proposed Action and Purpose and Need**.

The FAA through independent analyses provided in the *Final Environmental Impact Statement For the Development and Expansion of Runway 9R/27L and Other Associated Airport Projects at Fort Lauderdale-Hollywood International Airport Broward County, Florida*, June 2008, (Final EIS), confirmed that the existing airfield infrastructure at FLL lacks sufficient capacity to accommodate existing and forecast air carrier demand at a level of delay established for FLL.^{1,2}

The FAA identified Alternative B1b³ as its preferred alternative in the Final EIS (see this ROD, **Exhibit 1 FAA's Preferred Alternative (B1b)**). Alternative B1b includes the expansion of existing Runway 9R/27L to an 8,000-foot by 150-foot with Engineered Materials Arresting System (EMAS).⁴ The expanded runway extends to the east and would be elevated to 45 feet MSL over the Florida East Coast (FEC) Railway and U.S. Highway 1. In this ROD, the FAA selects its Preferred Alternative (B1b) for approval and implementation at FLL.

¹ The acceptable delay threshold used in the EIS is six minutes per operation. See the Final EIS, Chapter Three *Purpose and Need*, Section 3.3.1.3, *Level of Delay*.

² The most recent FAA Aviation System Performance Metrics (ASPM) data for FLL indicates that although average annual delay decreased between 2005 and 2006 (from 7.25 to 5.33), it increased in 2007 to 5.80 minutes per operation. In 2007, delays exceeded six minutes per operation in February through April, June through July, and December. During these six months average delay was nearly seven minutes per operation.

³ Alternative B1b, the FAA's Preferred Alternative (B1b), has the same physical alignment, design and configuration as Alternative B1c, the Airport Sponsor's Proposed Action. However, Alternative B1c considers the implementation of the operational noise abatement actions described in the *County's Airfield Development Program Objective Statement* (October 26, 2004), which would limit the use of Runway 9R/27L in 2012. The FAA will not consider the approval of a runway development project with noise abatement runway use procedures that would limit its capacity in the opening year without a study of alternative noise abatement measures such as required under 14 CFR Part 150. The FAA's Preferred Alternative (B1b) does not include any operational noise abatement actions that would limit the use of Runway 9R/27L.

⁴ Engineered Material Arresting System (EMAS) is a "soft ground arresting system" consisting of a crushable cellular cement material installed on the runway overrun in a predetermined bed layout. EMAS provides a reliable and predictable capability to stop an aircraft by crushing under the weight of an aircraft providing deceleration and a safe stop. See FAA Order 5200.9, *Financial Feasibility and Equivalency of Runway Safety Area Improvements and Engineered Material Arresting Systems*.

The FAA's Preferred Alternative (B1b) consists of the following key development actions:

- Expand and elevate Runway 9R/27L to an overall length of 8,000 feet and width of 150 feet with an Engineered Materials Arresting System (EMAS) at both runway ends.
- Construct a new full-length parallel taxiway 75 feet wide on the north side of Runway 9R/27L with separation of 400 feet from Runway 9R/27L.
- Construct an outer dual parallel taxiway that would be separated from the proposed north side parallel taxiway by 276 feet.
- Construct connecting taxiways from the proposed full-length parallel taxiway to existing taxiways.
- Construct an Instrument Landing System (ILS) for landings on Runways 9R and 27L. Runway ends 9R and 27L would have a Category I ILS, which includes a Medium Intensity Approach Light System with runway alignment indicator lights (MALSR), localizer, and glideslope.
- Decommission and permanently close Runway 13/31, the crosswind runway.
- Terminal redevelopment envelope, which would accommodate a 67-77 gate complex and the potential redevelopment of Terminals 2, 3, and 4.

The connected actions associated with the development of the FAA's Preferred Alternative (B1b) are:

- Close Airport Perimeter Road located within the approach to Runway 9R.
- Relocate ASR-9.
- Acquire all, or a portion, of the Hilton Fort Lauderdale Airport Hotel (formerly the Wyndham Fort Lauderdale Airport Hotel).
- Acquire all, or a portion, of the Dania Boat Sales.

The federal actions requested of the FAA are described in detail in **Section 2 Requested Federal Actions and Approvals**. The FAA's reasons for identifying Alternative B1b as its preferred alternative in the Final EIS, required by 40 CFR 1505.2, are summarized in **Section 3.3 FAA's Preferred Alternative (B1b)**. The FAA is selecting and granting approval of an Airport Layout Plan (ALP) for the FAA's Preferred Alternative (B1b). The FAA's reasons for selecting the Preferred Alternative (B1b) are discussed in **Section 3.4 The Selected Alternative**. The mitigation for the Selected Alternative is discussed in **Section 4 Summary of Mitigation Measures**. A summary of the substantive comments received on the Final EIS is provided in **Section 5 Comments on the Final EIS**. The FAA's findings, determinations, and certifications for the selected alternative are described in **Section 6 Findings, Determinations, and Certifications**.

The public and federal, state, and local agencies were provided opportunities to participate in the EIS process and to provide input for FAA consideration in the development of the EIS. Those opportunities for public involvement and agency coordination are described in **Section 7 Public Involvement and Agency Coordination**. The FAA's specific conditions to be followed by the Airport Sponsor

in the development of the FAA's Preferred Alternative (B1b) are located in **Section 8 Conditions of Approval**. The FAA's decision and order approving FAA's federal actions for the project is located in **Section 9 Decision and Order**. Finally, information pertaining to any party seeking to stay the implementation of this ROD is located in **Section 10 Right of Appeal**.

Information in support of the FAA's decision and the EIS analysis and findings is provided in four appendices to this ROD. The comments received on the Final EIS and the FAA's responses to all substantive comments are provided in **Appendix A Comments Received and FAA Responses on the Final EIS**. Copies of the pertinent agency correspondence can be reviewed in **Appendix B Agency Letters: Concurrence, Certifications, Correspondence**.

Typographical errors in the Final EIS have been corrected. The corrected text is provided in **Appendix C Final EIS Errata Documents**. Information that was inadvertently omitted from the Final EIS is provided in **Appendix D Final EIS Addendum Documents**. This consisted of letters from Broward County to the FAA. These letters were listed in the introduction to Appendix C of the Final EIS but inadvertently omitted during printing. The letters were posted on Broward County's web site within one week of publication of the Final EIS, and in addition, the letters were available from the FAA upon request after the EIS was issued.

This ROD completes the FAA's environmental decision-making process, including disclosure and review by the public and the FAA decision maker of the analysis of alternatives and environmental impacts described in the Final EIS. This ROD has been prepared and issued by the FAA in compliance with the National Environmental Policy Act of 1969 (NEPA) [42 U.S.C. Section 4321, et seq.], the implementing regulations of the Council on Environmental Quality (CEQ) [40 CFR Parts 1500-1508] and FAA directives [Order 1050.1E and Order 5050.4B].

The ROD is also used to demonstrate and document the FAA's compliance with the procedural and substantive requirements of environmental, programmatic, and related statutes and regulations that apply to FAA decisions and actions on proposed airport projects.

It is the policy of the United States to undertake projects to increase airport capacity to the maximum feasible extent and further for major projects to protect and enhance natural resources and the quality of the environment.⁵ In *Vision 100 Century of Aviation Reauthorization Act Public Law 108-176*, the U.S. Congress stressed the importance of airports to the economy and the priority of capacity projects to ease congestion, and the need to assess environmental impacts associated with these projects.⁶ Congress directs the FAA as part of its overall air commerce missions to encourage the construction of capacity projects at congested airports. Vision 100 required the Secretary of Transportation to implement a process for expedited and coordinated environmental reviews for airport capacity enhancement projects at congested airports and for safety and security projects.

⁵ 49 U.S.C. §47101(a)(6), (7), Policies.

⁶ 49 U.S.C. §47171 et seq.

FLL is a congested airport and therefore this EIS is subject to the environmental streamlining provisions of the *Vision 100 Act*.⁷

The FAA coordinated with Federal, state, local, and tribal entities throughout the EIS process, including the U.S. Environmental Protection Agency (EPA), U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS), the Advisory Council on Historic Preservation (ACHP), the Florida Department of Environmental Protection (FDEP), the Florida Division of Historic Resources, the Florida Department of Transportation (FDOT), Broward County (Airport Sponsor), and local municipalities. The FAA also coordinated with the general public to identify and evaluate key issues associated with the proposed action. Section 7 *Public Involvement and Agency Coordination* describes in detail the FAA's coordination with the public and federal, state, and local agencies.

Federal, state, local agencies, public individuals, and public organizations, submitted comments on the Draft Environmental Impact Statement (Draft EIS) published in March 2007. The FAA provided responses to those comments in the Final EIS, published in June 2008. The FAA solicited comments on the Final EIS which identified a preferred alternative differing from the Airport Sponsor's Proposed Action.⁸ FAA responses to comments on the Final EIS are included in this ROD in Appendix A, *Comments Received and FAA Responses on the Final EIS*.

The FAA is responsible for the preparation and content of the Draft and Final EIS and this ROD. In developing the EIS, the FAA relied on certain information prepared by outside sources as permitted by 40 CFR §1506.5. In keeping with its oversight responsibility, the FAA consistently exercised control over the scope, content, and development of the EIS. The FAA selected a Third Party Contractor (TPC) to assist in the preparation of the EIS per the guidance contained in 40 CFR § 1506.5(c).

The FAA used its own resources, as well as the resources of the TPC, to independently evaluate any environmental information and other submissions provided by Broward County (the Airport Sponsor) or other entities.

The degree of supervision that the FAA exercised over the TPC, and its participation in the preparation of the EIS, fully maintained the integrity and objectivity of the EIS and ROD.

⁷ FAA interprets the definition of congested airport in 49 U.S.C. §47175(2) to include airports like FLL that are listed in FAA's Airport Capacity Benchmark Report of 2004.

⁸ The Airport Sponsor's Proposed Action, Alternative B1c, has the same physical alignment, design and configuration as the FAA's Preferred Alternative (B1b). However, Alternative B1c considers the implementation of the operational noise abatement actions referenced in the *County's Airfield Development Program Objective Statement* (October 26, 2004) and specifically described in a memorandum to the FAA in August 2006. These operational noise abatement actions would limit the capacity of Runway 9R/27L in 2012. Broward County has interpreted that the operational noise abatement actions would no longer be in place by 2020.

BACKGROUND

On January 19, 2005 the FAA issued a Notice of Intent to prepare an Environmental Impact Statement for proposed improvements at the Fort Lauderdale-Hollywood International Airport.⁹ In accordance with FAA Orders 1050.1E and 5050.4B, and CEQ Regulations 40 CFR 1501.7, agency and public scoping meetings were conducted on February 23, 2005.

A public information workshop was conducted as part of the process of completing the Draft EIS to receive comments from the public, review agencies, and other interested parties on February 2, 2006.

In addition to the public information workshop, other public venues were offered at key project milestones for the general public to meet with the FAA to discuss issues important to them. These venues included Project Focus Group meetings and District-Wide Briefings. The Project Focus Groups consisted of small meetings with representatives of community and homeowner association's surrounding the airport. The Broward County Board of County Commissioners asked the FAA to replace the third round of Focus Group Meetings with three District-wide Briefings to provide a larger venue for public participation.

The FAA issued the Draft EIS for public review and comment on March 30, 2007. The agency held a public information workshop and hearing on May 1, 2007 at the Fort Lauderdale Hollywood Convention Center. In addition to notices in the *Federal Register (FR)* of the availability of the Draft EIS and public information workshop and hearing, notices were also published in the Sun Sentinel on April 15, 22, and 29, (2007); Broward Herald on April 15, 22, and 29, (2007); and El Herald on April 16, 2007. Over 600 people combined attended the public information workshop and hearing.

⁹ The Airport Sponsor's proposed redevelopment of Runway 9R/27L was originally proposed in the *FLL 1994 Airport Master Plan Update*. The Federal environmental process, under the National Environmental Policy Act of 1969 (NEPA), was originally initiated by the FAA for this project in 1996. Since that time, three NEPA documents were published. All FAA NEPA processes ceased in 2003 to allow Broward County to conduct additional planning studies for the expansion of the runway and associated projects. These additional studies resulted in a new proposal by the Sponsor for runway expansion at FLL. All previous EIS documents were terminated and the associated processes were discontinued when the EIS process was reinitiated by the issuance, in January 2005, of the FAA Notice of Intent (NOI) to prepare an EIS and to conduct agency and public scoping. The Draft EIS published in March 2007 and the Final EIS published June 2008 are the result of the FAA NEPA process begun in January 2005.

On June 5, 2007, the Broward County Board of County Commissioners sponsored a separate public hearing on the Draft EIS. More than 1,300 people attended. The Mayor of Broward County, on behalf of the Broward County Board of County Commissioners notified the FAA that Alternative B1c was the County's Preferred Alternative.¹⁰

Comments were received on the Draft EIS from federal, state, and local agencies as well as members of the public. The FAA reviewed and prepared responses to all substantive comments received on the Draft EIS.

The FAA published the Notice of Availability for the Final EIS in the *FR* on June 27, 2008. The Final EIS identified the FAA's Preferred Alternative and proposed mitigation for noise and land use, which had not previously been disclosed in the Draft EIS. A 30-day comment period on the Final EIS closed on July 28, 2008. Late-filed comments were considered by the FAA to the extent practicable. The FAA reviewed and prepared responses to all substantive comments received on the Final EIS, which are included with this ROD (see Appendix A, *Comments Received and FAA Responses on the Final EIS*). No comments were received on the Final EIS that warranted further evaluation or analysis of the proposed action or alternatives.

ROD AVAILABILITY

Paper copies and CD copies of this ROD are available for review at various libraries in Broward County, the FAA Headquarters Office in Washington, D.C. and its Southern Regional Office in College Park, Georgia and Airports District Office in Orlando, Florida and at the administrative offices of the City of Cooper City, City of Dania Beach, City of Fort-Lauderdale, City of Hollywood, City of Lauderdale, City of Pembroke Pines, City of Plantation, City of Sunrise, and the Town of Davie, as well as the Fort Lauderdale-Hollywood International Airport. The addresses for these locations are provided in the Final EIS, in *Chapter Nine*.

The Final EIS is available on Broward County's website at:

http://www.broward.org/airport/community_airportexpansion.htm

This ROD is available on the FAA's web site at:

www.faa.gov/airports_airtraffic/airports/environmental/records_decision/

WHAT SHOULD YOU DO?

You should read this ROD to understand the actions that the FAA and the Airport Sponsor will take in order to implement the proposed development and expansion of Runway 9R/27L and associated projects at the Fort Lauderdale-Hollywood International Airport in Broward County, Florida.

¹⁰ Letter from Josephus Eggeleton, Mayor Broward County Florida, to Bart Vernace, Assistant Manager, FAA Orlando Airports District Office, RE: Broward County (Sponsor) Preferred Runway Alternative. Dated: August 10, 2007.

WHAT HAPPENS AFTER THIS?

The Airport Sponsor may proceed with the actions to implement the proposed project, as approved, and the FAA may proceed with processing applications for Federal grant-in-aid funding.

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1. DESCRIPTION OF THE AIRPORT SPONSOR'S PROPOSED ACTION AND PURPOSE AND NEED

This section describes the airport sponsor's proposed action, why the proposal is necessary, and the action's location and information on when the action would occur.

AIRPORT SPONSOR'S PROPOSED ACTION: The Proposed Action includes the redevelopment and extension of Runway 9R/27L to an 8,000-foot by 150-foot elevated runway with EMAS, and associated projects, which are described in the Final EIS, Chapter Two, *The Proposal*, Section 2.0 *Airport Sponsor's Proposed Project*.

The Proposed Action consists of the following key development actions:

- Expand Runway 9R/27L to an overall length of 8,000 feet and width of 150 feet with an Engineered Materials Arresting System (EMAS) at both runway ends. The runway extends to the east without encroaching onto NE 7th Avenue and would be elevated over the Florida East Coast (FEC) Railway and U.S. Highway 1; the western extent of the runway is the Dania Cut-Off Canal.
- Construct a new full-length parallel taxiway 75 feet wide on the north side of Runway 9R/27L with separation of 400 feet from 9R/27L.
- Construct an outer dual parallel taxiway that would be separated from the proposed north side parallel taxiway by 276 feet.
- Construct connecting taxiways from the proposed full-length parallel taxiway to existing taxiways.
- Construct an Instrument Landing System (ILS) for landings on Runways 9R and 27L. Runway ends 9R and 27L would have a Category I ILS, which includes a Medium Intensity Approach Light System with runway alignment indicator lights (MALSR), localizer, and glideslope.
- Decommission Runway 13/31. Due to the increased elevation of Runway 9R/27L at its intersection with Runway 13/31, Runway 13/31 would be closed permanently.
- Terminal Redevelopment Envelope. The terminal redevelopment envelope can accommodate a total of 67 to 77 gates and would accommodate the FAA-forecast levels of passenger-related activity through 2020. For the EIS analysis, Option 2B¹¹ of the FLL Master Plan Update Phase 1 was used as a representative layout of a 67 to 77 gate complex. The terminal redevelopment envelope accommodates the potential redevelopment of Terminals 2, 3, and 4 including aircraft parking positions, taxilanes, and remote parking positions. (The terminal redevelopment envelope is depicted on Exhibit D.2-3 and D.2-10 in the Final EIS Appendix D.2, *Terminal Gate Verification*.)

¹¹ Leigh Fisher Associates (now known as Jacobs Consultancy) report dated January 2006, *Master Plan Update—Phase I, Draft Final Summary Report. Development Option 2B*, Figure 6-24, Figure 6-25 and pp. 6-18 to 6-23.

During project design, the Airport Sponsor will consider the refinement of the airfield and terminal area elements that include the design, location, and number of taxiway exits, aircraft holding pads, and runway access areas.

The connected actions associated with the development of the Proposed Action are:

- Close Airport Perimeter Road located within the approach to Runway 9R
- Relocate Airport Surveillance Radar (ASR-9)
- Acquire all, or a portion, of the Hilton Fort Lauderdale Airport Hotel (formerly the Wyndham Fort Lauderdale Airport Hotel)
- Acquire all, or a portion, of the Dania Boat Sales

The Airport Sponsor's Proposed Action, Alternative B1c, has the same physical alignment, design and configuration as the FAA's Preferred Alternative (B1b). However, Alternative B1c considers the implementation of the operational noise abatement actions referenced in the *County's Airfield Development Program Objective Statement* (October 26, 2004) and specifically described in a memorandum to the FAA in August 2006.¹² These operational noise abatement actions would limit the capacity of Runway 9R/27L in 2012. Broward County has interpreted that the operational noise abatement actions would no longer be in place by 2020.¹³

The FAA will not consider the approval of a runway development project with noise abatement runway use procedures that would limit its capacity in the opening year without a study of alternative noise measures such as required under 14 CFR Part 150, Airport Noise Compatibility Planning. Broward County may recommend such noise operational noise abatement measures for Alternative B1b as part of an updates to its Part 150 airport noise compatibility program.

WHY THE PROPOSAL IS NECESSARY: Under 49 USC 47101(a)(7), the FAA is charged with carrying out a policy ensuring "that airport construction and improvement projects that increase the capacity of facilities to accommodate passenger and cargo traffic be undertaken to the maximum feasible extent so that safety and efficiency increase and delays decrease."¹⁴

¹² Memorandum from Max Wolfe/Eric Bernhardt, Leigh Fisher Associates (now Jacobs Consultancy), to Virginia Lane, AICP, Environmental Specialist, Federal Aviation Administration. Subject: Sponsor's Proposed Project Operational Assumptions. Dated: August 22, 2006/Revised: August 24, 2006.

¹³ The FAA's review of this memorandum and the analysis referenced in this memorandum indicates that Broward County has interpreted that the operational noise abatement actions would no longer be in place in order to maintain acceptable levels of delay as defined by Broward County. Memorandum from Max Wolfe/Eric Bernhardt, Leigh Fisher Associates (now Jacobs Consultancy), to Virginia Lane, AICP, Environmental Specialist, Federal Aviation Administration. Subject: Sponsor's Proposed Project Operational Assumptions. Dated: August 22, 2006/Revised: August 24, 2006.

¹⁴ 49 U.S.C. 47101(a)(7). Title 49 Transportation. SUBTITLE VII—AVIATION PROGRAMS PART B—AIRPORT DEVELOPMENT AND NOISE CHAPTER 471—AIRPORT DEVELOPMENT SUBCHAPTER I—AIRPORT IMPROVEMENT § 47101.

The National Plan of Integrated Airport Systems (NPIAS) supports this policy and underscores the FAA goals identified in the *Flight Plan (2004-2008)*¹⁵ for safety and capacity. The most recent NPIAS (2007-2011)¹⁶ report was prepared in accordance with 49 USC Section 47103 and provided to Congress in September 2006. FLL is identified as a large hub in the NPIAS. Large hubs are those airports that each account for at least one percent of total U.S. passenger enplanements¹⁷. The nation's air traffic delay problems tend to be concentrated at the 30 large hub airports where the average delay per aircraft operation was six minutes in 2004. These 30 large hub airports plus five of the busiest medium hub airports are included in FAA's 10-year plan to increase the capacity and efficiency of the national airspace system, known as the Operational Evolution Plan (OEP).

The U.S. Congress stressed the importance of airports to the economy and required the FAA to implement a process for expedited and coordinated environmental reviews for airport capacity enhancement projects at congested airports and for safety and security projects under *Vision 100 Century of Aviation Reauthorization Act Public Law 108-176*. FLL is a congested airport within the meaning of Vision 100.¹⁸

More recently, in a report entitled *Capacity Needs in the National Airspace System 2007-2025*, the FAA determined that FLL would need additional capacity within the 2007 timeframe.¹⁹

The FLL forecast provided in the FAA Terminal Area Forecast (TAF)²⁰ projects that operations will continue to increase. The projected continued growth will result in a continued shortage of capacity at FLL and increasing levels of delay. A more detailed discussion of capacity and delay at FLL is provided in the Final EIS in Chapter Three, *Purpose and Need*, Section 3.2 *Problem Statement* and Section 3.3 *Need for the Project*.

The FAA received a number of comments on the Final EIS regarding the potential effect of increasing fuel costs on operations at FLL and the reduction in operations nationwide announced by a number of airlines in early 2008. The comments

¹⁵ *FAA Flight Plan 2004-2008*. Internet web site: [http://www.faa.gov/apo/strategicplan/FAA_Flight_Plan.pdf#search=%22Flight%20Plan%20\(2004-2008\)%20for%20safety%20and%20capacity%22](http://www.faa.gov/apo/strategicplan/FAA_Flight_Plan.pdf#search=%22Flight%20Plan%20(2004-2008)%20for%20safety%20and%20capacity%22)

¹⁶ FAA National Plan of Integrated Airport Systems (NPIAS) (2007-2011), submitted to the U.S. Congress September 2006; October 2006. Internet web site: http://www.faa.gov/airports_airtraffic/airports/planning_capacity/npias/reports/index.cfm

¹⁷ FAA's use of the term hub airport is somewhat different than that of airlines, which use it to denote an airport with significant connecting traffic by one or more carriers. The hub categories used by FAA are defined in Section 40102 of Title 49 of the United States Code (2004).

¹⁸ The FAA interprets 49 U.S.C. §47175(2) to refer to *FAA's Airport Capacity Benchmark Reports of 2001 and 2004*.

¹⁹ *Capacity Needs in the National Airspace System 2007-2025, An Analysis of Airport and Metropolitan Demands and Operational Capacity in the Future*. Federal Aviation Administration. Table E1. May 2007.

²⁰ The 2006 FAA Terminal Area Forecast (TAF) for FLL was used in the EIS analysis. The FAA reviewed the 2007 FAA TAF (when it was published in December 2007) to determine the variance between the 2006 TAF and 2007 TAF projections for FLL. The FAA determined the variance in projected operations was within the FAA's standard for determining projected forecast consistency (within 10 percent (+/-) for the five-year projection; and within 15 percent (+/-) for the 10-year and beyond forecast projections). See the Final EIS, Chapter Three, Section 3.3.1.1 *Projected Operational Demand*.

questioned the FAA's reliance on 2006 operations that did not represent airline changes in response to the fuel cost increase. However, although the price of fuel and economic fluctuations can affect an airport's operations, these variables have been taken into account by the FAA in the FLL TAF.

The FAA's TAF is updated annually. In the TAF for FLL, the near term forecast of operations²¹ is based, in part, on the future schedules of the airlines serving the airport. Airline schedules include anticipated changes in the market such as reductions in operations in response to increased fuel costs. The long term estimates of domestic enplanements are forecast as a function of real yield at the airport²² and employment in the metropolitan area. These enplanement forecasts in turn are translated into operation forecasts using assumptions for average seats per aircraft and load factor. The long term forecasts are not significantly influenced by the short term changes in the price of fuel, rather they are more influenced by regional and national economic and employment indicators.

The FAA is currently preparing the 2008 TAF. Based upon the preliminary 2008 TAF²³ for FLL a comparison with the 2006 TAF used in the EIS analysis indicates that the difference in projected operations between the 2006 TAF and the preliminary 2008 TAF for 2012 and 2020 is within an acceptable range.²⁴ The 2008 TAF is anticipated to be published by the FAA in late 2008 or early 2009. In the event that the 2008 TAF forecasted operations, when published, are significantly different from the forecast used in the EIS, the FAA will complete any appropriate additional environmental review.

By examining the analysis of capacity and delay issues at FLL, the FAA would fulfill its statutory responsibilities to administer the National Airspace System. The FAA through the independent analyses provided in the EIS, determined that the existing airfield infrastructure at FLL lacks sufficient capacity²⁵ to accommodate existing and forecast air carrier demand at a level of delay established for FLL in the EIS.^{26,27}

The purpose of the proposed action is to provide sufficient capacity for existing and forecast demand at FLL with an acceptable level of delay. The FAA considered the deficiencies at FLL, as discussed in the Final EIS, Chapter Three *Purpose and Need*, Section 3.2 *Problem Statement*, and their impact on the FAA's purpose of

²¹ Near term would be within a one to two year time frame. Long term would be beyond the two year time frame.

²² Yield is the average amount of revenue the airline would receive per revenue passenger mile. Yield is derived by dividing total passenger revenue by total revenue passenger miles. Real yield means that the dollar amounts have been adjusted to take out inflation over time.

²³ Preliminary FAA Terminal Area Forecast for FLL, September 2008.

²⁴ The FAA standard for determining projected forecast consistency defines acceptable when a forecast is within 10 percent (+/-) for the five-year projection. For forecast projections within the 10-year and beyond, a 15 percent (+/-) difference is considered consistent with the FAA's TAF. (FAA Order 5100.38C *Airport Improvement Program Handbook*, paragraph 428.a. *Aviation Forecasting*.)

²⁵ As stated in FAA Advisory Circular 150/5060-5, *Airport Capacity and Delay*, capacity (throughput capacity) is a measure of the maximum number of aircraft operations that can be accommodated on the airport or airport component in an hour.

²⁶ An established delay threshold is typically around four to six minutes of average delay per operation based on data contained in the FAA National Plan of Integrated Airport Systems (NPIAS) (2007-2011).

²⁷ The threshold used in the EIS to define acceptable levels of delay at FLL is six minutes per operation. See the Final EIS, Chapter Three *Purpose and Need*, Section 3.3.1.3, *Level of Delay*.

enhancing safety, efficiency, and capacity on both the regional and national level, and has identified the following needs at FLL:

- The need for sufficient airfield capacity, to the extent practicable, to accommodate existing and projected air carrier demand at a level of delay established for FLL in the EIS analysis, which is six minutes of average annual delay per operation;
- The need for an enhanced and balanced airfield; and
- The need for sufficient gate and apron capacity to address existing and forecast passenger demand and aircraft congestion on the ramp.

LOCATION OF THE PROPOSED ACTION: The proposed action will occur in Broward County, Florida, primarily on airport property that is owned by Broward County.

WHEN THE PROPOSED ACTION WOULD OCCUR: Project initiation and mobilization is expected to begin with the issuance of the ROD. It is projected that construction will begin in 2009. Construction is expected to last between four to six years, with completion occurring in the 2012 to 2014 timeframe.

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2. REQUESTED FEDERAL ACTIONS AND APPROVALS

This section summarizes the actions and approvals the airport sponsor has asked FAA and other federal agencies to give before the sponsor can implement the proposed action.

FAA DETERMINATIONS RELATING TO ELIGIBILITY FOR FEDERAL FUNDS FOR THE PROPOSED PROJECT: FAA determinations relating to eligibility for Airport Improvement Program (AIP) funds and to impose and use Passenger Facility Charges (PFC) funds for the proposed project.

FAA APPROVAL TO AMEND THE ALP TO DEPICT THE PROPOSED ACTION AND ASSOCIATED DETERMINATIONS: FAA approval of an ALP,²⁸ environmental determinations and sponsor assurances and certifications required as conditions of eligibility for grants of federal funding for the proposed project,²⁹ and determinations under other environmental laws, regulations, and executive orders discussed in the EIS.

FAA INSTALLATION AND/OR RELOCATION OF NAVIGATIONAL AIDS ASSOCIATED WITH THE PROPOSED NEW RUNWAY: FAA determination for the installation and/or relocation of navigational aids associated with the new runway.³⁰

FAA APPROVAL OF AIR TRAFFIC CONTROL PROCEDURES AND MODIFICATION OF FLIGHT PROCEDURES FOR THE RUNWAY: The FAA would approve new air traffic control and instrument procedures for FLL to include an expanded runway and the closure of Runway 13/31. These procedures would be flight tested, and published for general use.³¹

FAA EVALUATION AND DETERMINATION OF AIRSPACE OBSTRUCTIONS: Determinations and actions, through the aeronautical study process of any off-airport obstacles that might be obstructions to the navigable airspace under the standards and criteria of 14 CFR Part 77 *Objects Affecting Navigable Airspace*³², and an evaluation of the appropriateness of proposals for on-airport development from an airspace utilization and safety perspective based on aeronautical studies conducted pursuant to the standards and criteria of 14 CFR Part 157, *Notice of Construction, Alteration, Activation, and Deactivation of Airport*.

FAA CERTIFICATION AND OTHER APPROVALS: FAA modification or amendment of existing certificates or specifications is required to comply with FAA design standards and to accommodate, in a safe and efficient manner, the passenger enplanements and aircraft activity forecasts.

- Certification under 14 CFR Part 139, *Certification of Airports*.

²⁸ 49 U.S.C. § 47107(a)(16)

²⁹ 49 U.S.C. § 47106(c)

³⁰ 49 U.S.C. § 40103

³¹ 49 U.S.C. § 40103

³² 49 U.S.C. § 40103(b) and 40113

- Operating Specifications for scheduled air carriers intending to operate at the airport in the future under FAR 14 CFR Part 121, *Certification and Operations: Domestic, Flag, and Supplemental Air Carriers and Commercial Operations of Large Aircraft*.

APPLICABLE ENVIRONMENTAL LAWS, REGULATIONS, STATUTES, AND POLICIES

In accordance with Federal law and agency guidance, the Final EIS contains the information that the FAA will use to make the following findings, determinations, and certifications for the selected alternative.

DETERMINATIONS WITH REGARD TO ENVIRONMENTAL LAWS, REGULATIONS, AND EXECUTIVE ORDERS

- Determination of general conformity under the Clean Air Act, 42 U.S.C. § 7506(c)(1).
- Determination that the Proposed Action is consistent with approved coastal zone management programs, Executive Order 13089, Coral Reef Protection; Coastal Barrier Resources Act, 16 U.S.C. § 3501-3510, and Coastal Zone Management Act, 16 U.S.C. § 1451-1464.
- Determinations under 49 U.S.C. § 303(c) [Section 4(f)] with respect to use of any publicly-owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state or local significance; or land from an historic site of national, State, or local significance.
- Findings regarding the potential impact to Federally endangered or threatened and protected species, marine mammals, essential fish habitat and migratory birds, and state-listed species. Endangered Species Act, 16 U.S.C. § 1531-1544. Marine Mammal Protection Act, 16 U.S.C. § 1361-1421h. Related Essential Fish Habitat Requirements of the Magnuson-Stevens Act, as amended by the Sustainable Fisheries Act, 16 U.S.C. § 1855(b)(2). Migratory Bird Treaty Act, 16 U.S.C. § 703-712.
- Floodplain determination and findings in accordance with Executive Order 11998, *Floodplain Management*, and DOT Order 5650.2, *Floodplain Management and Protection*.
- Determination in accordance with Section 106 of the National Historic Preservation Act of 1966. The FAA is required to make a determination related to the potential effect of the proposed actions on properties either listed or eligible to be listed on the National Register of Historic Places that are in the vicinity of the development of the proposed actions. National Historic Preservation Act, 16 § U.S.C. 470(f).
- Determination regarding coordination and consultation with Native American representatives in accordance with DOT Order 5301.1, Department of Transportation Programs, Policies, and Procedures Affecting American Indians, Alaska Natives, and Tribes; and FAA Order 1210.20, American Indian and Alaskan Native Tribal Consultation Policy and Procedures.

- Determination regarding environmental justice in accordance with Executive Order 12898 and DOT Order 5610.2, Environmental Justice.
- Determination that water quality requirements will be satisfied in accordance with the Clean Water Act. Clean Water Act, 33 U.S.C. § 1251, et seq.
- Determinations in accordance with Executive Order 11990, Protection of Wetlands. Department of Transportation (DOT) Order 5660.1A, Preservation of the Nation's Wetlands, and Section 404 of the Clean Water Act. 33 U.S.C. 1344. For this project involving new construction that will directly affect wetlands, the FAA must determine that there is no practicable alternative to such construction and that the proposed action includes all practicable measures to minimize harm to wetlands.
- Determination regarding actions associated with the project that would require relocation assistance for displaced persons or businesses pursuant to the Uniform Relocation Assistance and Real Property Acquisition Policies Act (42 U.S.C. 4601 et seq.).
- Determination regarding the independent and objective evaluation required by the Council on Environmental Quality (40 C.F.R. Section 1506.5).

FAA DETERMINATIONS UNDER 49 USC SECTIONS 47106 AND 47107

- Determination of consistency with existing plans of public agencies for the development of the area surrounding the airport. 49 U.S.C. § 47106(a)(1).
- Determination that fair consideration has been given to the interests of communities in or near the project location. 49 U.S.C. § 47106(b)(2).
- Determination in accordance with 47106(c)(1)(A) that the Sponsor has provided the following certifications:
 - an opportunity for a public hearing was given to consider the economic, social, and environmental effects of the location and the location's consistency with the objectives of any planning that the community has carried out; 49 U.S.C. § 47106(c)(1)(A)(i)
 - the airport management board has voting representation from the communities in which the project is located or has advised the communities that they have the right to petition the Secretary about a proposed project; and 49 U.S.C. § 47106(c)(1)(A)(ii)
 - with respect to an airport development project involving the location of an airport, runway, or major runway extension at a medium or large hub airport, the airport sponsor has made available to and has provided upon request to the metropolitan planning organization in the area in which the airport is located, if any, a copy of the proposed amendment to the airport layout plan to depict the project and a copy of any airport master plan in which the project is described or depicted; and 49 U.S.C. § 47106(c)(1)(A)(iii)
- For this project, which involves the location of a new runway or major runway extension, determination in accordance with 49 U.S.C. § 47106(c)(1)(C) of whether there are significant adverse effects on natural resources,

determination that no possible and prudent alternative to the project exists, and that the project includes every reasonable step to minimize the significant adverse effects.

- Determination that the Airport Sponsor has, or will take, the appropriate action, as pertains to the adoption of zoning laws to the extent reasonable to restrict the use of land next to or near the airport to uses that are compatible with normal airport operations 49 U.S.C. § 47107(a)(10).

LIST OF OTHER FEDERAL, STATE, AND LOCAL PERMITS AND APPROVALS

The following permits and approvals are required by federal agencies (other than the FAA) and state and local agencies for implementation of the FAA's Preferred Alternative (B1b):

- Issuance of a Clean Water Act Section 404 permit by the U.S. Army Corps of Engineers (USACE) related to potential impacts to jurisdictional streams and wetlands, based upon a determination that there is no practicable alternative to the selected alternative and all practicable measures have been considered to avoid, minimize, and mitigate harm to wetlands.
- Issuance of a Clean Water Act Section 404 permit by the USACE for dredge and fill, based upon review and comment by the U.S. Environmental Protection Agency (USEPA), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and the Florida State Historic Preservation Office (SHPO).
- Section 401 Water Quality Certification from the South Florida Water Management District (SFWMD), based upon the FAA determination that standards under the CWA will be met.
- Modification to the National Pollutant Discharge Elimination System (NPDES) permit (Section 402 of the Clean Water Act) for proposed construction activities; this would be coordinated through the Florida Department of Environmental Protection.
- Modification to the SFWMD Environmental Resource Permit (ERP) No. 06-00339-S for impacts to jurisdictional wetlands. This permit modification constitutes State Water Quality Certification for the Section 404 Permit.

3. SUMMARY OF ALTERNATIVES CONSIDERED

This section briefly describes the reasonable alternatives the EIS analyzed in detail. It also identifies the environmentally preferred alternative (C1) (40 CFR § 1505.2 (b)), the Airport Sponsor's proposed action (B1c), and the FAA's Preferred Alternative (B1b) (FAA Order 5050.4B, paragraph 1007.e. (7)). The Airport Sponsor's proposed action was described in detail in Section 1, above.

BRIEF DESCRIPTION OF ALTERNATIVES CONSIDERED: The Council on Environmental Quality's (CEQ) regulations implementing NEPA (40 CFR Parts 1500 through 1508) require that all reasonable alternatives that might accomplish the objectives of a proposed project be identified and evaluated. Therefore, in compliance with NEPA³³ and other special purpose environmental laws, the FAA analyzes those alternatives that could achieve the established purposes and needs for the project.

Reasonable alternatives include those that are practical or feasible from a technical and economic standpoint.³⁴ According to CEQ Section 1502.14(c) the FAA, as the lead agency, has a responsibility to explore and objectively evaluate all reasonable alternatives, including those beyond the agency's jurisdiction.

The analysis of EIS alternatives is an independent examination by the FAA of a reasonable range of alternatives that could meet the identified purposes and needs for the Airport Sponsor's Proposed Project as described in detail in the EIS. The alternatives that the FAA considered included off-site and on-site alternatives, and a no action alternative. On-site alternatives included non-runway development (i.e., demand management) and runway development alternatives. (To review the range of alternatives considered, see the Final EIS, Chapter Four, *Alternatives*, Section 4.1.1, *Off-Site Alternatives*, and Section 4.2.2, *On-Site Alternatives*.)³⁵

As a requirement of NEPA, a no action alternative must be carried forward in the assessment of environmental impacts.³⁶ With the No Action Alternative, the FLL airfield configuration would remain as it is today, with no additional runways,

³³ National Environmental Policy Act of 1969 (NEPA) Part 1502, Environmental Impact Statement, Section 1502.14.

³⁴ 46 Federal Register 18026, Memorandum: *FORTY MOST ASKED QUESTIONS CONCERNING CEQ'S NATIONAL ENVIRONMENTAL POLICY ACT REGULATIONS*, March 16, 1981.

³⁵ After the Final EIS was published DOT and FAA finalized an amended policy on airport rates and charges and limitations on operations at the three NY area airports. These actions are consistent with the dismissal of demand management alternatives for FLL in Section 4.2.2.4 of the Final EIS. In affording airport sponsors greater flexibility to use landing fees to manage congestion, DOT/FAA stated that the amendments were intended "as a mechanism to address delay when capacity projects will not be available in time to prevent increasing delays and in those congested airports where capacity expansion is simply not feasible." 73FR 40430 July 14, 2008. Similarly, DOT/FAA imposed flight caps at the NY area airports to reduce congestion and delays until the airport sponsor is able to bring needed capacity projects, such as additional taxiway and other improvements, on line. Use of demand management if at all, as a stop gap measure and last resort, is in harmony with congressional policies encouraging airport improvement projects to increase capacity to be undertaken "to the maximum feasible extent" while artificial restrictions on airport capacity, which are not in the public interest, "should be imposed to alleviate air traffic delays only after other reasonably available and less burdensome alternatives have been tried." 49 U.S.C. 47101(a)(7), (9).

³⁶ Council on Environmental Quality's (CEQ) regulations implementing NEPA (40 CFR Parts 1500 through 1508), Sec. 1502.14(d) Include the alternative of no action.

extensions, or improvements to any existing runways, and the airfield would be operated in accordance with the current air traffic procedures.³⁷ The No Action Alternative serves as the baseline of comparison for the assessment of future conditions/impacts.

The alternatives analysis identified and evaluated a range of reasonable alternatives that could substantially meet the stated purpose and need for the project. First, the analysis screened both the off-airport and on-airport alternatives that could feasibly address capacity and reduce delay at the FLL at the threshold of six minutes of acceptable delay. None of the off-site alternatives and none of the non-runway on-site alternatives were determined by the FAA to meet the stated purpose and need. (See the Final EIS, Chapter Four, *Alternatives*, Section 4.1.1, *Off-Site Alternatives*, and Section 4.2.2, *On-Site Alternatives*.)³⁸

Next, the on-site runway development alternatives that could address capacity and reduce delay were subjected to a detailed analysis. The analysis considered runway length, airfield throughput capacity,³⁹ constructability,⁴⁰ and the consideration of "fatal flaws."⁴¹ An alternative that did not meet one or more of these criteria also did not meet purpose and need and therefore was eliminated from further evaluation in the EIS. (For the full discussion of the screening analysis, see the Final EIS, Chapter Four, *Alternatives*, Section 4.2.2.5, *Runway Development Alternatives*.)

As a result of the alternatives screening process, the FAA determined that eight of the runway development alternatives could potentially meet the stated purpose and need to increase capacity and reduce delay, and did not appear to have substantial constructability issues or "fatal flaws". These eight runway development alternatives and the No Action alternative were subjected to detailed environmental analysis in the EIS and are listed below. (See the Final EIS, Chapter Four, *Alternatives*, Section 4.3, *Alternatives to be Assessed for Environmental Impacts*.)

³⁷ FAA Environmental Assessment for the Proposed Use of Runways 9R/27L and 13/31 When the Preferred Runway Cannot Efficiently Accommodate Existing Operations at Fort Lauderdale-Hollywood International Airport (FLL). Broward County, Florida. 2008.

³⁸ Given the similarities between PHL and FLL, a peak hour pricing program would not likely work at FLL because the fees would cause reductions in the general aviation and turboprop aircraft that principally use the south runway at FLL during peak periods and do not contribute to delays. Cancellation of these flights would have little impact on congestion on the primary runways and therefore would not significantly reduce delays at FLL. PHL Runway 17-35 Extension Project Final EIS, pages 3-31 and 3-32.

³⁹ As stated in FAA Advisory Circular 150/5060-5, *Airport Capacity and Delay*, capacity (throughput capacity) is a measure of the maximum number of aircraft operations that can be accommodated on the airport or airport component in an hour.

⁴⁰ Constructability considers the physical characteristics of each alternative and its direct impact on existing facilities and structures, infrastructure, and natural features. These physical characteristics can affect engineering costs, project schedules, operational safety and efficiency, and construction sequencing or phasing.

⁴¹ "Fatal flaws" are discussed in the Final EIS Chapter Four - *Alternatives*, Section 4.2.2.5.1 *Fatal Flaws*. "Fatal flaws" in the EIS analysis are associated with direct impacts on existing facilities that would result in substantial redevelopment or inhibit development or maintenance of existing transportation infrastructure. The fatal flaws considered in the alternatives included encroachment of the Dania Cut-Off Canal, Interstate-95, and/or the Seaboard Coast Line Railroad (CSX Transportation); major impacts to the existing terminal core area that would cause significant disruption of airline and passenger service; or impacts to or the relocation of the Florida Power Light (FPL) LaDania Substation.

- **Alternative A (No Action):** the airfield configuration would remain as it is today, with no additional runways, extensions, or improvements to any existing runways, and the airfield would be operated in accordance with the current air traffic procedures. Runway 9L/27R is 9,000 feet long by 150 feet wide; Runway 9R/27L is 5,276 feet long by 100 feet wide; and, Runway 13/31 6,930 feet long by 150 feet wide.
- **Alternative B1:** redevelop and extend existing Runway 9R/27L to an 8,600-foot by 150-foot elevated runway; this runway would extend east over the FEC Railway and U.S. Highway 1; Runway 13/31 would be permanently closed
- **Alternative B1b (FAA's Preferred Alternative):** redevelop and extend existing Runway 9R/27L to an 8,000-foot by 150-foot elevated runway with EMAS; this runway would extend east over the FEC Railway and U.S. Highway 1; Runway 13/31 would be permanently closed (see this ROD, Exhibit 1 *FAA's Preferred Alternative (B1b)*)
- **Alternative B1c (Airport Sponsor's Proposed Action):** redevelop and extend existing Runway 9R/27L to an 8,000-foot by 150-foot elevated runway with EMAS; this runway would extend east over the FEC Railway and U.S. Highway 1; includes the implementation of the operational noise abatement actions described in the *County's Airfield Development Program Objective Statement* (October 26, 2004),⁴² and specifically in a memorandum to the FAA in August 2006 which would limit the capacity of Runway 9R/27L in 2012; Broward County has interpreted that the operational noise abatement actions would no longer be in place by 2020;⁴³ Runway 13/31 would be permanently closed
- **Alternative B4:** build a new 6,001-foot at grade runway with EMAS located 340 feet north of existing south runway (to replace existing Runway 9R/27L); Runway 13/31 would remain open
- **Alternative B5:** build a new 7,800-foot elevated runway with EMAS located 320 feet south of existing south runway (to replace existing Runway 9R/27L); this runway would extend east over the FEC Railway and U.S. Highway 1; Runway 13/31 would be permanently closed
- **Alternative C1:** build a new 7,721-foot at grade runway located 850 feet north of existing Runway 9L/27R (a dependent parallel runway to existing Runway 9L/27R); Runway 13/31 would be permanently closed

⁴² Letter from Tom Jargiello, Director of Aviation, Broward County Aviation Department, Fort Lauderdale-Hollywood International Airport, to Dean Stringer, Manager, FAA Orlando Airports District Office. This letter pertains to the Broward County Board of County Commissioners Goals and Objectives. Dated: November 1, 2004. "This responds to your letter dated December 24, 2003 requesting information necessary for the preparation of the revised Environmental Impact Statement (EIS) for the proposed extension of Runway 9R/27L at the Fort Lauderdale-Hollywood International Airport."

⁴³ Memorandum from Max Wolfe/Eric Bernhardt, Leigh Fisher Associates (now Jacobs Consultancy), to Virginia Lane, AICP, Environmental Specialist, Federal Aviation Administration. Subject: Sponsor's Proposed Project Operational Assumptions. Dated: August 22, 2006/Revised: August 24, 2006.

- **Alternative D1:** redevelop and extend existing Runway 9R/27L to 8,000 feet and build a new 7,721-foot runway north of existing Runway 9L/27R; Runway 13/31 would be permanently closed; (combination of Alternatives B1b and C1)
- **Alternative D2:** build a new 6,001-foot at grade runway with EMAS located 340 feet north of existing south runway (to replace existing Runway 9R/27L), and build a 7,721-foot at grade runway located 850 feet north of existing Runway 9L/27R; Runway 13/31 would be permanently closed; (combination of Alternatives B4 and C1)

SUMMARY OF OPERATIONAL CAPACITY AND DELAY, IMPACTS TO AIRPORT PROPERTY, AND ENVIRONMENTAL IMPACTS OF THE ALTERNATIVES:

In identifying the Preferred Alternative, the FAA considered three major factors. First, it considered the extent to which an alternative could, as a practical matter, meet the stated purpose and need to accommodate existing and projected air carrier demand at a level of delay established for FLL, which is six minutes of average annual delay per operation; to provide sufficient airfield capacity, to the extent practicable; to provide an enhanced and balanced airfield; and, to provide sufficient gate and apron capacity to address existing and forecast passenger demand and aircraft congestion on the ramp.

Second, the FAA considered the extent to which an alternative impacted existing airport property, including airport tenant facilities and the availability of airport property for future development.

Third, the agency considered whether the implementation of an alternative would result in significant adverse environmental impacts, and if so, whether the alternative would meet the requirements of 49 USC §47106(c)(1)(C).

Operational capacity and delay: The first consideration in the identification of FAA's Preferred Alternative was the extent to which an alternative could increase operational capacity and reduce delay at FLL. For the alternatives that were studied in detail, operational capacity and delay were assessed in the EIS in terms of maximum capacity⁴⁴, actual throughput or practical capacity,⁴⁵ and average

⁴⁴ As stated in FAA Advisory Circular 150/5060-5, *Airport Capacity and Delay*, capacity (throughput capacity) is a measure of the maximum number of aircraft operations that can be accommodated on the airport or airport component in an hour. It represents a condition of balanced arrival and departure demand that is based on the methodology in the AC.

⁴⁵ When calculating capacity and delay it is standard industry practice to calibrate capacity to reflect the usability of the actual runway pavement. This is 'practical capacity' (also known as 'actual throughput'). This type of capacity analysis considers factors that can affect runway use and usability (or utility). These factors can include aircraft type and runway length. For example: a 5,000 foot runway at Airport A may have an hourly maximum throughput capacity of 50 operations (based on the maximum number of operations that can occur by aircraft that can use a 5,000-foot runway). If the forecast demand for Airport A includes aircraft that all can operate on such a runway, then the practical capacity for Airport A will be the same as the throughput capacity. However, the forecast demand for Airport B may include only 20 aircraft operations able to use a 5,000-foot runway. Therefore, because of the demand at Airport B the 'practical capacity' is 20 operations, not 50. Several major commercial airports in the U.S. have runways of less than 6,000 feet. Some examples include Runway 15L/33R at Baltimore Washington International Airport and Runway 14/32 at Boston Logan International Airport. The 'practical capacity' of the runways at these airports is determined by the types of aircraft and number of aircraft operations using such aircraft that can actually operate on a runway 6,000 feet in length.

minutes of delay per operation. The analysis of capacity and average delay was used to determine the extent to which an alternative could meet the stated purpose and need to increase capacity and reduce delay at FLL.⁴⁶

A key aspect of operational capacity and delay was the extent of actual throughput or practical capacity provided by an alternative.

Table 1 Hourly Capacity Estimates – Total Airfield, summarizes the maximum and practical hourly capacity of the airport under each alternative. Maximum capacity shown in these tables refers to the capacity estimated from the FAA AC 150/5060-5. By comparison, the practical capacity listed on Table 1 takes into consideration actual demand able to use available runways according to the aircraft types and runway length characteristics of each alternative.

**TABLE 1
HOURLY CAPACITY ESTIMATES – TOTAL AIRFIELD
Fort Lauderdale-Hollywood International Airport**

MAXIMUM	CAPACITY ¹					PRACTICAL CAPACITY ²
	East Flow		West Flow		All Weather Average	All Weather Average
	VFR IF	R	VFR	IFR		
No Action	115	106	105	100	113	84
B1/B1b/B1c/B5	108	104	102	98	107	107
B4 ³	108	104	102	98	107	107
C1 ⁴	134	116	127	101	131	101
D1	130	113	124	99	128	128
D2	130	113	124	99	128	128
Percent of Annual	75%	6%	18%	1%	100%	100%

¹ Maximum capacity presents a condition of balanced arrival and departure demand

² Practical Capacity takes into consideration actual demand able to use available runways according to the aircraft types and runway length characteristics.

³ Alternative B4 is the only alternative, other than the No Action, under which Runway 13/31 would remain in operation. Even though Runway 13/31 remains open it does not result in an increase in the practical capacity as compared to the other “B” alternatives, because Runway 13/31 crosses Runway 9L/27R and operations are directed to either Runway 13/31 or Runway 9L/27R but not to both runways simultaneously. The airfield operates most efficiently in an east/west configuration; Alternative B4 would have two east/west parallel runways that could accommodate air carrier demand, which is why the practical capacity for Alternative B4 is equal to the other ‘B’ alternatives.

⁴ The practical capacity for Alternative C1 is lower than all alternatives except for the No Action because no improvements would be made to Runway 9R/27L and the north airfield parallel runway system would operate as a dependent runway system.

The 850-foot separation distance between Runway 9L/27R and the new closely spaced parallel runway north of Runway 9L/27R is not sufficient to allow for simultaneous independent arrival operations to occur to both runways. Additionally, existing Runway 9R/27L cannot accommodate air carrier operations due to its length (5,276 feet) and width (100 feet). Because of the dependent north parallel runway system, Alternative C1 will only provide one runway capable of accommodating air carrier arrivals at a time during peak arrival periods and as a result the

⁴⁶ For a discussion of the operational capacity and delay as assessed in the EIS, see the Final EIS, Chapter Three, *Purpose and Need*, Section 3.3.1.2 *Existing Airfield Capacity*, Section 3.3.1.3 *Level of Delay*, and Appendix F, *Net Benefits Analysis*.

airfield's practical capacity is reduced as compared to all of the other runway development alternatives. Departures on the closely spaced parallel runways would have to be coordinated by FLL Air Traffic Control to meet wake turbulence separation requirements.

Note: The practical capacity of Alternative A is less than the maximum capacity because certain types of aircraft in the forecast fleet and a number of operations will not be able to use existing Runway 9R/27L.

Source: FAA Advisory Circular 150/5600-5 and Landrum & Brown analysis, 2008.

For a more detailed discussion of the hourly capacity estimates and actual demand, see the Final EIS, Appendix F *Net Benefits Analysis*, Section F.4 *Capacity Analysis*.

Because capacity is a function of delay, many airports plan new runways or runway improvements when approaching six minutes of delay. The delay threshold used in this EIS for establishing the runway capacity of FLL is six minutes per operation because it is within the range of the FAA's planning guidance and it is acceptable to the Airport Sponsor. A more detailed discussion of delay is provided in the Final EIS in Chapter Three, *Purpose and Need*, Section 3.3.1.3 *Level of Delay*.

Average minutes of delay was calculated per operation using a queue modeling methodology. Demand, defined in terms of the number of arrivals and departures in five-minute intervals, was modeled against the estimated capacity of each alternative in VFR and IFR weather conditions for both east and west operating flows. See the Final EIS, Appendix F.5, *Demand/Capacity Analysis* and Table F-11 and Table F-12 in Appendix F, *Net Benefit Analysis*. To maintain average delays at the six minutes per operation threshold, there is a need to provide a practical airfield capacity of between 101 and 107 operations per hour.

Airport Property Impacts: The second consideration in the FAA's identification of the preferred alternative was the extent to which an alternative would impact existing airport tenant leaseholds and facilities and the availability of airport property for relocation of facilities and future development.

To identify the tenant leasehold impacts and potential impacts of relocation on availability of existing and future airport property, the FAA prepared a tenant relocation analysis that considered the airport property within the current FLL boundary owned by Broward County.⁴⁷ This analysis identified the airport properties and tenant leasehold facilities that could be directly or indirectly⁴⁸ impacted with the development of an alternative; the potential areas of on-airport

⁴⁷ The EIS analysis focused on the availability of existing on-airport property and tenant leaseholds depicted by the 2004 FLL Leasehold Identification Map and the assumption that in-kind replacements (in terms of gross leasehold displacements) would be offered by Broward County to tenants that would be displaced with each alternative. While some changes have occurred to on airport tenant leasehold areas since the EIS analysis was prepared, the FAA's tenant relocation analysis was conducted based on the information contained in the 2004 FLL Leasehold Identification Map and does not include any additional changes resulting from lease renewals or new leaseholds that may have been approved by Broward County since that time.

⁴⁸ Direct impacts included those tenant facilities that required removal in order to conform to the airfield geometric requirements and/or NAVAID siting criteria. Indirect impacts include tenant facility relocations resulting from airspace encroachments or to allow for a more efficient use of airport property.

property that could accommodate relocated facilities; and was used in the development of a comparative analysis of the projected costs among the various alternatives.⁴⁹

The tenant relocation analysis was based on information provided to the FAA by Broward County in November 2004.⁵⁰ It was presented in the Draft EIS in Chapter Four, *Alternatives*, Section 4.3 *Alternatives to Be Assessed for Environmental Impacts*, and Appendix E, *Airfield Planning Engineering and Constructability Review*.⁵¹

In December 2007, the Airport Sponsor submitted comments to the FAA raising concerns about the potential impact to airport properties and tenant leasehold facilities that could occur with the development of Alternative D2. Broward County's concern was that the "D2 Alternative would result in significant and costly relocation, loss of any future tenant expansion capabilities, complete elimination of any aviation development growth and, when completed in its entirety, create an unbalanced airfield terminal/landside situation."⁵² The FAA considered each of these concerns in the Final EIS. The most important points from FAA's perspective are summarized below.

- *Sponsor states Alternative D2 would result in significant and costly relocation*

The comparative cost estimate for the EIS alternatives was prepared at a planning level of detail and included facility relocation costs.⁵³ The estimated cost of facility relocations addressed in-kind replacement costs (such as utility infrastructure, structure square footage, vehicle and aircraft parking areas).

Other costs associated with facility relocation, such as loss of business revenue or employee costs were not included and would be assessed during design and

⁴⁹ "Facility Relocations" costs for each alternative represent estimated in-kind replacement costs (such as utility infrastructure, structure square footage, vehicle and aircraft parking areas). See the Final EIS, Chapter Four Alternatives, Section 4.4 *Projected Costs*.

⁵⁰ FLL Leasehold Identification Map, Broward County Aviation Department, November, 2004. See the Final EIS, Appendix E *Airfield Planning, Engineering and Constructability Review*, Section E.1.6 *Facility Impacts*, Table E.1-7 *FLL Tenant Leasehold Impact Summary (Non Terminal Impacts)* and Exhibit E.1-11 *Existing Tenant Leasehold Summary*.

⁵¹ In response to the Broward County comments on the Draft EIS, the FAA prepared additional information regarding the potential impacts to airport properties. Using the information compiled from the November 2004 FLL Leasehold Identification Map, more detailed text and exhibits were developed to describe the impacts for all of the runway development alternatives. Revised exhibits illustrated the areas that could accommodate the relocated tenant leasehold facilities that would be impacted due to the airfield and/or terminal development considered by each alternative. This additional information was presented to interested parties at airport meetings in October 2007 and was included in the Final EIS. See the Final EIS, Chapter Four, *Alternatives*, Section 4.3 *Alternatives to Be Assessed for Environmental Analysis*, Appendix E *Airfield Planning, Engineering and Constructability Review*, Section E.1.6 *Facility Impacts*, Exhibits E.1-12-E.1-17; and revised Table E.1-8 *FLL Tenant Facility Relocation Summary (Acres)* provided in this ROD in Appendix C, *Final EIS Errata Documents*.

⁵² Letter from Kent G. George, A.A.E., Director of Aviation, Broward County Aviation Department, Fort Lauderdale-Hollywood International Airport, to Dean Stringer, Manager, FAA Orlando Airports District Office. RE: This letter pertains to Alternative D2 and Broward County's comments on the tenant relocation, future tenant expansion capabilities, and future aviation development growth. Dated: December 7, 2007.

⁵³ See the Final EIS Chapter Four *Alternatives*, Section 4.4 *Projected Costs*, and Appendix E *Airfield Planning, Engineering and Constructability Review* Section E.1.6 *Facility Impacts*.

construction planning.⁵⁴ Therefore, the potential total cost for facility relocations could be higher than the planning level cost estimates used for the EIS comparative analysis of alternatives. Impacts to on airport businesses, including loss of business revenue and employee costs, were not considered as adverse socioeconomic impacts in the Final EIS because, although there could potentially be some disruption, the alternatives did not cause extensive relocation of community businesses that would create severe economic hardship for the affected communities or substantial loss in the community tax base. For all of the alternatives except for D1 and D2 the businesses and employees could be relocated to airport property.

While the north airfield alternatives (C1, D1, and D2) would result in greater in-kind replacement costs for tenant relocations as compared to the south airfield alternatives (B1, B1b/c, and B5), these south airfield alternatives would result in greater costs for airfield construction than the north alternatives in order to elevate the new runway.

The EIS comparative analysis of projected costs takes these various factors into consideration.^{55,56}

- *Sponsor expressed concern that Alternative D2 would result in a loss of any future tenant expansion capabilities*

The EIS analysis also provides information regarding potential future airport development opportunities. With the north airfield alternatives future airport development opportunities would be more limited as compared with the south airfield alternatives.

The EIS analysis took into consideration the potential surplus and deficiencies of airport property that would result from the development of each alternative. The north runway development alternatives would result in less developable airside and non-airside property as compared with the south runway development alternatives. Because an airport should be as self-sustaining as possible in accordance with grant assurances, it is important for an Airport Sponsor to have sufficient land to the extent possible for aeronautical and non-aeronautical development as a means to generate airport revenue.⁵⁷

The EIS analysis provided information regarding impacts to airport property and tenant leasehold facilities with the north airfield alternatives. The north airfield alternatives would result in more impacts to airport property and tenant

⁵⁴ FAA Order 5100.38C *Airport Improvement Program Handbook*, Chapter 5. Airfield Construction and Equipment Projects, Section 10 Miscellaneous, paragraph 593 Purchase, Relocation, or Demolition of Ineligible Facilities, p. 103.

⁵⁵ For example, the FAA's Preferred Alternative (B1b) would result in an estimated \$25.6 million for facility relocations and \$604.8 million in construction costs, as compared to Alternative C1 which would result in \$361.5 million for facility relocations and \$129.9 million in construction costs. See the Final EIS, Chapter Four, Section 4.4 *Projected Costs*.

⁵⁶ Costs associated with the alternatives proposed at FLL include capital investment costs and annual operation and maintenance (O&M) costs. Detailed capital costs were developed for each alternative and include all costs associated with the construction of the proposed alternative. The comparative cost analysis did not include noise mitigation or wetland mitigation costs. See Final EIS Chapter 4, Alternatives Section 4.4 Projected Costs and Appendix F, Net Benefits Analysis Section F.6.2 Project Costs.

⁵⁷ 49 U.S.C. §47101 (a)(13) and Grant Assurance 24.

leasehold facilities than the south airfield alternatives. This has the potential to lessen Broward County's ability to generate aeronautical and non-aeronautical revenue streams at FLL.

- *Sponsor indicates that Alternative D2 would result in the complete elimination of any aviation development growth*

The north airfield alternatives would result in a deficiency of airport property available for future development and would substantially reduce the ability for development and/or expansion at FLL. The Sponsor's Proposed Action would not result in a deficiency of property and would not require acquisition for future development.

- *Sponsor indicates that when fully constructed, Alternative D2 would create an unbalanced airfield terminal/landside situation*

As discussed above, the north runway development alternatives would result in the potential for less developable airside and non-airside property as compared with the south runway development alternatives. This could result in an imbalance between developed airfield facilities and the land available for potential development. Because an airport should be as self-sustaining as possible in accordance with grant assurances, it is important for an Airport Sponsor to have sufficient land to the extent possible for aeronautical and non-aeronautical development as a means to generate airport revenue.⁵⁸

Potential Direct, Secondary (Induced), Environmental, and Cumulative Impacts: In the identification of the FAA's Preferred Alternative (B1b) at FLL, the third consideration was whether the implementation of an alternative would result in significant adverse impacts to an environmental resource category, and if so whether the alternative would meet the requirements under 49 U.S.C. § 47106(c)(1)(C). The Final EIS analysis discloses the potential environmental impacts for the projected conditions in 2012 and 2020; 2012 was the projected earliest implementation year for the runway development alternatives; and 2020 represented the earliest future condition after full implementation of the alternatives with the development of two runways (Alternatives D1 and D2).

* * * * *

The paragraphs below describe each alternative's operational capacity and delay; impacts on existing tenant leasehold facilities and availability of airport property; and, potential direct and secondary environmental and cumulative impacts. The runway development alternatives are compared to the No Action Alternative. Tables 2 and 3 provide a summary comparison in tabular form of each alternative's operational capacity and delay, and environmental impacts. A comparison of impacts on existing tenant leasehold facilities and availability of airport property is provided at Table E.1-8 in Appendix C of this ROD.

- **Table 2 Summary of Alternatives – Net Benefit Analysis**
- **Table 3 Summary of Alternatives – Environmental and Cumulative Impacts**

⁵⁸ 49 U.S.C. §47101 (a)(13) and Grant Assurance 24.

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Table 2
SUMMARY OF ALTERNATIVES - NET BENEFIT ANALYSIS
Fort Lauderdale-Hollywood International Airport

BENEFITS/COSTS	ALTERNATIVE									
	A	B1	B1b	B1c	B4*	B5	C1	D1	D2	
Operational										
Maximum Hourly Capacity Estimate ^{1/} Total Airfield All Weather Average Includes East Flow/West Flow and VFR/IFR ^{2/} conditions	113	107	107	107	107	107	131	128	128	
Practical Hourly Capacity Estimate ^{1/} Total Airfield All Weather Average Includes East Flow/West Flow and VFR/IFR ^{2/} conditions	84	107	107	107	107	107	101	128	128	
2012: Average Minutes of Delay Per Operation ^{3/}	10.7	1.2	1.2	3.9	2.2	1.2	1.9	N/A ^{5/}	N/A ^{5/}	
2012: Benefit Over No Action ^{4/}	N/A	9.5	9.5	6.8	8.5	9.5	8.8	N/A ^{5/}	N/A ^{5/}	
2020: Average Minutes of Delay Per Operation ^{3/}	26.2	3.1	3.1	3.1	4.7	3.1	5.0	1.2	1.5	
2020: Benefit Over No Action ^{4/}	N/A	23.1	23.1	23.1	21.5	23.1	21.2	25.0	24.7	
Costs (Estimates in 2007 Dollars):										
Construction	\$ -	\$ 637,680,200	\$ 641,098,000	\$ 641,098,000	\$ 485,191,000	\$ 610,715,300	\$ 137,694,800	\$ 749,687,200	\$ 607,855,700	
Airfield Design	\$ -	\$ 67,714,300	\$ 67,714,200	\$ 67,714,200	\$ 55,559,100	\$ 56,026,300	\$ 13,769,500	\$ 74,186,400	\$ 68,070,400	
Land Acquisitions & Facility Relocations ^{6/}	\$ -	\$ 101,337,700	\$ 101,337,700	\$ 101,337,700	\$ 37,389,600	\$ 93,410,800	\$ 383,217,700	\$ 473,361,400	\$ 419,639,300	
Total Costs:	\$ -	\$ 806,732,200	\$ 810,149,900	\$ 810,149,900	\$ 578,139,700	\$ 760,152,400	\$ 534,682,000	\$ 1,297,235,000	\$ 1,095,565,400	
Benefit/Cost Ratio ^{7/}										
Evaluation period: 2007 - 2020 ^{8/}	N/A	1.87	1.87	1.66	3.21	1.99	2.95	1.31	2.10	
Evaluation period: 2007 - 2030 ^{8/}	N/A	3.75	3.75	3.42	5.08	3.99	5.08	3.17	4.01	

NOTE:

*/ A sensitivity analysis was prepared for Alternative B4 for 2012 and 2020 conditions to determine the potential affect of pilot refusal to use the 6,001-foot runway. The analysis results, provided in the Final EIS, Appendix F *Net Benefit Analysis*, Table F 19, shows the consequence of potential pilot refusal is an increase in delay from 2.2 to 3.1 minutes per aircraft in 2012. In 2020, the delay increases from 4.7 minutes to 10.2 minutes. See the Final EIS, Appendix F *Net Benefit Analysis*, Section F.6.4 *Alternative B4 Sensitivity Analysis*.

FOOTNOTES

- ^{1/} Maximum capacity presents a condition of balanced arrival and departure demand, arrival peak, and departure peak. Practical capacity takes into consideration actual demand able to use available runways according to the aircraft types and runway length characteristics of each alternative.
- ^{2/} VFR: Visual Flight Rules - Rules and procedures specified in Federal Aviation Regulations Part 91 for aircraft operations under visual conditions (i.e. "good" weather).
IFR: Instrument Flight Rules - Rules and procedures specified in Federal Aviation Regulations Part 91 for aircraft operations during flight in Instrument Meteorological Conditions (i.e. "poor" weather).
- ^{3/} Average minutes of delay was calculated per operation using a queue modeling methodology. Demand, defined in terms of the number of arrivals and departures in five-minute intervals, was modeled against the estimated capacity of each alternative in VFR and IFR weather conditions for both east and west operating flows. See the Final EIS, Appendix F.5 *Demand/Capacity Analysis* and Table F-11 and Table F-12 in Appendix F *Net Benefit Analysis*.
- ^{4/} Benefit over No-Action was computed by subtracting each alternative's delay from the delay resulting from the No Action Alternative.
- ^{5/} Alternatives D1 and D2 would not be fully operational by 2012. In 2012 the noise impacts for Alternative D1 would be the same as Alternative B1b; and for Alternative D2 the noise impacts would be the same as Alternative B4.
- ^{6/} For Alternatives B1, B1b, B1c, B5, and D1 the estimated land acquisition cost includes the full acquisition of the Hilton (former Wyndham) Hotel and the Dania Boat Sales. For Alternatives B4 and D2 the estimated land acquisition cost includes the full acquisition of the Dania Boat Sales. Alternative C1 does not require the acquisition of any land.
- ^{7/} This analysis quantifies the annual costs and benefits of each alternative through the year 2030. The net present value of costs and benefits was calculated and is expressed in 2007 dollars. Net present value of benefits divided by the net present value of costs yields a benefit/cost ratio that can be used to compare the relative benefit of each alternative. A ratio greater than one (1.0) indicates that the benefits yielded by the project outweigh the costs of developing the project.
- ^{8/} Ratio for 2006 - 2020 evaluation period indicates the project's ability to provide a positive return on investment over a shorter period of time (from the end of construction to 2020) while the 2030 ratio (evaluation period of 2006 - 2030) represents the benefits accrued over the life of the project (from the end of construction to 2030). These ratios provide a comparison of projects that differ significantly in terms of cost, time to be fully implemented, benefits in the near term, and ability to deliver benefits in the long-term.

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Table 3
SUMMARY OF ALTERNATIVES - ENVIRONMENTAL AND CUMULATIVE IMPACTS
Fort Lauderdale-Hollywood International Airport

ENVIRONMENTAL CONSEQUENCES	ALTERNATIVE									
	A	B1	B1b	B1c	B4	B5	C1	D1	D2	CUMULATIVE
Air Quality	Impact Would Not Exceed Standards (NAAQS) 1/	Impact Would Not Exceed Standards (NAAQS) 1/	Impact Would Not Exceed Standards (NAAQS) 1/	Impact Would Not Exceed Standards (NAAQS) 1/	Impact Would Not Exceed Standards (NAAQS) 1/	Impact Would Not Exceed Standards (NAAQS) 1/	Impact Would Not Exceed Standards (NAAQS) 1/	Impact Would Not Exceed Standards (NAAQS) 1/	Impact Would Not Exceed Standards (NAAQS) 1/	No Significant Cumulative Impact
Airport Noise Impacts Within 65+DNL										
2012:										
Residential Dwelling Units 2/	13	632	652 4/	118 4/	372	840	28	N/A 5/	N/A 5/	No Significant Cumulative Impact
Population (# of persons)	33	1,538	1,593 4/	285 4/	973	1,928	71	N/A 5/	N/A 5/	
Noise Sensitive Facilities 3/	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	N/A 5/	N/A 5/	
Area of 65 DNL in Square Miles	5.0	5.6	5.6	5.6	5.3	5.6	4.9	N/A	N/A	
2020:										
Residential Dwelling Units 2/	696	1,046	1,051 4/	1,051 4/	477	1,260	285	801	303	
Population (# of persons)	1,772	2,447	2,472 4/	2,472 4/	1,492	4,235	717	1,926	789	
Noise-Sensitive Facilities 3/	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	
Area of 65 DNL in Square Miles	6.0	6.5	6.5	6.5	6.2	6.5	5.5	6.5	6.3	
Compatible Land Use5/	No Direct Impact	Acquire all or part of the Hilton Hotel and the Dania Boat Sales	Acquire all or part of the Hilton Hotel and the Dania Boat Sales	Acquire all or part of the Hilton Hotel and the Dania Boat Sales	Partial acquisition of the Dania Boat Sales warehouse may be necessary	Acquire all of the Hilton Hotel and the Dania Boat Sales	No Direct Impact	Acquire all or part of the Hilton Hotel and the Dania Boat Sales	Partial acquisition of the Dania Boat Sales warehouse may be necessary	No Significant Cumulative Impact
	No Change in Land Use or Zoning	No Change in Land Use or Zoning	No Change in Land Use or Zoning	No Change in Land Use or Zoning	No Change in Land Use or Zoning	No Change in Land Use or Zoning	No Change in Land Use or Zoning	No Change in Land Use or Zoning	No Change in Land Use or Zoning	No Significant Cumulative Impact
Water Quality	Impact Would Not Exceed Standards	Impact Would Not Exceed Standards	Impact Would Not Exceed Standards	Impact Would Not Exceed Standards	Impact Would Not Exceed Standards	Impact Would Not Exceed Standards	Impact Would Not Exceed Standards	Impact Would Not Exceed Standards	Impact Would Not Exceed Standards	No Significant Cumulative Impact
Wetlands	No Impact	Direct Impact to 15.17 acres	Direct Impact to 15.41 acres	Direct Impact to 15.41 acres	Direct Impact to 0.13 acres	Direct Impact to 21.67 acres	Direct Impact to 15.40 acres	Direct Impact to 21.87 acres	Direct Impact to 15.54 acres	No Significant Cumulative Impact
Floodplains	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Cumulative Impact
Coastal Resources	Consistent with FCMP 6/	Consistent with FCMP 6/	Consistent with FCMP 6/	Consistent with FCMP 6/	Consistent with FCMP 6/	Consistent with FCMP 6/	Consistent with FCMP 6/	Consistent with FCMP 6/	Consistent with FCMP 6/	No Significant Cumulative Impact
Fish, Wildlife, & Plants										
<i>Federally-Listed Species & Critical Habitats</i>										
West Indian Manatee	No Impact	May affect, but not likely to adversely affect	May affect, but not likely to adversely affect	May affect, but not likely to adversely affect	May affect, but not likely to adversely affect	May affect, but not likely to adversely affect	No Impact	May affect, but not likely to adversely affect	May affect, but not likely to adversely affect	No Significant Cumulative Affect
Wood Stork	No Impact	May affect, but not likely to adversely affect	May affect, but not likely to adversely affect	May affect, but not likely to adversely affect	May affect, but not likely to adversely affect	May affect, but not likely to adversely affect	May affect, but not likely to adversely affect	May affect, but not likely to adversely affect	May affect, but not likely to adversely affect	No Significant Cumulative Affect
Smalltooth Sawfish	No Impact	May affect, but not likely to adversely affect	May affect, but not likely to adversely affect	May affect, but not likely to adversely affect	No Impact	May affect, but not likely to adversely affect	No Impact	May affect, but not likely to adversely affect	No Impact	No Significant Cumulative Affect
Johnson's Seagrass	No Impact	No Impact	No Impact	No Impact	No Impact	May affect, but not likely to adversely affect	No Impact	No Impact	No Impact	No Significant Cumulative Affect
<i>State-Listed Species</i>	No Impact	Surveys for Florida Burrowing Owl would be conducted prior to initiating construction	Surveys for Florida Burrowing Owl would be conducted prior to initiating construction	Surveys for Florida Burrowing Owl would be conducted prior to initiating construction	Surveys for Florida Burrowing Owl would be conducted prior to initiating construction	Surveys for Florida Burrowing Owl would be conducted prior to initiating construction	Surveys for Florida Burrowing Owl would be conducted prior to initiating construction	Surveys for Florida Burrowing Owl would be conducted prior to initiating construction	Surveys for Florida Burrowing Owl would be conducted prior to initiating construction	No Significant Cumulative Affect
<i>Essential Fish Habitat</i>	No Impact	No Significant Affect	No Significant Affect	No Significant Affect	No Significant Affect	No Significant Affect	No Significant Affect	No Significant Affect	No Significant Affect	No Significant Cumulative Affect
Hazardous Materials	No Impact	Minimal Impact	Minimal Impact	Minimal Impact	Minimal Impact	Minimal Impact	Minimal Impact	Minimal Impact	Minimal Impact	No Significant Cumulative Impact
Solid Waste	No Significant Increase	No Significant Increase	No Significant Increase	No Significant Increase	No Significant Increase	No Significant Increase	No Significant Increase	No Significant Increase	No Significant Increase	No Significant Cumulative Increase
Socioeconomic, Environmental Justice, & Childrens' Health & Safety	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Cumulative Impact
Secondary (Induced) and Infrastructure										
<i>Surface Transportation</i>	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Cumulative Impact
<i>Economic Impact: Final Demand Employment Associated with Construction Spending for All Industries in Region</i>	Not applicable due to no construction activity	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive Cumulative Economic Impact
<i>Public Services</i>	No Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Cumulative Impact
Light Emissions & Visual Impacts	No Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Cumulative Impact
Natural Resources and Energy	No Adverse Affect	No Adverse Affect	No Adverse Affect	No Adverse Affect	No Adverse Affect	No Adverse Affect	No Adverse Affect	No Adverse Affect	No Adverse Affect	No Adverse Cumulative Affect
Construction										
<i>Noise</i>	No Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	No Adverse Cumulative Affect
<i>Air Quality</i>	No Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	No Adverse Cumulative Affect
<i>Water Quality</i>	No Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	No Adverse Cumulative Affect
<i>Surface Transportation</i>	No Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	No Adverse Cumulative Affect

Table 3
SUMMARY OF ALTERNATIVES - ENVIRONMENTAL AND CUMULATIVE IMPACTS
Fort Lauderdale-Hollywood International Airport

FOOTNOTES

1/ NAAQS: National Ambient Air Quality Standards, established by the U.S. Environmental Protection Agency

2/ Includes single-family homes, multi-family units, and mobile homes.

3/ Includes schools, churches, nursing homes, and libraries

Alternative B1b, the FAA's Preferred Alternative (B1b), has the same physical alignment, design and configuration as Alternative B1c, the Airport Sponsor's Proposed Action. However, Alternative B1c considers the implementation of the operational noise abatement actions described in the County's Airfield

4/ Development Program Objective Statement (October 26, 2004), which would limit the use of Runway 9R/27L in 2012. As a matter of policy, the FAA will not consider the approval of a runway development project with noise abatement runway use procedures that would limit its capacity in the opening year without a study of alternative noise abatement measures such as required under 14 CFR Part 150. The FAA's Preferred Alternative (B1b) does not include any operational noise abatement actions that would limit the use of Runway 9R/27L. Broward County has interpreted that the operational noise abatement

5/ For Compatible Land Use, the runway development alternatives were examined to determine whether the proposed airport improvements would result in the acquisition or taking of a property, and/or require a change in land use/zoning.

6/ FCMP: Florida Coastal Management Program

Source: Landrum & Brown, 2008

* * * * *

Alternative A (No Action): In terms of all weather hourly averages, Alternative A would provide a practical capacity of 84 operations apart from its maximum capacity of 113 operations. Alternative A would have 10.7 average minutes of delay per operation in 2012; and 26.2 average minutes of delay per operation in 2020.

Based on the EIS tenant relocation analysis, the airport contains an estimated 363 acres of property and tenant leasehold facilities⁵⁹ outside of the central terminal complex. There would be no displacement of facilities with the No Action alternative. There would be 234.9 acres of airport land available for future development, including 83.9 acres available for future airside development.⁶⁰ The 234.9 acres includes available airport property west of I-95.

Alternative A would exceed the 24-hour PM2.5 National Ambient Air Quality Standard (NAAQS) in 2012 and 2020. Alternative A would not exceed the NAAQS for any other criteria pollutants in 2012 and 2020. In terms of noise exposure for 2012, there would be 13 residential dwelling units with a total population of 33 within the 65 Day-Night Average Sound Level (DNL) noise contour. No noise-sensitive public facilities (i.e. churches, schools, hospitals, nursing homes, libraries) are located within the 65 DNL noise contour in 2012. In terms of noise exposure for 2020, there would be 696 residential dwelling units with a total population of 1,772 within the 65 DNL noise contour. No noise-sensitive public facilities are located within the 65 DNL noise contour in 2020. Because there is no development or construction, no off-airport property would be acquired; and there would be no changes to land use planning and zoning.

No historic properties or archaeological sites would be affected. There would be no impact to Section 4(f) or Section 6(f) resources. Water quality standards would not be exceeded. There would be no impact to wetlands. There would be no significant impact to floodplains. This alternative would be consistent with the Florida Coastal Management Program. There would be no impacts to federally-listed species and critical habitats. There would be no impact to state-listed species. There would be no impact to essential fish habitat. There are no wild and scenic rivers or farmlands in the Study Area, therefore, there are no impacts under the No Action or any of the development alternatives.

There would be no impact to areas of known hazardous waste contamination. There would be no significant increase in solid waste. Land acquisition would not be necessary; therefore, there would be no residential or business relocations, no change to local traffic patterns, and no loss in community tax base.

⁵⁹ See the Final EIS Appendix E, Table E.1-7 FLL *Tenant Leasehold Impact Summary (Non-Terminal Impacts)* for a list of these airport and tenant facilities and Exhibit E.1-11 *Existing Tenant Leasehold Summary*. These facilities include general aviation (GA) and fixed base operators (FBO), cargo/warehouse facilities, office buildings, parking facilities, Broward County facilities, and vacant undeveloped airport property. The 363.3 acres are located on airport property east of Interstate 95.

⁶⁰ See this ROD, Appendix C, revised Table E.1-8 *Tenant Facility Relocation Summary (acres)*, Alternative A.

There would be no disproportionate impact to minority or low-income communities and no effects on children's health and safety. For secondary induced impacts, there would be no impact to surface transportation infrastructure, no economic affect due to construction spending and activities, and no impact on public services. There would be no visual impact due to light emissions. There would be no adverse affect on energy supply/natural resources. There would be no construction impact.

Alternative A would not result in any significant direct, indirect, or cumulative impacts or affects for any of the environmental impact categories, except for air quality.

Alternative B1: r edevelop a nd e xtend exist ing R unway 9R/27L to an 8,600-foot by 150-foot elevated r unway. Alternative B1 would improve capacity and reduce delays in comparison to Alternative A. Alternative B1 would provide a maximum and practical all weather average hourly capacity of 107 operations. Alternative B1 would have 1.2 average minutes of delay per operation in 2012; and 3.1 average minutes of delay per operation in 2020.

Based on the EIS tenant relocation analysis, the airport contains an estimated 363 acres of property and tenant leasehold facilities⁶¹ outside of the central terminal complex. The Alternative B1 airfield configuration would displace 18.6 acres (five percent) of these existing facilities. After development of the new runway and associated facilities, there would be 134.6 acres of airport land available for future facility development, including 39.4 acres available for future airside development.⁶²

Alternative B1 would improve air quality in comparison to Alternative A, the No Action Alternative. Although emissions of certain pollutants would increase temporarily during construction, Alternative B1 would not cause exceedances of the NAAQS. The concentrations of the criteria pollutants under Alternative B1 would be less than those under the No Action Alternative for both 2012 and 2020. In terms of noise exposure for 2012, there would be 632 residential dwelling units with a total population of 1,538 within the 65 DNL noise contour. No noise-sensitive public facilities (i.e. churches, schools, hospitals, nursing homes, libraries) are located within the 65 DNL noise contour in 2012. In terms of noise exposure for 2020, there would be 1,046 residential dwelling units with a total population of 2,447 within the 65 DNL noise contour. No noise-sensitive public facilities are located within the 65 DNL noise contour in 2020. There would be off-airport property impacts due to the required acquisition of all or a portion of the Hilton (formerly the Wyndham) Fort Lauderdale Airport Hotel and the Dania Boat Sales. This alternative would not require a land use or zoning change and would be consistent with current local land use and zoning documents.

⁶¹ See the Final EIS Appendix E, Table E.1-7 FLL *Tenant Leasehold Impact Summary (Non-Terminal Impacts)* for a list of these airport and tenant facilities and Exhibit E.1-11 *Existing Tenant Leasehold Summary*. These facilities include general aviation (GA) and fixed base operators (FBO), cargo/warehouse facilities, office buildings, parking facilities, Broward County facilities, and vacant undeveloped airport property.

⁶² See this ROD, Appendix C, revised Table E.1-8 *Tenant Facility Relocation Summary (acres)*, Alternative B1.

No historic properties or archaeological sites would be affected. There would be no impact to Section 4(f) or Section 6(f) resources. Water quality standards would not be exceeded. There would be 15.17 acres of impacts to wetlands; this includes 2.81 acres of mangrove wetlands.⁶³ There would be no significant impact to floodplains. This alternative would be consistent with the Florida Coastal Management Program. There are no wild and scenic rivers or farmlands in the Study Area, therefore, there are no impacts. This alternative "may affect but is not likely to adversely affect" three federally-listed species: the West Indian Manatee, the wood stork, and the smalltooth sawfish. Surveys for one state-listed species, the Florida Burrowing Owl, would be conducted prior to initiating construction activities. There would be no significant affect to essential fish habitat.

There would be minimal impact to areas of known hazardous waste contamination. There would be no significant increase in solid waste. The acquisition of all or a portion of the Hilton (formerly the Wyndham) Fort Lauderdale Airport Hotel and the

Dania Boat Sales properties would be required. No residential land acquisition would be necessary. There would be no significant impact to local traffic patterns, and no significant loss in community tax base.

There would be no disproportionate impact to minority or low-income communities and no effects on children's health and safety. For secondary induced impacts, there would be no significant impact to surface transportation infrastructure, a positive economic affect due to construction spending and activities, and no significant impact on public services. There would be no significant visual impact due to light emissions. There would be no adverse affect on energy supply/natural resources. There would be temporary construction impacts.

Alternative B1 would not result in any significant direct, indirect, or cumulative impacts for any of the environmental impact categories.

Alternative B1b (FAA's Preferred Alternative): redevelop and extend existing Runway 9R/27L to an 8,000-foot by 150-foot elevated runway with EMAS (see Exhibit 1 *FAA's Preferred Alternative (B1b)*). Alternative B1b would provide the same operational and delay benefits as Alternative B1. Alternative B1b would provide a maximum and practical all weather average hourly capacity of 107 operations. It would have 1.2 average minutes of delay per operation in 2012; and 3.1 average minutes of delay per operation in 2020.

Based on the EIS tenant relocation analysis, the airport contains an estimated 363 acres of airport properties and tenant leasehold facilities⁶⁴ outside of the central terminal complex. The Alternative B1b airfield configuration would displace

⁶³ Mangrove wetlands are considered to be a higher quality wetland, and therefore, are identified and considered independently of total wetland acreage.

⁶⁴ See the Final EIS Appendix E, Table E.1-7 *FLL Tenant Leasehold Impact Summary (Non-Terminal Impacts)* for a list of these airport and tenant facilities and Exhibit E.1-11 *Existing Tenant Leasehold Summary*. These facilities include general aviation (GA) and fixed base operators (FBO), cargo/warehouse facilities, office buildings, parking facilities, Broward County facilities, and vacant undeveloped airport property.

the same percentage of existing facilities and, after development of the new runway and associated facilities, would have the same acreage of land available, including land for airside development, as Alternative B1.⁶⁵

Alternative B1b would have slightly different noise and wetland impacts than Alternative B1. In terms of noise exposure for 2012, there would be 652 residential dwelling units with a total population of 1,593 within the 65 DNL noise contour. No noise-sensitive public facilities (i.e. churches, schools, hospitals, nursing homes, libraries) are located within the 65 DNL noise contour in 2012. In terms of noise exposure for 2020, there would be 1,051 residential dwelling units with a total population of 2,472 within the 65 DNL noise contour. No noise-sensitive public facilities are located within the 65 DNL noise contour in 2020.

There would be 15.41 acres of impacts to wetlands; this includes 3.05 acres of mangrove wetlands.⁶⁶ However, air quality, off-airport property impacts due to acquisition, land use and zoning, historic and archeological, Section 4(f) and 6(f) resource, water quality, floodplain, coastal zone, federally and state-listed species, essential fish habitat, hazardous waste, solid waste, land acquisition, local traffic patterns, community tax base, environmental justice, children's health and safety, surface transportation infrastructure, economic affects, public services, visual and light emission, energy supply/natural resources, and temporary construction impacts for Alternative B1b are like those of Alternative B1. As noted above, there are no wild and scenic rivers or farmlands in the Study Area, therefore, there are no impacts. Alternative B1b would not result in any significant direct, indirect, or cumulative impacts for any of the environmental impact categories.

Alternative B1c (Airport Sponsor's Proposed Action): Redevelop and extend existing R runway 9R/27L to an 8,000-foot by 150-foot elevated runway with EMAS; includes the implementation of the operational noise abatement actions in 2012. Broward County has interpreted that the operational noise abatement actions would no longer be in place by 2020.⁶⁷

Alternative B1c provides the same operational and delay benefits as B1 and B1b except that average minutes of delay in 2012 are higher due to the imposed runway use limitations required by the Airport Sponsor for this alternative. Alternative B1c would provide a maximum and practical all weather average hourly capacity of 107 operations. Alternative B1c would have 3.9 average minutes of delay per operation in 2012; and 3.1 average minutes of delay per operation in 2020.

⁶⁵ See this ROD, Appendix C, revised Table E.1-8 *Tenant Facility Relocation Summary (acres)*, Alternative B1b/B1c.

⁶⁶ The installation of the runway approach lights and associated access roads would impact 0.20 acres of W-25a and 0.18 acres to W-25b for Alternative B1b while Alternative B1 only impacts 0.14 acres of W-25a.

⁶⁷ Memorandum from Max Wolfe/Eric Bernhardt, Leigh Fisher Associates (now Jacobs Consultancy), to Virginia Lane, AICP, Environmental Specialist, Federal Aviation Administration. Subject: Sponsor's Proposed Project Operational Assumptions. Dated: August 22, 2006/Revised: August 24, 2006.

Based on the EIS tenant relocation analysis, the airport contains an estimated 363 acres of airport properties and tenant leasehold facilities⁶⁸ outside of the central terminal complex. The Alternative B1c airfield configuration would have identical impacts to Alternatives B1 and B1b in this area.⁶⁹

Alternative B1c includes short term runway use limitations that would result in fewer significant noise impacts than Alternatives B1 and B1b in 2012. However, its noise impacts in 2020 and other environmental impacts are otherwise identical to those of Alternative B1b. In terms of noise exposure for 2012, there would be 118 residential dwelling units with a total population of 285 within the 65 DNL noise contour. No noise-sensitive public facilities (i.e. churches, schools, hospitals, nursing homes, libraries) are located within the 65 DNL noise contour in 2012.

Alternative B1c would not result in any significant direct, indirect, or cumulative impacts for any of the environmental impact categories.

Alternative B4: Build a new 6,001-foot at grade runway with EMAS located 340 feet north of existing south runway (to replace existing R runway 9R/27L). Runway 13/31 would remain open. Like Alternatives B1, B1b, and B1c, Alternative B4 would provide a maximum and practical all weather average hourly capacity of 107 operations. Alternative B4 would have 2.2 average minutes of delay per operation in 2012; and 4.7 average minutes of delay per operation in 2020. However, Alternative B4 is the only alternative whose relatively short runway length could cause airlines and pilots to decide to wait to use the longer runway "pilot refusals", rather than accept a "payload penalty."⁷⁰

FAA conducted additional delay analysis for this alternative in response to comments from the Airport Sponsor and airlines about the 6,001-foot runway length. During the EIS process, the Airport Sponsor and several airlines that operate at FLL raised concerns^{71,72} about the length of the Alternative B4 runway

⁶⁸ See the Final EIS Appendix E, Table E.1-7 FLL *Tenant Leasehold Impact Summary (Non-Terminal Impacts)* for a list of these airport and tenant facilities and Exhibit E.1-11 *Existing Tenant Leasehold Summary*. These facilities include general aviation (GA) and fixed base operators (FBO), cargo/warehouse facilities, office buildings, parking facilities, Broward County facilities, and vacant undeveloped airport property.

⁶⁹ See this ROD, Appendix C, revised Table E.1-8 *Tenant Facility Relocation Summary (acres)*, Alternative B1b/B1c.

⁷⁰ Pilot refusals refer to when the pilot in command of an aircraft requests from Air Traffic Control to use a different runway than the one assigned by Air Traffic Control. Payload penalty refers to when an aircraft must reduce the number of passengers, cargo, or fuel that it carries in order to not exceed the maximum weight allowed to take off from a specific runway length. A reduction of passengers or cargo results in reduced revenues. A reduction in fuel results in less distance flown, thus it results in limitations on the markets that can be reached. See Appendix F, *Net Benefits Analysis* Section F.6.4 *Alternative B4 Sensitivity Analysis*.

⁷¹ During the EIS process Broward County raised concerns with the length of the runway in Alternative B4 and the potential necessity for payload penalties on aircraft operations. Therefore, the FAA conducted a sensitivity analysis on Alternative B4 to determine the impact estimated pilot refusals, caused by potential payload penalties, would have on delay. The FAA also received comments on the Draft EIS from several airlines expressing this concern with Alternative B4.

⁷² "SWA does not support Option B4 since it is the shortest extension scenario and will not provide any payload benefit." Email to Virginia Lane, FAA Orlando Airports District Office, From: Craig Aldinger, Flight Operations Engineer, Southwest Airlines, Co. Dated: May 1, 2007. (See the Final EIS, Appendix P, Comment Code: EC015).

"Delta strongly opposes the B4 alternative as its length combined with significant obstructions will greatly restrict operating capacity, thus, receiving only a small percentage of utilization by Delta

and the potential necessity for payload penalties on aircraft operations. Therefore, the FAA conducted a sensitivity analysis on Alternative B4 operations to determine the impact on delay of potential pilot refusals.

A sensitivity analysis was conducted for Alternative B4 for 2012 and 2020 conditions to determine the potential effect of pilot refusal to use the 6,001-foot runway. The sensitivity analysis assumed that approximately 48 departures (in 2012) and 81 departures (in 2020) going to long-haul destinations, defined as destinations that are 1,000 miles or more from FLL would have to take a payload penalty to use the shorter 6,001-foot south runway. The payload penalty would translate into a reduction of passengers and cargo on these flights. To avoid reducing passengers and cargo, pilots would elect to request the longer Runway 9L/27R for departure. Therefore, the sensitivity analysis assigned 48 departures (in 2012) and 81 departures (in 2020) to the longer north runway to avoid reducing payload. Some flights were reassigned from the north runway to the south runway to avoid an imbalance in runway use due to this assumption. The analysis results, provided in the Final EIS, Appendix F *Net Benefit Analysis*, Table F-19, shows the consequence of potential pilot refusal is an increase in delay from 2.2 to 3.1 minutes per aircraft in 2012. In 2020, the delay increases from 4.7 minutes to 10.2 minutes.⁷³ See the Final EIS, Appendix F *Net Benefit Analysis*, Section F.6.4 *Alternative B4 Sensitivity Analysis*.

Based on the EIS tenant relocation analysis, the airport contains an estimated 363 acres of airport properties and tenant leasehold facilities⁷⁴ outside of the central terminal complex. Although the Alternative B4 airfield configuration would displace more facilities than the B1, B1b, and B1c alternatives, there would be more airport property available for future development. It would displace 27.6 acres (eight percent) of the existing facilities but after development of the new runway and associated facilities, there would be 199 acres of airport land available for future facility development, including 65.9 acres available for airside development.⁷⁵

Alternative B4 would have fewer noise impacts in 2012 than Alternatives B1 and B1b, but not Alternative B1c. It would have fewer noise impacts than Alternative B1c in 2020. The impacts of Alternative B4 would be less than Alternatives B1, B1b, and B1c in three other impact categories: off-airport property impacts due to

Air Lines." Letter to Virginia Lane, FAA Orlando Airports District Office, From: D. Carlos Phillips, Engineer-Technical Development Flight Operations Engineering, Delta Air Lines, Inc. Dated: May 1, 2007. (See the Final EIS, Appendix P, Comment Code: EC017).

"While the 6,000 foot runway, 9R/27L is adequate for our mainline aircraft, it would not be the preferred option within our pilot group." Letter to Virginia Lane, FAA Orlando Airports District Office, From: Chuck Allen, Director-Corporate Affairs, US Airways. Dated: May 21, 2007. (See the Final EIS, Appendix P, Comment Code: LC102)

⁷³ Even a conservative pilot refusal rate of 80 departures per day would result in delay over 10 minutes by 2020 according to the sensitivity analysis. See the Final EIS Appendix F *Net Benefits Analysis*, Section F.6.4 *Alternative B4 Sensitivity Analysis*.

⁷⁴ See the Final EIS Appendix E, Table E.1-7 *FLL Tenant Leasehold Impact Summary (Non-Terminal Impacts)* for a list of these airport and tenant facilities and Exhibit E.1-11 *Existing Tenant Leasehold Summary*. These facilities include general aviation (GA) and fixed base operators (FBO), cargo/warehouse facilities, office buildings, parking facilities, Broward County facilities, and vacant undeveloped airport property.

⁷⁵ See this ROD, Appendix C, revised Table E.1-8 *Tenant Facility Relocation Summary (acres)*, Alternative B4.

acquisition, wetlands, and federally-listed species. In terms of noise exposure for 2012, there would be 372 residential dwelling units with a total population of 973 within the 65 DNL noise contour. No noise-sensitive public facilities (i.e. churches, schools, hospitals, nursing homes, libraries) are located within the 65 DNL noise contour in 2012. In terms of noise exposure for 2020, there would be 477 residential dwelling units with a total population of 1,492 within the 65 DNL noise contour. No noise-sensitive public facilities are located within the 65 DNL noise contour in 2020. There would be off-airport property impacts if the partial acquisition of the Dania Boat Sales is necessary.

There would be 0.13 acres of impacts to wetlands; all of which are mangrove wetlands. This alternative "may affect but is not likely to adversely affect" two federally-listed species; the West Indian Manatee and the wood stork.

Environmental impacts of Alternative B4 would otherwise be similar to those of Alternatives B1, B1b, and B1c. Alternative B4 would not result in any significant direct, indirect, or cumulative impacts for any of the environmental impact categories.

Alternative B5: build a 7,800-foot elevated runway with E MAS located 320 feet south of existing runway (to replace existing Runway 9R/27L). Like Alternatives B1, B1b, B1c, and B4, Alternative B5 would provide a maximum and practical all weather average hourly capacity of 107 operations. It would have 1.2 average minutes of delay per operation in 2012; and 3.1 average minutes of delay per operation in 2020.

Based on the EIS tenant relocation analysis, the airport contains an estimated 363 acres of airport properties and tenant leasehold facilities⁷⁶ outside of the central terminal complex. The Alternative B5 airfield configuration would displace slightly fewer facilities and leave more property available for airside development than Alternatives B1, B1b and B1c. It would displace 15.4 acres (four percent) of the existing facilities. After development of the new runway and associated facilities, there would be 98.9 acres of airport land available for future facility development, including 42.6 acres available for airside development.⁷⁷

Alternative B5 would have environmental impacts similar to those of Alternatives B1, B1b, and B1c, except in the areas of noise, wetlands, federally-listed species, and off airport property impacts. Impacts for these categories would be greater with Alternative B5. In terms of noise exposure for 2012, there would be 840 residential dwelling units with a total population of 1,928 within the 65 DNL noise contour. No noise-sensitive public facilities (i.e. churches, schools, hospitals, nursing homes, libraries) are located within the 65 DNL noise contour in 2012. In terms of noise exposure for 2020, there would be 1,260 residential dwelling units with a total population of 4,235 within the 65 DNL noise contour. No noise-

⁷⁶ See the Final EIS Appendix E, Table E.1-7 FLL *Tenant Leasehold Impact Summary (Non-Terminal Impacts)* for a list of these airport and tenant facilities and Exhibit E.1-11 *Existing Tenant Leasehold Summary*. These facilities include general aviation (GA) and fixed base operators (FBO), cargo/warehouse facilities, office buildings, parking facilities, Broward County facilities, and vacant undeveloped airport property.

⁷⁷ See this ROD, Appendix C, revised Table E.1-8 *Tenant Facility Relocation Summary (acres)*, Alternative B5.

sensitive public facilities are located within the 65 DNL noise contour in 2020. There would be 21.67 acres of impacts to wetlands; this includes 2.85 acres of mangrove wetlands. There would be no significant impact to floodplains. This alternative "may affect but is not likely to adversely affect" four federally-listed species: the West Indian Manatee, the wood stork, the smalltooth sawfish, and Johnson's Seagrass.

The acquisition of all of the Hilton (formerly the Wyndham) Fort Lauderdale Airport Hotel and the Dania Boat Sales properties would be required. Alternative B5 would not result in any significant direct, indirect, or cumulative impacts for any of the environmental impact categories.

Alternative C1: Build a 7,721-foot at grade runway located 850 feet north of existing Runway 9L/27R (a dependent parallel runway to existing Runway 9L/27R). Like Alternative A, Alternative C1 has a practical all weather average hourly capacity much lower than its maximum all weather average hourly capacity. Alternative C1 would provide a practical hourly capacity of 101 operations in comparison to a maximum capacity of 131 operations because no improvements would be made to Runway 9R/27L and the north airfield parallel runway system would operate as a dependent runway system. Alternative C1 would have 1.9 average minutes of delay per operation in 2012; and 5.0 average minutes of delay per operation in 2020. Other than Alternative A and Alternative B4, Alternative C1 has the highest level of delay in 2020.

Based on the EIS tenant relocation analysis, the airport contains an estimated 363 acres of airport properties and tenant leasehold facilities⁷⁸ outside of the central terminal complex. The Alternative C1 airfield configuration would displace almost three-quarters of the existing tenant leasehold acreage, leaving a little more than half the amount of land available for future development under Alternatives B1, B1b, and B1c, including approximately one-fifth the amount available for airside development under these alternatives. It would displace 261.5 acres (72 percent) of these existing facilities. After development of the new runway and associated facilities, there would be 71.9 acres of airport land available for future facility development, including 8.2 acres available for airside development.⁷⁹

The environmental impacts of Alternative C1 would be similar to those of Alternatives B1, B1b, and B1c, except for noise, off-airport property impacts, wetlands, and federally-listed species. Impacts for these categories would be significantly less with Alternative C1 than with Alternative B1, B1b, and B1c. In terms of noise exposure for 2012, there would be 28 residential dwelling units with a total population of 71 within the 65 DNL noise contour. No noise-sensitive public facilities (i.e. churches, schools, hospitals, nursing homes, libraries) are located within the 65 DNL noise contour in 2012. In terms of noise exposure for 2020, there would be 285 residential dwelling units with a total population of

⁷⁸ See the Final EIS Appendix E, Table E.1-7 FLL *Tenant Leasehold Impact Summary (Non-Terminal Impacts)* for a list of these airport and tenant facilities and Exhibit E.1-11 *Existing Tenant Leasehold Summary*. These facilities include general aviation (GA) and fixed base operators (FBO), cargo/warehouse facilities, office buildings, parking facilities, Broward County facilities, and vacant undeveloped airport property.

⁷⁹ See this ROD, Appendix C, revised Table E.1-8 *Tenant Facility Relocation Summary (acres)*, Alternative C1.

717 within the 65 DNL noise contour. No-noise-sensitive public facilities are located within the 65 DNL noise contour in 2020. The development and construction of Alternative C1 would not cause any off-airport property impacts because the airport sponsor would not need to acquire any land from off-airport businesses.

There would be 15.40 acres of impacts to wetlands;⁸⁰ no mangrove wetlands would be impacted. This alternative “may affect but is not likely to adversely affect” one federally-listed species, the wood stork.

Alternative C1 would not result in any significant direct, indirect, or cumulative impacts for any of the environmental impact categories.

Alternative D1: redevelop and extend existing Runway 9R/27L to 8,000 feet and build a new 7,721-foot runway north of existing Runway 9L/27R (combination of Alternatives B1b and C1). Alternative D1 would provide substantially greater maximum and practical all weather average hourly capacity of 128 operations, compared to all other alternatives, except for Alternative D2. Alternative D1 would have the same average minutes of delay per operation as Alternative B1, B1b, and B5 in 2012 – 1.2 average minutes of delay per operation; this alternative would not be fully operational in 2012. In 2020, Alternative D1 would have fewer minutes of delay than any other alternative, 1.2 average minutes of delay per operation.

Based on the EIS tenant relocation analysis, the airport contains an estimated 363 acres of airport properties and tenant leasehold facilities⁸¹ outside of the central terminal complex. Like Alternative C1, the Alternative D1 airfield configuration would displace approximately three-quarters of existing facilities. It would displace 269.8 acres (74 percent) of these existing facilities. After development of the new runway and associated facilities, there would be a deficit of 32.8 acres of airport land available for future facility development.⁸² D1 would result in a deficiency of 32.4 acres of airport property available for existing airside tenants (accessible by aircraft).

This alternative would not be fully operational by 2012; the 2012 noise impacts to residential dwelling units would be the same as Alternative B1b. In terms of noise exposure for 2012, there would be 652 residential dwelling units with a total population of 1,593 within the 65 DNL noise contour. No noise-sensitive public facilities (i.e. churches, schools, hospitals, nursing homes, libraries) are located within the 65 DNL noise contour in 2012. In terms of noise exposure for 2020, there would be 801 residential dwelling units with a total population of 1,926 within the 65 DNL noise contour. No noise-sensitive public facilities are located within the 65 DNL noise contour in 2020.

⁸⁰ The 15.40 acres of impacts to wetlands are due to airport and tenant facility relocations. It may be possible, with further planning, design, and engineering, that these relocated facilities could be relocated on airport property to avoid impacts to wetlands.

⁸¹ See the Final EIS Appendix E, Table E.1-7 FLL *Tenant Leasehold Impact Summary (Non-Terminal Impacts)* for a list of these airport and tenant facilities and Exhibit E.1-11 *Existing Tenant Leasehold Summary*. These facilities include general aviation (GA) and fixed base operators (FBO), cargo/warehouse facilities, office buildings, parking facilities, Broward County facilities, and vacant undeveloped airport property.

⁸² See this ROD, Appendix C, revised Table E.1-8 *Tenant Facility Relocation Summary (acres)*, Alternative D1

There would be 21.87 acres of impacts to wetlands; this includes 3.05 acres of mangrove wetlands. The remaining environmental impacts would be essentially the same as those of Alternatives B1 and B1b.

Alternative D1 would not result in any significant direct, indirect, or cumulative impacts for any of the environmental impact categories.

Alternative D2: build a new 6,001-foot at grade runway with EMAS located 340 feet north of existing south runway and build a 7,721-foot at grade runway located 850 feet north of existing Runway 9L/27R (combination of Alternatives B4 and C1). Alternative D2 would provide the same operational capacity benefits as Alternative D1; maximum and practical all weather average hourly capacity of 128 operations. Alternative D2 would have the same average minutes of delay per operation as Alternative B4 in 2012 – 2.2 average minutes of delay per operation; this alternative would not be fully operational in 2012. In 2020, Alternative D2 would have 1.5 average minutes of delay per operation.

Based on the EIS tenant relocation analysis, the airport contains an estimated 363 acres of airport properties and tenant leasehold facilities⁸³ outside of the central terminal complex. The Alternative D2 airfield configuration would displace slightly more facilities than Alternative D1; 280.5 acres (77 percent) of existing facilities. After development of the new runway and associated facilities, there would be 35.8 acres of non-airside property available for future development, however, there is a deficit of 8.2 acres of airport property available for existing airside access by aircraft.⁸⁴

This alternative would not be fully operational by 2012; therefore the 2012 noise impacts to residential dwelling units would be the same as Alternative B4. In terms of noise exposure for 2012, there would be 372 residential dwelling units with a total population of 973 within the 65 DNL noise contour. No noise-sensitive public facilities (i.e. churches, schools, hospitals, nursing homes, libraries) are located within the 65 DNL noise contour in 2012. In terms of noise exposure for 2020, there would be 303 residential dwelling units with a total population of 789 within the 65 DNL noise contour. No noise-sensitive public facilities are located within the 65 DNL noise contour in 2020.

There would be 15.54 acres of impacts to wetlands; this includes 0.14 acres of mangrove wetlands. Except for noise and wetlands discussed above, the environmental impacts of Alternative D2 would be like those of Alternative B4.

Alternative D2 would not result in any significant direct, indirect, or cumulative impacts for any of the environmental impact categories.

⁸³ See the Final EIS Appendix E, Table E.1-7 FLL *Tenant Leasehold Impact Summary (Non-Terminal Impacts)* for a list of these airport and tenant facilities and Exhibit E.1-11 *Existing Tenant Leasehold Summary*. These facilities include general aviation (GA) and fixed base operators (FBO), cargo/warehouse facilities, office buildings, parking facilities, Broward County facilities, and vacant undeveloped airport property.

⁸⁴ See this ROD, Appendix C, revised Table E.1-8 *Tenant Facility Relocation Summary (acres)*, Alternative D2.

3.1 THE ENVIRONMENTALLY PREFERRED ALTERNATIVE: This section identifies the environmentally preferred alternative (40 CFR 1505.2(b)).

In accordance with 40 CFR 1505.2(b), the environmentally preferred alternative must be identified in the ROD. The CEQ 40 Most Asked Questions, Question 6a, defines the environmentally preferred alternative as "the alternative that will promote the national environmental policy as expressed in NEPA's Section 101. Ordinarily, this means 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."

The EIS analysis discloses the potential environmental impacts for the projected conditions in 2012 and 2020; 2012 was the projected earliest implementation year for the runway development alternatives; and 2020 represented the earliest future condition after full implementation of the alternatives with the development of two runways (Alternatives D1 and D2). Because the ultimate build out year for the full range of alternatives is 2020, the FAA is identifying the environmentally preferred alternative based on 2020 conditions.

Alternative C1 in 2020 would impose the least potential environmental impacts of all of the runway development alternatives. From a NEPA perspective, applying the guidance in Question 6a of the *40 Most Asked Questions*, the environmentally preferred alternative is Alternative C1.

The FAA has identified Alternative C1 as the Environmentally Preferred Alternative because it has the least significant impacts in noise and compatible land use in 2020 compared to all other alternatives. It is the only alternative that does not require the acquisition of property off the airport. It avoids impacts on mangrove wetlands, and could potentially avoid impacts to all wetlands through further design.

Noise and Compatible Land Use Impacts: For 2020 conditions, the Alternative C1 noise exposure would result in the least impacts of all the alternatives in terms of residential dwelling units (285) and population (717) within the 65 DNL noise contour. Similar to all other alternatives, no noise-sensitive public facilities (i.e. churches, schools, hospitals, nursing homes, libraries) are located within the Alternative C1 65 DNL noise contour in 2020.

Off-airport Property Impacts: Alternative C1 is the only alternative, other than the No Action alternative, that does not require the acquisition of any off-airport property. Similar to all of the other runway development alternatives, no change is required to the local land use plans or zoning regulations.

Wetlands: Alternative C1 is the only runway development alternative that does not impact mangrove wetlands. There would be 15.40 acres of impacts to wetlands due to relocation of facilities, which could potentially be avoided through further planning, design, and engineering.

Although total wetland impacts for Alternative C1 (15.40 acres) as compared to the FAA's Preferred Alternative (15.41 acres) are essentially the same, Alternative C1 does not impact any mangrove wetlands as compared to 3.05 acres of mangrove

wetlands for the FAA's Preferred Alternative (B1b). Significantly, Alternative C1's wetland impacts are primarily due to airport and tenant facility relocations. It may be possible, with further planning, design, and engineering, to relocate these facilities on airport property so as to avoid any impacts to wetlands. For this reason, Alternative C1 is also environmentally superior to Alternative B4, which would impact 0.13 acres of mangrove wetlands. Because all of the other development alternatives, including Alternative B1b and B4, would affect mangrove wetlands, the FAA has deferred to the expertise of the USACE in determining that Alternative C1 is preferable to Alternative B4 in terms of potential wetland impacts.

Alternative C1 and the other runway development alternatives have similar potential environmental impacts for all other environmental impact categories.

3.2 THE PROPOSED ACTION: The Airport Sponsor's Proposed Action, described in detail in Section 1 of this ROD, is reviewed below.

The Airport Sponsor presented the FAA with a proposal to expand and elevate Runway 9R/27L to an overall length of 8,000 feet and width of 150 feet. The reconstructed Runway 9R/27L would also be equipped with an Engineered Materials Arresting System (EMAS)⁸⁵ at both runway ends. The Airport Sponsor's Proposed Project meets the Airport Sponsor's goals and objectives as identified in the *County's Airfield Development Program Objective Statement* adopted by the Commission on October 26, 2004.⁸⁶ These goals and objectives included: enhance FLL capacity by accommodating forecast traffic through 2020 in a manner that will maintain an average annual delay level at or below six to ten minutes, decommission the use of Runway 13/31 (crosswind), mitigate noise impacts, and implement residential noise mitigation initiatives.

The Airport Sponsor's Proposed Action, Alternative B1c, has the same physical alignment, design, and configuration as the FAA's Preferred Alternative (B1b). However, Alternative B1c considers the implementation of the operational noise abatement actions in 2012 which the Airport Sponsor provided to the FAA in a memorandum describing the sponsor's proposed project operational assumptions.⁸⁷ Broward County has interpreted that the operational noise abatement actions would no longer be in place by 2020.⁸⁸

⁸⁵ Engineered Material Arresting System (EMAS) is a "soft ground arresting system" consisting of a crushable cellular cement material installed on the runway overrun in a predetermined bed layout. EMAS provides a reliable and predictable capability to stop an aircraft by crushing under the weight of an aircraft providing deceleration and a safe stop. See FAA Order 5200.9, *Financial Feasibility and Equivalency of Runway Safety Area Improvements and Engineered Material Arresting Systems*.

⁸⁶ Letter from Tom Jargiello, Director of Aviation, Broward County Aviation Department, Fort Lauderdale-Hollywood International Airport, to Dean Stringer, Manager, FAA Orlando Airports District Office. This letter pertains to the Broward County Board of County Commissioners Goals and Objectives. Dated: November 1, 2004.

⁸⁷ Memorandum from Max Wolfe/Eric Bernhardt, Leigh Fisher Associates (now Jacobs Consultancy), to Virginia Lane, AICP, Environmental Specialist, Federal Aviation Administration. Subject: Sponsor's Proposed Project Operational Assumptions. Dated: August 22, 2006/Revised: August 24, 2006.

⁸⁸ Memorandum from Max Wolfe/Eric Bernhardt, Leigh Fisher Associates (now Jacobs Consultancy), to Virginia Lane, AICP, Environmental Specialist, Federal Aviation Administration. Subject:

3.3 THE PREFERRED ALTERNATIVE: The FAA identified its Preferred Alternative (B1b) in the Final EIS in accordance with FAA Order 5050.4B, paragraph 1007.e.(7), [40 CFR 1502.14 (e)]. As discussed in Chapter Eight, Section 8.0 *Introduction*, of the Final EIS, the FAA statutory mission is to provide leadership in planning and developing a safe, efficient national airport system to satisfy the needs of the aviation interests of the United States. In accomplishing this mission, the FAA considers economics, environmental compatibility, and local proprietary rights, and safeguards the public investment.⁸⁹ This mission guides final agency decisions regarding proposed airport development projects. In identifying the Preferred Alternative, the FAA considered the ability of each alternative to meet the purpose and need for the project, the Airport Sponsor's goals and objectives, the impacts to existing on-site airport tenants as well as impacts to future growth and development at FLL, and the potential environmental impacts.

The FAA identified Alternative B1b as the FAA's Preferred Alternative. This alternative redevelops and extends existing Runway 9R/27L to an 8,000-foot by 150-foot elevated runway with EMAS, and would extend east over the FEC Railway and U.S. Highway 1. In addition, Runway 13/31 would be permanently closed.

The FAA's Preferred Alternative (B1b) differs from the environmentally preferred alternative (Alternative C1) and the Airport Sponsor's Proposed Action (Alternative B1c). This ROD presents the FAA's reasons for selecting its preferred alternative (40 CFR 1505.2(b)) for approval and implementation rather than Alternative C1 or the Airport Sponsor's Proposed Action (Alternative B1c), or any of the other alternatives.

FAA CONSIDERATION OF PURPOSE AND NEED AT FLL

In support of the FAA's statutory responsibility under 49 USC 47101(a)(7), the FAA identified the purpose of the proposed action is to provide sufficient capacity for existing and forecast demand at FLL. The FAA considered the deficiencies at FLL, as discussed in the Final EIS, Chapter Three *Purpose and Need*, Section 3.2 *Problem Statement*, and their impact on the FAA's purpose of enhancing aviation safety, efficiency, and capacity on both the regional and national level, and has identified the following needs at FLL:

- The need for sufficient airfield capacity, to the extent practicable, to accommodate existing and projected air carrier demand at a level of delay established for FLL in the EIS analysis, which is six minutes of average annual delay per operation;
- The need for an enhanced and balanced airfield; and
- The need for sufficient gate and apron capacity to address existing and forecast passenger demand and aircraft congestion on the ramp.

Sponsor's Proposed Project Operational Assumptions. Dated: August 22, 2006/Revised: August 24, 2006. Memorandum is included in Final EIS Appendix C, *Airport Sponsors Correspondence*.

⁸⁹ http://www.faa.gov/about/office_org/headquarters_offices/arp/

FAA CONSIDERATION OF AIRPORT SPONSOR GOALS AND OBJECTIVES

The FAA considered the Airport Sponsor's goals and objectives as identified in the *County's Airfield Development Program Objective Statement* adopted by the Commission on October 26, 2004, in the development of the EIS. These goals and objectives included: enhance FLL capacity by accommodating forecast traffic through 2020 in a manner that will maintain an average annual delay level at or below six to ten minutes, decommission the use of Runway 13/31 (crosswind), mitigate noise impacts, and implement residential noise mitigation initiatives.

FAA CONSIDERATION OF AIRPORT PROPERTY IMPACTS

As noted in this ROD above in Section 3.0, *Summary of Alternatives Considered, Airport Property Impacts*, the Airport Sponsor submitted comments to the FAA on the Draft EIS raising concerns about the potential impact to airport properties and tenant leasehold facilities, and the availability of airport property for future development as a result of the implementation of one of the north runway alternatives.^{90,91}

To address these issues the FAA prepared and included in the Final EIS a tenant relocation analysis that evaluated the airport property within the current FLL boundary owned by Broward County and identified the tenant leasehold impacts and potential impacts of relocation on the availability of existing and future airport property. This analysis identified the airport properties and tenant leasehold facilities that could be directly or indirectly impacted with the development of an alternative and the potential areas of airport property that could accommodate relocated facilities and future development. This information was used in the was used in the development of a comparative analysis of the projected costs among the various alternatives.

The FAA used this information to determine which alternative was preferable in terms of potential impacts on existing airport property and future development. Notwithstanding the Sponsor's concerns presented in the December 2007 letter, the FAA determined there was no basis for considering the projected costs of relocating tenant facilities differently than any other project cost in comparing alternatives and identifying the preferred alternative. The analysis in the Final EIS indicates that Alternative B1b still qualifies as the agency's preferred alternative when this concern is set aside.

⁹⁰ Letter from Kent G. George, A.A.E., Director of Aviation, Broward County Aviation Department, Fort Lauderdale-Hollywood International Airport, to Dean Stringer, Manager, FAA Orlando Airports District Office. RE: This letter pertains to Alternative D2 and Broward County's comments on the tenant relocation, future tenant expansion capabilities, and future aviation development growth. Dated: December 7, 2007.

⁹¹ See the Final EIS, Chapter Four, *Alternatives*, Section 4.3 *Alternatives to Be Assessed for Environmental Analysis*, Appendix E *Airfield Planning, Engineering and Constructability Review*, Section E.1.6 *Facility Impacts*, Exhibits E.1-12-E.1-17; and revised Table E.1-8 *FLL Tenant Facility Relocation Summary (Acres)* provided in this ROD in Appendix C, *Final EIS Errata Documents*.

FAA CONSIDERATION OF POTENTIAL ENVIRONMENTAL IMPACTS

The FAA has considered the potential environmental impacts that would occur with each alternative as compared to the FAA's Preferred Alternative (B1b) for 2020. While the Final EIS analysis discloses the potential environmental impacts for the projected conditions in 2012 and 2020 (2012 was the projected earliest implementation year for the runway development alternatives), 2020 represented the earliest future condition after full implementation of the alternatives with the development of two runways (Alternatives D1 and D2). Therefore, the FAA identified the environmentally preferred alternative based upon 2020 conditions. The potential environmental impacts for each alternative are discussed in Section 3 above under the subheading titled *Summary of Operational Capacity and Delay, On-Airport Tenant Facility Impacts, and Environmental and Cumulative Impacts of the Alternatives Considered*.

* * * * *

In identifying its Preferred Alternative the FAA has made the following assessments:

- **Alternative A (No Action):** Alternative A does not meet the purpose of the proposal because it does not address the capacity issues at FLL. The average minutes of delay per operation for 2020 conditions for Alternative A is 26.2 compared to 3.1 minutes of delay per operation for the FAA's Preferred Alternative (B1b). Alternative A would have a practical hourly capacity of 84 operations compared to the FAA's Preferred Alternative (B1b) which would provide 107 operations.

Alternative A also does not meet the identified need for sufficient airfield capacity, to the extent practicable, to accommodate existing and projected air carrier demand at a level of delay established for FLL in the Final EIS; it does not meet the need for an enhanced and balanced airfield; and it does not meet the need for sufficient gate and apron capacity to address existing and forecast passenger demand and aircraft congestion on the ramp.

Alternative A would not meet the Airport Sponsor's goals and objectives as identified in the *County's Airfield Development Program Objective Statement* adopted by the Commission on October 26, 2004. These goals and objectives included: enhance FLL capacity by accommodating forecast traffic through 2020 in a manner that will maintain an average annual delay level at or below six to ten minutes, decommission the use of Runway 13/31 (crosswind), mitigate noise impacts, and implement residential noise mitigation initiatives.

Regarding impacts to airport properties and tenant leasehold facilities, Alternative A would not result in any impacts to existing facilities and would provide available surplus property for future airport facility development.

The airport contains an estimated 363 acres of airport properties and tenant leasehold facilities outside of the central terminal complex. There would be no displacement of existing facilities with the Alternative A compared to a displacement of 18.6 acres (five percent) with the FAA's Preferred Alternative (B1b). There would be 234.9 acres of airport land available for future airport

and tenant facility development compared to 134.6 acres for the FAA's Preferred Alternative (B1b). Eighty-four acres would be available for airside development compared to 39 acres for the FAA's Preferred Alternative (B1b).

The FAA has considered the potential environmental impacts that would occur with the Alternative A as compared to the FAA's Preferred Alternative (B1b). In most of the environmental impact categories no impacts would occur with Alternative A because no construction is associated with this alternative.

The impact categories where there is a significant difference between the FAA's Preferred Alternative (B1b) and Alternative A are air quality, noise, compatible land use, and wetlands. Alternative A exceeds the 24-hour PM_{2.5} National Ambient Air Quality Standard (NAAQS). Alternative A does not exceed the NAAQS for any other criteria pollutants in 2012 and 2020. The noise and compatible land use impacts for Alternative A in 2020 would be 696 residential dwelling units with a total population of 1,772 within the 65 DNL noise contour. The noise and compatible land use impacts for the FAA's Preferred Alternative (B1b) in 2020 would be 1,051 residential dwelling units with a total population of 2,472 within the 65 DNL noise contour. There would be no impacts to wetlands due to construction activities because no construction would occur, as compared to 15.41 acres of wetland impacts with the FAA's Preferred Alternative (B1b).

In summary, for 2020 conditions, the noise and compatible land use impacts of Alternative A (No Action) are significantly less than the FAA's Preferred Alternative (B1b). Also, Alternative A would not displace any on-airport tenants and there would be on-airport land available for future tenant development. However, Alternative A does exceed the 24-hour PM_{2.5} NAAQS and does not meet the purpose and need because it does not address the capacity deficiency at FLL.

- **Alternative B1: re develop and extend existing Runway 9R/27L to an 8,600-foot by 150-foot elevated runway .** To avoid an encroachment into the Dania Cut-Off Canal on the west and to NE 7th Avenue to the east, the Alternative B1 proposed runway, at 8,600-feet, would require the use of declared distance⁹² to achieve a standard runway safety area (RSA) at both runway ends. Due to the increased elevation of Runway 9R/27L at its intersection with Runway 13/31, Runway 13/31 would be permanently closed.

Alternative B1 would have a practical hourly capacity of 107 operations which is the same as the FAA's Preferred Alternative (B1b). The average minutes of delay per operation for 2020 conditions for Alternative B1 is 3.1 minutes which is the same as the FAA's Preferred Alternative (B1b). Alternative B1 would meet the purpose of the proposed action to provide sufficient capacity for existing and forecast demand at FLL; and it would meet the identified need for sufficient airfield capacity, the need for an enhanced and balanced airfield, and the need for sufficient gate and apron capacity. However, Alternative B1 would require the use of declared distances in order to meet the FAA's RSA standard. The FAA's Preferred Alternative (B1b) would not require the use of declared

⁹² Declared distance is the distance the airport owner declares available for the airplane's takeoff run, takeoff distance, accelerate-stop distance, and landing distance requirements.

distance to meet the FAA's RSA standard. Eliminating the need for declared distance improves the operational capability of the runway by allowing for the full use of the available runway length.

Alternative B1 would meet the Airport Sponsor's goals and objectives as identified in the *County's Airfield Development Program Objective Statement* adopted by the Commission on October 26, 2004.

Regarding impacts to airport properties and tenant leasehold facilities, Alternative B1 would result in relatively minimum impacts (five percent) to existing facilities and would provide available surplus property for future airport facility development.

The airport contains an estimated 363 acres of airport properties and tenant leasehold facilities outside of the central terminal complex. With Alternative B1 there would be a displacement of 18.6 acres (five percent) of airport properties and tenant leasehold facilities, which is the same as the FAA's Preferred Alternative (B1b). After development of the new runway and associated facilities, there would be 134.6 acres of airport land available for future facility development, which is the same as the FAA's Preferred Alternative (B1b). Thirty-nine acres would be available for airside development which is the same as the FAA's Preferred Alternative (B1b).

The FAA has considered the potential environmental impacts that would occur with Alternative B1 compared to the FAA's Preferred Alternative (B1b). For 2020 conditions, the potential environmental impacts of Alternative B1 are essentially the same as the FAA's Preferred Alternative (B1b) for all environmental impact categories except for noise, compatible land use, and wetlands. Noise and compatible land use impacts within the 65 DNL noise contour and the wetland impacts for Alternative B1 are slightly less than the FAA's Preferred Alternative (B1b).

In summary, the potential noise, compatible land use, and wetland impacts of Alternative B1 are slightly less than the FAA's Preferred Alternative (B1b); all other potential environmental impacts are essentially the same. However, Alternative B1 would require the use of declared distances in order to avoid encroachment into the Dania Cut-Off Canal and 7th Avenue and to meet FAA's RSA standard at both runway ends.

- **Alternative B1c (Airport Sponsor's Proposed Action): Redevelop and extend existing Runway 9R/27L to an 8,000-foot by 150-foot elevated runway with E MAS; includes the implementation of the operational noise abatement actions in 2012. Broward County has interpreted the operational noise abatement actions would no longer be in place by 2020.⁹³**

Alternative B1c would meet the purpose of the proposed action to provide sufficient capacity for existing and forecast demand at FLL; and it would meet the identified need for sufficient airfield capacity, the need for an enhanced and

⁹³ Memorandum from Max Wolfe/Eric Bernhardt, Leigh Fisher Associates (now Jacobs Consultancy), to Virginia Lane, AICP, Environmental Specialist, Federal Aviation Administration. Subject: Sponsor's Proposed Project Operational Assumptions. Dated: August 22, 2006/Revised: August 24, 2006.