

CHAPTER SEVEN

CUMULATIVE IMPACTS

7.0 INTRODUCTION

This chapter provides a discussion of the potential cumulative impacts of actions proposed at Fort Lauderdale-Hollywood International Airport (FLL) evaluated in this Environmental Impact Statement (EIS), in combination with other related or independent actions in the vicinity of FLL. The analysis of potential cumulative impacts recognizes that while the impacts of many actions may be individually small, when combined with the impacts of past, present, and reasonably foreseeable future actions on populations or resources in and around FLL, the impacts could be potentially significant.

Cumulative impacts are those impacts that can be reasonably expected to occur as a result of implementation of the proposed action, in combination with the impacts from other past, present, and reasonably foreseeable future activities, development, and/or projects that may be connected by geography or time.¹

7.1 BACKGROUND

The Council on Environmental Quality's (CEQ) regulations for implementing the National Environmental Policy Act (NEPA) defines cumulative impacts as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." See 40 Code of Federal Regulations (CFR) 1508.7. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time.²

Cumulative impacts must be evaluated relative to the direct and indirect effects of the proposed action for each environmental category discussed in Chapter Six, *Environmental Consequences*. As with the environmental consequences discussion, the No Action Alternative serves as the reference point against which to evaluate potentially significant cumulative impacts. Significant cumulative impacts are determined according to the same thresholds of significance used in the evaluation of each environmental category in the environmental consequences discussion.

It can be difficult to determine levels beyond which cumulative impacts significantly degrade a resource. Local, state, and Federal standards for some resources will apply, and goals or objectives from land use management plans and other guiding programs may serve as thresholds. Where numerical thresholds are not available or cannot be determined, impacts are typically qualified in relative terms of magnitude. The thresholds of significance for each environmental category, where

¹ *Considering Cumulative Impacts Under the National Environmental Policy Act*, Council on Environmental Quality, January 1997.

² CFR Title 40: *Protection of Environment*. § 1508.7 Cumulative Impact.

applicable, are defined in FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures*, dated March 20, 2006, and FAA Order 5050.4B, *NEPA Implementing Instructions for Airport Actions*.

7.1.1 IDENTIFICATION OF PERTINENT PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS

The evaluation of cumulative impacts in this EIS considers the past, present, and reasonably foreseeable future projects or actions undertaken at FLL by Broward County or other parties (such as the FAA), as well as notable actions that affect the airport area, including development undertaken in the airport environs. For the purposes of this assessment, the past actions are defined as those that were prior to 2004, and were determined to be relevant and useful in analyzing whether the reasonably foreseeable effects of the agency proposal for action and its alternatives may have a continuing, additive, and significant relationship to those effects. Present actions are defined as those completed from 2005 to 2008. Foreseeable future actions are defined as those planned to occur between 2009 and 2020, which is within the planning horizon of this EIS. This section identifies those past, present, and reasonably foreseeable future projects.

7.1.1.1 Past Projects

Past actions were considered to the extent that they were determined to be relevant and useful in analyzing whether the reasonably foreseeable effects of the Proposed Action and its alternatives may have a continuing, additive, and significant relationship to those effects.³ Certain types of data "may be available for extensive periods in the past," while other data "may be available only for much shorter periods," according to CEQ guidance. Consequently, because the data describing past conditions are usually scarce, the analysis of past impacts is often qualitative and relies on the existing conditions.⁴

7.1.1.1.1 FLORIDA AIRSPACE OPTIMIZATION PROJECT⁵

The Florida Airspace Optimization Project (also know as the Florida Airspace Redesign) was initiated by the FAA to alleviate airspace congestion over southern Florida. The actions included in the Florida Airspace Optimization are within the airspace controlled by Washington Air Route Traffic Control Center (ARTCC), Jacksonville ARTCC, Miami ARTCC, West Palm Beach Terminal Radar Control Center (TRACON), and Miami TRACON; with the changes primarily impacting operations within the Washington ARTCC, Miami TRACON, and West Palm Beach TRACON.

³ MEMORANDUM: *Guidance on the Consideration of Past Actions in Cumulative Effects Analysis*. Executive Office of the President, Council on Environmental Quality, Washington, D.C. 20503; James L. Connaughton, Chairman. Dated: June 24, 2005.

⁴ *Considering Cumulative Impacts Under the National Environmental Policy Act*, Council on Environmental Quality, January 1997.

⁵ *Florida Airspace Optimization Preliminary Environmental Review Checklist and Categorical Exclusion Declaration*. Department of Transportation FAA. August 2005.

The purpose of the project was to address capacity constraints and complexity issues within Washington ARTCC due to the need to merge cross (aircraft) flows to Miami International Airport (MIA), FLL, Palm Beach International Airport (PBI), Boca Raton (BCT), and satellite airports in the South Florida region. The airspace capacity constraints and complexity issues were predominantly caused by the so-called "snowbird system problem," which occurs when South Florida airports and airspace controlled by Washington ARTCC become congested in the winter months due to increased traffic volume caused by increased demand to South Florida from the northeastern U.S. Three project components were designed to alleviate this congestion:⁶

1. Develop new sectors for the Washington and Miami airspace to facilitate improved flow of northeast arrivals and address constraints in existing sectors. This includes a number of boundary changes to existing sectors to facilitate more efficient airspace operations. Because the sector changes were related to airspace boundaries rather than aircraft flight paths, there were no associated environmental impacts to analyze.
2. Implement new over-water routes and changes to existing over-water routes. Because the new routes occur above 24,000 feet (Flight Level 240) and over water, there were no associated environmental impacts to analyze.
3. Revise instrument arrival procedures to MIA, FLL, PBI, and BCT. Environmental analysis determined that there would be no new noise or air quality impacts associated with the revised instrument arrival procedures.

The airspace optimization project was designed to reduce congestion in the Washington ARTCC airspace, to identify the resulting congestion and operational constraints in other Florida airspace, and to determine the effect this congestion has on the entire National Airspace System. Other benefits of this project included reduced complexity, workload, and frequency of congestion for controllers; as well as shorter flight routes, reduced delays, and reduced re-routes for aircraft operators. The Florida Airspace Optimization Project was implemented on October 27, 2005.

7.1.1.1.2 PORT EVERGLADES HARBOR

The Port Everglades Harbor and Seaport (the Port) is located on the southeastern coast of the Florida peninsula within the cities of Fort Lauderdale, Hollywood, and Dania Beach, as well as unincorporated Broward County. Port Everglades' jurisdiction encompasses a total of 2,190 acres (1,742 acres of upland and 448 acres of submerged land) that fall within the following municipalities (only upland acreage is indicated below):⁷

- 1,242 acres (71 percent) - City of Hollywood
- 232 acres (13 percent) - City of Fort Lauderdale

⁶ *Florida Airspace Optimization Preliminary Environmental Review Checklist and Categorical Exclusion Declaration*. Department of Transportation FAA. August 2005.

⁷ Port Everglades Internet web site: <http://www.porteverglades.org/>. Retrieved March 22, 2006.

- 234 acres (14 percent) - City of Dania
- 34 acres (2 percent) - unincorporated Broward County

The Port was constructed between 1925 and 1928, and was authorized for Federal maintenance in 1930 under the Rivers and Harbors Act of 1899 (including subsequent acts). The Port's harbor is a gateway for international trade and cruise ships. The Port is one of South Florida's leading economic engines providing more than 15,000 direct jobs and generating \$2.87 billion in business activity and \$879.5 million in personal income annually in Broward County. The Port is ranked as one of the busiest cruise ports in the world, and it is the 12th busiest containerized cargo port in the U.S. and is South Florida's main distribution port for petroleum products such as gasoline and jet fuel.⁸ The Port is a self-supporting Enterprise Fund of Broward County government with operating revenues of approximately \$105 million annually. It does not rely on local tax dollars for operations. The Port is governed by the Broward County Commission.⁹

The following projects were recently completed at the Port:

Terminal 25 Expansion: In 1999, the baggage and passenger areas at Cruise Terminal 25 were expanded to allow the facility to accommodate the increased cruise passenger capacities of the new breed of mega-cruise ships operating at the Port. Terminal 25 was expanded by 15,000 square feet to bring the baggage handling area to a total size of 25,000 square feet and the passenger area to a total size of 23,000 square feet. Other improvements included repositioning of the terminal's passenger loading bridge to match the loading doors on ships over 900 feet long, the installation of a second escalator, an additional set of restrooms, full air conditioning, and a new overhead canopy for the passenger drop-off/pick-up area.¹⁰

Terminal 21 Expansion and Reconstruction: In 2000, the south side of Cruise Terminal 21 was expanded to allow the facility to accommodate the increased cruise passenger capacities of the new breed of mega-cruise ships operating at the Port. A 33,000-square foot elevated terminal was constructed adjoining the existing facility, which became a large baggage handling area. The new enlarged world-class facility offers a direct connection to the Midport Parking Garage by a covered passenger walkway.¹¹

Construction of Operations Center and Harbormaster Tower: In February 2001, the new Port Everglades Operations Center and Harbormaster Tower was dedicated. The nine-story building affords the harbormaster staff a

⁸ *Public Provides Ecological Input for Port Everglades' 20-Year Master Plan.* Internet web site: http://porteverglades.poweri.com/dev/site/pub/port/news_pressreleases.html?news=1&newsid=132. March 15, 2006.

⁹ *Port Everglades Plans for Future Growth with New Master Plan Development.* Internet web site: http://porteverglades.poweri.com/dev/site/pub/port/news_pressreleases.html?news=1&selectedYear=2006. July 18, 2006.

¹⁰ Broward County, Port Everglades Cruise Terminals. Internet web site: http://www.broward.org/port/cruise_terminals.htm/. Retrieved October 24, 2006.

¹¹ Broward County, Port Everglades Cruise Terminals. Internet web site: http://www.broward.org/port/cruise_terminals.htm/. Retrieved October 24, 2006.

270-degree view of the Port and its surrounding communities. The building is topped with a 75-foot high communications monopole, which is equipped with state-of-the-art security cameras, and navigational and weather monitoring devices. The Harbormaster's office serves as an information source for the Port's customers by providing real-time information on ship scheduling, berthing, traffic flow, and other pertinent operational information. The Operations Center and Harbormaster Tower is constructed atop the Midport Parking Garage, which was expanded to include three additional floors, doubling the number of parking spaces from 1,000 to 2,000.¹²

Terminal 29 Reconstruction: In 2002, Terminal 29 at the Port was converted from a cargo terminal into a dual purpose facility to handle both cruise and cargo operations. Terminal 29 handles cargo operations on weekdays and serves as a reliever Cruise Terminal on weekends. Terminal 29 measures 20,250 square feet and the baggage handling area measures 24,500 square feet.¹³

Terminal 2 Expansion: In 2005, Terminal 2, a dual purpose facility that handles both cruise and cargo operations at the Port, was expanded to double the existing baggage hall area to 50,000 square feet. Other features included stair and ramp improvements, new toilet facilities, air conditioning, lighting, two new elevators, and fire protection upgrades.¹⁴

Port Security Enhancements: Security improvements at the Port were initiated in response to attempts to stop drug trafficking, the flow of stolen vehicles, and cash laundering that was occurring at the Port during the late 1990s. Soon after September 11, 2001, the projects took on priority status, with emphasis on addressing the Port's vulnerabilities from threats of potential terrorism. A Security Operations Center was constructed in 2003 and additional security improvements continued through 2005 with the installation of additional fencing, roadside access gates, a wall surrounding fuel storage facilities, a barrier wall to protect hazardous materials, closed-circuit television monitoring systems at all entrances, a cargo x-ray system, increased number of Port checkpoints, increased presence of law enforcement personnel, electronically-controlled dock access gates, an employee identification (ID) processing center to manage the use of Port IDs by authorized personnel, and upgrades to the fire alarm systems. Temporary U.S. Customs offices have been replaced with permanent facilities.^{15, 16}

¹² Press Release: *Port Everglades Dedicates New Operations Center and Harbormaster Tower*. February 13, 2001. Internet web site:

<http://porteverglades.poweri.com/remote/pr.php?news=1&newsid=75&selectedYear=2001>

¹³ Broward County, Port Everglades Cruise Terminals. Internet web site:

http://www.broward.org/port/cruise_terminals.htm/. Retrieved October 24, 2006.

¹⁴ Broward County, Port Everglades Cruise Terminals. Internet web site:

http://www.broward.org/port/cruise_terminals.htm/. Retrieved October 24, 2006.

¹⁵ Port Everglades Security. Internet web site: <http://www.broward.org/port/security.htm>. Retrieved October 24, 2006.

¹⁶ Press Release: *Port Everglades Gains Florida Seaport Security Approval*. November 9, 2005. Internet web site: <http://porteverglades.poweri.com/remote/pr.php?news=1&newsid=125&selectedYear=2005>

7.1.1.1.3 PORT EVERGLADES OCEAN-DREDGED MATERIAL DISPOSAL SITE (ODMDS)

The U.S. Environmental Protection Agency (USEPA), with the cooperation of the U.S. Army Corps of Engineers (USACE) Jacksonville District, investigated the feasibility of designating Ocean-Dredged Material Disposal Sites (ODMDS) at locations off the east coast of Florida including possible sites at Palm Beach Harbor and the Port. The environmental amenities in the vicinity of each alternative site were investigated to determine the suitability of each location as an ODMDS. The physical, chemical, and biological characteristics of each site were examined along with an evaluation of the potential dispersants from each site and possible non-ocean alternatives for dredged material disposal.¹⁷

The investigation showed that Palm Beach Harbor and the Port were the preferred ODMDSs, located 4.5 and 4.0 nautical miles offshore, respectively. The preferred sites, each approximately one square nautical mile (3.4 square kilometers) in size, consist primarily of soft-bottom habitat. Each site is located on the upper continental slope on the western edge of the Florida Current. The depth of each site exceeds 150 meters (492 feet). Based on USEPA and USACE surveys, it was concluded that no natural reefs, no natural or cultural features of historical importance, and no areas of special scientific importance are located within or near the preferred sites. Therefore, each site met all evaluation criteria for use as an ODMDS.¹⁸ The preferred ODMDSs for both Palm Beach Harbor and the Port were designated and became effective on February 17, 2005.¹⁹

7.1.1.1.4 TRACTEBEL CALYPSO NATURAL GAS PIPELINE

Tractebel North America, Inc. (TNA) proposed construction of a 42.5-mile long pipeline to transport natural gas from their planned Tractebel Calypso Liquefied Natural Gas storage and regasification facility in Freeport, Grand Bahamas to Fort Lauderdale. The pipeline would make landfall at the Port with 6.2 miles of onshore pipeline connecting it to the Florida Gas Transmission (FGT) system tie-in, adjacent to the Florida Power and Light (FPL) Fort Lauderdale Plant. The pipeline would transport approximately 832 million cubic feet of natural gas to Florida per day. The Tractebel Calypso Pipeline is designed to satisfy about 40 percent of Florida's projected increase in electric generation capacity through 2014.²⁰ The route of the Tractebel Calypso Pipeline is proposed to pass along the northern edge of FLL, within the existing FGT pipeline easement near Interstate-595.

¹⁷ *Draft Environmental Impact Statement (EIS) for Designation of the Palm Beach Harbor Ocean Dredged Material Disposal Site and the Port Everglades Harbor Ocean Dredged Material Disposal Site*, February 2004. Internet web site: <http://www.saj.usace.army.mil/pd/envdocs/Broward/PBH-PE/index.html/>.

¹⁸ *Draft Environmental Impact Statement (EIS) for Designation of the Palm Beach Harbor Ocean Dredged Material Disposal Site and the Port Everglades Harbor Ocean Dredged Material Disposal Site*, February 2004. Internet web site: <http://www.saj.usace.army.mil/pd/envdocs/Broward/PBH-PE/index.html/>.

¹⁹ Environmental Protection Agency, *Ocean Dumping; Designation of Sites Offshore Palm Beach Harbor, FL and Offshore Port Everglades Harbor, FL*. Federal Register: January 18, 2005 (Volume 70, Number 11).

²⁰ *Tractebel Calypso Pipeline Project, Final Environmental Impact Statement*; Tractebel Calypso Pipeline, LLC, Docket No. CP01-409-000; January 2004.

The Federal Energy Regulatory Commission (FERC) granted a Certificate of Public Convenience and Necessity on March 24, 2004, allowing TNA to proceed with implementation of the pipeline. Similar to the process for development of the Ocean Express Pipeline described previously, TNA sought to select a route that avoids or minimizes environmental impacts, particularly to marine life, bottom/coral reef habitats, and essential fish habitats.

Construction of the Tractebel Calypso Pipeline began in 2004 with active transport of natural gas beginning in 2007.

7.1.1.1.5 FORT LAUDERDALE-HOLLYWOOD INTERNATIONAL AIRPORT

Revised Terminal Roadway System: Modifications to the connections of the terminal road system with U.S. Highway 1 were completed in fall 2003.

Parking Garages and Consolidated Rental Car Facility: The construction of a new facility for rental car companies in the main terminal area was completed in January 2005. Two parking garages (Cypress and Hibiscus) were constructed to keep up with the demand for parking spaces. The Hibiscus Parking Garage (located across from Terminals 1 and 2) opened in October 1999 with 4,900 parking spaces. The \$247-million Cypress Garage opened in January 2005 and has 4,000 public parking spaces. The eight-story garage has four levels dedicated to housing 12 rental car agencies.

7.1.1.2 Present Projects

Present projects were considered to the extent that they were determined to be relevant and useful in analyzing whether the reasonably foreseeable effects of the Proposed Action and its alternatives may have a continuing, additive, and significant relationship to those effects. This section provides a discussion of development and improvement plans at FLL and at other facilities in the vicinity of FLL that are currently being proposed or were recently completed.

7.1.1.2.1 FORT LAUDERDALE-HOLLYWOOD INTERNATIONAL AIRPORT

Concourse A: The proposed project for Concourse A consists of construction of a new Concourse A at existing Terminal 1. The new Concourse A would include five narrow-body gates with in-ground hydrant fueling, accessed by a dual taxi-lane serving both Concourse A and B. Concourse A would be located on the north side of the terminal complex, north of the terminal loop road and consolidated rental car facility, and east of Concourse B.

Concourse A would be the third and final concourse attached to Terminal 1. Terminal 1 was designed to accommodate the proposed Concourse A and has room for the additional support facilities, such as airline ticket counters and baggage claim. Concourse A would be a single-loaded (aircraft parking only on one side) pier structure with aircraft gates on the west and north side of the building. The construction and operation of Concourse A is consistent with the original plans for Terminal 1 and all other current planning at FLL.

The FAA has determined that the Concourse A project has independent utility from the projects being considered in this EIS. A Draft Environmental Assessment (Draft EA) was prepared in June 2004 and included coordination with Federal, state, and local agencies. Broward County held a public workshop on the Draft EA in January 2005.²¹ Broward County revised the Concourse A project in January 2008 to eliminate the proposed Group Check-In Facility and prepared a revised Environmental Assessment.

In April 2008, the public and agencies were provided the opportunity to review this environmental assessment for 30 days. The FAA is considering all comments received.

Airport Master Plan Update: On December 9, 2003, the Commission initiated an Airport Development Plan Definition (ADPD) that is the first part of a two-phase process to update the 1994 FLL Master Plan to address the development of terminals and ancillary facilities at FLL for the period 2010 to 2020. The ADPD process will provide Broward County with a range of potential future scenarios for the development of FLL landside and terminal facilities, as well as an understanding of associated technical issues. Key areas addressed in the ADPD will include the following:²²

- Management of growth and impacts
- Financial capacity once airline agreements expire in 2011
- Airfield configuration, operational capacity, and airspace compatibility
- Terminal capacity and facilities
- Landside access and parking
- Synergy with Port Everglades, including cruise passengers
- Role of 2020 Vision Plan concepts
- Balancing of airfield, terminal, and landside development
- Ongoing role of general aviation at FLL
- Development opportunities and constraints on the west side of FLL
- Infrastructure needs (including fuel, power, water, sewer)
- Coordination with the Runway 9R/27L EIS Consultant Team, the Part 150 Study, and (Broward County) environmental services
- Stakeholder involvement process

The first in a series of public workshops was held on March 31, 2005 at the Broward County Convention Center and the Broward County Commission held a Master Plan Update Workshop on Tuesday, October 18, 2005. In January and February 2006,

²¹ *Concourse A and Group Check-In Facility Environmental Assessment*. Broward County Aviation Department. Internet web site: <http://www.broward.org/airport/communityairportexpansion.htm/>. Retrieved February 12, 2008.

²² *Master Plan Update*, Broward County Aviation Department. Internet web site: http://www.broward.org/airport/community_airport_expansion.htm/. Retrieved March 27, 2006.

the Phase 1 portion of the Master Plan Update was presented to local interest groups. Phase 2 is currently ongoing.²³ The Broward County Aviation Department held an Aviation Planning Workshop for the County Commission on January 22, 2008 to present the terminal layout plan, which is a central component of the Master Plan, as well as the financial plan for all capital projects for the airport.²⁴

Part 150 Noise Compatibility Study Update: The County prepared Part 150 Noise Compatibility studies for FLL in 1987 and 1994. In June 2005, Broward County initiated a 14 CFR Part 150 Noise Compatibility Study Update at FLL; it is anticipated that the update currently underway may be completed in 2008-2009. 14 CFR Part 150, *Airport Noise Compatibility Planning*, was established under the Aviation Safety and Noise Abatement Act of 1979.

A Noise Compatibility Study includes the development of Noise Exposure Maps and a Noise Compatibility Program, which involves the analysis of existing and future noise exposure, identification of appropriate uses for land surrounding the airport, and recommendations of noise mitigation programs to benefit surrounding communities. Public meetings were held in May 2006 and March 2007 to discuss the Noise Compatibility Study Update and to obtain input and feedback from the officials of Dania Beach, Davie, and Hollywood; members of the Airport Advisory Board of Fort Lauderdale; and area residents. The following initial tasks are included in the 14 CFR Part 150 Noise Compatibility Study Update:²⁵

- Identification of areas eligible for mitigation under Federal guidelines that are impacted by the proposed south runway extension (the Airport Sponsor's Proposed Project). Mitigation elements will be provided to the FAA for use in preparation of this EIS.
- Development of more general airport noise mitigation policies to guide additional County-sponsored mitigation.

Westside Airfield Development Program: This project includes the development of infrastructure facilities on the west side of the airfield for development of air cargo and aircraft support services including maintenance and parking. Construction is currently underway and is anticipated to be complete in 2008.

Terminal 4 Interior Improvement Project: This project involves improvements to the ticket counters, security checkpoint, baggage make-up areas, and Federal inspection areas in Terminal 4. Construction is currently underway and is anticipated to be complete in 2008. County administrative offices were relocated to a temporary location on-airport during the reconstruction in Terminal 4.

²³ *Master Plan Update*, Broward County Aviation Department. Internet web site: http://www.broward.org/airport/community_airportexpansion.htm/. Retrieved February 12, 2008.

²⁴ *Master Plan Update*, Broward County Aviation Department. Internet web site: http://www.broward.org/airport/community_airportexpansion.htm/. Retrieved February 12, 2008.

²⁵ Noise Compatibility Study, Broward County Aviation Department. Internet web site: http://www.broward.org/airport/community_noise.htm/. Retrieved February 12, 2008.

The permanent relocation of the offices to an administrative building is projected to occur in 2009²⁶ at a location that has not yet been determined.

Green Airport Initiative (GAI): The Commission has set the goal for FLL to be a leader in sustainable design. On November 9, 2004, the Commission approved a contract with Clean Airport Partnership (CAP), to implement a Green Airport Initiative (GAI) at FLL. CAP introduced the GAI project at a public meeting on March 31, 2005. The purpose of the program is “to create a collaborative program that identifies innovative approaches to protecting the natural environment above and beyond Federal, state, and local regulatory requirements.” The goal is to “identify priority research and an overall environmental strategy that can yield benefits during a period that spans the next several years to several decades.”²⁷

Addition of Biodiesel Hybrid Electric Busses to Clean Air Shuttle System: FLL is the first Florida airport to have a shuttle service that is fully powered by biodiesel fuel. On March 6, 2006, the first biodiesel hybrid electric bus was put into service at FLL. The vehicle combines the use of biodiesel fuel with hybrid electric features and is used primarily to access the airport’s remote parking area and the intra-terminal loop. The County made the decision in 2005 that all 52 shuttle busses and trams at FLL would eventually be powered by biodiesel fuel.^{28, 29}

7.1.1.2.2 BROWARD INTERMODAL CENTER AND AUTOMATED PEOPLE MOVER

In 2002, Broward County developed and endorsed the conceptual *2020 Vision Master Plan* to define the framework for future development at FLL and the Port, as well as elements that would promote improvement in regional transportation and transit systems. This conceptual plan was consistent with certain strategic goals stated by the Commission, including promoting mass transit in the County, capitalizing on a co-located airport-seaport, and providing a catalyst for economic development. The *2020 Vision Master Plan* proposed new facilities and improvements for surface transportation to provide the capacity to accommodate future growth anticipated in the County.

Two key elements of the *2020 Vision Master Plan* included the Broward Intermodal Center (IMC) and the Automated People Mover (APM):³⁰

²⁶ Press Release: *Broward County Aviation Department Moves to New Location*. Internet web site: http://www.broward.org/airport/press_news_release.htm#DEPARTMENT/. February 2006.

²⁷ Broward County Aviation Department, *Environmental Footprint for FLL Operations*, September 2005. Clean Airport Partnership (CAP).

²⁸ Press Release: *Broward County Aviation Department Adds Biodiesel Hybrid Electric Busses to Clean Air Shuttle System*. Internet web site: http://www.broward.org/airport/press_news_release.htm#DEPARTMENT/. March 6, 2006.

²⁹ Press Release: *Fort Lauderdale-Hollywood International Airport First In Florida with Shuttle Service Fully Powered by Biodiesel*. Internet web site: http://bcegov2.broward.org/newsrelease/view_screen.asp?MessageID=1141. May 17, 2006.

³⁰ *Intermodal Center and People Mover Project Draft Briefing Book*. Federal Highway Administration and Federal Transit Administration. October 2005.

- The IMC would serve as a regional transportation hub, housing such facilities as bus and train stations, kiss and ride areas, people mover connection, vehicle parking, and concession spaces. The IMC would facilitate transfers to other regional transit systems.
- The APM system would be designed to transport passengers within and between FLL and the Port, with connections to other regional transportation modes at the IMC.

This public-use system is envisioned to relieve traffic congestion, and address safety and security concerns at the airport and seaport terminals, on access roadways (specifically Eller Drive, Spangler Boulevard, U.S. Highway 1, Interstate-595, and Griffin Road), area corridors Interstate-595, U.S. Highway 1, and Interstate-95, as well as mitigation to support the anticipated population and passenger growth in the area. Alternatives for the system include grade-separated roads, dedicated bus routes, rail, and the APM system.

In August 2004, the County completed a technical and financial feasibility study of the proposed IMC and APM systems, which considered the following elements.³¹

- Concept-level technical evaluation of alternatives to identify any fatal flaw that would prevent any alternative from moving forward for further evaluation in the environmental study phase of the project; and
- Financial feasibility analysis of the viable alternatives.

The County authorized the initiation of the environmental study phase of the project, with the Federal Highway Administration (FHWA) as the lead agency. The project's Advanced Notification was issued on March 3, 2006. This document informs local, state, and Federal agencies about the project and initiates outreach to solicit input, in compliance with NEPA.³² A Draft Environmental Assessment (EA) is currently being developed for the proposed IMC and APM systems. A public workshop will be held when the Draft EA is finalized and released to the public.³³ On January 10, 2008, Broward County Port Everglades and Aviation Department held a public workshop on the Project Development and Environmental Study for the IMC and APM System to share project information and answer questions.³⁴

³¹ *FLL Airport/Port Everglades APM and Intermodal Center – Feasibility Analysis*. Lea+Elliott, Inc. August 2004.

³² *In Motion, Broward County*. Lea+Elliott, Inc. Spring 2006 Newsletter. Internet web site: <http://www.leaelliott.com/Information/PDF/Newsletter%20Spring%202006.pdf/>.

³³ E-mail correspondence between FAA Orlando Airports District Office (Virginia Lane) and Lea+Elliott (William Bascus), consultant. October 6, 2006.

³⁴ *Intermodal Center and People Mover System*, Broward County Aviation Department. Internet web site: http://www.broward.org/airport/community_airportexpansion_intermodalcenter.htm/. Retrieved: February 12, 2008.

7.1.1.2.3 PORT EVERGLADES HARBOR

The projects described in the following sections are currently on-going at the Port:

Draft EIS for the Feasibility Study of Navigation Improvements at Port Everglades Harbor: The USACE Jacksonville District is preparing a Draft EIS for the Feasibility Study of Navigation Improvements at Port Everglades Harbor. That Draft EIS should be available for public and agency review in 2008. If approved, construction of the navigational improvements would begin in 2010.³⁵ The study is a cooperative effort between the USACE and the Broward County Department of Port Everglades. As stated in the Notice of Intent to prepare the Draft EIS, improvements at the Port are required to accommodate future commercial fleets and to more effectively transit the existing fleet. The proposed solution is to widen and deepen every major Federal channel and basin within the project area and develop (widen and deepen) the Dania Cut-Off Canal.³⁶

The USACE Draft EIS will consider impacts on seagrass (including Johnson Seagrass, a Federally-threatened species), mangrove and hardbottom communities, other protected species, shore protection, health and safety, water quality, aesthetics and recreation, fish and wildlife resources, cultural resources, energy conservation, socioeconomic resources, and other impacts identified through scoping, public involvement, and interagency coordination.

The proposed action is being coordinated with both the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) under Section 7 of the Endangered Species Act, with the USFWS under the Fish and Wildlife Coordination Act, with the NMFS concerning Essential Fish Habitat, and the State Historic Preservation Officer. The Port's proposed action involves evaluation for compliance with guidelines pursuant to Section 404 (b)(1) of the Clean Water Act; application (to the State of Florida) for Water Quality Certification pursuant to Section 401 of the Clean Water Act; certification of state lands, easements, and rights-of-way; and determination of consistency with the Coastal Zone Management Act.³⁷

In May 2008 the Broward County Commission reconfirmed expansion plans for Port Everglades and proposed mitigation for environmental impacts. Port Everglades has offered to set aside additional land for mangroves and manatees in exchange for the right to build new docks capable of handling super-

³⁵ Information obtained from Allan D. Sosnow, Environmental Projects Manager, Broward County, dated November 7, 2006, RE: Dredge Material.

³⁶ Department of Defense Department of the Army, Corps of Engineers, *Notice of Intent To Prepare a Draft Environmental Impact Statement (DEIS) for a Feasibility Study of Navigation Improvements at Port Everglades, Broward County, FL*. Federal Register: March 23, 2001 (Volume 66, Number 57).

³⁷ Department of Defense Department of the Army, Corps of Engineers, *Notice of Intent To Prepare a Draft Environmental Impact Statement (DEIS) for a Feasibility Study of Navigation Improvements at Port Everglades, Broward County, FL*. Federal Register: March 23, 2001 (Volume 66, Number 57).

size freighters. The expansion plans would take nine acres of mangroves and the proposed mitigation is to restore 22 acres of nearby property and add it to a state-owned conservation area.³⁸

Port Everglades 2020 Vision Master Plan Project: The Broward County Public Works Department contracted with DMJM Harris to prepare a comprehensive five-year Master Plan and to develop 10-year and 20-year Vision Plans to guide the growth and development of the Port. A public environmental workshop for the Master Plan was held March 10, 2006. Broward County Port Everglades Department staff met with approximately 60 County residents and environmental experts to generate ideas to further the Port's environmental stewardship as its Master Plan and Vision Plans are developed. The workshop allowed participants to discuss their ideas and concerns about the natural habitat, water quality, air quality, recycling, and the use of "green" products. Some of the ideas generated as a result of the break-out groups' discussions included:³⁹

- Seeking alternative transport modes for passengers and cargo
- Reducing traffic congestion and emissions
- Protecting wildlife species
- Further incorporating stakeholders and outreach efforts
- Changing the Port's mission to include environmental stewardship
- Avoiding and minimizing habitat impacts, including essential fish habitat
- Considering the cumulative impacts of port plans and other programs
- Managing energy efficiently
- Managing the solid hazardous waste stream
- Encourage participation of the Port's tenants
- Procuring green and recycled products
- Becoming more proactive in monitoring ballast water and other discharges
- Considering the impact of stirring up pathogens and diseases that could result from dredging
- Enforcing compliance with the Master Plan, current and future programs

The Draft Master Plan is available to the public and the Final Master Plan is currently in development.⁴⁰

³⁸ *Land swap offered to expand Port Everglades for bigger freighters*, by Scott Wyman, South Florida Sun-Sentinel, May 5, 2008.

³⁹ *Public Provides Enological Input for Port Everglades' 20-Year Master Plan*. Internet web site: http://porteverglades.poweri.com/dev/site/pub/port/news_pressreleases.html?news=1&newsid=132. March 15, 2006.

⁴⁰ *2006 Port Everglades Master Plan Update*. Internet web site: <http://www.portevergladesmasterplanupdate.com/index.htm>. Retrieved February 12, 2008.

It is anticipated that the completed Master Plan and Vision Plans will incorporate recommendations from a study of the Port's petroleum facilities, which identified ways to improve their efficiency of operations.⁴¹ In January 2005, the Commission contracted with Purvin and Gertz, Inc. to conduct a comprehensive study of the current and future facility needs of the petroleum sector at the Port through 2020.⁴² As a result of the Petroleum Sector Study, completed in Fiscal Year 2006, the Port plans to create a database to benchmark the performance of petroleum tank ships in Fiscal Year 2007.⁴³

7.1.1.2.4 SOUTH FLORIDA EAST COAST CORRIDOR TRANSIT ANALYSIS STUDY

This project seeks to reduce roadway congestion and improve mobility by providing local and regional passenger transit service for Palm Beach, Broward, and Miami-Dade counties. The Florida Department of Transportation (Florida DOT) District 4 is currently leading the regional partnership that is conducting this South Florida East Coast Corridor Transit Analysis (SFECCTA). The 204-square mile study area for this project centers on 85 of the total 351 existing Florida East Coast (FEC) Railway miles in the highly urbanized and traffic-congested eastern portions of Miami-Dade, Broward, and Palm Beach counties.⁴⁴

The study consists of two tiers. Tier 1 began September 26, 2005 and is scheduled to be completed by spring, 2007. It is examining possible routes, or alignments, for north-south transit. Various kinds of transit vehicles, called technologies or modes, have also been analyzed. Tier 1 will conclude by identifying alignments and technologies most suitable for further analysis. The result will be a corridor Record of Decision from the Federal Transit Administration (FTA), which indicates approval of the work done so far and authorization to proceed with Tier 2.

Tier 2 initiated in mid-2007, divided the corridor into sections for more detailed analysis to consider existing commuter rail service, land use densities, and coordination of freight and passenger traffic. Tier 2 will determine one or more Locally Preferred Alternatives that identify the routes and services best suited for the study corridor. The documentation will then be submitted to the FTA to obtain another, more detailed ROD with authorization to proceed to engineering and construction. Depending on how the service and funding packages are structured, transit service along portions of the corridor could begin as early as 2012.⁴⁵

⁴¹ *Port Everglades Plans for Future Growth*. South Florida Business Journal. July 18, 2006. Internet web site: <http://southflorida.bizjournals.com/southflorida/stories/2006/07/17/daily13.html>

⁴² Press Release: *Port Everglades to Undertake Petroleum Sector Study*. January 26, 2005. Internet web site: <http://porteverglades.poweri.com/remote/pr.php?news=1&newsid=93&selectedYear=2005>

⁴³ Broward County Florida, Port Everglades Operating Fund, Operating Budget 2007. Internet web site: <http://www.co.broward.fl.us/budget/yr2007/operating/14port.pdf>

⁴⁴ South Florida East Coast Corridor Study. Internet web site: <http://www.sfecstudy.com/>.

⁴⁵ South Florida East Coast Corridor Study. Summer 2006 Newsletter. Internet web site: <http://www.sfecstudy.com/>

7.1.1.2.5 PROPOSED USE OF RUNWAYS 9R/27L AND 13/31 WHEN THE PREFERRED RUNWAY CANNOT EFFICIENTLY ACCOMMODATE EXISTING OPERATIONS AT THE FORT LAUDERDALE-HOLLYWOOD INTERNATIONAL AIRPORT

The FAA prepared an environmental assessment⁴⁶ to document the potential environmental impacts of the proposed use of Runways 9R/27L and 13/31 when the preferred runway cannot efficiently accommodate existing operations at FLL. The purpose for the proposed action was to improve the operational efficiency of the airfield at FLL during times when demand warrants. The existing operations require an operationally flexible runway system that can more efficiently accommodate the number of aircraft operations.

Currently, Runway 9L/27R is used by the majority of aircraft operations at FLL, but the FAA also needs to use Runway 9R/27L or Runway 13/31 to reduce congestion on the preferred runway (Runway 9L/27R). FAA Air Traffic Control (ATC) could use Runway 9R/27L and Runway 13/31 when Runway 9L/27R cannot handle operations, particularly during the peak period. This runway flexibility would ease congestion on the preferred runway.

The FAA conducted a public hearing on May 1, 2008. All comments received on the environmental assessment were considered by the FAA. Based on the environmental analysis, which determined there were no significant environmental impacts, the FAA has issued, in June 2008, a Finding of No Significant Impact and Record of Decision for this proposed action.

7.1.1.3 Reasonably Foreseeable Future Actions

Reasonably foreseeable future projects were considered to the extent that they were determined to be relevant and useful in analyzing whether the reasonably foreseeable effects of the Proposed Action and its alternatives may have a continuing, additive, and significant relationship to those effects. This section describes the foreseeable future development and improvement plans at FLL and at other facilities in the vicinity of FLL that are under preliminary study or designed for possible future development.

7.1.1.3.1 FORT LAUDERDALE-HOLLYWOOD INTERNATIONAL AIRPORT

Taxiway C Extension and Relocation or Decommissioning of the Very High Frequency Omnidirectional Range (VOR) Beacon: Phase 1 of this two-phase project is the construction of Taxiway C, which is anticipated to be complete in spring 2008. Phase 2 includes extending the taxiway from Runway 13/31 into the main terminal core. Broward County has proposed the relocation or decommissioning of the FLL VOR to enable this extension. The County is working with the FAA to identify potential locations or THE decommissioning of the VOR. Phase 2 of Taxiway C, with the relocation of the VOR, is anticipated to be complete in 2010.

⁴⁶ On May 11, 2007, the United States Court of Appeals for the District of Columbia Circuit decided the case of City of Dania Beach, Florida, et al. vs. Federal Aviation Administration (Case No. 05-1328). Based on this decision, the FAA was ordered to prepare a NEPA document.

Ramp Rehab/Airfield Modifications (High-Speed Exits): This project will include ramp rehabilitation of the mill and overlay of the aprons around Terminals 2 and 3. The Airfield Modifications project includes the construction of two high-speed exits on Runway 9L/27R. Construction is anticipated to occur in 2008 through 2010.

Relocation of the Buckeye Pipeline: The Buckeye pipeline transports commercial aviation fuels from Port Everglades, Florida to FLL and Miami International Airport (MIA). The line traces a 35-mile arc west from Port Everglades, through Fort Lauderdale, Dania Beach, Cooper City, Pembroke Pines, Miramar, and Hialeah down to MIA. The pipe measures ten inches in diameter and runs four feet underground. Over 13,000 linear feet of the pipeline traverses FLL property from the northeast corner to the airline fuel farm, then heading south through the terminal complex, continuing south to the southeast corner, turning west along the southern side of FLL and then near the southwest corner of the airport, turning south and continuing to MIA.

The Buckeye Pipeline is owned by Everglades Pipe Line Company, LP which leases the on-airport right-of-way from Broward County. Broward County has requested that the Everglades Pipe Line Company relocate a portion of the pipeline underlying the terminal area to the east, potentially on airport property. Everglades is considering several realignment relocations, but this information is not currently available. Broward County anticipates that Everglades would relocate this pipeline in the next four to five years. (See Appendix N, *Hazardous and Waste Materials*.)

7.1.1.3.2 NEW BROWARD COUNTY AVIATION DEPARTMENT ADMINISTRATION FACILITY

On March 1, 2006, Broward County moved its offices to a temporary location pending their relocation to a permanent administrative building in 2009. When completed, the new offices would highlight a news media briefing center, as well as on-site employee and visitor parking. The location of this administrative building has not yet been determined.⁴⁷

7.1.1.3.3 REHABILITATION OF RUNWAYS 9R/27L AND 13/31 AT FLL

In 2008 and 2009, Broward County is planning to treat Runway 9R/27L and Runway 13/31 with seal coat or Grip-Flex as a temporary maintenance measure. This would extend the life of both runways.

7.1.1.3.4 ATLANTIC VILLAGE HOTEL AND MARINA

The proposed Atlantic Village Hotel and Marina would be developed on a ten-acre site located directly south of, and in close proximity to FLL, within the City of Dania, Florida. The proposed Atlantic Village property sits on the Dania Cut-Off Canal and would include a large, deep water marina. The hotel would include 349 condo-hotel units, 80 private boat slips, swimming pool and tennis court areas, 20,000 square feet of ballroom and conference facilities, a 1,200-square foot business center, and

⁴⁷ Press Release: *Broward County Aviation Department Moves to New Location*. Internet web site: http://www.broward.org/airport/press_news_release.htm#DEPARTMENT/. February 2006.

over 1,000 parking spaces in two multi-level garages. The complex would include a 125,000-square foot office building that would adjoin the two parking garages.⁴⁸ A timeline for this proposed development is not available at this time.

7.1.1.3.5 PORT EVERGLADES

The projects described in the following sections are reasonably foreseeable future actions at the Port. These projects have been budgeted and are currently undergoing various stages of planning and design. If implemented, the earliest that construction would be complete is estimated no earlier than 2009.⁴⁹

Bridge Construction: The Port has proposed construction of a vehicular bridge over the FPL discharge canal at the Port, linking the Berth 29 area and Midport Cargo Yards to Southport. The bridge would be located adjacent to and north of the current Dry Marinas and south of the existing Florida Marine Patrol.⁵⁰

Terminal 4 Expansion: Improvement of Cruise Terminal 4 at the Port is necessary to provide an expanded cruise terminal with greater baggage area space to accommodate the increasing number of cruise passengers. Building access improvements would relocate the entrance operations along the west side of the Terminal 4 building and would provide a dedicated Terminal 4 roadway system separate from the existing roadway system that serves Cruise Terminal 2.⁵¹

Cruise Terminal 21 Baggage Claim Expansion: Expansion of the first floor of Cruise Passenger Terminal 21 and modification of the adjacent terminal roadway is proposed to improve the management and storage of passenger baggage for the cruise ship companies. To achieve the space necessary to accommodate passenger's baggage as they disembark cruise ships, approximately 15,000 square feet of additional baggage claim space would be added to the north side of the existing building. This additional space would allow the facility to better serve the large number of passengers carried by the mega-cruise ships in operation at the Port.⁵²

Renovation of Terminal 27 and Extension of Berth 27: This project would renovate an existing cargo terminal at the Port into its newest permanent cruise passenger terminal facility, which would be designated as Terminal 27. Terminal 27 would be designed to accommodate mega-cruise ships, which would require a 350-foot long extension of the existing Berth 27. The renovation of the

⁴⁸ Atlantic Village Hotel and Marina. Internet web site: <http://www.avhm.net/>. Retrieved March 28, 2006.

Atlantic Village Hotel and Marina. Internet web site: <http://www.condohotelcenter.com/condo-hotels/featured-properties/atlantic-village.html/>. Retrieved March 28, 2006.

⁴⁹ Information obtained from Broward County Seaport Planning and Construction Division (October 13, 2006). Broward County stated that it would be at least one year (from the date of the conversation) before construction for each planned project would begin.

⁵⁰ *Future Projects*, Broward County Seaport Planning and Construction Division. Internet web site: <http://www.broward.org/seaport/futureprojects.htm/>. Retrieved March 24, 2006.

⁵¹ *Future Projects*, Broward County Seaport Planning and Construction Division. Internet web site: <http://www.broward.org/seaport/futureprojects.htm/>. Retrieved March 24, 2006.

⁵² *Future Projects*, Broward County Seaport Planning and Construction Division. Internet web site: <http://www.broward.org/seaport/futureprojects.htm/>. Retrieved March 24, 2006.

terminal would include modifications to improve the site's ability to accommodate large buses, cabs, and private vehicles. All Federal inspection facilities and security needs would be incorporated into the design of Terminal 27.⁵³

Planned Dredging of Port Everglades: Improvement of the Port to accommodate future commercial fleets and to more effectively transit the existing fleet will involve dredging to deepen and widen the port basin, as well as the Dania Cut-Off Canal. One option being considered to handle the disposal of the dredge material is to make this material available to FLL for the construction of the Airport Sponsor's Proposed Project via a slurry pipeline from the Port.

7.1.1.3.6 FLORIDA POWER AND LIGHT (FPL) LAUDERDALE AND PORT EVERGLADES POWER PLANTS

FPL in its *Ten Year Power Plant Site Plan 2007-2016*, identified two Preferred Sites and eight Potential Sites for future generation power plant additions to meet future capacity needs. Preferred Sites are those locations where FPL has conducted significant reviews and taken action to site generation. Potential Sites are those sites that have attributes that support the siting of generation and are under consideration as a location for future generation; these sites have been identified as potential sites due to their proximity to FPL load centers, available space, existing infrastructure, and/or accessibility to fuel and transmission facilities, and include the remainder of FPL's existing generation facilities. Each of the eight Potential Sites is considered by FPL to be equally viable. Two of the eight Potential Sites are 1) the Lauderdale Plant in Broward County, Florida and 2) the existing Port Everglades Power Plant in Broward County, Florida.⁵⁴

The Lauderdale site encompasses approximately 130 acres and is located approximately five miles inland from Dania Beach and less than two miles west of FLL. The site is bounded on the south by Dania Cutoff Canal, the east by SW 30th Avenue, and the North by Interstate-595. The Lauderdale site has been in use since the 1920s and is adjacent to a county resource recovery project. To the north of the power plant is an area of mixed uplands with a scattering of small wetlands. Cooling water to support the operation of cooling towers would potentially be drawn from existing groundwater or the municipal water supply.⁵⁵

The Port Everglades Power Plant site encompasses 94 acres in the Port and consists of four steam boiler generating units capable of firing residual fuel oil, natural gas, or a combination of both. The plant site is primarily industrial and the adjacent land uses are a combination of Port facilities and associated industrial activities (oil storage, cruise ship facilities, and light commercial development). Should this site be selected as a future generation power plant addition, FPL expects to use the existing municipal water supply for industrial process and makeup water. Cooling

⁵³ *Future Projects*, Broward County Seaport Planning and Construction Division. Internet web site: <http://www.broward.org/seaport/futureprojects.htm/>. Retrieved March 24, 2006.

⁵⁴ *Florida Power & Light Ten Year Power Plant Site Plan, 2007-2016*. Internet web site: http://www.fpl.com/about/ten_year/pdf/plan.pdf/. April 2007.

⁵⁵ *Florida Power & Light Ten Year Power Plant Site Plan, 2007-2016*. Internet web site: http://www.fpl.com/about/ten_year/pdf/plan.pdf/. April 2007.

water to support the operation of cooling towers would be drawn from the Intracoastal Waterway. FPL has estimated that sufficient water is available for generation technologies that might be considered for the site.⁵⁶

While definitive timelines have been set for the identified Preferred Sites in FPL's *Ten Year Power Plant Site Plan 2007-2016*, there are no further indications that any concrete plans have progressed beyond an exploratory scope for the Potential Sites that are under consideration for possible increased future generation.

7.1.1.3.7 U.S. BORDER PATROL FACILITY

The Department of Defense (DOD) is proposing to construct a 35,000 square-foot U.S. Border Patrol Facility on an undeveloped 4.346-acre parcel located in the city of Dania Beach on NE 7th Avenue. The U.S. Border Patrol protects the nation's borders by controlling access and preventing illegal immigrants, drug traffickers, terrorists and terrorists weapons, including weapons of mass destruction, from entering the United States. The proposed facility will enhance border protection along the South Florida coastline and will be strategically placed close to FLL and Port Everglades.⁵⁷

As of June 2007, building permit plans were submitted to the city of Dania Beach⁵⁸ and the U.S. Army Corps of Engineers is reviewing the necessary Federal permit applications. For the construction of this facility and its supporting structures, this project could potentially fill an estimated 4.16 acres of jurisdictional mangrove wetlands designated as Essential Fish Habitat (EFH). Proposed mitigation for these unavoidable impacts to mangroves and EFH would consist of the purchase of 2.71 saltwater wetland credits at the FPL Everglades Mitigation Bank.⁵⁹ A timeline for the development of this facility has not yet been determined.

7.1.1.3.8 PROPOSED OCEAN EXPRESS NATURAL GAS PIPELINE

The AES Corporation, a global power company, proposes to construct an Ocean Express natural gas pipeline that would transport 842 million cubic feet of natural gas to southeastern Florida. The project consists of a new 53.62-mile intrastate natural gas pipeline that would extend from the Exclusive Economic Zone (EEZ) boundary between the U.S. and The Bahamas, to interconnect with the Florida Gas Transmission (FGT) system in Broward County, Florida. At the EEZ boundary, the Ocean Express pipeline will connect with, and receive natural gas transported by a 40-mile Bahamian-jurisdictional pipeline (owned by another AES affiliate) that extends to Ocean Cay, The Bahamas. The Ocean Express pipeline will deliver

⁵⁶ *Florida Power & Light Ten Year Power Plant Site Plan, 2007-2016*. Internet web site: http://www.fpl.com/about/ten_year/pdf/plan.pdf. April 2007..

⁵⁷ USACE Jacksonville District Regulatory Division Office. Permit Application SAJ-2006-0003233-LA0-1 and SAJ-2006-0003233-LA0-2, *Border Patrol at Dania Beach*. Email status May 2007. <https://epermit.usace.army.mil/cgi-bin/status.cgi>.

⁵⁸ City of Dania Beach Department of Planning and Zoning, Pending Major Projects, June 2007. Project List accessed by website. <http://ci.dania-beach.fl.us/DocumentCenterii.asp?FID=31>.

⁵⁹ USACE Jacksonville District Regulatory Division Office. Permit Application SAJ-2006-0003233-LA0-1 and SAJ-2006-0003233-LA0-2, *Border Patrol at Dania Beach*. Email status May 2007. <https://epermit.usace.army.mil/cgi-bin/status.cgi>.

natural gas to markets in the State of Florida and beyond via the interstate pipeline grid.⁶⁰ The proposed route may affect the Airport Perimeter Road right-of-way along the FLL perimeter.

The project is designed to help satisfy the growing demand for natural gas in Florida, to diversify the sources of supply to the state, and to increase competitive alternatives to the existing pipeline infrastructure for the benefit of customers in an environmentally acceptable manner. In evaluating route alternatives, AES Ocean Express sought to select a route that avoids or minimizes environmental impacts, particularly to sensitive or protected ecological areas. In addition, AES factored impacts on existing businesses and residential communities into its route selection, as well as maximizing the benefits associated with interconnecting with the existing FGT infrastructure. Since the project's inception, AES Ocean Express has consulted extensively with numerous state and Federal agencies, various departments of Broward County, and other interested parties to refine its route in a collaborative fashion and will continue to do so as the project advances. Construction is expected to begin during the second quarter of 2008. Delivery of natural gas to customers is estimated to begin in second quarter 2010.⁶¹ It is not known at this time whether the project is progressing as scheduled.

7.1.1.3.9 PROPOSED SHORELINE STABILIZATION AT WEST LAKE PARK

West Lake Park is a 1,522-acre restored mangrove wetland preserve that is located approximately five miles southeast of FLL. West Lake Park is owned and operated by the Broward County Parks and Recreation Division.⁶² The project includes stabilizing the shoreline of the Intracoastal Waterway to halt the constant erosion caused by many factors including boat traffic and storms. Habitat restoration and enhancement projects are on-going within West Lake Park as mitigation for Port and FLL development projects. As described in Section 6.J, *Conceptual Mitigation Measures Considered in the Draft EIS*, the mitigation of proposed impacts resulting from the implementation of the EIS alternatives would take place within West Lake Park, as stipulated by Broward County. Broward County currently holds a permit authorizing the mitigation and bank stabilization projects on-going in West Lake Park.

7.2 BASELINE FOR INCREMENTAL INCREASES IN ADVERSE EFFECTS

Chapter Five, *Affected Environment*, describes the existing environmental conditions within the Study Area for the runway development alternatives. If no actions were to take place, it can be reasonably determined that the existing environment at FLL and its vicinity would not change significantly from current conditions. However, as the future population of the region increases (as

⁶⁰ *Ocean Express Pipeline Project, Draft Environmental Impact Statement*; AES Ocean Express, L.L.C.; Docket No. CP02-090-001, FERC/EIS-0160D; June 2003.

⁶¹ AES Ocean Express. Internet web site: <http://www.aesoceanexpress.com/>. Retrieved September 4, 2007.

⁶² *West Lake Park and Anne Kolb Nature Center*. U.S.G.S. Internet web site: http://sofia.usgs.gov/virtual_tour/wlak/. Retrieved March 29, 2006.

projected), related changes are anticipated to occur; these changes would occur regardless of whether any of the runway development alternatives are approved and implemented. Therefore, the conditions described in Chapter Five, *Affected Environment*, serve as a baseline for comparison of the incremental increases in adverse effects that could potentially result from implementation of any of the runway development alternatives.

7.3 CUMULATIVE IMPACT COMPARISON

The scope of projects for consideration in the disclosure of cumulative impacts can vary by resource, just as the geographic study areas for the different resources may vary, as discussed in Chapter Five, *Affected Environment*. In general, those projects on or within the existing FLL property boundary are included because they are within the area of potential construction of the runway development alternatives. Consideration of impacts beyond the FLL property boundary is dependent on the resource being considered, and is influenced by such factors as political and land use jurisdictions, any unique characteristics of the resource, importance of the resource in a local and regional setting, and the distance of the effect of the potential impact for that resource.

The following discussion of cumulative impacts discloses only those environmental categories where potential impacts could occur with any of the runway development alternatives. Those categories are:

- air quality
- noise
- compatible land use
- water quality
- wetlands
- floodplains
- coastal resources
- hazardous waste
- fish, wildlife, and plants and Essential Fish Habitat
- solid waste
- socioeconomic impacts, environmental justice issues, and childrens' health and safety issues;
- secondary (induced) and infrastructure impacts
- light emissions and visual impacts
- natural resources and energy supply
- construction impacts

The environmental categories where no significant environmental impacts would occur due to the runway development alternatives are not included in this discussion of cumulative impacts nor are these categories listed in the summary matrix provided at the end of this chapter (see Table 7.2, *Summary of Cumulative Environmental Impacts*). These environmental categories are: historic, architectural, archeological, and cultural resources; Section 4(f) Properties [Recodified as 49 U.S.C. 303(c)] and Section 6(f) Properties; wild and scenic rivers; and farmlands.

7.3.1 AIR QUALITY

As discussed in Chapter Five, *Affected Environment*, Section 5.B, *Air Quality*, Section 5.B.1, *Regulatory Overview*, southeast Florida was compliant with all the Federal and state standards for healthful air quality at the time of the preparation of this EIS (see Chapter Six, Section 6.B, *Air Quality*, for detailed information).

However, in the recent past, the area was in violation of the ozone standard. Consequently, emissions of nitrogen oxides (NO_x) and volatile organic compounds (VOC), the precursor ozone pollutants, are of particular interest in Broward County and are the focus of the air quality assessment for this EIS.

Emissions of NO_x and VOC at the airport are primarily the result of the operation of motor vehicles and non-road mobile sources such as ground support equipment (GSE) and aircraft. The air quality assessment of future conditions presented in Chapter Six, Section 6.B, *Air Quality*, includes all reasonably foreseeable⁶³ future conditions associated with emission sources at the airport, particularly for the use of motor vehicles, GSE, and aircraft. As such, all known and quantifiable past, present, and reasonably foreseeable future actions relating to emission sources at the airport for the 2012 and 2020 analyses have been included in the modeling of pollutant concentrations, as presented in Chapter Six, Section 6.B, *Air Quality*.

The results of computer modeling show that implementation of any of the runway development alternatives would all result in a reduction in annual emissions as compared to the 2012 and 2020 No Action Alternatives (Alternative A). Therefore, when considering recent past, current, and reasonably foreseeable projects in and around FLL, neither the future baseline conditions, nor any of the runway development alternatives would have the potential to cause significant adverse cumulative air quality impacts.

Construction activities would result in short-term temporary air quality impacts including direct emissions from construction equipment and trucks, fugitive dust emissions from site demolition and earthwork, and increased emissions from motor vehicles and haul trucks on the on-site and off-site roads. The impacts would occur only within the immediate vicinity of the construction site. Broward County would be required to implement best management practices to reduce emissions, particularly fugitive particle emissions, during construction as described in Chapter Six, Section 6.B, *Air Quality*.

The air quality assessment in the EIS, Chapter Six Section 6.B, included the existing sources of emissions at FLL and the reasonably foreseeable projects for the 2012 and 2020 analyses. None of the future baseline conditions or any of the runway development alternatives would have the potential to cause significant cumulative impacts in air quality.

7.3.2 AIRPORT NOISE

As discussed in Chapter Six, *Environmental Consequences*, Section 6.C.1, *Airport Noise*, the disclosure of aircraft noise impacts are defined as incompatible land uses⁶⁴ located within the FAA-defined threshold of 65+ DNL (Day-Night Average Sound Level). The FAA further defines a significant noise impact if noise-sensitive areas would experience an increase in noise of DNL 1.5 decibels (dB) or more at or above DNL 65 dB noise exposure when compared to the No Action Alternative for the same time frame.

⁶³ FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, Appendix 2, Section 1.2c.

⁶⁴ Incompatible land uses are identified in accordance with *Federal Aviation Regulations 14 CFR Part 150 Airport Noise Compatibility Planning, Appendix A, Table 1*. See Appendix H, Table H-1.

A summary of the number of housing units, population, and noise-sensitive facilities located within each noise exposure contour range for all of the EIS alternatives are provided in Chapter Six, Section 6.C.1.1.8, *Summary of Land Use Impact Assessment* (for 2012), and Section 6.C.1.12, *Summary of Land Use Impact Assessment* (for 2020). All eligible incompatible land uses located within the 65 DNL noise contour of the FAA's Preferred Alternative would be mitigated to below the FAA's threshold of significance in accordance with the conditions specified in the FAA's Record of Decision.

The development and operation of the other projects disclosed in this chapter would occur on compatibly developed land or along existing transportation corridors. Noise impacts generated from those projects would be mitigated in accordance with all applicable local, state, and Federal regulations.

Therefore, it is reasonable to expect that with the mitigation of potential significant noise impacts with any of the runway development alternatives no significant cumulative impact to incompatible land uses would be expected because there were no noise impacts associated with the other projects disclosed in this chapter.

7.3.3 LAND USE COMPATIBILITY

As discussed in Chapter Six, *Environmental Consequences*, Section 6.C.2, *Land Use Compatibility*, noise and land use impacts are defined in terms of indirect, direct, and compatibility/consistency with local plans of affected jurisdictions. Indirect impacts are the aircraft noise impacts on incompatible land use⁶⁵ located within a 65+ DNL noise contour, and were discussed in Chapter Six, Section 6.C.1, *Airport Noise*.

The analysis of land use compatibility in relation to the runway development alternatives indicates that direct impacts to off-airport property could occur with all of the runway development alternatives except for Alternative A and Alternative C1. A discussion of the direct impacts is provided in Chapter Six, Section 6.C.2.1, *Property and Land Use Impacts*.

For Alternatives B1, B1b, B1c, B5, and D1, all or a portion of the Hilton (formerly the Wyndham) Fort Lauderdale Airport Hotel and the Dania Boat Sales properties may need to be acquired. Alternative C1 would not require any property to be acquired. Alternatives B4 and D2 may require the partial acquisition of the Dania Boat Sales. No residential properties would need to be acquired with the construction of any of the runway development alternatives. The acquisition or relocation of any property would comply with the Federal *Uniform Relocation Assistance and Real Property Acquisition Policies Act* (49 CFR Part 24).

None of the runway development alternatives require land use or zoning changes and would be considered consistent with the local land use and comprehensive plans as described in Chapter Five, Section 5.C.2, *Land Use Compatibility*.

⁶⁵ The incompatible land uses identified around FLL include housing units, places of worship (churches, synagogues), schools, assisted living facilities (nursing homes), libraries, performing arts centers, and hospitals.

The recent past and current projects in the vicinity of FLL have not caused a significant change in local land use. The development and operation of the other projects disclosed in this chapter would occur on compatibly developed land or along existing transportation corridors. The reasonably foreseeable projects discussed in this chapter would not change or impact zoning or land use around the Port or in the vicinity of FLL.

The implementation of any of the runway development alternatives would impact some off-airport (compatible) properties. However, the acquisition or relocation of any property would comply with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act (49 CFR Part 24). Other projects identified in this section would involve the use of already developed land and existing transportation corridors. It is reasonably expected that there would not be land use compatibility issues or consistency issues with local comprehensive plans and land use controls. Therefore, there would be no significant cumulative impact.

7.3.4 WATER QUALITY AND WATER RESOURCES

7.3.4.1 Water Quality

The EIS water quality analysis (see Section 6.E.1, *Water Quality*) estimates an increase in annual surface water quality pollutant loads to be discharged to receiving waterbodies under each of the runway development alternatives. However, it is reasonable to expect that direct or cumulative impacts to surface water or groundwater quality resulting from the runway development alternatives would be negligible. It would be mandatory for all projects to comply with existing and future water quality permit requirements. Also, the FLL Best Management Practices (BMPs) would ensure that concentrations of pollutants of concern would not exceed regulatory criteria. Based on the low background concentrations of the pollutants of concern, coupled with the relatively small volume of runoff to be generated by an improved airfield, impacts to the quality of the surrounding waterbodies would be considered unlikely.

The other projects identified in this chapter would be required to comply with all existing and future water quality regulatory criteria and permit requirements. In addition, these projects would also be required to develop BMPs that would ensure that concentrations of pollutants of concern do not exceed regulatory criteria. Therefore, it is reasonable to expect that there would be no significant cumulative impacts to water quality.

7.3.4.2 Floodplains

As indicated by the analysis of potential impacts to floodplains resulting from the runway development alternatives (see Section 6.E.3, *Floodplains*), the 100-year floodplain encroaches onto the airfield, and would be affected by all of the runway development alternatives under consideration. With the exception of the No Action Alternative (Alternative A), complete avoidance and minimization of new floodplain impacts with any of the runway development alternatives is not practicable due to the existing airfield geometry and presence of major transportation corridors and surrounding development.

Although the runway alternatives and the potential relocation of on-airport tenants would impact the floodplain, these impacts would not be significant because the loss of flood storage capacity would be accommodated through the design of the airfield stormwater management system.

The other projects identified in this section would be required to comply with all existing and future floodplain criteria and permit requirements. Therefore, it is reasonable to expect that no significant cumulative impacts to floodplains would occur.

7.3.4.3 Coastal Resources

The State of Florida has issued a preliminary consistency determination based on the findings presented in Chapter Six, Table 6.E.4-1, *Florida Coastal Management Program Consistency Review Statute/Scope Consistency*.

The other projects identified in this section would be required to comply with all existing and future coastal resource regulatory criteria and permit requirements. Therefore, it is reasonable to expect that no significant cumulative impacts to coastal resources would occur.

7.3.4.4 Wetlands

Development projects in the area surrounding FLL have resulted in a substantial modification to historic wetlands. **Table 7.1, Summary Analysis of Cumulative Impacts to Wetlands and EFH**, summarizes the impacts to wetlands and Essential Fish Habitat (EFH) from projects identified in this EIS.

Unavoidable impacts to wetlands would occur for each runway development alternative. Chapter Six, Section 6.E.2, *Wetlands*, presents the acres of wetland directly impacted by each runway development alternative, including the total Uniform Mitigation Assessment Method (UMAM) functional gain (FG) credits needed for mitigation.⁶⁶ Alternative B4 has the lowest direct wetland impact with 0.13 acres, while Alternative D1 has the highest direct impact with 21.87 acres. However, these impacts would be mitigated in accordance with regulatory requirements.

The avoidance and minimization of wetlands and conceptual mitigation proposed to offset unavoidable wetland impacts for all of the runway development alternatives is described in Chapter Six, Section 6.J, *Conceptual Mitigation Measures Considered in the Draft EIS*. Potential further avoidance and minimization opportunities related to wetland impacts would be identified during permitting. A *Conceptual Wetland Mitigation Plan* for the Proposed Action is provided in Appendix M.3 of this EIS.

⁶⁶ The Uniform Mitigation Assessment Method (UMAM) is used to determine the amount of mitigation needed to offset adverse impacts to wetlands and other surface waters and to award and deduct mitigation bank credits. See Chapter Six, Section 6.E.2, *Wetlands* and Section 6.E.2.3, *Analyses of Direct Wetland Impacts*.

Current and future development projects within Broward County and neighboring jurisdictions could potentially have a cumulative effect on wetland resources beyond the impacts caused by the runway development alternatives. Increases in impervious areas, utility relocations, and navigation improvements would likely affect wetlands and Waters of the U.S. to varying degrees. Mitigation for unavoidable wetland impacts would be required for these projects.

**Table 7.1
SUMMARY ANALYSIS OF CUMULATIVE IMPACTS TO WETLANDS AND EFH**

Name of Project	Wetland Impacts	EFH Impacts	Comments on Mitigation
Past Projects			
Florida Airspace Optimization Project	No impact	No impact	N/A
Port Everglades Projects			
Terminal 25 Expansion	No impact	No impact	N/A
Terminal 21 Expansion & Reconstruction	No impact	No impact	N/A
Construction of Operations Center & Harbormaster Tower	No impacts	No impact	N/A
Terminal 2 Expansion	No impact	No impact	N/A
Port Security Enhancements	No impact	No impact	N/A
Ocean-Dredged Material Disposal Site	No impact	Some minor direct/indirect impacts on water column and benthic environment at offshore disposal site	Mitigated through appropriate testing of the dredged material prior to disposal as well as ongoing EPA monitoring of the areal extent of impact and rate of recovery
Current Projects			
FLL Airport Current Projects	No impact	No impact	N/A
Port Everglades Harbor Current Projects	Potential impacts to jurisdictional wetlands including mangroves for the planned dredging projects are being assessed	Impacts to EFH could occur with the planned dredging activities including temporary turbidity of the water column and removal of benthic species. Assessment of impacts are ongoing	Planned mitigation opportunities at West Lake Park are being considered for any unavoidable impacts
Broward Intermodal Center and Automated People Mover	Impacts to jurisdictional wetlands occurring within the study area are currently being assessed	Impacts to certain estuarine and marine wetlands designated as EFH within the study area are currently being assessed	FDOT wetland mitigation site at I-595 and US-1 interchange is currently being considered for any potential unavoidable impacts
Ocean Express Natural Gas Pipeline	No impact because using directional drilling	Impacts to 0.44 acres of attached epibenthic biota with 5-20% coverage and 0.38 acres of sandy bottom	Removal of 37,642 tires in tire reef off of Broward County (DEP permit no. 06-0193181-006)

**Table 7.1, Continued
Summary Analysis of Cumulative Impacts to Wetlands and EFH**

Name of Project	Wetland Impacts	EFH Impacts	Comments on Mitigation
Tractebel Calypso Natural Gas Pipeline	Total expected wetland impacts includes less than 0.1 acres of direct impact	Impacts to EFH for various nearshore and offshore species and colonized hardbottom are expected with construction of pipeline	Planned path would minimize impacts to protected species and habitats nearshore and offshore. Restoration of a wetland area overrun by exotics onsite is currently planned to mitigate for unavoidable wetland impacts
South Florida East Coast Corridor Transit Analysis Study	No impacts yet identified (study is in planning phase)	No impacts yet identified (study is in planning phase)	N/A
Proposed Dania Beach U.S. Border Patrol Facility	Impacts to 4.16 acres of jurisdictional mangrove wetlands is expected	Impacts to 4.16 acres of mangrove habitat designated as EFH is expected	Propose to purchase 2.71 saltwater wetland credits at FPL Everglades Mitigation Bank ^a
Reasonably Foreseeable Future Actions			
Taxiway C Extension and Relocation/Decommissioning of VOR Beacon at FLL	Not yet determined	Not yet determined No adverse impacts to wetlands or EFH are expected	N/A
New Broward County ADA Facility	Not yet determined	Not yet determined	N/A
Rehabilitation of Runways 9R/27L and 13/31 at FLL	Not yet determined	Not yet determined No adverse impacts to wetlands or EFH are expected	N/A
Atlantic Village Hotel and Marina	Not yet determined	Not yet determined	N/A
Port Everglades Planned Terminal Projects	Not yet determined	Not yet determined	N/A
Planned Dredging at Port Everglades	Not yet determined	Not yet determined	N/A
FPL Lauderdale and Port Everglades Power Plants	Not yet determined	Not yet determined	N/A

^a Information provided by Barbara Chow, Broward County Environmental Protection Department, August 2007

Source: Landrum & Brown and Sandra Walters Consultants, Inc., 2008

The other projects identified in this section would be required to comply with all existing and future wetland regulatory criteria and permit requirements. Therefore, it is reasonable to expect that no significant cumulative impacts to wetlands would occur.

7.3.4.5 Water Quality and Water Resources – Summary

Other regional projects, in combination with any of the runway development alternatives could impact water quality and water resources in the vicinity of FLL. However, it is reasonable to expect that impacts would be offset through the implementation of mitigation programs developed in coordination with Federal and state regulatory agencies and in accordance with applicable regulatory permit requirements. Therefore, no significant cumulative impacts to water quality would be expected.

7.3.5 FISH, WILDLIFE, PLANTS, AND ESSENTIAL FISH HABITAT

As discussed in Chapter Six, Section 6.F.1, *Fish, Wildlife, and Plants*, potential impacts to four Federally-listed species and one state-listed species of concern were considered with the various runway development alternatives. The Federally-listed species of concern are the smalltooth sawfish, the West Indian manatee, the wood stork, and Johnson's seagrass. The state-listed species of concern is the Florida burrowing owl.

Coordination with the National Marine Fisheries Service, the U.S. Fish and Wildlife Services, and the Florida Fish and Wildlife Conservation Commission was conducted throughout the EIS process, to identify and document potential impacts and mitigation opportunities. The FAA has determined that no significant adverse affect would occur to any Federally- or state-listed species. The Airport Sponsor will be required to conduct a survey for the Burrowing Owl (a state-listed species) prior to construction. Results of the FAA's agency coordination are provided in Chapter Eight, *FAA's Preferred Alternative*, and Appendix M, *Biological Resources*.

Table 7.1, *Summary Analysis of Cumulative Impacts to Wetlands and EFH*, summarizes the impacts to wetlands and Essential Fish Habitat (EFH) from projects identified in this EIS. The FAA has determined there would be no significant impacts to threatened and endangered species or EFH resulting from the implementation of any of the runway development alternatives, based on project design; the minimal short-term and permanent impacts associated with the installation of light tower foundations, utility cables, and access roads required for the proposed runway approach light configurations; and the mitigation proposed for unavoidable wetland impacts.⁶⁷ (See Section 6.F.1, *Fish, Wildlife, and Plants*).

Past and current development in Broward County has resulted in fragmentation of natural habitats, have limited the amount and locations of suitable habitat available to support plant and animal species. These impacts are not the result of any one project, yet cumulatively they have been significant to natural ecosystems. As the

⁶⁷ Further consultation with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service occurred after issuance of the Draft EIS. Those coordination letters are included in this EIS document in Appendix M, *Biological Resources*.

population of Broward County has grown in the last 20 years, the construction of major transportation thoroughfares and the extensive urbanization of the County have all contributed to these cumulative impacts. However, based on the anticipated impacts that would be associated with any of the runway development alternatives, and mitigation for unavoidable impacts, the implementation of any of the runway development alternatives would make only a negligible contribution to these cumulative impacts.

Other regional projects, in combination with any of the runway development alternatives could cumulatively affect fish, wildlife, and plants in the vicinity of FLL. It is reasonable to expect that any potential significant affects would be offset through the implementation of mitigation programs developed in coordination with Federal and state regulatory agencies and in accordance with applicable regulatory requirements. Therefore, no significant cumulative affect would occur.

7.3.6 HAZARDOUS MATERIALS AND SOLID WASTE

Hazardous Materials: The hazardous materials identified in this EIS (see Chapter Six, Section 6.G.1, *Hazardous Waste*) shows that due to the age of many of the buildings located at FLL, it is likely that asbestos is present in a number of on-airport structures. For locations potentially affected by the runway development alternatives, asbestos surveys would need to be conducted to determine the quantities of asbestos at the facilities and the extent of asbestos abatement required. Potential clean-up of asbestos would be completed in accordance with all Federal, state, and local regulations.

There are previously documented incidences of petroleum contamination at FLL. Construction and demolition activities proposed in these areas would include measures that would be taken during the excavation or dewatering process to ensure worker safety and proper disposal of any contaminated media encountered during construction. A contingency plan would be put in place to address potential worker exposure, as well as clean-up and disposal of any contaminated material that is unearthed during the construction phases of the proposed project. Proper storage, use, and disposal procedures would reduce the probability of releases and, as a result, minimize cumulative impacts on human health and the environment.

Construction of the runway development alternatives would not result in a significant increase in the amount of hazardous waste generated and would have no impact on the available capacity of existing waste disposal facilities. Existing hazardous waste disposal facilities would be able to accommodate the forecast increase in the amount of hazardous waste generated by operations and construction activity at FLL. Other projects identified in this section would be required to comply with all existing and future hazardous material regulatory criteria. Therefore, it is reasonable to expect that cumulative impacts to hazardous materials, as a result of past, present, and reasonably foreseeable future projects, would not be considered significant.

Solid Waste: The solid waste analysis for this EIS (see Chapter Six, Section 6.G.2, *Solid Waste*) shows that the forecast increases in airport use would result in the generation of greater amounts of waste. Based on the current capacity of the solid

waste facilities used by FLL, and the resources available at each facility, it is not anticipated that those facilities would have to be expanded to accommodate the increase in solid waste that would result from the implementation of the runway development alternatives. Therefore, no long-term cumulative impact is expected on the total quantities of solid waste produced and handled in the region.

Other projects identified in this section would be required to comply with all existing and future solid waste regulatory criteria. Existing solid waste disposal facilities would be able to accommodate the forecast increase in the amount of solid waste generated by operations and construction activity at FLL. Therefore, it is reasonable to expect that cumulative impacts to solid waste, as a result of past, present, and reasonably foreseeable future projects, would not be considered significant.

Reasonably foreseeable future actions in and around FLL would contribute to hazardous waste generation and solid waste. The hazardous waste disposal facilities and solid waste landfills can accommodate the expected increase in waste, primarily in the form of construction debris. Construction waste is considered a temporary impact and would not have a long-term significant affect on the total quantities of waste produced and handled in the region. Therefore, no significant cumulative impact or increase in hazardous material or solid waste would be expected to occur.

7.3.7 SOCIAL AND COMMUNITY RESOURCES

7.3.7.1 Socioeconomic Impacts

No residential property acquisition is required to implement any of the runway development alternatives assessed in this EIS. Acquisition of all or a part of the Hilton (formerly the Wyndham) Fort Lauderdale Airport Hotel and the Dania Boat Sales may be required depending on which alternative is implemented. In addition, access to or crossing of rights-of-way owned by Broward County, the Florida DOT, the Dania Cut-Off Canal, or Florida East Coast (FEC) Railway may need to be negotiated. Other than the Hilton Hotel and Dania Boat Sales, all other potential relocations would affect only on-airport tenants. Surface traffic leading to and from the site would increase during the construction period. Construction vehicles, personal vehicles of construction workers, and heavy vehicles would access the site during the construction phase. Potential local roadway detours during construction have not yet been determined. Any such detour would be short-term and temporary.

Implementation of any of the runway development alternatives would impact some off-airport (compatible) properties, however the acquisition or relocation of any property would comply with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act (49 CFR Part 24). Other projects identified in this section would involve the use of already developed land and existing transportation corridors. It is reasonably expected that there would not be any significant socioeconomic impact because these projects would not require land acquisition. Therefore, it is reasonable to expect that no significant cumulative impact would occur.

7.3.7.2 Environmental Justice

As described in Chapter Six, Section 6.H.1.2, *Environmental Justice*, minority or low-income populations located around the airport would not experience a disproportionate noise impact from aircraft activity than the majority population in the Study Area. In addition, no residential land use would be acquired for any of runway development alternatives. Other projects identified in this section would involve the use of already developed land and existing transportation corridors, it is reasonable to expect that no significant or disproportionate impact to minority or low-income populations would occur.

Therefore, there would be no significant cumulative impact.

7.3.7.3 Children's Environmental Health and Safety

The FAA determined through its analysis of the potential for impacts to childrens' health and safety that the implementation of any of the runway development alternatives would not significantly contribute to, or result in harmful agents being introduced into the water, air, or soil above what potentially exists at FLL. Past and present projects that currently comply with applicable Federal, state, and local laws have not adversely impacted the health and safety of area residents. All future regional projects would need to document compliance with such laws.

It is reasonable to expect that the health and safety of children would not be adversely affected by the cumulative development of any future projects in the region.

7.3.8 SECONDARY, INDUCED, AND INFRASTRUCTURE

7.3.8.1 Surface Transportation

The EIS surface transportation analysis (see Chapter Six, Section 6.H.2.1, *Surface Transportation*) determined that the roadway intersections in the vicinity of FLL operate at Level of Service (LOS) ⁶⁸ "D" or "F" during peak hours. Traffic volumes on these local roadways are anticipated to increase in the future with or without implementation of improvement projects at FLL. Depending on the runway development alternative selected, minor amounts of traffic that currently travel along on-airport roadways, would be shifted to local roadways due to the closure of various sections of Airport Perimeter Road. The introduction of this airport traffic onto these congested local roadways would not further deteriorate the LOS of local roadways or intersections.

Alternatives B4 and D2 would require a shift of U.S. Highway 1 to the east approximately 87 feet to accommodate the proposed extension of Runway 9R/27L to a full length of 6,001 feet. The construction activities associated with the proposed realignment of U.S. Highway 1 may require temporary lane shifts and/or closures. However, full closure of U.S. Highway 1 northbound or southbound lanes

⁶⁸ Level of service (LOS) is a quantitative measure of the quality of service on a roadway developed from the perspective of transportation users. See Section 5.H.2.1, *Surface Transportation*.

is not required. Coordination with the Florida Department of Transportation (DOT) and the FEC Railway could avoid or minimize possible scheduling issues with the operation of the FEC Railway and minimize traffic disruptions on U.S. Highway 1.

Other planned future transportation projects in the region would relieve traffic congestion. The planned future Intermodal Center (IMC) and Automated People Mover (APM) would relieve traffic congestion, and address safety and security concerns along access roadways serving FLL and seaport terminals (specifically Eller Drive, Spangler Boulevard, U.S. Highway 1, Interstate-595, and Griffin Road); area corridors Interstate-595, U.S. Highway 1, and Interstate-95; as well as mitigation to support the population and passenger growth anticipated in the area.

The IMC would serve as a regional transportation hub housing such facilities as bus and train stations, kiss and ride areas, people mover connection, vehicle parking, and concession spaces; it would facilitate transfers to other regional transit systems. The APM would be designed to transport passengers within and between FLL and the Port, with connections to other regional transportation modes at the IMC.⁶⁹ The current South Florida East Coast Corridor Transit Analysis (SFECCTA) study, led by the Florida DOT, seeks to reduce roadway congestion and improve mobility by providing local and regional passenger transit service.

Other regional projects, in combination with any of the runway development alternatives, are not expected to cumulatively impact surface transportation. Planned future transportation projects in the vicinity of FLL and the region are intended to relieve traffic congestion. Therefore, it is reasonable to expect that no significant cumulative impacts to surface transportation systems would occur.

7.3.8.2 Economic Impact: Final Demand Employment Associated with Construction Spending for All Industries in Region

As discussed in Chapter Six, Section 6.H.2.2, *Economic Impacts*, the Regional Input-Output Modeling System (RIMS II), as presented in the Draft EIS, was used to quantify the construction impacts of the runway development alternatives on the regional economy. RIMS II is a set of regional and industry specific economic multipliers produced by the U.S. Department of Commerce, Bureau of Economic Analysis, commonly used to estimate the regional impacts of airport construction projects.

Based on the magnitude of the construction costs, additional jobs would be created within the region as a result of the construction of any of the runway development alternatives. These jobs would be associated with industries that directly and indirectly support construction activities.

There would be positive economic impacts to the region as a result of any of the runway development alternatives. As other projects identified in this EIS are constructed, it is reasonable to expect a positive economic impact to the region.

⁶⁹ *Intermodal Center and People Mover Project Draft Briefing Book*. Federal Highway Administration and Federal Transit Administration. October 2005.

Therefore, it is reasonable to expect that positive cumulative economic impacts could occur with any of the runway development alternatives along with other current and reasonably foreseeable future projects in the region.

7.3.8.3 Public Services

As discussed in Chapter Six, 6.H.2.3, *Public Services*, the implementation of the runway development alternatives would not reduce the level of vehicular access on local roadways by emergency vehicles to the airport or surrounding developments. Access by emergency response vehicles, school buses, and public transit, within the vicinity of FLL would not be altered with implementation of any of the runway development alternatives.

The implementation of any of the runway development alternatives would not affect the accessibility or circulation of public service vehicles to the airport or surrounding communities. This would include emergency response vehicles, school buses, and public transit. The LOS of the existing roadway system around the airport falls under existing conditions, therefore local roadway projects are needed to improve the LOS regardless of whether any airport development projects are implemented.

The implementation of the runway development alternatives would not result in any residential acquisition or relocation or significant commercial/business acquisition or relocation therefore the level of public services would not change.

As discussed above in Section 7.3.8.1, *Surface Transportation*, other planned future transportation projects in the region would relieve traffic congestion.

Other regional projects, in combination with any of the runway development alternatives, are not expected to cumulatively impact public services in the vicinity of FLL and the region.

7.3.9 LIGHT EMISSIONS AND VISUAL IMPACTS

Many residential areas surrounding FLL are shielded from airport light emissions by a buffer of undeveloped land and compatible land uses that surround the airport (i.e., major highways, industrial development, noise berms, and mature trees). The distance of the residential structures from the airport property further attenuates light emissions. In addition, the Aviation Greenbelt, and the landscaping and wall on the south side of Griffin Road act as a buffer between airport property and the residential use on the south side of Griffin Road. This would remain the case with any of the runway development alternatives. Therefore, no significant light emissions or visual impacts would occur as a result of implementation of the runway development alternatives.

Current and reasonably foreseeable future regional projects occurring in the highly developed area around FLL would be subject to local building codes.

Therefore, it is reasonable to expect that any of the runway development alternatives along with the other projects discussed in this chapter would not create significant cumulative light emissions or visual impact.

7.3.10 NATURAL RESOURCES AND ENERGY SUPPLY

No irreversible or irretrievable commitments of natural resources are anticipated with the construction of any of the runway development alternatives. There would be no depletion of materials in short supply or substantial irreversible changes to the natural or cultural environment.

Potential future energy and fuel demands necessary to support stationary facilities and aircraft operations at FLL would not consume energy or fuel sources that may be in short supply. The future FLL energy and fuel demand, as described in Chapter Six, Section 6.H.4, *Natural Resources and Energy Supply*, would not have an adverse effect on future power and fuel supplies or for the supply of natural resources.

The Broward County Board of County Commission has set a goal for FLL to be a leader in sustainable design through the newly implemented Green Airports Initiative. It is expected that the proposed IMC and APM could potentially relieve traffic congestion in the Fort Lauderdale area and decrease the consumption of fossil fuels. The current SFECCTA study, led by the Florida DOT, proposes to reduce roadway congestion and improve mobility by providing local and regional passenger transit service. As transit ridership is anticipated to increase in the future, the number of personal vehicles on the roadway system could potentially decrease, which, in turn would decrease fossil fuel consumption.

Other regional projects, in combination with any of the runway development alternatives, are not expected to adversely cumulatively affect natural resources and energy supply in the region.

7.3.11 CONSTRUCTION IMPACTS

Construction activities are generally short-term and temporary in nature, and do not usually cause significant adverse environmental impacts at airports. The EIS construction impacts analysis (see Chapter Six, Section 6.H.5, *Construction Impacts*) indicates that implementation of any of the runway development alternatives would not have long-term adverse impacts. Construction activities would cause minor short-term impacts in the categories of noise, air quality, water quality, and surface transportation, as described below. The short-term temporary impacts of the construction process are typically mitigated with proper construction management and the use of BMPs, as outlined in FAA Advisory Circular 150/5370-10A, *Temporary Air and Water Pollution, Soil Erosion and Siltation Control*.

- **Noise** - Noise levels caused by construction vehicles and equipment would temporarily increase at the site and along haul roads leading to the site during daytime hours. However, the construction noise is not expected to be distinguishable from general background noise from the airport and major streets and highways.
- **Air Quality** – Construction activities can result in short-term impacts of ambient air quality. These potential impacts include increased emissions from motor vehicles on the nearby streets due to traffic disruption at the construction site accesses, fugitive dust emissions, and direct emissions from

construction equipment and trucks. These impacts will be temporary and of short duration, and will affect only the immediate vicinity of the construction site and access routes. Fugitive dust emissions can occur during ground excavation, material handling and storage, movement of equipment at the site, and transport of material to and from the site. Fugitive dust is most likely to be a problem during periods of intense activity during windy and/or dry weather conditions. BMPs such as wetting, paving, or landscaping; chemically treating exposed earth areas; covering dust-producing materials during transport; limiting dust-producing construction activities during high wind conditions; and providing street sweeping or tire washes for trucks leaving the site can minimize the impacts from fugitive dust.

- **Water Quality** - Compliance with all permit conditions would be required to minimize short-term temporary impacts on surface waters caused by erosion and sedimentation. Permanent and temporary erosion control measures would be implemented to limit the area of exposed soil, to manage stormwater, and to minimize the production of dust that could be carried on equipment or by the wind to waterbodies on- and off-airport. A Stormwater Pollution and Prevention Plan (SWPPP) would be developed and implemented for construction activities. The SWPPP would stipulate what types of BMPs should be installed, practiced, and monitored to minimize impacts on water quality.
- **Surface Traffic** – Surface traffic leading to and from the site would increase during the construction period. Construction vehicles, personal vehicles of construction workers, and heavy vehicles would access the site during the construction phase. This inconvenience would be temporary and would cease immediately upon completion of construction.

No long-term construction impacts are expected from the runway development alternatives. The other projects discussed in this chapter are either complete, in the planning stage with no identified construction schedule, or beyond the proposed construction period for the proposed runway development. The short-term temporary construction impacts expected with the runway development projects or its alternatives along with the other projects discussed in this chapter do not appear to coincide in time, based on the best information available. Therefore, it does not appear that significant cumulative short-term temporary nor long-term construction impacts would occur.

7.4 CONCLUSIONS AND FINDINGS

7.4.1 SUMMARY OF CUMULATIVE IMPACTS

The discussion of cumulative impacts discloses the impacts of the runway development alternatives under consideration at FLL in combination with past, present, and reasonably foreseeable future actions at FLL, the Port, and within the FLL environs. These actions have been implemented, are under current planning, or are anticipated to occur in the reasonably foreseeable future to address the transportation and infrastructure needs of the region. When grouped together,

these independent actions could have a cumulative effect on resources, land use patterns, and the character of the surrounding community. See **Table 7.2, Summary of Cumulative Environmental Impacts**.

As described in Chapter Five, *Affected Environment*, the Study Area and Detailed Study Area encompass a built environment, dominated by transportation uses, commercial and industrial development, and residential areas. This built environment limits the categories within which cumulative impacts would occur.

For the runway development alternatives and other past, present and reasonably foreseeable projects described in this chapter, the level of cumulative impact is not expected to be significant. It is reasonable to expect that significant cumulative impacts would not occur because of the types of projects proposed, the extent of the built environment in which they will occur, compliance with regulatory requirements, and mitigation in accordance with local, state, and Federal regulations.

THIS PAGE INTENTIONALLY LEFT BLANK

**Table 7.2
SUMMARY OF CUMULATIVE ENVIRONMENTAL IMPACTS
Fort Lauderdale-Hollywood International Airport**

ALTERNATIVE										
ENVIRONMENTAL CONSEQUENCES	A	B1	B1b	B1c	B4	B5	C1	D1	D2	CUMULATIVE
Air Quality	Impact Would Not Exceed Standards (NAAQS) ^{9/}	Impact Would Not Exceed Standards (NAAQS) ^{9/}	Impact Would Not Exceed Standards (NAAQS) ^{9/}	Impact Would Not Exceed Standards (NAAQS) ^{9/}	Impact Would Not Exceed Standards (NAAQS) ^{9/}	Impact Would Not Exceed Standards (NAAQS) ^{9/}	Impact Would Not Exceed Standards (NAAQS) ^{9/}	Impact Would Not Exceed Standards (NAAQS) ^{9/}	Impact Would Not Exceed Standards (NAAQS) ^{9/}	No Significant Cumulative Impact
Airport Noise Impacts Within 65+ DNL										
2012:										
Residential Dwelling Units ^{10/}	13	632	652 ^{12/}	118 ^{12/}	372	840	28	N/A ^{5/}	N/A ^{5/}	No Significant Cumulative Impact
Population (# of persons)	33	1,538	1,593 ^{12/}	285 ^{12/}	973	1,928	71	N/A ^{5/}	N/A ^{5/}	No Significant Cumulative Impact
Noise Sensitive Facilities ^{11/}	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Significant Cumulative Impact
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	No Significant Cumulative Impact
2020:										
Residential Dwelling Units ^{10/}	696	1,046	1,051 ^{12/}	1,051 ^{12/}	477	1,260	285	801	303	No Significant Cumulative Impact
Population (# of persons)	1,772	2,447	2,472 ^{12/}	2,472 ^{12/}	1,492	4,235	717	1,926	789	No Significant Cumulative Impact
Noise-Sensitive Facilities ^{11/}	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Significant Cumulative 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	No Significant Cumulative Impact
Compatible Land Use ^{13/}	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 ^{14/}	Consistent with FCMP ^{14/}	Consistent with FCMP ^{14/}	Consistent with FCMP ^{14/}	Consistent with FCMP ^{14/}	Consistent with FCMP ^{14/}	Consistent with FCMP ^{14/}	Consistent with FCMP ^{14/}	Consistent with FCMP ^{14/}	No Significant Cumulative Impact
Fish, Wildlife, & Plants										
Federally-Listed Species & Critical Habitats										
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 Impact
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 Impact
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 Impact
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 Impact
State-Listed Species	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 Impact
Essential Fish Habitat	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 Impact
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 Impact
Socioeconomic, Environmental Justice, & Children's 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										
Surface Transportation	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
Economic Impact: Final Demand Employment Associated with Construction Spending for All Industries in Region	Not applicable due to no construction activity	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive Economic Impact
Public Services	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	No Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	No Adverse Cumulative Affect
Noise	No Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	No Adverse Cumulative Affect
Air Quality	No Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	No Adverse Cumulative Affect
Water Quality	No Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	No Adverse Cumulative Affect
Surface Transportation	No Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	Temporary Impact	No Adverse Cumulative Affect

Table 7.2
SUMMARY OF CUMULATIVE ENVIRONMENTAL IMPACTS
Fort Lauderdale-Hollywood International Airport

FOOTNOTES

- 1/ Maximum capacity presents a condition of balanced arrival and departure demand, arrival peak, and departure peak. By comparison, Practical capacity takes into consideration actual demand able to use available runways according to the aircraft types and runway length characteristics of each alternative. The practical capacity is lower than the maximum capacity for those alternatives that have shorter runways.
- 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 per operation was computed using a queue modeling methodology. Demand, defined in terms of counts of arrivals and departures in five-minute intervals, was modeled against the estimated capacity of each alternative in good (VFR), and poor (IFR) weather conditions. Both east and west operating flows were analyzed.
- 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/ Land acquisitions provides consideration for full acquisition of the Hilton (former Wyndham) Hotel and Dania Boat Sales. It does not provide consideration for potential acquisition of the marina.
- 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. A ratio of 2.0, for example, indicates that the benefits are twice as large as the costs. The higher the ratio, the greater the benefits.
- 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.
- 9/ NAAQS: National Ambient Air Quality Standards, established by the U.S. Environmental Protection Agency
- 10/ Includes single-family homes, multi-family units, and mobile homes.
- 11/ Includes schools, churches, nursing homes, and libraries
- 12/ For the 2012 scenario, Alternatives B1b and B1c (the Airport Sponsor's Proposed Project) represent the same condition with the exception that Alternative B1c includes implementation of Broward County Aviation Department's existing voluntary noise abatement program. All other alternatives represent unabated operating conditions. By 2020, the County's existing voluntary noise abatement program would no longer be in effect. The FAA's proposal could include operational abatement measures.
- 13/ For Land Use Compatibility, the runway development alternatives were examined to determine whether the proposed airport improvements would result in the acquisition or taking of a property and require a change in land use/zoning.
- 14/ FCMP: Florida Coastal Management Program

Source: Landrum & Brown, 2008