

Record of Decision

Philadelphia International Airport
Runway 17-35 Improvements Project

April 2005



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1. Introduction

This Record of Decision (ROD) provides final agency determinations and environmental approvals for Federal actions of the Federal Aviation Administration (FAA) necessary to extend Runway 17-35 at the Philadelphia International Airport (PHL).

The Federal actions are considered in ROD Section 3. This ROD completes a thorough and careful environmental decisionmaking process, including the FAA's public disclosure and review by the FAA decisionmaker of the analysis of impacts described in the March 2005 Final Environmental Impact Statement (FEIS). This ROD has been prepared and issued by the FAA in compliance with the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. Section 4321, *et seq.*), the implementing regulations (40 CFR Parts 1500-1508) and FAA directives (Order 1050.1E and 5050.4A). The ROD is also used to demonstrate and document FAA's compliance with the procedural and substantive requirements and environmental, programmatic, and related statutes and regulations that apply to FAA decisions and actions on proposed runway development and airport expansion projects. The FAA arrived at these determinations and approvals by reviewing the environmental analysis in the FEIS and all other relevant documents that comprise the EIS Record. Based on this review, it is FAA's finding that implementation of the Proposed Project achieves the Purpose and Need and is the environmentally Preferred Alternative.

2. Background

PHL is owned and operated by the City of Philadelphia, Department of Commerce (the Sponsor). Designated by the FAA as a large hub airport, PHL serves 26 scheduled passenger airlines, six cargo airlines, and general aviation. The airport is a domestic hub and international gateway for US Airways and a hub for United Parcel Service. In 2003, PHL handled approximately 447,000 aircraft operations and 25 million passengers. In 2003, it was the 13th busiest airport in the U.S. in terms of operations.

The Sponsor began preparing a Master Plan Update (MPU) in the fall of 2000 to study the airport's facility needs relative to future operational and passenger demand. One of the specific objectives of the study was to evaluate the cause(s) of delay at the airport, which in 2003 was the sixth most delayed airport in the U.S. The Sponsor examined existing passenger and aircraft activity levels, forecast future activity levels, and measured both against the capacity of the existing facilities to efficiently handle these levels. The forecasts were submitted to the FAA for review and the FAA approved them in February 2004. The analysis of the forecast passenger and aircraft activity levels determined that the number of delayed operations at PHL would continue to increase and that delays would increase from their current average level of nearly 10 minutes per operation to nearly 19 minutes per operation in 2010. FAA considers an airport with average delay in excess of five minutes to be congested.

The FAA has identified the PHL as one of the airports contributing to delays throughout the national airport system. The FAA has determined that a capacity and delay problem exists at PHL and that one of the major



causes of the delay is inadequate all-weather airfield capacity due to the airfield's current configuration. The FAA has also determined that proposed projects, identified by the Sponsor to alleviate this problem, required the FAA to prepare an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA). One of these proposed projects, known as the Runway 17-35 Extension Project (the Project), will provide delay reduction in the short term. A second proposed project, known as the PHL Capacity Enhancement Program (CEP), is a major airfield redevelopment project that would provide additional capacity and, as a result, more comprehensive and longer-term delay reduction. FAA is early in the NEPA process for the CEP, but determined that the Runway 17-35 Extension Project has independent utility because of PHL's more immediate need to achieve delay reductions as soon as possible.

3. Proposed Federal Action

The FAA's actions include approval of the revised Airport Layout Plan (ALP); development and approval of navigational aids and revised flight procedures; and funding and grant approval processes for elements of the Proposed Project. The Federal actions required of the FAA are:

- The approval of revisions to the Airport Layout Plan (ALP) for construction and operation of the proposed Runway 17-35 extension and associated improvements (listed in full in FEIS Section 3.5.3 and in Section 5 of this ROD);
- The Federal environmental approval necessary to proceed with processing an application for Federal funding of those development items qualifying under the former Airport and Airway Improvement Act of 1982, and as recodified at 49 U.S.C. 47101 et seq. as well as applications to impose and use Passenger Facility Charges;
- The approval for relocation, installation and/or upgrade of various navigational aids; and
- The approval of associated safety actions (i.e. the air traffic procedures necessary to operate the extended runway) including, but not limited to, revisions to established flight procedures.

Several Federal permits and approvals will be required to implement the Proposed Project. The U.S. Environmental Protection Agency (USEPA) is responsible for determining compliance with the Safe Drinking Water Act (42 U.S.C. 300f to 300j). The Commonwealth of Pennsylvania is responsible for permitting processes under 33 U.S.C. 1342, the Federal statute that governs the National Pollutant Discharge Elimination System (NPDES) permit program for stormwater and wastewater discharges, and for Section 404 of the Clean Water Act subject to the Statewide General Permit issued by the U.S. Army Corps of Engineers. Other than the FAA's actions approved in this ROD, separate Federal and state actions and associated determinations will be made by the appropriate agencies in accordance with established procedures.



4. Purpose and Need

The purpose of the Project is to reduce current and projected airfield delays at PHL in the short term.

Passenger and aircraft activity data examined during the preparation of the PHL MPU show that aircraft operations at PHL are currently delayed an average of 10 minutes per operation. As stated in FAA's *National Plan of Integrated Airport Systems*, an airport is considered to be congested when average delay exceeds five minutes per operation.

Delays at the Airport have been made worse by dramatic changes in the fleet mix from turboprop aircraft to regional jets. Yearly operations by regional jets are forecast to increase 144 percent between 2002 and 2010 from approximately 73,000 to 178,000. Conversely, operations by turboprop aircraft are forecast to decrease 15 percent (from approximately 117,100 to 98,700) between 2002 and 2010.

Secondary Runways 17-35 and 8-26 are presently 5,459 feet and 5,000 feet long, respectively. These runways were constructed to serve commuter operations which were conducted using turboprop aircraft. Since the construction of these runways, airlines have been increasingly using narrowbody aircraft and regional jets have replaced most turboprop operations. Because of their short lengths, regional jets and narrowbody aircraft cannot use these runways on a regular basis for takeoff to many of the destinations served from PHL. This is because narrowbody and most regional jets require runway departure lengths of 6,300 feet to 6,700 feet for many of the destinations served. As a result, Runways 17-35 and 8-26 are underused and delays at PHL are increasing because the growing regional jet and small narrowbody fleets must share the Airport's primary 9,500-foot and 10,500-foot runway complex with the large narrowbody and widebody fleets. This congestion of the primary runway complex contributes to delays.

By 2010, combined regional jet and small narrowbody aircraft operations are forecast to total approximately 375,400 or 67 percent of PHL's total aircraft operations. This increase (from 292, 851 or 63 percent of total operations, in 2002) is due to the changes that the airlines serving PHL are projected to make to their fleets within the next three to seven years to meet passenger and cargo demands. Delays are forecast to increase from 10 minutes to 19 minutes per operation by 2010 if no actions are taken to reduce delays. Immediate, short-term solutions are, therefore, needed to reduce current and projected short-term airfield delays at PHL.

Just prior to publication of the DEIS in October 2004, US Airways filed for bankruptcy under Chapter 11. The Airline has indicated it will not change its Philadelphia schedule significantly, and the courts have allowed funding to maintain operations. FAA does not expect that this filing will affect the delay analysis or the need for the Proposed Project. PHL is a heavy origin-destination market with a considerable demand for air carrier services. If US Airways were to cancel services, other airlines, such as the new entrant low-cost carrier Southwest, are positioned and would be expected to increase services to meet this demand. US Airways has recently increased operations in Philadelphia, indicating that the need for the Proposed Project has not been affected by the financial situation of this carrier.

This analysis of historical and forecast delays at PHL demonstrates that PHL is one of the most congested airports (ranked as the 6th most delayed airport in the U.S) and that delays will increase substantially as a result of the changing fleet mix and increased aircraft operations. Based on this need, the FAA has defined the



purpose of the Project as the reduction of current and projected aircraft delays at PHL in the short term. The earliest period of time that an alternative could be evaluated in the NEPA EIS review process, pass through the permitting or regulatory process, and proceed through construction and implementation would be in 2007. The CEP will increase airport capacity and therefore will provide a more comprehensive and longer-term delay reduction. The CEP's major airfield redevelopment program will require a longer time period for environmental review, design and implementation. Because PHL is a pacing airport, (an airport that contributes to delays throughout the National Airspace System) delay reduction at PHL is important to the efficient operation of airports throughout the National Airspace System.

5. Alternatives Analysis

In addition to its responsibility to ensure environmental integrity through compliance with NEPA and other applicable environmental statutes, the FAA, in its consideration of alternatives, has kept in mind two of its statutory missions: to encourage the development of civil aeronautics and the safety of air commerce in the United States (49 U.S.C. 40104); and to plan the kind of airport development necessary to provide a safe, efficient, and integrated system of public-use airports adequate to anticipate and meet the needs of civil aeronautics, national defense and the United States Postal Service (49 U.S.C. 47103). FAA has also considered the congressional policy declaration that airport construction and improvement projects be undertaken to the maximum extent feasible so that safety and efficiency increase and delays decrease [49 U.S.C. 47101 (a)(7)].

In determining the best method to meet the needs identified in Chapter 2 of the FEIS, the FAA evaluated a broad range of alternatives, including some alternatives that were eliminated from further evaluation because they would not meet the Proposed Project's purposes or needs. Both off-site and on-site alternatives to the Proposed Project were evaluated in Chapter 3 of the FEIS. As discussed below, most of these alternatives were not feasible, reasonable, practicable or prudent; they were not responsive to reducing existing and future levels of delay, not timely, or too costly. The following is a summary of the alternatives considered.

5.1 No-Action Alternative

CEQ regulations require the No-Action Alternative be considered in the environmental assessment of alternatives (40 CFR Part 1502.14(d)). The No-Action Alternative involves only periodic maintenance and minor enhancements needed to maintain safe operations at PHL. The No-Action Alternative was not considered to be reasonable, practicable or prudent in accomplishing the identified purpose and need, to reduce delays at PHL in the short-term, but, as required to serve as a baseline, was carried through detailed analysis of all impact categories contained in FAA Orders 1050.1E and 5050.4A to serve as a baseline for analysis and as required by NEPA regulations.



5.2 Off-Site Alternatives

The FAA considered the following: possible use of other airports or sites (including construction of a potential new airport), the use of existing commercial-service airports, and other modes of transportation to meet the need to reduce delay.

More extensive use of other existing large hub airports by shifting aircraft operations away from PHL (Alternative A1, described in Section 3.3.1 of the FEIS) was eliminated from further consideration because it will not achieve the purpose and need. Airlines are unlikely to shift operations to other airports, because 63 percent of PHL's air passengers begin or end their journey in the Philadelphia catchment area, and PHL offers competitive destinations and service frequencies compared to the other large hub airports within the region. With the introduction of low cost carriers at PHL, fares are competitive with Newark and Baltimore-Washington, the closest large hub airports, further inducing passengers to choose PHL rather than drive further to these airports. Further, an airline's decision to establish connecting operations at an airport is based on economics, location, and other factors. FAA cannot force carriers to relocate their operations.

Increased use of commercial service airports and airports that could potentially provide new commercial service (Alternative A2.1, described in Section 3.3.1 of the FEIS) was eliminated from further review because these airports do not provide adequate levels of service in terms of destinations or frequencies, and, therefore, would not attract air passengers currently using PHL, and levels of service cannot be adequately increased in the short term to compete with service levels at PHL. In addition, airlines and air passengers decide which airport to use based on market forces and neither FAA nor the Sponsor can regulate these decisions. FAA cannot require that another airport expand its facilities or service, nor can it direct air carriers to use particular airports.

Increased use of Reliever Airports for general aviation (GA) (Alternative A2.2, described in Section 3.3.1 of the FEIS), including Wings Field Airport, Northeast Philadelphia, Brandywine, and South Jersey Regional, was eliminated from further review since it will not achieve the purpose and need, (*i.e.*, reduce current or future delays). GA operations at PHL are a minor contributor to delay. In 2003, GA accounted for 45,054 annual operations at PHL, or 10 percent of the total operations. In 2007, the total number of GA operations is forecast to increase to 61,200 annual operations, only 12 percent of the airport's total operations. Since GA generally operates on Runways 17-35 and 8-26 during peak periods of congestion and the delays at PHL are caused primarily by congestion on the primary runways 9L-27R and 9R-27L, GA operations have minimal impact on delay. As with commercial aircraft, GA pilots are free to choose which airports they use. Some corporate jets, air taxis, and other GA operators choose PHL for specific reasons, such as connections to commercial flights or access to corporate facilities.

Construction of a New Airport (Alternative A3, described in Section 3.3.1 of the FEIS) was eliminated by FAA from further review because while the construction of a new airport could reduce projected delays at PHL, it requires at least 10 to 20 years to implement and would not provide a short-term solution to PHL's immediate delay issues. No sponsor has proposed construction of a new airport in the PHL catchment area.



Consideration was given to other modes of transportation, such as rail, automobile, and intercity buses, that could reasonably provide an alternative to air passengers who otherwise could use PHL for their travel needs. Increased passenger travel by surface roadways (Alternative B1, described in Section 3.3.2 of the FEIS) was eliminated by FAA from further review because for the markets served by PHL that are greater than 400 miles from Philadelphia (nine of the top 10 markets to/from Philadelphia), the flying time is significantly shorter than the driving travel time and travel by automobile would not divert a sufficient number of air passenger trips from PHL to reduce current delay. Increased passenger use of passenger rail (Alternative B2, described in Section 3.3.2 of the FEIS) was eliminated from further review because no attractive rail alternatives are presently available outside the New York-Washington DC intercity travel market (northeast corridor), travel times and frequencies are too long and too few to be attractive outside the northeast corridor, particularly to nine of PHL's top ten destinations, and rail travel time and frequencies cannot be further improved in the short term. Increased passenger use of intercity bus services (Alternative B3, described in Section 3.3.2 of the FEIS) was eliminated by FAA from further consideration. It was eliminated because long travel times make it an unattractive mode choice for the principal origin-destination markets served by PHL and because it would not reduce passenger demand sufficiently to reduce delay in the short-term.

5.3 On-Site Alternatives

The FAA considered several alternatives that could potentially be implemented at PHL to reduce delays. These included alternatives that could be implemented without requiring substantial airfield infrastructure development such as Demand Management strategies (including Administrative Approaches, Voluntary Approaches, and Market-based Approaches), new navigation technologies, as well as physical improvements to the airfield such as taxiway reconfiguration and extending one of the secondary runways.

Administrative approaches (Alternative C1, discussed in Section 3.3.3 of the FEIS) such as FAA-imposed operational limits or caps on aircraft operations were dismissed after careful consideration because such approaches are not preferred as a matter of policy to solve delay problems at airports where expansion is physically possible and has been proposed. The FAA's preferred approach to reducing delay and congestion is to increase airport infrastructure to meet demand efficiently. Such administrative approaches bar air carriers from offering air travelers as much service as they would prefer. Past FAA actions indicate that the agency is not likely to undertake rulemaking to address persistent flight delays related to over-scheduling absent a severe and extraordinary level of delay and effect on the National Airport System (NAS). The FAA, in a Notice of Proposed Rulemaking¹, has proposed to adopt operational limits on arrivals during peak hours as an interim measure to manage congestion and delays at O'Hare pending environmental review and decision-making concerning proposed capacity improvements. While Philadelphia is among the most delayed airports, these delays do not rise to the level of severity experienced at O'Hare International Airport, the airport experiencing the most delays of any U.S. airport, with twice as many operations per year as PHL, and more than six times the share of total annual minutes of delay than PHL. In addition, O'Hare Airport is responsible for a greater number of disruptive, ripple effects in the National Airspace System than PHL.

¹ *Congestion and Delayed Reduction at Chicago O'Hare International Airport*. Federal Register Docket No. FAA-2005-20704; Notice No. 05-03, United States Department of Transportation/Federal Aviation Administration, 25 March 2005.



FAA eliminated the voluntary de-peaking and flight reduction approaches to Demand Management (Alternative C2, discussed in Section 3.3.3 of the FEIS) from further review at PHL because while they have proven effective at O'Hare in the very short term, the possibility of their effectiveness at PHL to meet the Proposed Project's purpose and need is unknown, due to the differences between the airports and in the severity of delay and congestion between O'Hare and PHL. The flight reduction approach (i.e. scheduling reduction meetings) is an interim, stop-gap measure and is not intended to fill a void of many years. Unlike O'Hare, where the first improvements in the modernization program, if approved, are expected to come on line in 2007, PHL's CEP, if approved, would not be expected to come on line until 2015. This approach has other drawbacks, including lack of coverage of foreign air carriers.

While PHL is delayed, it is not severely congested to a point where FAA would invite scheduled U.S. and Canadian carriers at PHL to a scheduling reduction meeting. The type and severity of delay and role that PHL plays in the national and international aviation systems, and the composition of airlines at PHL are significantly different from those at ORD.

A Peak Period Pricing Program (PPPP) (Alternative C3, discussed in Section 3.3.3 of the FEIS) was evaluated and eliminated from further review because a PPPP is estimated to reduce only GA and turboprop service in both 2007 and 2015. These aircraft use the secondary runways during the peak periods and do not contribute to delays at PHL. Cancellation of turboprop and GA flights as a result of a PPPP would have no impact on congestion on the primary runways and, therefore, would not reduce delays at PHL.

Taxiway reconfiguration (Alternative D2, discussed in Section 3.3.4 of the FEIS) was considered because the existing configuration of taxiways at PHL contributes to the delay problem experienced at PHL. Because of the restricted space between the terminal piers, and between the terminal area and runways, pilots are forced to use long taxi routes and to wait to avoid conflicts with other taxiing aircraft. A reconfiguration of the taxiways could assist in reducing delay at PHL; however, the redesign of the taxiway system cannot be accomplished in the short term. Optimal reconfiguration would require additional space in the apron areas around the terminals, either by moving Runway 9L-27R away from the terminals, eliminating the terminal ends to provide more space for aircraft, or moving the terminals. Since these configurations cannot be implemented in the short term they are eliminated from further consideration. This alternative was eliminated from further review because it requires significant airfield and/or terminal modifications and, therefore, cannot be implemented in the short term.

The FAA has considered other technologies (Alternative E1, discussed in Section 3.3.4 of the FEIS) that could assist in increasing the number of arrival operations, such as RNP (Required Navigation Performance), Paired Approach with Automatic Dependent Surveillance-Broadcast (ADS-B), Wake Vortex Advisory System and Center Terminal Radar Approach Control (TRACON) Automation System (CTAS) tools. Many of these are already in use at PHL. Perhaps the most promising new technology for reducing delays at PHL is the potential reduction of separation requirements for arrivals or departures on closely spaced parallel runways under certain crosswind conditions. The implementation of these new technology improvements was eliminated by FAA from further review because they require additional research and testing, and cannot be implemented in the short term.



Secondary Runway Extensions (Alternative D1, discussed in Section 3.3.4 of the FEIS). The FAA evaluated extending the secondary runways at PHL [(Runway 8-26 is currently 5,000 feet long) and Runway 17-35 (is currently 5,459 feet long)] as a means of reducing delay in the short term. In order to meet the Project need, a median departure runway length of 6,450 feet for the future fleet is required. Runway 8-26 is a unidirectional runway with substantial constraints at both ends (Terminal F, the Army Corps of Engineers Fort Mifflin Dredge Disposal Facility, and the Kaeverner Shipyard crane). Due to the complexities involved in eliminating the constraints at both ends of the runway, a 1,450-foot extension to Runway 8-26 would not be feasible by 2007 and this alternative was eliminated from further consideration.

Four alternatives for extending Runway 17-35 were evaluated. Two alternatives were evaluated and eliminated from further consideration:

- Option A extends Runway 17-35 to the north only. Interstate 95 (I-95) is 1,900 feet north of the existing Runway 17 threshold. Since I-95 is elevated 35 feet above mean sea level, the highway would be an airspace obstruction if the runway has a standard 1,000-foot RSA and is extended by more than 640 feet to the north. This option would not fulfill the Project's purpose and was eliminated because it would only provide a total runway length of 6,100 feet, less than the minimum 6,450 feet required to meet the Project need.
- Option B extends Runway 17-35 to the south only with no displaced threshold. EMAS could be used at this location to reduce the RSA length and provide a longer runway pavement length. However, any extension greater than 400 feet would require a displaced landing threshold for Runway 35 to provide clearance above vehicles on Hog Island Road and trains on the railroad tracks. This option was eliminated because it would only provide a total runway length of 5,860 feet, less than the minimum 6,450 feet required to meet the Project need.

5.4 EIS Alternatives

Three alternatives were the subject of detailed environmental evaluation in the FEIS, and were described in Section 3.3.5 of the FEIS. Table 1 summarizes the alternatives evaluated in the FEIS.

The No-Action Alternative consists of only periodic maintenance and minor enhancements needed to maintain safe operations at PHL

Alternative 1 extends the runway to the north 640 feet and to the south 400 feet for a total length of 6,500 feet with standard safety areas. Because of the occasional large vessels in the Delaware River that would be airspace obstructions, this option would require that the operational procedure, developed to suspend Runway 35 arrivals when certain large ships are present, be maintained.



Table 1 Summary of Alternatives

	No-Action	Alternative 1 (Preferred Alternative)	Alternative 2
Runway 17 End (southbound)			
Take-off Distance Available	5,460 feet ¹	6,500 feet	7,000 feet
Landing Distance Available	5,460 feet	6,500 feet	6,500 feet
Displaced Threshold ²	No	No	500 feet
EMAS ³ RSA	No	No	Yes
Runway 35 End (northbound)			
Take-off Distance Available	5,460 feet	6,500 feet	7,000 feet
Landing Distance Available	5,460 feet	6,500 feet	5,556 feet
Displaced Threshold	No	No	1,444 feet
EMAS RSA	No	No	No
Ship Notification Procedure Required	Yes	Yes	No
Delay (minutes per operation)			
2007	15.3	13.9	15.1
2015	32.4	25.9	28.3
Estimated Cost (\$million)		\$36	\$56

1 Runway lengths rounded by 1 foot.

2 Displaced Thresholds is a threshold that is located at a point on the runway other than the designated beginning of the runway. The portion of pavement behind a displaced threshold may be available for takeoffs in both directions and landings from the opposite direction.

3 EMAS are collapsible blocks made from water, foam, and cement that deform readily under the weight of an aircraft tire. As the tires crush the material, the drag forces decelerate the aircraft, bringing it to a safe stop. EMAS is proposed for use in Alternative 2 for the RSA.

Alternative 1 is the Preferred Alternative and the Environmental Preferable Alternative. It includes the following elements:

- ❑ The runway pavement would be extended to the north by 640 feet, maintaining a width of 150 feet and having required shoulders on either side. This area would be regraded. Appropriate runway markings would be repositioned, as required.
- ❑ Taxiway D and E would be extended to the north by 640 feet and the width would be maintained at 75 feet. Appropriate connector taxiways, comparable to those already in place, would be constructed. Appropriate pavement markings, such as centerline, edge, and holding bars, would be painted and centerline lighting would be installed.



- ❑ A new 30-degree high speed exit taxiway would be constructed approximately 1,700 feet south of the future Runway 17 edge of pavement to expedite exit of landing aircraft from the runway and reduce overall Runway Occupancy Time. This taxiway would connect the runway to Taxiway E.
- ❑ The new runway safety area would extend 1,000 feet beyond the new Runway 17 edge of pavement. The RSA would be 500 feet wide and would be cleared and graded. The existing pavement that is used for the airfield service road and the economy parking lot would be demolished and removed.
- ❑ The segment of the airfield service road that passes north of the existing Runway 17 RSA would be relocated approximately 640 feet further north to remain clear of the future RSA.
- ❑ The runway pavement would be extended to the south by 400 feet, maintaining a width of 150 feet and having required shoulders on either side. This area would be regraded to create appropriate runway grades and safety areas. Appropriate runway markings would be repositioned, as required.
- ❑ Taxiway D and Taxiway E would be extended to the south by 400 feet and the width would be maintained at 75 feet. Appropriate connector taxiways, comparable to those already in place, would be constructed. Appropriate pavement markings, such as centerline, edge, and holding bars, would be painted and centerline lightings would be installed.
- ❑ A new holding apron would be added to the end of Taxiway S to serve the extended runway.
- ❑ The new RSA would extend 1,000 feet beyond the new Runway 35 edge of pavement. The RSA would be 500 feet wide and would be cleared and graded.
- ❑ The segment of the airfield service road that passes south of the existing Runway 35 RSA would be reconfigured to remain clear of the future RSA.
- ❑ The existing Visual Approach Slope Indicator (VASI) for Runway 35 would be recalibrated or relocated pending their tolerance limits, or replaced with a Precision Approach Path Indicator (PAPI) for improved visual guidance. The Runway End Identifier Lights (REIL) would be relocated 400 feet south of their current position. The existing Runway 17 localizer is 1,300 feet south of the existing Runway 35 threshold. The proposed extension may require that the localizer be relocated approximately 120 feet south of its current location.
- ❑ The glide slope transmitter for the Runway 17 Instrument Landing System (ILS) would be relocated based on the new landing threshold.
- ❑ The MALSR would be shifted to the north. The shift would move the last light directly north of Bartram Avenue on airport property.
- ❑ The section of State Route 291 from the Airport Exit Road north of Ramp F to Island Avenue would be abandoned and demolished. Bartram Avenue would be re-signed and designated as a replacement State Route.
- ❑ Approximately 1,000 spaces in the Economy Parking Lot would be displaced as a result of the runway extension and would be replaced in adjacent areas.



- ❑ Land Acquisition - The Project Sponsor would have to acquire a portion of the SR 291 right-of-way from the Commonwealth of Pennsylvania.
- ❑ The 24-inch sanitary sewer line that crosses the proposed runway extension area would be relocated.
- ❑ An existing Texas Eastern Transmission Corporation (TETCO) 16-inch natural gas pipeline would be relocated along the new access roadway.
- ❑ The Church Creek culvert beneath the existing Runway 17 RSA would be strengthened and the remaining segments of open channel would be covered by an extension of the culvert.
- ❑ A PECO 104-foot high electric transmission pole along the SEPTA line would be an obstruction to navigation and would need to be lowered accordingly. The remaining poles are not obstructions.
- ❑ The existing service station and associated underground tanks at the intersection of Island Avenue and SR 291 would be demolished. The property is owned by the City and the lease can be terminated, when necessary.

Alternative 2 extends the runway to the north and the south and would provide clearance above the large ships in the Delaware River by displacing the Runway 35 landing threshold to the north by 1,444 feet. To offset the loss of landing length on the south end, a 500-foot RSA with EMAS would be used on the north end. This would increase the departure distance for both directions to 7,000 feet and provide 6,500 feet for landing to the south and 5,556 feet for landing to the north. A displaced landing threshold would be required on Runway 17 to avoid obstructions related to I-95.

Alternative 2 includes the following elements:

- ❑ The runway pavement would be extended to the north by 1,140 feet, maintaining a width of 150 feet and having required shoulders on either side. This area would be regraded. Appropriate runway markings would be repositioned, as required.
- ❑ Taxiway D and E would be extended to the north by 1,140 feet and the width would be maintained at 75 feet. Appropriate connector taxiways, comparable to those already in place, would be constructed. Appropriate pavement markings, such as centerline, edge, and holding bars, would be painted and centerline lighting would be installed.
- ❑ A new 30-degree high speed exit taxiway would be constructed approximately 2,200 feet south of the future Runway 17 edge of pavement to expedite exit of landing aircraft from the runway and reduce overall Runway Occupancy Time. This taxiway would connect the runway to Taxiway E.
- ❑ The new runway safety area would extend 500 feet beyond the new Runway 17 edge of pavement. An EMAS surface would be placed within the 500-foot RSA and would be 150 feet wide and made of collapsible, impervious concrete. The remainder, if any, of the RSA not occupied by the EMAS would be cleared and graded. The existing pavement that is used for the airfield service road and the economy parking lot would be demolished and removed.



- ❑ The segment of the airfield service road that passes north of the existing Runway 17 RSA would be relocated approximately 640 feet further north to remain clear of the future RSA.
- ❑ The runway pavement would be extended to the south by 400 feet, maintaining a width of 150 feet and having required shoulders on either side. This area would be regraded to create appropriate runway grades and safety areas. Appropriate runway markings would be repositioned, as required.
- ❑ Taxiway D and Taxiway E would be extended to the south by 400 feet and the width would be maintained at 75 feet. Appropriate connector taxiways, comparable to those already in place, would be constructed. Appropriate pavement markings, such as centerline, edge, and holding bars, would be painted and centerline lightings would be installed.
- ❑ A new holding apron would be added to the end of Taxiway S to serve the extended runway.
- ❑ The new RSA would extend 1,000 feet beyond the new Runway 35 edge of pavement. The RSA would be 500 feet wide and would be cleared and graded.
- ❑ The segment of the airfield service road that passes south of the existing Runway 35 RSA would be reconfigured to remain clear of the future RSA.
- ❑ The existing Visual Approach Slope Indicator (VASI) for Runway 35 would be recalibrated or relocated pending their tolerance limits, or replaced with a Precision Approach Path Indicator (PAPI) for improved visual guidance. The Runway End Identifier Lights (REIL) would be relocated 400 feet south of their current position. The existing Runway 17 localizer is 1,300 feet south of the existing Runway 35 threshold. The proposed extension may require that the localizer be relocated approximately 120 feet south of its current location.
- ❑ The glide slope transmitter for the Runway 17 Instrument Landing System (ILS) would be relocated based on the new landing threshold.
- ❑ The MALSR would be shifted to the north. The shift would move the last light directly north of Bartram Avenue on airport property.
- ❑ The section of State Route 291 from the Airport Exit Road north of Ramp F to Island Avenue would be abandoned and demolished. Bartram Avenue would be re-signed and designated as a replacement State Route.
- ❑ Approximately 1,000 spaces in the Economy Parking Lot would be displaced as a result of the runway extension and would be replaced in adjacent areas.
- ❑ Land Acquisition - The Project Sponsor would have to acquire a portion of the SR 291 right-of-way from the Commonwealth of Pennsylvania.
- ❑ The 24-inch sanitary sewer line that crosses the proposed runway extension area would be relocated.
- ❑ An existing Texas Eastern Transmission Corporation (TETCO) 16-inch natural gas pipeline would be relocated along the new access roadway.



- ❑ The Church Creek culvert beneath the existing Runway 17 RSA would be strengthened and the remaining segments of open channel would be covered by an extension of the culvert.
- ❑ A PECO 104-foot high electric transmission pole along the SEPTA line would be an obstruction to navigation and would need to be lowered accordingly. The remaining poles are not obstructions.
- ❑ The existing service station and associated underground tanks at the intersection of Island Avenue and SR 291 would be demolished. The property is owned by the City and the lease can be terminated, when necessary.
- ❑ The runway pavement would be extended to the north by 1,140 feet, maintaining a width of 150 feet and having required shoulders on either side. Appropriate runway markings would be repositioned as required.
- ❑ Taxiway D and Taxiway E would be extended to the north by 1,140 feet.
- ❑ A new 30-degree high speed exit taxiway would be constructed approximately 2,200 feet south of the future Runway 17 edge of pavement to expedite landing aircraft from the runway and reduce overall Runway Occupancy Time.
- ❑ The new RSA would extend 500 feet beyond the new Runway 17 edge of pavement. An EMAS surface would be placed within the 500-foot RSA and would be 150 feet wide and made of collapsible, impervious concrete.

6. The Selected Alternative

As required by the CEQ (40 CFR Part 1502.14(e)), a lead agency must identify its Preferred Alternative in the FEIS and must identify the environmentally preferable alternative (40 CFR Part 1505.2(b)) at the time of its decision. The environmentally preferable alternative is the alternative which best promotes the national environmental policies incorporated in Section 101 of NEPA. In general, this would be the alternative resulting in the least adverse impact to the human environment while still meeting the purpose and need, and which best protects natural and cultural resources.

FAA has completed the appropriate environmental review and the necessary steps in the NEPA process, including:

- Careful consideration of the alternatives and the ability of the alternatives to satisfy the identified purpose and need for the Proposed Project;
- Evaluation of the potential impacts of the alternatives carried forward, including the determination that Alternative 1 can be considered an environmentally preferable alternative; and
- Review and consideration of public testimony, of comments submitted in response to the DEIS and FEIS, and of coordination with Federal, state and local agencies.



Alternative 1 meets the Project purpose and need, and will provide average annual delay reductions (per operation) of 1.4 minutes in 2007 and 6.5 minutes in 2015. Alternative 1 would shift 123 operations per day (44,900 operations per year) to Runway 17-35, reducing congestion on the primary runways. It has a lower cost than Alternative 2 (\$36 million). As shown in Table 2, there are only minor differences in the environmental effects of Alternative 1 in comparison to Alternative 2. Alternative 1 would have less impact on waterways (by 0.05 acres) and floodplains (by 4,000 cubic yards of fill) than Alternative 2. Because Alternative 1 has a lower cost and does not include EMAS, it will have slightly lower economic benefits than Alternative 2, with an estimated 500 fewer construction jobs. Either alternative will improve air quality in comparison to the No-Action Alternative. However, Alternative 1 would have slightly higher emissions of NO_x, CO, SO₂, and VOCs than Alternative 2.

FAA finds that Alternative 2 would be less effective in meeting the Project purpose and would provide average annual delay reductions (per operation) of only 0.2 minutes in 2007 and 4.1 minutes in 2015. It has a higher cost than Alternative 1 (\$56 million) and has greater adverse environmental impacts. Alternative 2 would shift 100 operations per day (2007) to Runway 17-35, reducing congestion on the primary runways to a lesser degree than Alternative 1.

The No-Action Alternative does not meet the Project's purpose and need. Delays would increase to an average delay per operation of 15.3 minutes in 2007 and 32.4 minutes in 2015. As a consequence of the increased delays, the No-Action Alternative would increase emissions of VOCs, NO_x, CO, and SO₂.

The FAA received numerous comments from elected officials and individuals concerned with noise, safety, and the effects of the Proposed Project on their quality of life, and opposing any build alternative. FAA recognizes that opposition, but all studies indicate that the Proposed Project will have no significant environmental effects, and that there is a need for the Project.

Therefore, FAA finds Alternative 1 to be the environmentally preferable alternative and to be a feasible, reasonable, practicable, and prudent alternative to meet the purpose and need for reducing existing and future delay at PHL. The FAA's selection of Alternative 1 as the Preferred Alternative incorporates mitigation measures described in Chapter 5 of the FEIS and later sections of this ROD. Having thus considered the policies set forth in 49 U.S.C. Sections 40104 and 47101, the ability of the available alternatives to meet the purpose and need, and the environmental impact of the alternatives, the FAA's approval of the Preferred Alternative signifies that the Project meets FAA standards for approval of the agency actions discussed in Section 3 of this ROD.



Table 2 Comparison of the Environmental Consequences of the No-Action Alternative, Alternative 1 and Alternative 2

Category	No-Action Alternative	Alternative 1	Alternative 2
Noise	Continued increase in aircraft noise from growth in airport operations.	No significant impact. Noise changes do not exceed FAA criteria. Minor increases or decreases in noise in some areas.	No significant impact. Noise changes do not exceed FAA criteria. Minor increases or decreases in noise in some areas.
Land Use	No impact	No significant impact. Noise levels at sensitive receptors would not exceed FAA criteria.	No significant impact. Noise levels at sensitive receptors would not exceed FAA criteria.
Social and Economic	No impact	No significant impact. Closing the Exxon station would have a minor adverse effect due to the loss of jobs and revenues. Minor short-term economic benefit from the creation of 1300 construction-related jobs.	No significant impact. Closing the Exxon station would have a minor adverse effect due to the loss of jobs and revenues. Minor short-term economic benefit from the creation of 1800 construction-related jobs.
Air Quality	Aircraft emissions increase as a result of increasing delays and increasing airport operations.	No significant impact. Air emissions would be reduced due to shorter taxi-idle times and reduced delays.	No significant impact. Air emissions would be reduced due to shorter taxi-idle times and reduced delays.
Environmental Justice and Children's Environmental Health and Safety Risk	No impact	No disproportionate significant impact to minority or low-income populations, or to children's health and safety risk.	No disproportionate significant impact to minority or low-income populations, or to children's health and safety risk.
Water Quality	Continued deterioration due to deicing and discharge of other stormwater contaminants.	No significant impact. Minor increase in the discharge of stormwater pollutants. Mitigation measures would be implemented to reduce adverse effects on water quality.	No significant impact. Minor increase in the discharge of stormwater pollutants. Mitigation measures would be implemented to reduce adverse effects on water quality.
Section 4(f) Properties	No direct or constructive use	No direct or constructive use	No direct or constructive use
Historical and Archaeological Resources	No impact	No impact	No impact
Biotic Communities	No impact	No significant impact. Loss of a small amount of common habitat types.	No significant impact. Loss of a small amount of common habitat types.



Table 2 Comparison of the Environmental Consequences of the No-Action Alternative, Alternative 1 and Alternative 2 (Continued)

Category	No-Action Alternative	Alternative 1	Alternative 2
Endangered and Threatened Species	No habitat enhancement measures implemented.	No significant impact. Minor impact to the aquatic habitat of a state-listed species. Mitigation measures would include habitat enhancement.	No significant impact. Minor impact to the aquatic habitat of a state-listed species. Mitigation measures would include habitat enhancement.
Wetlands and Waterways	No impact	No significant impact. Loss of approximately 0.37 acres of open waterway would not require mitigation.	No significant impact. Loss of approximately 0.42 acres of open waterway.
Floodplains	No impact	No significant impact. Placing approximately 50,600 cubic yards of fill in the 100-year floodplain would not affect flood levels or duration.	No significant impact. Placing approximately 54,600 cubic yards of fill in the 100-year floodplain would not affect flood levels or duration.
Surface Transportation	Intersection level-of-service degrades to unacceptable levels at 3 intersections due to growth in vehicular traffic.	Minor increase in traffic volumes on Bartram Avenue. Improvements at 4 intersections would improve levels of service over the No-Action Alternative.	Minor increase in traffic volumes on Bartram Avenue. Improvements at 4 intersections would improve levels of service over the No-Action Alternative.
Hazardous Materials and Solid Waste	No impact	No significant impact. Preliminary testing and appropriate construction measures would meet state standards and reduce risk to construction workers and the public.	No significant impact. Preliminary testing and appropriate construction measures would meet state standards and reduce risk to construction workers and the public.
Construction Impacts	Temporary minor increases in noise and air quality emissions during construction projects anticipated in the Airport's current 5-year Plan.	No significant impacts. Temporary minor increases in noise, air quality emissions, temporary minor adverse effects on water quality, and construction traffic impacts due to intersection improvements would be mitigated by use of appropriate best management practices.	No significant impacts. Temporary minor increases in noise, air quality emissions, temporary minor adverse effects on water quality, and construction traffic impacts due to intersection improvements would be mitigated by use of appropriate best management practices.
Cumulative Impacts	The No-Action Alternative would not result in a serious deterioration of environmental functions or exceed applicable significant thresholds.	The combination of the action's impacts with other impacts would not result in a serious deterioration of environmental functions or exceed applicable significant thresholds.	The combination of the action's impacts with other impacts would not result in a serious deterioration of environmental functions or exceed applicable significant thresholds.



7. Public Involvement

The FAA conducted a public outreach program for the Proposed Project to obtain information relevant to the study from local, regional, county, state and Federal agencies, and to keep local officials, elected officials, community members, and other interested parties informed about the progress and results of the EIS. The public outreach program included a scoping meeting, public information meetings, meetings with elected officials, public notifications, newsletters, and a Project web site (www.phlrunway17-35eis.com). Appendix B of the FEIS contains the Notice of Intent (NOI). Appendix C provides copies of public information materials.

The complete FEIS and appendices are available on the website. Approximately 1,150 copies were made available for review to 48 Federal and state officials, 47 public libraries, 58 municipalities, state and Federal resource agencies, and 970 individuals. The public outreach program and preparation of this EIS were initiated following publication of the Notice of Intent in the *Federal Register* on July 30, 2003. In addition to the public scoping meeting on August 12, 2003, three sets of public meetings have been held to provide the public with information about the study, and to provide the public with the opportunity to ask the FAA questions about the study. Each public meeting was held in three locations to reach various segments of the affected public.

The FAA held Public Hearings on November 15, 16, 17, and 18, 2004 on the DEIS. Comments received during the public comment period have been considered in the FEIS. Comments on the DEIS were submitted by letter, e-mail, and oral comments at the public hearings. More than 115 letters and emails, containing 900 individual comments were received from elected officials, state and Federal resource agencies, non-profit organizations, local businesses, and residents of the Pennsylvania-New Jersey-Delaware region. At the four public hearings, 55 people also provided oral comments. Appendix A of the FEIS contains copies of all comments received, and provides responses to those comments. All comments were considered in the preparation of the FEIS.

The FAA received 37 comments on the FEIS, from elected officials and individuals concerned with noise, safety, and the effects of the Proposed Project on their quality of life, and opposing any build alternative. No new information or substantive issues were raised in these comments (see Attachment A of this Record of Decision). FAA recognizes that opposition, but all studies indicate that the Proposed Project will have no significant environmental effects, and that there is a need for the Project.

The public outreach program provides access and opportunity for participation by all the communities in the Regional Study Area, but there has been a particular emphasis on the communities in the areas directly to the north and south of the runway, which would most likely be affected by the Proposed Project. In particular, the Eastwick neighborhood of Philadelphia, north of Runway 17-35, is a predominantly minority community and FAA made specific efforts to reach out to this community.

The FAA has also undertaken extensive consultation and coordination with state and Federal resource and regulatory agencies. The Proposed Project was selected by the U.S. Secretary of Transportation on October 31, 2002 as one of thirteen high-priority projects nationwide that are subject to *Presidential Executive*



Order 13274, Environmental Stewardship and Transportation Infrastructure Project Review. In response to the designation as a High-Priority Project, an *Interagency Stewardship and Streamlining Agreement* was developed and signed by the FAA, the Sponsor, and 16 state and Federal review and resource agencies. As outlined in this Agreement, the FAA has provided information to these agencies throughout the preparation of the EIS, and held meetings to address agency comments and gather consensus at key decision points. These key decision points include purpose and need, alternatives considered, and the avoidance, minimization and mitigation of impacts. Concurrence was obtained from all agencies on the Proposed Project's Purpose and Need Statement; the range of alternatives considered; the alternatives considered in this FEIS; the methodologies used for analysis of environmental impacts; and minimization and mitigation measures. Federal and state agencies provided detailed technical comments throughout the EIS process.

8. Environmental Impacts and Mitigation Measures

This section contains a brief summary of the principal findings relative to environmental impact categories that have been examined by the FAA in the FEIS. More detailed evaluations of these environmental categories can be found in Chapter 4 of the FEIS. Mitigation measures to which the Sponsor has committed are described in Chapter 5 of the FEIS. Table 2 summarizes the environmental effects of the Alternatives evaluated in the FEIS.

8.1 Noise

The Study Area for noise (as described in Section 4.2 of the FEIS) is a circular area centering on the airport with a radius of approximately 27 miles. It is the geographic area over which aircraft operate from the surface to 10,000 feet Above Ground Level (AGL) for departures and 7,000 feet AGL to the surface for arriving aircraft. The Study Area was defined by using existing flight tracks as well as predicted preliminary flight tracks for future Build conditions, taking into consideration the dispersion of flight paths observed at higher altitudes. The Study Area was enlarged to take into account these areas, which would normally qualify for a categorical exclusion and are not expected to create a potentially significant environmental impact, to be consistent with the ongoing New York/New Jersey/Philadelphia Airspace Redesign Project, which considers airspace changes from the ground to 10,000 feet AGL. Although this Project is an independent project from the airspace redesign, at the time the EIS began, the FAA believed that this Project might require action to revise the airspace redesign project. In these circumstances, the FAA determined that it was appropriate to provide a level of disclosure in this EIS that is comparable to that in the airspace redesign.

The EIS analyzed the noise impacts of the Proposed Project using the FAA's Integrated Noise Model (INM) (Version 6.1). In addition to its analysis of noise impacts using the required Day-Night Average Sound Level (DNL) metric, in response to comments made during scoping, the EIS provides supplemental metrics for information purposes.

The projected growth in aircraft operations between 2007 and 2015 is expected to increase the size of the area covered by the DNL 65 dB contour for the No-Action Alternative from 5,145 acres (8.0 square miles) to 6,410 acres (10.0 square miles) of land, including both on-airport and off-airport areas. The number of people



residing in the DNL 65 dB contour would increase from 191 to just over 1,000 during this time period. In 2007, Alternative 1 would produce no net change to the population within the DNL 65 dB contour in comparison to the No-Action Alternative, and the land area covered by the DNL 65 dB contour would decrease by roughly 20.6 acres (0.03 square miles). In 2015, the DNL 65 dB contour for Alternative 1 would decrease in size relative to the 2015 No-Action Alternative, while there would be no change to the total population within the 65 dB DNL contour.

For Alternative 1, the noise analysis identified one site within the Study Area that would experience a 1.5 dB change within the 65 DNL contour in 2015. The area is an undeveloped area in New Jersey south of Runway 35 and is not classified as a noise sensitive area, and there would be no significant impacts.

By FAA criteria contained in Orders 1050.1E and 5050.4A, Alternative 1 will not cause “significant impact” due to noise, anywhere in the Local or Regional Study Areas during either of the two study periods, 2007 or 2015. While no mitigation is required, the Sponsor has a committed to update its 2003 Part 150 Study following any substantial changes in the airfield configuration.

8.2 Land Use Compatibility

Land use compatibility is defined by the FAA in 14 CFR 150, *Airport Noise Compatibility Planning*, as the “use of land that is identified as normally compatible with the outdoor noise environment”. A land use inventory was conducted to define the affected environment. The land use inventory conducted for the *Part 150 Study*, which was completed in 2002 and approved by FAA in May 2003, was a key source of information for this DEIS land use compatibility analysis. Other data incorporated from the *Part 150 Study* included zoning, identified noise sensitive land uses, and other receptors. These data were updated for this study. The Delaware Valley Regional Planning Commission (DVRPC) was the primary source of land use and zoning data. As the Federally-designated Metropolitan Planning Organization (MPO) for the nine-county, bi-state, Philadelphia-Camden-Trenton region, DVPRC is the regional planning entity that covers 8 of the 12 counties within the 27-mile radius from PHL.

No noise-related land use compatibility impacts will result from either alternative. Although the Project would result in slight changes in noise levels in some areas (see Table 4.3-1 of the FEIS), these changes would be compatible with existing land uses as defined in 14 CFR 150, *Airport Noise Compatibility Planning*. As described in Sections 4.8 and 4.9 of the FEIS, there are no significant noise impacts on Section 4(f) or historic resources and, therefore, no land use compatibility impacts associated with these resources.

8.3 Social Impacts and Induced Socioeconomic Impacts

As described in Section 4.4 of the FEIS, the Proposed Project would not result in adverse social or economic impacts. The Project would require that the Airport terminate the lease of a gasoline service station on airport property (located in Philadelphia). This action would result in the loss of employment and business income to the lessee, possible reduction in taxes paid to various governmental agencies, and the loss of lease revenue to the Airport. These impacts are considered to be insignificant relative to the size of the local economy and the airport budget. The Proposed Project would, therefore, not be expected to affect the community tax base.



Alternative 1 would eliminate a portion of the Economy Parking Lot on airport property. However, this parking lot can be relocated elsewhere on PHL property, and would not require the acquisition of property or displacement of persons. Alternative 1 would also require closing and relocating a portion of State Route 291. As discussed in Section 4.14 of the FEIS, reasonable options exist to divert traffic from this portion of SR 291; therefore, this relocation will have no adverse impact on the businesses, their employees, and local residents that use SR 291. With the proposed mitigation, as described in Chapter 5 of the FEIS, the relocation will not disrupt local traffic patterns or reduce levels of service on roads serving the airport or the surrounding community.

PHL is an important component of the existing economic base of both the City of Philadelphia and the larger regional economy. The City issued a report in 2002 (*Airport Expansion: A Key Component of Philadelphia's Economic Development Strategy*) which stated that improvement of the Airport is the top priority of the City's economic development agenda. Furthermore, this report expressed the concern that without improvements, the Airport would have difficulty remaining competitive, which in turn could have an adverse impact on the economy of the City and the region.

According to a report by GRA, Inc. in 2001 (*Regional Economic Impacts of Philadelphia International Airport*), the Airport resulted in a total regional employment of 39,000 direct and 32,000 indirect jobs in the year 2000, for a total employment impact of 71,000 jobs. Furthermore, the study estimated that 45 percent of this employment, or 32,000 jobs, are held by City of Philadelphia residents and the remainder held by residents of the Delaware Valley Region. PHL employment represents five percent of total employment within the City.

The Proposed Project would not create additional airport capacity or increase in airport operations and, therefore, is not expected to generate shifts in patterns of population movement and growth, public service demands, or changes in business economic activity. Long-term employment generation at PHL is not expected to change materially because there is no significant change in capacity at the airport as a result of this action. The Proposed Project would create new construction-related employment over a period of approximately 18 months (mid-2005 through 2006) which would be beneficial to the construction industry, particularly within the City of Philadelphia.

Total construction costs of Alternative 1 are estimated at \$36 million.² Based on statewide regional multipliers, approximately 33 direct and indirect jobs are created throughout the economy for every \$1 million spent on new construction, resulting the creation of approximately 1,200 jobs during the 18-month construction period. This additional employment represents less than one tenth of one percent of the region's 2.8 million jobs and therefore would have no measurable short or long-term impacts.

Because all direct impacts are on the Airport or adjacent short segment of SR 291, and the shift in traffic to Bartram Avenue will not disrupt traffic patterns or reduce level of service, these alternatives would not result in a shift in population, increase in public service demands, or change business or economic activity. The proposed extension

² Philadelphia International Airport: Master Plan Technical Report 2004.02, Final Runway 17-35 Extension Justification and Definition, DMJM Aviation, 27 August 2004.



of Runway 17-35 would not have the potential to result in induced growth or secondary impacts in the surrounding communities. The Proposed Project would be expected to provide additional construction-period jobs that would have a minor regional beneficial effect.

8.4 Air Quality

The air quality analysis documented in the FEIS (Section 4.5) consists of four main elements:

- Emission inventory analysis of volatile organic compounds (VOC), nitrogen oxides (NO_x), carbon monoxide (CO), sulfur dioxide (SO₂), particulate matter (PM₁₀ and PM_{2.5}) for the Regional Study Area;
- Emission inventory analysis of hazardous air pollutants (HAPs) in the Regional Study Area;
- Ambient concentrations analysis for the Regional Study Area; and
- Ambient concentrations analysis of CO concentrations from roadway intersections (or hot spots) in the Local and Regional Study Areas.

Emissions were modeled using FAA's Emissions and Dispersion Modeling System (EDMS) program. Where necessary and appropriate, this was supplemented with emissions data developed using the EPA's Guidance for Emissions Inventory Development, the EPA-approved MOBILE6.2 program as released by the Office of Transportation and Air Quality (OTAQ). This analysis demonstrated that there would be no significant adverse air quality impacts from the Proposed Project. The emissions inventory analysis demonstrates that the Project would not cause emissions to increase from Project operation, and the dispersion modeling analyses show that there are no predicted violations of any of the National or Pennsylvania Ambient Air Quality Standards (AAQS) due to Project-related impacts. Therefore, no air quality mitigation measures are required for routine operation of this Project.

Air Emissions

The Proposed Project will reduce the emissions of all modeled compounds in both the 2007 and 2015 scenarios due to the decrease in aircraft queue delay times. The emission inventory analysis demonstrates that the Proposed Project will not cause VOC and NO_x emissions to increase due to Project operation.

Dispersion Analysis

Ambient pollutant concentrations were estimated at receptor locations in the airport environs for the same analysis years as for the emission inventory analysis.

The dispersion modeling results for this analysis are summarized below:

- All of the estimated maximum concentrations for NO₂, CO, SO₂, and PM₁₀ are below the National Ambient Air Quality Standards (NAAQS) for all analysis years.



- Because of existing high ambient background level, estimated annual PM_{2.5} concentrations with the No-Action Alternative and, therefore, the Proposed Project, are above the NAAQS. The Proposed Project will not increase emissions of particulate matter.
- In both 2007 and 2015, the Proposed Project decreases in NO₂, CO, and SO₂ compared to the No-Action Alternative, because of shifting aircraft operations to Runway 17-35 and delay reduction.

Roadway Intersection Analysis

The maximum 1- and 8-hour CO concentrations were estimated at the six roadway intersections for the 2007 and 2015 Conditions. The findings demonstrate that the estimated maximum 1-hour CO concentrations at the intersections analyzed are well below the 1-hour CO NAAQS of 35 ppm and all the estimated maximum 8-hour CO concentrations at the intersections analyzed are below the 8-hour CO NAAQS of nine ppm.

Emissions of Hazardous Air Pollutants (HAPs)

Emissions of HAPs are anticipated to increase over time due to increased operations and aircraft delay times at the Airport. The Proposed Project would decrease HAPs emissions (in comparison to the No-Action Alternative) due to the decreases in overall aircraft delay.

Attainment Status

PHL is partly in the City and County of Philadelphia and partly in Delaware County. Both of these counties have been classified as in attainment for CO, NO₂, PM₁₀, SO₂, and lead. With respect to the 1-hour ozone standard, these two counties are part of the Philadelphia Interstate Ozone Nonattainment Area because of measured violations of the 1-hour ozone standard at several monitoring sites in the region.

In accordance with the classification scheme established by the CAAA, the EPA classified this Ozone Nonattainment Area as Serious-15 with respect to the 1-hour ozone standard. This nonattainment area is required to attain the 1-hour ozone standard by the year 2005. With respect to the 8-hour ozone standard, the EPA issued final rules on April 15, 2004, that designate this area of Pennsylvania as a Moderate nonattainment area.

General Conformity

The changes in VOC and NO_x emissions in both 2007 and 2015 due to routine operations of the Proposed Project are less than the General Conformity *de minimis* thresholds of 25 tons per year of VOC or NO_x. When compared to the No-Action Alternative, the changes in emissions show decreases in both VOC and NO_x emissions for both Build Alternatives, an improvement in conditions when compared to the status quo. Since the Project's emissions for both VOC and NO_x are less than ten percent of the total emission inventory for the entire nonattainment area, this Project is not "regionally significant." The emission inventory analysis demonstrates that the Proposed Project will not cause VOC and NO_x emissions to increase due to Project operation, and will not cause construction emissions of VOC or NO_x to exceed 25 tons per year for any year. Thus, the Project-related VOC and NO_x emissions will be less than the *de minimis* thresholds and a General Conformity determination is not required.



The FEIS demonstrates that the net annual changes in emissions of VOC or NO_x due to the Proposed Project, when compared to the No-Action Alternative, will:

- Not result in an increase in emissions from operations above the *de minimis* threshold of 25 tons per year of VOC or NO_x, or result in the Proposed Project being regionally significant;
- Not cause or contribute to any new violation of any of the NAAQS in the Airport Project Area;
- Not increase the frequency or severity of any existing violation of any NAAQS in the Project area; and
- Not delay timely attainment of NAAQS or any required interim emission reductions in the Project area.

8.5 Environmental Justice and Children's Environmental Health and Safety Risk

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low Income Populations* (EO 12898), and FAA Order 1050.1E require FAA to identify and address potential disproportionate high and adverse impacts on minority and low income populations. The FEIS reports on efforts to involve minority and/or low income populations in the planning and decision-making process for the Project. The Proposed Project would not have a disproportionately high and adverse impact on minority or low income populations. Any impacts would occur only on the Airport, on the adjacent segment of SR 291 between the Airport and I-95, and on Bartram Avenue, and would not affect adjacent communities. There will be no long-term significant noise impacts. There are no significant social, socioeconomic, air quality (long-term or construction), historical, archaeological, coastal zone, farmland, light emissions, or energy supply and natural resource impacts that would occur as a result of the alternatives. Direct impacts to water quality would occur on the Airport and indirect water quality impacts may occur in adjacent industrial areas. Water quality impacts can be mitigated and would not affect residential communities.

Pursuant to Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, Federal agencies are directed to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children. As discussed in FAA Order 1050.1E, Appendix A paragraph 16.2b, environmental health risks and safety risks include risks to health or safety that are attributable to products or substances that a child is likely to come into contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products they might use or be exposed to. As documented in the FEIS, the Proposed Project would not result in significant impacts to air quality, drinking water, recreational waters, or other products or substances that a child might come into contact with or ingest. The Proposed Project would, therefore, not result in disproportionate health or safety impacts to children.

8.6 Water Quality

Surface water, stormwater runoff, groundwater and permitting requirements were identified in the FEIS (Section 4.7). The Airport is within the Delaware River watershed and the New Jersey Coastal Plain Sole Source Aquifer (SSA) review area. Both construction of the Proposed Project and future Airport operations may potentially affect water quality through short-term increase of non-point pollutants during construction, increased stormwater runoff resulting from increased pavement, long-term non-point pollutants from deicing



activities and the operation of aircraft and maintenance vehicles. Stormwater runoff from the Project would discharge to the Delaware River through the southeast ponding ditch drainage system and through tributaries to the Schuylkill River.

The Airport currently operates under a NPDES Permit (No. 0056766), and has a comprehensive stormwater management plan that addresses pollution prevention as well as a Spill Prevention Control and Countermeasure (SPCC) plan that addresses spill response procedures. A Phase II NPDES permit for construction activities would be required prior to construction.

FAA has evaluated the Proposed Project using the criteria at FAA Order 5050.4A and 1050.1E to determine if water quality impacts were significant, and has determined that the Proposed Project: can be designed to meet state Water Quality Standards; would not result in special water-related problems; and would have no difficulty in obtaining permits. Mitigation measures compatible with airport operations would be used during construction and would be incorporated in the design of the selected alternative to protect surface water quality. The following mitigation measures would be used to reduce the effects of construction and operations of the Proposed Project on adjacent surface and ground waters.

Specific mitigation measures are required to protect water quality following construction. To prevent and contain spills and other discharges of water quality contaminants, the Sponsor will:

- Implement an appropriate Operation and Maintenance Plan to prevent and contain spills and other discharges of water quality pollutants;
- Design and construct the Church Creek culvert to provide access to the culverts for monitoring water quality at Outfall 001;
- Update existing SPCC Plans to reflect changed conditions at Runway 17-35, and continue to use these plans to provide emergency spill response procedures and preventive maintenance for areas at PHL with fuel or hazardous material storage/operations. The potential loss of spill containment and recovery areas in Church Creek would require revising the SPCC Plan to include a protocol for containment and recovery in the downstream Mingo Creek Stormwater Basin;
- Update existing Preparedness, Prevention and Contingency Plans and continue to use these for best management practices (BMPs) meant to reduce the discharge of pollutants from industrial activities as part of a long-term operation and maintenance program; and
- Continue to follow current and future NPDES Permits, and continue to monitor Outfalls 001 and 005 and report to the PA DEP.

Structural measures will be incorporated into the design of the Preferred Alternative to control the discharge of potential contaminants to surface or groundwater, and to control peak runoff rates to reduce erosion. Measures that will be evaluated during the final design phase of the Proposed Project include:

- Installing catchbasins with sumps and hoods in the reconstructed portions of the Economy Parking Lot; and



- Designing the stormwater collection system (sheet flow from paved areas to shallow detention areas, where catchbasins convey flows through a system of pipes to either Church Creek or the Southeast Ponding ditch) to maximize detention times and reduce peak discharge rates.

8.7 Section 303(c) Resources (Section 4(f)) and Section 6(f) Resources

The implementation of the Proposed Project would neither incorporate land from a Section 303(c) resource or impair the normal activity or aesthetic value of a public park, recreation area, or wildlife refuge. No properties on or eligible for listing on the National Register of Historic Places would be impaired by the Proposed Project in such a way that would interfere with the designation of the property. Therefore, the Proposed Project would not result in the “use” of a Section 303(c) property.

No publicly owned park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance or land from an historic site of national, state, or local significance protected under 49 U.S.C., Section 303(c) (formerly known as Section 4(f) of the Department of Transportation Act of 1966) were identified within the physical limits of the Proposed Project, as documented in Section 4.8 of the FEIS. Under Section 303 (c), use of land may be either physical or constructive. A constructive use occurs where the effects of the Project result in impacts to Section 303(c) land that conflict with the normal activity associated with the land so as to constitute a substantial impairment of its value. The Proposed Project would not require acquisition of any Section 303(c) property, nor would it affect access to any property or alter the visual setting or ecology of any property. The only property acquisition would be a section of SR 291 north of the Economy Parking Lot, which is not a Section 303(c) resource.

Although several Section 303(c) resources were identified within the Noise Study Area, the analysis demonstrated that Project-related noise changes would not result in a constructive use of any resource. The John Heinz National Wildlife Refuge is northwest of the PHL, separated from the Airport by I-95, the Southeastern Philadelphia Transportation Authority (SEPTA) rail line, and Bartram Avenue. The Refuge is not aligned with any existing runway and is not on the direct approach or departure track for any of the existing runways, and would not be on the approach or departure track for the Proposed Project. The noise analysis completed for this Project demonstrated that, under existing conditions and the No-Action Alternative, the Heinz Refuge experiences noise levels between 45 and 60 dB DNL. A noise monitoring site on Lindberg Boulevard south of the refuge showed an average DNL of 50 dB. This is calculated to increase to 53.5 dB in 2007 and 2015 for the No-Action Alternative and to 55.4 dB in 2007 and 56.5 dB in 2015 with the Proposed Project. These noise levels are compatible with the outdoor recreational use of the Heinz Refuge in accordance with FAR Part 150 criteria for compatible land use (Part 150, Table 1, Appendix A).

No properties eligible for protection under Section 6(f) of the Land and Water Conservation Fund Act of 1965, as amended (legislation that provides for the public purchase and preservation of land), were identified within the boundaries of the Proposed Project. Section 6(f) properties, purchased with Land and Water Conservation Act funds, must be maintained perpetually in public outdoor recreation use.



8.8 Historical, Architectural, Archaeological, and Cultural Resources

Section 106 of the National Historic Preservation Act of 1966 addresses the responsibilities of Federal agencies to afford protection of historic and cultural resources. Historic, architectural, cultural and archaeological surveys have been conducted during the course of the environmental review process as documented in Section 4.9 of the FEIS. Properties and resources that are either listed, or potentially eligible for listing, on the National Register of Historic Places have been identified in accordance with Section 106 and 36 CFR Part 800.4. FAA, in consultation with the Pennsylvania and New Jersey State Historic Preservation Officers, has made a determination that the Proposed Project will have no effect on architectural, archaeological or other cultural resources.

As documented in Section 4.9 of the FEIS, the Proposed Project would not result in any direct physical or visual impacts to historic resources, nor would it change the physical features within the physical setting of any property that contributes to its historic significance. All physical alterations would be within the airport property and would not directly affect any historic resource. Because of the shallow depth of excavation and earthwork, the Proposed Project would not affect areas potentially containing archaeological resources. The Proposed Project would decrease noise levels at one historic property, Fort Mifflin, by less than one decibel. The NJ SHPO and the Pennsylvania Historic and Museum Commission (PHMC) have concurred with this determination of no effect (see Appendix D of the FEIS). The PHMC also concurred with the No Effects Finding for Archaeological Resources (see Appendix D). However, if subsurface archaeological resources are identified during construction, FAA would comply with the requirements of the Archaeological and Historic Preservation Act. If the resource is determined to be significant, FAA may conduct a survey of the site and undertake the recovery, protection and preservation of data.

8.9 Biotic Communities

The Proposed Project area was evaluated for the occurrence of distinct and definable natural communities and land use, as documented in Section 4.10 of the FEIS. The assessment included the evaluation of potentially affected terrestrial communities as well as wildlife and wildlife habitat. Implementation of the Proposed Project will result in the unavoidable disturbance of up to 7.5 acres of common urban biotic communities. Due to existing airfield and highway development in the area of construction, the biotic communities are isolated and degraded, and adverse impacts are minimal.

The Proposed Project would have a beneficial effect to the operation of the airport by eliminating a hazardous wildlife attractant. Culverting Church Creek would remove habitat that attracts Canada geese in close proximity to the runway. No mitigation measures are warranted. However, measures to prevent and control invasive plant species, as stated in EO 13112, *Invasive Species*, would be implemented. These include measures such as prevention of invasive plant species by using selected native grass seed mixes; landscaping with native plants; monitoring for invasive plant species and removing invasive plant species that become established.

8.10 Threatened and Endangered Species

Surveys for Federal and state endangered and threatened species were conducted during the development of the EIS, and FAA consulted with the U.S. Fish and Wildlife Service (USFWS) and responsible state agencies, as documented in Section 4.11 of the FEIS. The Federally-listed shortnose sturgeon and American bald eagle are



potentially present in the vicinity of the airport. The National Marine Fisheries Service has concurred that the Proposed Project would not affect shortnose sturgeon. The USFWS has concurred that the Proposed Project would not affect nesting habitat of the American bald eagle. One waterway within the Project area (designated as SEPD-2) contains suitable habitat for the Pennsylvania Threatened red-bellied turtle. Either Alternative 1 or Alternative 2 would result in the minor loss and fragmentation of a portion of the habitat of this species. Impacts cannot be avoided, and have been minimized to the extent practicable by modifying the location and dimensions of a culvert and the relocated airport service road. Additional mitigation measures have been developed in consultation with the Pennsylvania Fish and Boat Commission, and include protective measures during construction; enhancing aquatic habitat by adding basking platforms in a portion of SEPD-2; and enhancing upland nesting habitat by constructing nest sites. The Sponsor will undertake a 5-year monitoring program to evaluate the success of these mitigation measures.

8.11 Wetlands and Waterways

Two waterways, subject to state and Federal regulatory jurisdiction, occur within the Proposed Project area. The primary function of these two man-made channels is to convey stormwater runoff. Alternatives 1 and 2 would have similar, unavoidable impacts to these two waterways, as documented in Section 4.12 of the FEIS. The Preferred Alternative will require placing approximately 608 linear feet of Church Creek and approximately 45 linear feet of the Southeast Ponding Ditch in culverts to extend Taxiways D and E, and to relocate the airfield service road south of the runway. No vegetated wetlands will be impacted. Impacts to these waterways are unavoidable and have been minimized to the extent practicable. The relevant regulatory authorities, Pennsylvania DEP and the U.S. Army Corps of Engineers, have concurred that no further measures are required to mitigate for this impact.

8.12 Floodplains

Executive Order 11988, together with FAA Orders 1050.1E and 5050.4A, requires that FAA evaluate the potential effect of its actions on a floodplain. The agency must consider alternatives to avoid adverse effects and incompatible development in a floodplain and, where avoidance is not practicable, the agency must design or modify its action to minimize potential harm to or within the floodplain. The Proposed Project will place fill in previously-developed portions of the floodplain of the Delaware River, but will not affect flood levels or duration or adversely affect the floodplain, as documented in Section 4.13 of the FEIS. Floodplains in the Project area have been previously impacted due to prior development of the airport. The encroachment will not be significant and there are no practicable alternatives as all of the alternatives share common impacts and the majority of the airfield is within the 100-year floodplain. No mitigation measures are warranted, as floodplain impacts have been minimized to the extent practicable, and the analysis provided in the FEIS demonstrates that the proposed fill will not increase the elevation or extent of flooding within the unconstrained tidal floodplain of the Delaware River estuary.

8.13 Surface Transportation

The Proposed Project would require that a portion of SR 291 be abandoned and the short segment from the intersection with the I-95 Ramp F to the intersection with Island Avenue be closed to through-traffic. Bartram Avenue, from Scott Way to Island Avenue, and Island Avenue from Bartram Avenue to Penrose Avenue, would



be designated SR 291. These roads would experience a minor increase in traffic volumes, as documented in Section 4.14 of the FEIS. The minor increase in traffic on Bartram Avenue and Island Avenue would increase delay at three intersections. Mitigation measures will be implemented at these locations and will improve the level of service at these intersections. Mitigation measures are described in Chapter 5 of the FEIS, and include:

- Install a traffic signal at the intersection of Bartram Avenue and the I-95 southbound on-ramp;
- Adjust signal timing at the intersection of Bartram Avenue and Tincum Boulevard;
- Add a left-turn lane on 84th Street at the Bartram Avenue intersection, by redesignating an existing through-traffic lane; and
- Modify the intersection of SR 291 and Bartram Avenue by adding an east-bound left-turn lane, removing a west-bound through lane, and adjusting signal timing.

These traffic changes and mitigation measures would not affect the bicycle lanes or bicycle usage on Bartram Avenue. Proposed improvements at the SR 291 – Bartram Avenue intersection would be designed to accommodate bicyclists using the E-Route, which is currently designated by signs and pavement markings on Bartram Avenue and on SR 291 in Essington and Tincum.

8.14 Hazardous Materials and Solid Waste

Several potential sources of soil or groundwater contamination are within or adjacent to Runway 17-35, such as the former Hog Island Shipyard, dredge sediment and fill materials, known releases of petroleum products, existing and former above ground and underground storage tanks, underground pipelines, and asbestos-containing asphalt, as documented in Section 4.15 of the FEIS. Construction activities for the Proposed Project may encounter contaminated soils, sediments, or groundwater, or may generate regulated and hazardous wastes. Although there are no feasible means of avoiding areas of potential subsurface contamination or waste materials, measures will be implemented during construction to minimize impacts and risks. Preliminary investigations will be undertaken and coordinated with PA DEP before construction to identify any required hazardous waste and special waste management procedures, specific response actions and dust suppression measures, and to develop construction Health and Safety Plans to protect construction workers who could come into contact with contaminated materials.

8.15 Coastal Zone Management Program

There are no coastal barriers in the Proposed Project area. The Proposed Project is consistent with the Pennsylvania Coastal Zone Management Program.

8.16 Wild and Scenic Rivers

There are no Wild and Scenic Rivers located in the Proposed Project area.

8.17 Farmland Soils

Based on an evaluation of soils and field surveys, there are no areas in the Proposed Project area designated as prime farmland, unique farmland, or farmland of state or local significance.



8.18 Energy Supply and Natural Resources

The effects of airport projects on energy supply and natural resources are related to the amount of energy required for stationary facilities, such as terminal buildings and airfield lighting, and for mobile uses, such as aircraft, aircraft ground support equipment (GSE), and motor vehicles. *FAA Order 5050.4A*, the *Airport Environmental Handbook* requires that these energy uses be considered to identify any proposed substantial changes in energy or resource consumption. As documented in Section 4.16.4 of the FEIS, the Proposed Project would result in a minor increase in electricity usage from the increased numbers of runway lights required for the additional runway lengths. The increased runway lighting would not have a measurable effect on local electric supplies. The Proposed Project would not change energy consumption for other stationary facilities, such as the terminal buildings. Alternatives 1 and 2 would lead to negligible increases in airside fuel consumption by ground service vehicles for runway snow plowing, deicing, and general maintenance. The Project would not affect fuel usage by general ground service equipment. The supply of materials necessary to construct the Proposed Project is readily available and no natural resources that will be needed are in short supply. No mitigation measures are warranted.

8.19 Solid Waste

The improvements will not generate the need for additional solid waste collection, control, or disposal other than that from construction. Any hazardous, contaminated or special wastes generated through excavation of contaminated soils, dewatering of contaminated groundwater, and demolition activities, may require special management procedures as described in Section 4.16 of the FEIS. The Pennsylvania Solid Waste Management Act (Act 97) regulates landfill, recycling, incinerators, and other solid waste management facilities. Off-site disposal of solid waste, soil, and groundwater materials from construction of the Proposed Project will require compliance with this regulation.

8.20 Light Emissions and Visual Impact

The Proposed Project will require moving the existing Runway 17 MALSR to the north by 640 feet. Seven of the nine steady-burning light stations will remain on airport property, and two of the steady-burning light stations will be within the I-95 right-of-way north of the runway. The farthest station in the extended MALSR would be located adjacent to the Hertz Rental Car facility on the north side of Bartram Avenue. That light station, a sequenced flashing light, will be 1,500 feet from the nearest residential area, as documented in Section 4.16.6 of the FEIS. It is not anticipated that the relocated light station will cause annoyance or interfere with normal activities because it is located 1,500 feet from the nearest residential area; the elevation of the light station would be 46.3 feet AGL; there is high ambient lighting from the rental car facility, adjacent parking lots, and I-95; and the SEPTA railroad tracks are also between the light station and the residential area. No mitigation measures are warranted.

8.21 Construction Impacts

Impacts during the 18-month construction phase of the Proposed Project were evaluated in the FEIS, Section 4.17. Construction could result in temporary and transient increases in noise, emission of air pollutants, impacts to water quality, impacts to traffic, and impacts to habitat of state-listed Threatened species. This Project has incorporated project specifications in accordance with the provisions of *Advisory Circular 150/5370-10A, Standards for Specifying*



Construction of Airports. Construction of the Proposed Project will be managed to minimize construction dust and noise from heavy equipment traffic, air and water pollution, and other impacts.

Noise associated with demolition and construction activities will be generated from heavy equipment such as bulldozers, dump trucks, loaders, and paving equipment. Construction noise is not anticipated to affect residents, as the nearest residence is approximately 2,000 feet north of the work area and separated from the construction area by I-95.

Construction activities may result in short-term impacts on air quality 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 due to traffic disruption. These impacts will be temporary, and will affect only the immediate vicinity of the construction site. Temporary, short-term net increase in emissions levels will occur due to construction activities for the Proposed Project in 2006 and 2007. All airport construction emissions are accounted for in the most recently-developed State Implementation Plan (SIP) budget for the nonattainment region. The Sponsor will comply with PA DEP regulations including the prohibition against fugitive emissions which requires that any person responsible for sources that have fugitive emissions take all reasonable actions to prevent particulate matter from becoming airborne, as described in 25 PA Code Section 123.1. Emissions from Project-related construction equipment and trucks are expected to be insignificant with respect to compliance with the NAAQS. Direct emissions from construction equipment are not expected to produce adverse effects on air quality, provided that all equipment is properly operated and maintained, and excess idling of engines is prohibited. Mitigation measures include specifying truck routes, establishing staging areas for equipment and materials, designating parking areas for construction workers' vehicles, minimizing the number of construction vehicles during peak traffic periods, retrofitting existing construction equipment with emission controls, and utilizing newly-certified construction equipment that comply with emission standards. BMPs will be implemented to minimize the impacts from fugitive dust, including providing street sweeping and tire washes for trucks leaving the site.

Temporary water quality impacts potentially caused by construction activities would be minimized by implementing sediment and erosion controls and dewatering during construction of the Project. Details of the sedimentation and erosion control methods will be included in the Storm Water Pollution Prevention Plan (SWPPP) for construction activities required by the National Pollution Discharge Elimination System (NPDES) Construction General Permit. Construction would likely require dewatering in some areas. Dewatering fluids are typically filled with silt and sediment, which can be harmful to surface waters, if directly discharged. Dewatering can also result in pollutants reaching the surface if the groundwater is contaminated. Appropriate mitigation measures will be used and any applicable permits will be obtained prior to construction activities. It is likely that a Philadelphia Water Department Permit authorizing discharge to the Southwest Water Pollution Control Plant would be obtained and dewatering effluent would be discharged to this facility. In past construction projects, PHL has encountered iron levels in dewatering discharge that are higher than the allowable discharge limit to surface waters. It is likely that iron levels may be high in dewatering discharge associated with the Runway 17-35 Extension Project construction. Erosion and sediment controls, and dewatering devices, will be designed to specifically address iron precipitation.



A portion of the Proposed Project will be located in wetland and upland habitats potentially used by the State Threatened red-bellied turtle. Preventative measures to minimize disturbance to the turtles during construction include employing BMPs, such as sediment traps and silt fences, to prevent water quality degradation, minimize water quality and habitat quality losses; timing construction of the culvert to avoid the period of highest turtle activity (May – July); monitoring during construction; temporarily relocating turtles, if necessary; and erecting exclusion fencing to protect the red-bellied turtles.

Construction traffic from the Project will not significantly add to the existing volume of traffic. No temporary impacts due to additional or rerouted traffic resulting from construction activities are expected. Minor construction impacts are expected to occur during the implementation of intersection/signal improvements at Bartram Avenue and Tinicum Boulevard. These temporary impacts will be mitigated by controlling traffic signal timing changes, traffic signal phasing changes, lane designation changes (within existing pavement), and physical changes to the intersection that may require widening and/or right-of-way.

Subsurface contamination or waste materials encountered during construction will be first identified and then mitigated by implementing preliminary investigations, managing contaminated soil and groundwater, asphalt paving and demolition debris management techniques, erosion and sedimentation controls, construction worker health and safety planning, assessment and remediation of known releases and other BMPs.

8.22 Cumulative Impacts

In accordance with the guidelines set forth by the Council on Environmental Quality (CEQ), the EIS considered the cumulative impact of the Proposed Project and the consequences of subsequent reasonably foreseeable future actions. The analysis considered all areas of direct physical effects of the Proposed Project; areas affected by significant changes in noise or traffic; and areas affected by changes in air quality attributable to the Project alternatives. The time frame of the cumulative impacts analysis extended from the early 1980s (for past actions) and included reasonably foreseeable future actions currently planned or proposed within the Study Area by the Airport as well as other public and private entities. To further determine the overall cumulative changes, the EIS included the CEP and the Metropolitan Area Airspace Redesign Project for comparative purposes. As described in Section 4.18 of the FEIS, all known projects and proposals at PHL were reviewed. Most of these have undergone independent environmental analysis and approval by FAA. This analysis shows that the Proposed Project, in the context of recent or anticipated projects, would not significantly affect the natural, built or social environment. Mitigation measures have been either incorporated or committed to by the Sponsor to minimize adverse effects. In addition to the irretrievable commitment of natural resources, the Project will require a substantial commitment of public funds to complete. The combination of the action's impacts with other impacts (the cumulative impacts of the Proposed Project) would not result in a serious deterioration of environmental functions or exceed applicable significant thresholds.

9. Mitigation

The construction and operation of the Proposed Project will result in the use of resources (energy, construction materials, and waterways) and in unavoidable environmental impacts to waterways, floodplains, state Threatened species, and traffic. The FAA and the Sponsor have developed a comprehensive mitigation program to mitigate the adverse effects of construction and operation. The mitigation program was developed in accordance with applicable Federal and state requirements and in consideration of state and local guidelines. The concerns of the public and government agencies were also addressed. The mitigation program is described in detail in FEIS Chapter 5 and summarized in this ROD, and the Sponsor has agreed to it. The FAA will monitor the implementation of these mitigation measures as necessary to assure they are carried out as Project commitments. The FAA finds that these measures constitute all reasonable steps to minimize harm and take all practicable means to avoid or minimize environmental harm from the selected alternative and proposed Federal Action. Specific mitigation commitments of the Proposed Project are listed below.

9.1 Water Quality

Water quality mitigation measures that will be incorporated into the Preferred Alternative include spill prevention and containment measures, source controls, peak runoff rate controls, and construction-period source controls. Section 4.7 of the FEIS provides additional information on water quality impacts and mitigation measures. The use of these mitigation measures will be finalized in coordination with the agencies.

Construction Period

Erosion and Sediment Control Plans will be used for the Runway 17-35 Project to provide the contractor with guidelines to prevent the erosion of soils and sediment deposition into storm drains and surface waters, including sediment and silt resulting from dewatering activities. Erosion and sediment controls, and dewatering devices, will be designed to specifically address iron precipitation. Specific elements of the construction-period mitigation include:

- Soils and groundwater will be tested for contamination and iron content prior to construction and excavation;
- Dry soil will be watered to prevent dust production;
- Any highly erosive soils will be stabilized and reinforced with structural methods, such as erosion control blankets, as necessary;
- Slopes will be reinforced using a hydroseed mix with a resin base, native vegetation, or other approved methods;
- During excavation and dewatering, sediment control methods will be employed, such as silt bags to catch silt and sediment, or temporary sediment basins for areas that would receive a large portion of construction runoff from exposed soil; and



- Existing catch basins in the Project Area will be protected with sediment traps to prevent accumulation of sediment in the structure.

Details of the sedimentation and erosion control methods will be included in the SWPPP for construction activities required by the NPDES Construction General Permit.

Water quality during construction may be affected by the discharge of groundwater high in iron, as iron oxides may precipitate when exposed to air. A treatment or filtration system may be required during construction to remove ferric oxide (iron) solids before discharge to a surface water body or the wastewater treatment plant. During the final design phase of the Proposed Project, the Airport will identify areas where dewatering would be required, and will develop a dewatering control plan.

Spill Prevention and Containment Measures

To prevent and contain spills and other discharges of water quality contaminants, the Airport will:

- Implement an appropriate Operation and Maintenance Plan.
- Design and construct the Church Creek culvert to provide access to the culverts for monitoring water quality at Outfall 001.
- Update existing SPCC Plans to reflect changed conditions at Runway 17-35, and continue to use these plans to provide emergency spill response procedures and preventive maintenance for areas at PHL with fuel or hazardous material storage/operations. The potential loss of spill containment and recovery areas in CMC-3 and CMC-4 will require revising the SPCC Plan to include a protocol for containment and recovery in the downstream Mingo Creek Stormwater Basin.
- Update existing Preparedness, Prevention and Contingency Plans and continue to use these for BMPs meant to reduce the discharge of pollutants from industrial activities as part of a long-term operation and maintenance program.
- Continue to follow current and future NPDES Permits, and continue to monitor Outfalls 001 and 005 and report to the PA DEP.

Source and Runoff Rate Controls

Structural measures will be incorporated into the design of the Preferred Alternative to control the discharge of potential contaminants to surface or groundwater, and to control peak runoff rates to reduce erosion. Measures that will be evaluated during the final design phase of the Proposed Project include:

- Installing catchbasins with sumps and hoods in the reconstructed portions of the Economy Parking Lot, unless precluded by high ground water; and
- Designing the stormwater collection system (sheet flow from paved areas to shallow detention areas, where catchbasins convey flows through a system of pipes to either Church Creek or the Southeast Ponding ditch) to maximize detention times and reduce peak discharge rates.



9.2 Archaeology

If subsurface archaeological resources are identified during construction, the contractor would notify the Pennsylvania Museum and Historic Commission and will comply with the requirements of the Archaeological and Historic Preservation Act. If the resource is determined to be significant, a survey of the site may be required and, if appropriate, the recovery, protection and preservation of data will be undertaken.

9.3 Threatened and Endangered Species

Mitigation is required for impacts to habitat of the state-Threatened red-bellied turtle resulting from construction of the airport perimeter service road across the drainage ditch (SEPD-2). Mitigation measures include culvert design to minimize impacts; construction measures to protect animals; and habitat enhancement to improve basking and nesting habitat. Engineering designs and specifications will be developed by the Airport's engineering consultant during the final design process. The final design will be prepared in coordination with the Airport's overall management plan for protection of the red-bellied turtle population.

Airfield Service Road Culvert

The Airfield Service Road will be designed to cross SEPD-2 at least 100 feet north of the bend in the ditch. The road will reconnect with the existing service road approximately 800 feet west of the crossing. This location minimizes impacts to aquatic habitat used by the turtles, and keeps the service road (where it parallels SEPD-2) as far from the bank of the ditch as is practicable.

The proposed culvert will be a 45-foot long arched pipe, 65 inches wide and 40 inches high. The bottom of the culvert will be depressed at least one foot below the existing bottom elevation to maintain a natural substrate and habitat connectivity. Headwalls will be constructed on both the upstream and downstream ends of the culvert to minimize habitat loss.

Construction Measures

Exclusion fencing will be installed between the work area and SEPD-2 to prevent turtle movement into the construction zone and protect against unintentional turtle mortality. Exclusion fencing may be installed in conjunction with erosion and sedimentation controls, and will consist of staked, entrenched siltation fencing. The entrenched portion of the fence should be on the outside of the fence (outside the work zone) to discourage turtles from tunneling under the fence.

Siltation fence will be installed across the SEPD-2 channel both upstream and downstream of the proposed culvert crossing. The aquatic area between the siltation fence crossing locations will be searched by a PFBC-approved biologist for turtles and any individuals will be relocated to the lower section of SEPD-2, which will not be disturbed.

Basking Habitat

SEPD-2 is a linear drainage ditch system that provides little opportunity for turtle basking. Basking is essential to maintain turtle metabolic functions and is important to maintaining population viability.

To enhance turtle habitat at the PHL, a minimum of twenty basking platforms will be installed. These will consist of six-foot long boards, two inches thick by six inches wide, anchored on the bank and extending into the water.

Because of the potential for even small basking platforms to attract birds (such as great blue herons or canada geese), placing basking platforms in proximity to the runway may create a hazardous wildlife attractant. During the final design phase, the Airport will identify appropriate locations within SEPD-2 for basking platforms, in consultation with PFBC and consistent with FAA Advisory Circular AC150/5200-33, *Hazardous Wildlife Attractants on or Near Airports*. A five-year monitoring and maintenance plan will be developed with the DEP and PFBC during the final design phase.

Nesting Habitat Enhancement

Turtle populations are also often limited by the availability of suitable nesting sites. Optimum nesting habitat is provided by open or sparsely vegetated sandy or loamy soils in open, sunny areas. The open, sparsely vegetated, soft substrates facilitate the female turtle's ability to excavate a nest. Open sunny conditions provide optimum temperatures for embryo development. These optimum nesting sites are very limited in the vicinity of SEPD-2, as most areas adjacent to the ditch are densely vegetated with turf grasses and have a clay soil. Some small areas of sandy soil are present at the top of the bank slope or on the steeply sloping banks of the ditch.

During construction, artificial nest habitat will be created to augment the limited natural nesting habitat. Because recent research³ indicates that clumped nests are more likely to be subject to predation by raccoons, skunks or fox, many (a minimum of 20) small nest sites will be created. Each nest site will be circular, three feet in diameter. Each nest site will be excavated to a depth of 18 inches and filled with a mixture of sand, peat and loam. The nest sites will be located at varying distances from the top of the bank of SEPD-2, with the closest site approximately three feet from the top of the bank. During the final design phase, the Airport will identify the appropriate locations along SEPD-2 for the created nest habitats, in consultation with the PFBC. A five-year monitoring and maintenance plan will also be developed during the final design phase with the DEP and PFBC.

Implementation Schedule

Threatened and endangered species mitigation measures will be implemented as soon as feasible following the completion of design and issuance of all required construction permits. A construction schedule will be developed that includes these actions. All mitigation measures will be completed prior to the end of construction.

- Exclusion fencing will be installed prior to any construction at the south (Runway 35) end of the runway;
- Nest habitat will be created as soon as feasible in the construction schedule;
- Basking platforms will be constructed as soon as feasible in the construction schedule;

³ Marchand, Michael N., John A. Litvaitis, Thomas J. Maier, Richard M. DeGraaf. 2002. *Use of artificial nests to investigate predation on freshwater turtle nests*. *Wildlife Society Bulletin* 2002, 30(4): 1092-1098.



- No construction (of the airfield service road culvert) will be done in SEPD-2 during the season when turtles are most active, from May 1 through July 30; and
- Exclusion fencing will be removed at the completion of construction.

9.4 Surface Transportation

The Proposed Project will close a portion of SR 291 and re-direct traffic to Bartram Avenue from Scott Way to Island Avenue. As a result of the change in traffic patterns and volumes, three intersections would exhibit unacceptable Level of Service (LOS) (E or F) during the morning and/or evening peak hour in 2015. These impacts, and mitigation measures, are described in detail in Section 4.14 of this FEIS. Mitigation measures will be incorporated into the final design of the Preferred Alternative as described below.

- Bartram Avenue-84th Street intersection: Add one left-turn lane on the 84th Street southbound approach to provide additional left-turn capacity, by redesignating one of the existing through traffic lanes.
- Bartram Avenue – Tincum Boulevard intersection: Implement signal timing adjustments.
- Bartram Avenue and the I-95 SB on-ramp: Install a traffic signal at the intersection.
- SR 291 and Bartram Avenue/Scott Way: Add an EB left-turn lane within the existing curb-to-curb width, remove one of the WB through lanes; and change signal phasing, timing, and cycle length.

These mitigation measures have been developed in coordination with the Philadelphia Department of Streets and the Pennsylvania Department of Transportation (PennDOT). The final design of these mitigation measures will be coordinated with the Philadelphia Department of Streets, PennDOT, and appropriate Federal, local and state agencies to ensure that the proposed improvements were designed to safely accommodate existing and planned bicycle lanes and routes.

Construction Mitigation

Additional mitigation measures are required during Project construction for temporary impacts to air quality, contaminated soils, and traffic, as described below.

Temporary air quality impacts could result from 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 due to traffic disruption. These impacts will affect only the immediate vicinity of the construction sites and access routes. Mitigation measures include specifying truck routes, establishing staging areas for equipment and materials, designating parking areas for construction workers vehicles, minimizing the number of construction vehicles during peak traffic periods, retrofitting existing construction equipment with emission controls, and utilizing newly-certified construction equipment that comply with emission standards. BMPs will be implemented to minimize the impacts from fugitive dust, including providing street sweeping and tire washes for trucks leaving the site.



Subsurface contamination or waste materials encountered during construction will be first identified and then mitigated by implementing preliminary investigations, managing contaminated soil and groundwater, asphalt paving and demolition debris management techniques, erosion and sedimentation controls, construction worker health and safety planning, assessment and remediation of known releases and other BMPs.

No temporary impacts due to additional or rerouted traffic resulting from construction activities are expected. Minor construction impacts are expected to occur during implementation of intersection and signal improvements at Bartram Avenue and Tinicum Boulevard. These impacts will be short-term and mitigated by implementing a construction traffic management plan.

10. Conditions of Project Approval

Conditions for the approval of the Proposed Project are as follows:

- Incorporate into the design of the Preferred Alternative structural measures to protect water quality during and after construction, as described in Section 9.1 of this ROD.
- Develop plans to protect water quality during construction as described in Section 9.1 of this ROD, including erosion and sediment control plans and a dewatering control plan. Enforce compliance with these plans by the contractor.
- Implement other measures described in Section 9.1 of this ROD to protect water quality during construction.
- If subsurface archaeological resources are identified during construction, notify the Pennsylvania Museum and Historic Commission and comply with the requirements of the Archaeological and Historic Preservation Act.
- Update existing water resource protection plans to reflect changed conditions at Runway 17-35, as described in Section 9.1 of this ROD, including the Spill Prevention, Control and Countermeasures Plans and the Preparedness, Prevention and Contingency Plans.
- Prior to initiating construction, obtain the following permits:
 - From the PA DEP, a National Pollution Discharge Elimination System Construction General Permit (Chapter 102 Permit).
 - From the PA DEP, a Water Obstruction and Encroachment Permit (Chapter 105 Permit).
 - From the PA DEP, Floodplain Management Permit (Chapter 106 Permit).
 - From the US EPA, Safe Drinking Water Compliance.
- Continue to follow the requirements of current and future NPDES Permits, and continue to monitor Outfalls 001 and 005 and report to the PA DEP.



- As described in Section 9.3 of this ROD, take the following measures to protect the red-bellied turtle:
 - Incorporate into the final design structural measures to minimize impacts to the red-bellied turtle and enhancements to basking and nesting habitat.
 - Develop a five-year turtle monitoring and maintenance plan during the final design phase in coordination with the PA DEP and PFBC.
 - Prepare the final design and the monitoring plan in coordination with the Airport's overall management plan for protection of the red-bellied turtle population.
 - Require and enforce construction measures to protect the red-bellied turtle population, including exclusion fencing, siltation fence and relocation of any individuals to outside of the construction area.
- Adhere to the implementation schedule for minimizing and mitigating impacts to the red-bellied turtle that is presented in Section 9.3 of this ROD.
- Incorporate into the final design of the Preferred Alternative measures to mitigate surface transportation impacts resulting from the closure of SR 291, which are summarized in Section 9.4 of this ROD and described in detail in Section 4.14 of the FEIS.
- Coordinate the design of surface transportation mitigation measures with the Philadelphia Department of Streets, PennDOT, and appropriate Federal, local and state agencies to ensure that the proposed improvements are designed to safely accommodate vehicles, as well as existing and planned bicycle lanes and routes.
- Implement the surface transportation mitigation measures prior to closure of SR 291.
- Implement the measures described in Section 9.4 of this ROD to minimize or mitigate construction impacts of the Proposed Project, such as traffic, emissions and fugitive dust.
- If encountered during construction, mitigate the impacts of subsurface contamination or waste materials as described in Section 9.4 of this ROD.



11. Agency Findings

In accordance with applicable law, the FAA makes the following determinations for this Project, based on appropriate information and analyses contained in the FEIS and other portions of the EIS Record.

11.1 Federal Funding Findings and Determinations

The FAA understands that the Airport Sponsor may apply for Federal grant-in-aid funding approvals in conjunction with its decisions to proceed with the implementation of the Project components and mitigation measures covered by this ROD. There are numerous findings and determinations prescribed by statute and regulation that must be made by the FAA as preconditions to agency approvals of airport Project funding applications. Any grant-in-aid or approval would also reflect appropriate statutory and regulatory assurances and other terms and conditions for FAA's action. This ROD provides the basis to proceed with making those findings and determinations. In the absence of an application from the Sponsor, it would be premature to consider the basis for funding at this time. The agency will make any necessary funding determinations in conjunction with its consideration of appropriate applications.

11.2 The Project is reasonably consistent with existing plans of public agencies for development of areas surrounding the airport (49 U.S.C. 47106(a)(1)), and Executive Order 12372.

The FAA finds that the proposed action is reasonably consistent with the existing plans of public agencies authorized by the state in the area in which the airport is located to plan for the development of the area surrounding the airport, and will contribute to the purposes of the 49 U.S.C. 47101 et seq. The proposed runway extension is also reasonably consistent with comprehensive plans that have been adopted by municipalities in the vicinity of the airport as described in the FEIS. In making its determination under 49 U.S.C. 47106(a)(1), the FAA has considered the fact that local governments were represented and have participated in its decision to authorize the Project. The FAA has also recognized the fact that none of these jurisdictions have regulatory authority over airport operations, since long-established doctrines of Federal preemption preclude these communities from regulating aircraft operations conducted at PHL.

11.3 The interest of the communities in or near where the Project may be located were given fair consideration (49 U.S.C. 47106(b)(2))

The determination prescribed by this statutory provision is a precondition to agency approval of airport development and funding applications. The process associated with the Airport's Master Plan Update and this FEIS, which began in 2003 and extended to this point of decision, provided numerous opportunities for the expression of and response to issues put forward by communities near the Project location. Nearby communities and their residents have had numerous opportunities to express their views during the DEIS public comment period, at a public hearing, as well as during the review period following public issuance of the FEIS. The FAA's consideration of these comments is set forth in Chapter 1 and Appendix A of the FEIS, and in Attachment A of this ROD. Thus, the FAA has determined that throughout the environmental process, consideration was given to the interest of communities in or near the Project location.



11.4 Effect on Natural Resources (49 U.S.C. Section 47106 (c)(1)(c))

Under this statutory provision, after consultation with the Secretary of the Interior and the Administrator of the USEPA, the FAA may approve airport Project funding applications involving the location of an airport, a new runway, or a major extension of a runway having a significant adverse effect on natural resources, only after determining that no possible or prudent alternative to the Project exists, and that every reasonable step has been taken to minimize the adverse effect.

FAA has consulted extensively with both the DOI and the USEPA. For the natural resource impact categories with established significance levels, the FAA finds that the selected alternative would not have a significant adverse effect. As discussed in ROD Section 8 and documented in the FEIS and the EIS Record, every reasonable step has been taken to minimize adverse environmental impacts resulting from the Proposed Project. In order to address any possible environmental affects resulting from the Project approved in this ROD, the FAA will condition such approval upon implementation of the mitigation measures described in FEIS Chapter 5 and ROD Section 9. This conditional approval will be enforced through special conditions included in future Airport Improvement Program grant agreements. The FAA has determined that through mitigation all reasonable steps have been taken to minimize any adverse effects on natural resources.

11.5 Appropriate action, including the adoption of zoning laws, has been or will be taken as reasonable to restrict the land use next to or near the airport to uses that are compatible with airport operations (49 U.S.C. Section 47107(a)(10)).

The Sponsor assurance prescribed by this statutory provision is a precondition of the approval of airport development Project funding applications. The FAA requires satisfactory assurances that appropriate action, including the adoption of zoning laws be taken to restrict, to the extent reasonable, the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft. FEIS Section 4.2 describes the current status and land use planning for lands near the airport. Some areas in the vicinity of the airport are outside of the City of Philadelphia and cannot be zoned by the Sponsor; however, the Sponsor is working with these communities through its Part 150 study. As explained in the FEIS, development of the Project will not result in any significant impacts on non-compatible land uses. Based on the EIS Record for this ROD, the FAA has concluded that existing noise mitigation programs provide for appropriate action to ensure compatible land use in the airport vicinity.

11.6 The Proposed Project conforms to the Avoidance, Minimization and/or Compensation of Harm to Wetlands in Accordance with Executive Order 11990 and the Clean Water Act

This Executive Order requires all Federal Agencies to avoid providing assistance for new construction located in wetlands, unless there is no practicable alternative to such construction, and all practicable measures to prevent harm to wetlands are included in the action. As described in the FEIS, extending Runway 17-35 and relocating the southern airfield access road will directly impact 650 linear feet of waterways (constructed drainage channels). Practicable means could not be found to avoid impacts to waterways by the construction of the airport Project. Consideration was given to the practicable measures available to minimize harm to the waterways where harm could not be avoided. Section 4.12 of the FEIS discusses these considerations, which



included relocating the airfield access road and reducing the length of the culvert needed to convey this road. Additional mitigation measures to minimize indirect impacts to waterways and water quality during construction have been developed and are described in Chapter 5 of the FEIS. Because the Proposed Project avoids any direct impact to vegetated wetlands, PA DEP and USACE have determined that no compensatory mitigation will be required.

The FAA finds that there is no practicable alternative to the Preferred Alternative's use of approximately 650 linear feet of waterway, and that the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use. This Project is in compliance with Executive Order 11990, as amended. The Project's mitigation plan includes all practicable measures to minimize harm to wetlands that may result from such use.

11.7 Relocation assistance, if any, will be provided in accordance with 42 U.S.C. Section 460 Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970)

Title II of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 U.S.C. Section 4610 et seq.) and implemented by the Secretary of Transportation under 49 CFR Part 24, require that state or local agencies that undertake Federally-assisted projects, which cause an involuntary displacement of persons or businesses, follow the prescribed procedures and provide relocation benefits to those displaced. The Proposed Project will not require the displacement and relocation of any persons or businesses. The Proposed Project will displace one tenant on airport property, as described in Section 4.3 of the FEIS. If necessary, per the Act, relocation assistance will be provided to the tenant. The FAA finds that there are no relocations associated with the Proposed Project which require the procedures required by Title II of the Uniform Relocation Assistance and Real Property Acquisition Policies Act.

11.8 For any use of lands with publicly owned parks, recreation areas, national wildlife refuges, or significant historic sites, there is no prudent and feasible alternative to using the land; the Proposed Project includes all possible planning to minimize harm to structures from land use (49 U.S.C. Section 303 (c) and Section 106, National Historic Preservation Act)

As discussed in Sections 4.8 and 4.9 of the FEIS, the Proposed Project would not result in direct or indirect impacts to publicly-owned parks, recreation areas, national wildlife refuges, or significant historic sites. The Proposed Project would not have significant adverse impacts on historic properties. The FAA has consulted with the Pennsylvania Historic and Museum Commission and the New Jersey SHPO, who have concurred with this finding. Based on the analyses presented in the FEIS and information in the EIS Record, the FAA finds that there is no actual or constructive use of any resource protected by 49 U.S.C. Section 303 (c) or Section 106 and no mitigation measures are warranted.

11.9 There are no Disproportionate Adverse Environmental Effects of the Project on Minority and/or Low-Income Populations (Executive Order 12989)

Environmental justice concerns were addressed in Section 4.6 of the FEIS, which concluded that no minority or low-income group would be disproportionately affected by the impacts occurring as a result of the Proposed Project.



11.10 The FAA has given this proposal the independent and objective evaluation required by the Council on Environmental Quality (40 C.F.R. Section 1506.5)

As documented in the FEIS and this ROD, the FAA has engaged in a lengthy and extensive process related to the screening and selection of the viable alternatives that best fulfilled the identified purposes and needs for development of the Sponsor's airport. The process included FAA selecting a consultant/contractor through a competitive process to assist in conducting the environmental process, which included identifying the Project purpose, screening and selecting reasonable alternatives, and ultimately of the Preferred Alternative, fully discovering and disclosing potential environmental impacts, and selecting appropriate mitigation measures. The DEIS and FEIS document, disclose, and analyze the environmental impacts of the proposed Federal action and the reasonable alternatives. The FAA directed the technical analysis provided in the FEIS for this Project. From its inception, the FAA has taken a strong leadership role in the environmental evaluation of this Project and has maintained its objectivity.

11.11 For this Project, which involves encroachment on a floodplain, there is no practicable alternative to development of the Preferred Alternative. The Proposed Action conforms to all applicable State and/or local Floodplain protection standards (Executive Order 11988)

This Executive Order establishes a policy to avoid construction within a 100-year floodplain where practicable, and where avoidance is not practicable, to ensure that the construction design minimizes potential harm to or within the floodplain. As documented in Section 4.13 of the FEIS, avoidance of work within the 100-year floodplain is not practicable as the majority of the airport is within the 100-year floodplain of the Delaware River. The Preferred Alternative will require that approximately 50,592 cubic yards of fill be placed within 79.8 acres of the 100-year floodplain; however, due to the unconstrained nature of the estuarine floodplain, this work will not result in increased depth, duration, or lateral extent of flooding. The Preferred Alternative will require that the Sponsor obtain a permit from PA DEP under Chapter 106 (Title 25, Chapter 106). Therefore, FAA finds that there are no practicable alternatives to the Preferred Alternative, and that the Project can be designed and constructed in conformance with applicable state and local floodplain protection standards.

11.12 The Proposed Project will conform with the SIP in accordance with Section 176 of the Clean Air Act Amendments (42 U.S.C. Section 7506(c))

The airport is located in a serious non-attainment area for ozone. Temporary, short-term net increase in emission levels will occur due to construction activities for the Proposed Project in the years 2005-2006. The analysis documented in the FEIS demonstrated that implementation of the Proposed Project would reduce the total regulated emissions due to the decrease in aircraft queue delay time and, during construction, would result in only *de minimus* emissions as defined in 40 CFR Part 93 Subpart B. Therefore, the Proposed Project would not require any further general conformity analysis under the Clean Air Act. Based on the air quality analysis, the FAA finds that the Proposed Project will not:

- Cause or contribute to any new violation of any standard in any area;
- Interfere with provisions in the applicable implementation plan for maintenance of any standard;



- Increase the frequency or severity of any existing violation of any standard in any area; and
- Delay timely attainment of any standard or any required interim emissions reductions or other milestones in any area including, where applicable, emission levels specified in the applicable implementation plan for purposes of a demonstration of reasonable further progress, a demonstration of attainment, and a maintenance plan.

11.13 The Proposed Project includes all practicable measures to minimize harm to endangered species as much as such harm may result from implementation of the Proposed Project (Endangered Species Act of 1974, U.S.C. 1531, as amended).

To comply with Section 7(c) of the Endangered Species Act of 1974 (ESA) as amended, agencies overseeing Federally funded projects are required to obtain from USFWS information concerning any species, listed or proposed to be listed, as may be present in the area of concern. As part of the review associated with the FEIS, USFWS identified two endangered species present near the airport (shortnose sturgeon and bald eagle), as described in Section 4.11 of the FEIS. Potential direct and indirect impacts to these species were evaluated in the FEIS, and USFWS has concurred that the Proposed Project will not harm endangered species.

12. Decision and Order

The FAA decision is based on a comparative examination of environmental impacts, operational, and economic factors for each of the alternatives in the EIS. The FEIS provides a fair and full discussion of any significant impacts. The EIS process included appropriate planning and design for avoidance, minimization, and/or compensation of impacts, as required by NEPA, the CEQ supplementing regulations, other special purpose environmental laws, and appropriate FAA environmental directives.

The FAA has determined that environmental and other relevant concerns presented by interested agencies and citizens have been addressed in the FEIS. The FAA believes that with respect to the Proposed Project, there are no outstanding environmental issues within FAA jurisdiction to be studied or NEPA requirements that have not been met. In making this determination, the FAA must decide whether to approve the Federal actions necessary for Project implementation. FAA approval would signify that applicable Federal requirements relating to airport development planning have been met and would permit the Sponsor to proceed with design and specifications for the proposed development and possibly receive funds for eligible items. Not approving these actions would prevent the Sponsor from proceeding with Federally supported development.

For reasons summarized earlier in this ROD, supported by disclosures and analysis presented in detail in the EIS, FAA has determined that the Sponsor's Proposed Project, described as Preferred Alternative 1, is reasonable, feasible, and prudent, in light of both Federal and Sponsor goals and objectives. An FAA decision to take the actions and approvals requested by the Sponsor is consistent with the FAA statutory mission and policies. This decision is supported by the environmental findings and conclusions presented in the FEIS and



ROD. After reviewing the FEIS and all of its related materials, I have fully and carefully considered the FAA's goals and objectives as to aeronautical aspects of the proposed development and related activities at PHL. These include purpose and need for this Project, alternative means of achieving these objectives, the environmental impacts of the alternatives, the mitigation necessary to preserve and enhance the environment, national transportation policies within which the FAA operates, and the costs and benefits of achieving the purpose and need in terms of efficiency and fiscally responsible expenditures of Federal funds.

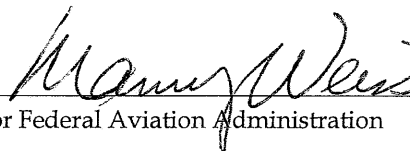
While this decision neither grants Federal funding nor constitutes a funding commitment, it does fulfill the environmental analysis prerequisites for Federal funding determinations to be made. The FAA will review funding requests upon receipt from the Sponsor of a timely application for Federal grant-in-aid, and the FAA will make funding decisions in accordance with the established procedures and applicable regulatory requirements.

Accordingly, pursuant to the authority delegated to me by the Administrator of the FAA, I find that the actions summarized in this Record of Decision are reasonably supported and approved. For those actions, I hereby direct that action be taken together with the necessary related and collateral actions, to carry out the agency decisions discussed more fully in sections of this ROD, including:

- Determinations under 40 U.S.C. Section 47106 and 47107 pertaining to FAA funding of airport development, including approval of a revised Airport Layout Plan (ALP) under 49 U.S.C. Section 47107(a)(16);
- Approval under 49 U.S.C. Section 47107 *et seq.* of Project eligibility for Federal grant-in-aid funds under Section 47104 as well as approval, under 49 U.S.C. Section 40117, of an application to impose and use Passenger Facility Charges;
- Determination and actions under 49 U.S.C. Section 44718 (14 CFR Part 77) evaluating obstructions to navigable airspace;
- Determination and actions, under 49 U.S.C. Sections 40103(b) and 44701, designing, developing, approving, and implementing new air traffic control, airspace management, flight procedures, and other rules or terms and conditions for the safe and efficient use, as well as management, of the navigable airspace;
- Approval for relocation and/or upgrade of various navigational aids;
- Review and subsequent approval of an amended Airport Certification Manual for the PHL; and
- Based on the EIS Record of this Project, I certify, as prescribed by 49 U.S.C. 44502(b), that implementation of the Proposed Project is reasonably necessary for use in air commerce.

4/29/05

Date of Approval


For Federal Aviation Administration



Right of Appeal

This ROD presents the Federal Aviation Administration's final decision and approvals for the actions identified, including those taken under the provisions of Title 49 of the United States Code, Subtitle VII, Parts A and B. This decision constitutes a final order of the Administrator subject to review by the Courts of Appeals of the United States in accordance with provisions of 49 U.S.C. Section 46110.



Attachment A Comments and Responses

Comments on the FEIS were received from Upper Darby Township, the New Castle County Council, approximately 40 individuals, and from three organizations (the Haverford League of Women Voters, the Coalition of Communities Against Runway 17-35, and the Philadelphia Airport Air Traffic and Quality of Life Issues Action Group).

The majority of commentors expressed general opposition to the Proposed Project based on concerns that the Project would increase noise levels that they already consider unacceptable; that an increase in overflights would result in increased emissions of air pollutants; that an increase in overflights would decrease safety; and that the Proposed Project would adversely affect their property values and quality of life.

Response: The FEIS addressed these concerns in the technical analysis and the responses to comments on the DEIS. As documented in the FEIS, the Proposed Project would not result in significant adverse noise impacts at any residential area; would decrease the emissions of air pollutants; and would not decrease safety in any of the communities in the vicinity of the airport.

Several individuals in northern Delaware felt that the Proposed Project would increase airport capacity, and that the number of large jet using Runways 9L-27R and 9R-27L would increase, resulting in adverse noise impacts to their communities.

Response: The FEIS addressed this concern in the technical analysis and the responses to comments on the DEIS. The Proposed Project is not anticipated to increase airport capacity nor to result in an increase in the usage of Runways 9L-27R or 9R-27L.

Some commentors felt that the delay benefits presented in the FEIS were not commensurate with the cost of the Proposed Project.

Response: Comments on the DEIS also asked whether a 4.1 or 6.5 minute delay reduction (2015) is worth the estimated \$36 million expenditure. The ability to achieve 4.1 to 6.5 minute delay reductions per operation does not mean that each operation will arrive or depart a minute or two sooner. It means gains in airport efficiency that translate into tremendous savings to passenger and industry and a more effective national air transportation system. With over 446,500 aircraft operations and 25 million passengers a year at PHL, an average delay of 10 minutes per operation amounts significant delays and costs to the industry, consumers, and the traveling public.

A commentor requested that the FAA provide a cost-benefit analysis as required by NEPA.

Response: NEPA regulations at 40 C.F.R. 1502.23 require that the FEIS include a cost-benefit analysis, if a cost-benefit analysis is used in the selection of a Preferred Alternative. FAA has not conducted a cost-benefit analysis, nor has this been a consideration in the selection of a preferred alternative. A cost-benefit analysis will be done before a funding decision is made.

The New Castle County Council cited Table S-3 in the FEIS, and stated that this table shows that the Proposed Project would have adverse impacts that exceed national standards and that could not be mitigated.



Response: The New Castle County Council has mis-interpreted Table S-3, which provides the FAA's thresholds for determining if a proposed action would have an adverse impact. Table S-4 summarizes the impacts of the Proposed Project, which do not exceed these thresholds for any resource category. The Proposed Project would not result in significant adverse impacts. Minor impacts resulting from the construction or operation of the Proposed Project can, and will, be mitigated.

Several individuals urged FAA to impose demand management or other administrative controls to reduce delay or reduce the number of flights, rather than extend Runway 17-35.

Response: The use of demand management and other administrative controls was thoroughly analyzed in the FEIS (see Section 3.3.3). These alternatives were found to be not practicable or reasonable, and would not meet the Project's purpose or need.

One individual stated that impacts to the Pennsylvania Endangered, Federally-threatened, bog turtle had not been taken into consideration.

Response: The FEIS did not address impacts to the bog turtle because bog turtles do not occur at the Airport, nor is suitable habitat available within the Project Area.

One individual requested that FAA consider replacing the existing instrument landing system (ILS) at the Airport with the new microwave landing system (MLS), a measure that could reduce delays.

Response: Microwave landing systems (MLS) were developed in the 1980s. These systems allow pilots to pick a path best suited to their type of aircraft and to descend and land from more directions than the ILS. Having different landing patterns can help reduce noise around airports and keep small aircraft away from the dangerous vortices behind large aircraft. MLS have been adopted in Europe as replacements for ILS. In the United States; however, the FAA halted further development of MLS in 1994. Instead, the FAA is considering the use of technology based on the global positioning system (GPS). The GPS uses satellites for navigation between airports and is exceedingly more precise than MLS. Regardless of the technology used, air carriers must be willing to equip aircraft with the technology. To date, very few air carriers have opted to install MLS. As long as aircraft comply with all safety standards, the FAA can not require the installation of new technology.

One individual argued that, by considering the Runway 17-35 Extension Project and the CEP in separate EISs, the FAA violated NEPA regulations concerning segmentation and failed to consider the cumulative effects of the two projects.

Response: The FEIS, in Section 4.18, considers the cumulative effects of the Proposed Project and the CEP, to the extent that those effects can be identified at this time. The EIS for the CEP will provide a complete analysis of the cumulative effects of the two projects. The FAA has evaluated the Proposed Project in a separate EIS because it has independent utility, does not constrain the alternatives evaluated for the CEP, and because there is an immediate need for delay reduction in the short term.