DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
FINDING OF NO SIGNIFICANT IMPACT
RECORD OF DECISION

Location

Newark Liberty International Airport (EWR)
Newark, New Jersey

Introduction

This Finding of No Significant Impact/Record of Decision (FONSI/ROD) sets out the Federal Aviation Administration's (FAA) consideration of environmental and other factors for Airport Layout Plan (ALP) approval and federal financial assistance for the Terminal A Redevelopment Program at Newark Liberty International Airport (EWR). This FONSI/ROD is based on the Final Environmental Assessment (EA) for *Terminal A Redevelopment Program at Newark Liberty International Airport* prepared by the Port Authority of New York and New Jersey (PANYNJ), dated March 2017.

Project Description

The Proposed Action involves the following:

- Demolition of the existing 28 gate/34 position Terminal A and construction of a new 33 gate terminal;
- Reconfiguration of the airfield access to the new terminal, including aircraft parking areas and taxilanes;
- Construction of a new 6 level, 2,300 space public vehicle parking garage and 321 space surface parking lot, replacing existing surface parking lots;
- Construction of a fully enclosed pedestrian walkway/bridge between the new Terminal A and the new parking garage;
- Reconfiguration of the stormwater collection system for the project area;
- Installation of new aviation fuel hydrants to serve the new terminal gates;
- Construction of separate access roadways to the new Terminal A from the airport entrance along with new dedicated frontage roadways to service the new Terminal A;
- Demolition of several buildings and reallocation of several airport leaseholds; and
- Relocation of existing airport functions within the project area to other areas of the airport.

The Proposed Action would not preclude a future expansion beyond the initial 33 gates; however future expansion is not reasonably foreseeable at this time.

Proposed Agency Actions

The FAA actions involved in the implementation of the Proposed Action include the following:

a. Unconditional Approval of a revised ALP to reflect the Terminal A Redevelopment Program at EWR, pursuant to 49 U.S.C. §40103(b) and §47107(a)(16); and determination and approval of the effects of this project upon the safe and efficient utilization of navigable airspace pursuant to 14 C.F.R. Parts 77 and 157 and 49 U.S.C. §44718;

b. Determination under 49 U.S.C. §§40101(d)(1) and 47105(b)(3) as to whether the Proposed Action maintains and enhances safety and security, and meets applicable design and engineering standards set forth in FAA Advisory Circulars;

c. Determinations concerning funding through the Federal grant-in-aid program authorized by the Airport and Airway Improvement Act of 1982, as amended (recodified at 49 U.S.C. §47107) and/or approval of an application to use Passenger Facility Charges (PFCs) under 49 U.S.C. §40117 (this FONSI/ROD does not determine eligibility or availability of potential funds);

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

e. Continued close coordination with the PANYNJ, the City of Newark and City of Elizabeth and appropriate FAA program offices, as required, for safety during construction (14 C.F.R. Part 77); and

f. Approval of appropriate amendments to the EWR Airport Certification Manual (ACM), as required, pursuant to 49 U.S.C. §44706.

Purpose and Need

The purpose and need for the Proposed Action is to replace the existing Terminal A with a new terminal to accommodate current and 2027 forecast passenger and flight demand; address building, utility, airfield and road frontage deficiencies; provide long-term operational flexibility and accommodate a variety of aircraft; implement energy efficiencies; update safety and security features; and allow more efficient operations.

Alternatives

The alternatives evaluated consisted of the Restoration Alternative, the Modernization Alternative, the Proposed Action, and the No-Build/No-Action Alternative. The Restoration and Modernization Alternatives of the existing Terminal A would not meet the need to efficiently utilize the Terminal A site based on the limited ability to accommodate further passenger and operations growth, or provide efficient aircraft parking and movement, and passenger processing and security flexibility. Each alternative also entailed a high degree of operations interruption from the complex construction phasing that would be required in and around an operating facility. For these reasons, both the Restoration and Modernization Alternatives of Terminal A were eliminated from further consideration.

The No-Build/No-Action Alternative would leave Terminal A as it currently exists, with only maintenance upgrades to the terminal. The forecasted passenger demand would be met by increasing the aircraft size (i.e., upgauging) which would result in low levels of service and increased delay due to the constrained apron layout around the existing satellite concourses.

The Proposed Action was selected for implementation after a thorough evaluation of all alternatives. Each alternative was assessed to determine its ability to meet the project purpose and need; for each of the alternatives, environmental impacts, and technical, operational, and cost factors were considered.

Discussion
The attached Final EA addresses the effects of the proposed project on the human and natural environment, and is made part of this Finding. The following impact analysis provides highlights of the more thorough analysis presented in the Final EA.

Air Quality
Section 176(c) of the Clean Air Act (CAA), as amended in 1990, (42 U.S.C. §7521-7554) requires that Federal actions conform to the appropriate Federal or State air quality implementation plans in order to attain the CAA's air quality goals. Section 176(c) states: "No department, agency, or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license or permit, or approve, any activity which does not conform to an implementation plan."

EWR is located in Bergen County, NJ which is currently designated by the Environmental Protection Agency (EPA) as being a non-attainment area for 8-hour ozone and a maintenance area for particulate matter ($PM_{2.5}$). Therefore, air emissions analyses were performed for the Proposed Action.

A General Conformity Rule (GCR) analysis was conducted with a construction emissions inventory. The results of these analyses predict that the construction emissions levels from the project will be below the established threshold levels. Thus, emissions levels associated with the project will be *de minimis* and a formal conformity determination is not required. Consequently, this project will not have a significant impact on air quality.

In order to determine the potential for impacts to air quality, the following analyses were conducted: criteria and precursor pollutant emission inventory; construction equipment emissions inventory, hot spot analysis, and greenhouse gas emissions estimation. The air quality analyses demonstrate that construction and implementation of the Proposed Action would not cause an increase in air emissions above the applicable *de minimis* thresholds established by the General Conformity Rule in 40 C.F.R. Part 93, §93.153. Therefore, a General Conformity Determination is not required.

In accordance with FAA Order 1050.1F, Environmental Impacts: Policies and Procedures, and FAA Order 5050.4B, Airport Environmental Handbook, no further analysis with respect to General Conformity is needed. Accordingly, the Proposed Action conforms to the New Jersey State Implementation Plan (SIP) and the CAA. Additionally, the operation of the Proposed Action would not create any new violation of the National Ambient Air Quality Standards (NAAQS), delay the attainment of any NAAQS, nor increase the frequency or severity of any existing violations of the NAAQS. Means and measures to reduce or minimize project-related emissions are also incorporated into the Proposed Action. Based on the above, since the Proposed Action is unlikely to result in a pollutant concentration that would exceed NAAQS, it will not result in significant adverse impacts to air quality.

Floodplains
According to current Federal Emergency Management Agency (FEMA) Preliminary Flood Insurance Rate Maps (FIRMs) for the airport and the surrounding area (dated April 9, 2015), the area primarily in and adjacent to the Peripheral Ditch is located in the 100-year floodplain, with a

larger area located within the limits of the 500-year floodplain. Pursuant to Executive Order 11988, Floodplain Management, all Federal agencies are required to avoid impacts to floodplains to the degree practicable and to minimize impacts that cannot be avoided.

Alternatives were examined that would locate the Proposed Action outside the floodplain and it was determined that no practicable alternative exists. Implementation of the Proposed Action is expected to result in a minor (approximately 0.7 acres) loss of effective floodplain storage volume from the placement of access roadway embankment material within the 100-year floodplain. However, since the 100-year floodplain on the airport is controlled by coastal storm surges and tidal flooding, it is not anticipated to create significant adverse impacts to the surrounding floodplain.

Pursuant to FAA's Desk Reference for Airports Actions, a "significant encroachment" on the floodplain would not occur because the probability of loss of human life is low and the Proposed Action would be designed to incorporate flood hazard mitigation strategies (See Section 6 of the Final EA). These strategies focus on the use of specific design criteria to minimize impacts on human safety and minimize future damages or costs to equipment, facilities, and structures to the degree practicable.

The final design of the Proposed Acton would ensure compliance with the New Jersey Department of Environmental Protection (NJDEP) Bureau of Floodplain Management's net fill requirements (N.J.A.C. 7:13-2.14) after construction is completed. The 100-year water surface elevation of the Peripheral Ditch would comply with the applicable NJDEP and Flood Hazard Area Control Act (N.J.A.C. 7:13) criteria and therefore would not create significant adverse impacts to the surrounding floodplain. Extensive coordination with NJDEP has occurred and will continue throughout the State level permitting process.

Based on the above, it can be concluded that there would be no significant adverse impacts to floodplains as result of the Proposed Action.

Noise

The Proposed Action is designed to accommodate forecasted passenger demand and would not attract any new passenger traffic other than that already forecast to come. As a result, implementation of the Proposed Action is not anticipated to result in changes or increases in airport operations (types and number of aircraft used, runway layout, and runway utilization). Therefore, the area influenced by the airport's existing noise contours would not change as a result of the Proposed Action. The Proposed Action would not individually or cumulatively introduce noise to a previously unaffected area, or significantly increase noise over a noise sensitive area. Temporary construction-related noise impacts are anticipated, however mitigation measures as outlined in the EA (See Section 6 of the Final EA) are proposed to address and minimize these temporary impacts. Based on the above, the Proposed Action will not result in significant adverse noise impacts.

Construction Impacts

Construction of the Proposed Action is not expected to cause significant long-term environmental impacts. However, short-term impacts resulting from construction operations may occur. Resources that are anticipated to experience short-term effects during construction are air quality, solid waste, light and visual, noise, traffic, and water quality. These impacts will be controlled and limited by compliance with the mitigation measures set forth in the Final EA's

Chapter 6, entitled, "Mitigation" and in this FONSI/ROD under the heading "Conditions/Mitigation Measures," as well as the FAA's Advisory Circular 150/5370-10F "Standards for Specifying Construction of Airports," Item P-156, Temporary Air and Water Pollution, Soil Erosion, and Siltation Control; and Advisory Circular 150/5320-5D, "Airport Drainage Design" (see Conditions/Mitigation Measures, item 1 below)

Summary of All Impact Categories

The Final EA addresses all environmental impact categories, as required by FAA Orders 1050.1F, 5050.4B, and the Desk Reference for Airports Actions. Impact categories such as air quality; coastal zone; land use compatibility; DOT Section 4(f) resources; prime and unique farmland; fish, wildlife and plants; floodplains; hazardous materials; solid waste impacts; historical, architectural, archaeological, and cultural resources; light emissions; energy supply and natural resources; noise; socioeconomic impacts and environmental justice; water quality; wetlands; wild and scenic rivers; construction impacts; and cumulative impacts were considered during preparation of and analyses for the Final EA. It is the FAA's finding that the proposed action will not have any significant effect on any of the above noted categories.

Coordination with the General Public

A Notice of Public Availability of the Draft EA was made in the *Star-Ledger* and the *Record* on February 16, 2017. The document was available for review at EWR's Administration Building, the Port Authority's headquarters office in Manhattan, and at both the Elizabeth and Newark public libraries. A copy of the document was also available for review on the Port Authority's website at *http://www.panynj.gov/about/studies-reports.html*. The review and comment period was from February 16, 2017 to March 16, 2017. No comments were received during the public comment period.

Conditions/Mitigation Measures

1. Construction contract specifications developed for the projects shall contain the provisions of FAA Advisory Circular 150/5370-10F, "Standards for Specifying Construction of Airports," Item P-156, Temporary Air and Water Pollution, Soil Erosion, and Siltation Control; and Advisory Circular 150/5320-5D, "Airport Drainage Design."

2. All required regulatory permits shall be obtained prior to construction of the Proposed Action, including a construction stormwater State Pollutant Discharge Elimination System permit when applicable.

3. All mitigation measures as determined through the NJDEP Flood Hazard Area Permit requirements and the flood hazard mitigation plan shall be developed and implemented as part of the Proposed Action.

Further mitigation measures are detailed in Section 6 of the Final EA. Consistent with applicable orders, policies and guidance, including Council on Environmental Quality (CEQ) Guidance, dated January 14, 2011, "Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact" under NEPA. The FAA understands that the PANYNJ will undertake the necessary actions to ensure that the above conditions and/or mitigation measures are undertaken and that it will monitor the implementation and effectiveness of such measures. In some instances, the above conditions are required as a result of coordination and agreement. They do not necessarily reflect impacts that require

mitigation to meet FAA standards pursuant to FAA Order or guidance. As with all projects subject to NEPA, should any conditions change or impacts be discovered that require further NEPA analysis, the FAA will require that a separate analysis, review and decision be conducted.

Federal Agency Findings

In accordance with all applicable laws, the FAA makes the following findings for the Proposed Action based on all appropriate information and analyses contained in the Final EA:

A. **The Proposed Action is reasonably consistent with existing plans of public agencies for development of areas surrounding the airport. (49 U.S.C. §47106(a)(1) .** The FAA is satisfied that the Proposed Action is consistent with plans (existing at the time the Proposed Action is approved) of public agencies for development of areas surrounding the airport based on coordination efforts with public agencies as indicated in Appendix D of the Final EA.

B. **The interest of the communities in or near where the Proposed Action may be located were given fair consideration. (49 U.S.C. §47106(b)(2).** The FAA is satisfied that the interests of the communities in or near where the Proposed Action will be located were given fair consideration as demonstrated by the Final EA, including Appendix G, Public Involvement.

C. **The FAA has given this Proposed Action the independent and objective evaluation required by the Council on Environmental Quality (40 C.F.R. Section 1506.5).** The FAA's review and ultimate decision process included the FAA's rigorous exploration and objective evaluation of reasonable alternatives and probable environmental consequences, regulatory agency and Native American consultations, as required, and public involvement. FAA furnished guidance and participated in the preparation of the Final EA by providing input, advice and expertise throughout the planning and technical analyses, along with administrative direction and legal review. FAA has independently evaluated the Final EA and takes responsibility for its scope and content.

D. **The Proposed Action will conform to the State Implementation Plan (SIP) in accordance with Section 176 of the Clean Air Act (CAA) and its amendments (42 U.S.C. §7506(c)).** EWR is located in Bergen County, NJ which is currently designated by the Environmental Protection Agency (EPA) as being a non-attainment area for 8-hour ozone and a maintenance area for particulate matter (PM2.5). The Proposed Action conforms to the New Jersey State Implementation Plan and complies with the Clean Air Act Section 176(c)(1). The Proposed Action would not: cause or contribute to any new violation of any standard in any area; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area. Specifically, the Proposed Action's total construction emissions, based on specific emissions calculations, are below the *de minimis* thresholds established by the General Conformity Rule (40 C.F.R. Parts 51 and 93) and therefore, would conform to the SIP. According to FAA Order 1050.1F and the Desk Reference for Airports Actions, no mitigation is necessary and further analysis is not required to comply with the CAA or NEPA. In summary, although the Proposed Action is taking place in a non-attainment area, the FAA determined that project emissions would be below *de minimis* thresholds under General Conformity requirements. Therefore, a Conformity Determination is unnecessary and

significant adverse impacts to air quality would be unlikely. The requirements of the General Conformity Rule have been met as discussed in Sections 4.2.1 and 5.5 and Appendix C of the Final EA.

E. **There are no disproportionately high and adverse environmental effects on minority and/or low-income populations that would result from the Proposed Action. (Executive Order 12989) (U.S. DOT Order 5610.2(a)).** Environmental Justice concerns are addressed in detail in Section 5.3.1.3 of the Final EA. An Environmental Justice assessment was conducted to determine if a disproportionate share of the Proposed Action's potential impacts would be borne by low-income and/or minority populations. Six Census Block Groups in the Study Area are considered potential Environmental Justice areas, including both minority and low-income communities. Because the Proposed Action does not include any impacts that would go beyond the airport property into adjoining neighborhoods, however, no impact to these areas are anticipated. There are no disproportionately high and adverse environmental effects on minority and/or low-income populations that would result from implementation of the Proposed Action.

F. **Executive Order 11988, that directs federal agencies to reduce the risk of flood loss, minimize the impacts of floods on human safety, health and welfare, and restore and preserve the natural and beneficial values served by floodplains, has been followed and as required, complied with appropriately.** The Final EA contains analyses that address whether the Proposed Action would be a "significant floodplain encroachment," as defined in FAA Order 1050.1F and Executive Order (EO) 11988. A "significant encroachment" on the floodplain would not occur because: the probability of loss of human life is low; the Proposed Action would be designed to minimize future extensive damage or costs; and there would be no notable adverse impacts on the floodplain's natural and beneficial features. The appropriate and currently valid FIRMs were consulted and are included in the Final EA. The FAA is satisfied that the Proposed Action would not be a significant encroachment on Floodplains; there is no feasible and prudent alternative that avoids the floodplain; and the implementation of the Proposed Action would comply with all the requirements of EO 11988.

Decision and Order

The FAA recognizes its responsibilities under the National Environmental Policy Act of 1969 (NEPA) and its implementing CEQ regulations, and its own directives. Recognizing these responsibilities, I have carefully considered the FAA's goals and objectives in relation to the various aeronautical aspects of the *Terminal A Redevelopment Program at Newark Liberty International Airport* as discussed in the Final EA, and I have used the environmental process to make a more informed decision. This review included the purposes and needs to be served by this project, alternative means of achieving them, the environmental impacts of these alternatives, and the mitigation and conditions necessary to preserve and enhance the human environment. This decision is based on a comparative examination of environmental impacts, operational factors, and economic factors for each of the alternatives. The Final EA provides a fair and full discussion of the impacts of the Proposed Action. The NEPA process included appropriate planning and design for avoidance and minimization of impacts, as required by NEPA, the CEQ regulations, other special purpose environmental laws, and appropriate FAA environmental directives and guidance.

The FAA has determined that environmental and other relevant concerns presented by interested agencies and the general public have been addressed in the Final EA. 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 signifies that applicable federal requirements relating to airport development planning have been met and permits the PANYNJ to proceed with development and possibly receive funds for eligible items. Not approving these actions would prevent the PANYNJ from proceeding with the airport development.

After careful and thorough consideration of the facts contained herein and subsequent to my review of the Final EA and all of its related materials, the undersigned finds that the proposed Federal action is consistent with existing national environmental policies and objectives as set forth in Section 101 of NEPA and other applicable environmental requirements and will not significantly affect the quality of the human environment or otherwise include any condition requiring consultation pursuant to Section 102(2)(C) of NEPA.

This decision does not constitute a commitment of funds under the Airport Improvement Program (AIP); however, it does fulfill the environmental prerequisites for future AIP funding determinations associated with AIP-eligible project components (49 U.S.C. §47107).

Similarly, this decision neither grants approval to use Passenger Facility Charges (PFC) nor constitutes a commitment of PFC approval. This decision fulfills the environmental analysis prerequisites for future PFC determinations. The FAA will review any future PFC application upon receipt from the PANYNJ and the FAA will make funding decisions in accordance with the established procedures and applicable statutory requirements (49 U.S.C. §40117).

Accordingly, pursuant to the authority delegated to me by the Administrator of the FAA, I find that the actions summarized in this FONSI/ROD are reasonably supported and approved. I hereby direct that action be taken together with the necessary related and collateral actions, to carry out the agency actions noted above. Specifically:

1. Unconditional Approval of the EWR ALP pursuant to 49 U.S.C. §40103(b) and §47107(a)(16), and determination of effects of each of the components comprising the Proposed Action as described above, in the Final EA, and all associated materials upon the safe and efficient utilization of navigable airspace pursuant to 14 C.F.R. Parts 77 and 157 and 49 U.S.C. §44718;

2. Determination under 49 U.S.C. §§40101(d)(1) and 47105(b)(3) that the proposed project meets applicable design and engineering standards set forth in FAA Advisory Circulars;

3. Determinations concerning funding through the Federal grant-in-aid program authorized by the Airport and Airway Improvement Act of 1982, as amended (recodified at 49 U.S.C. §47107) and/or approval of an application to use Passenger Facility Charges (PFCs) under 49 U.S.C. §40117 (this does not determine eligibility or availability of potential funds); and

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

5. Continued close coordination with the PANYNJ, the City of Newark, City of Elizabeth and appropriate FAA program offices, as required, for safety during construction (14 C.F.R. Part 77); and,

6. Approval of appropriate amendments to the EWR Airport Certification Manual (ACM), as required, pursuant to 49 U.S.C. §44706.

Approved: _____ 5/10/17

Steven M. Urlass
Airports Division Manager
Federal Aviation Administration
Eastern Region

Date

Right of Appeal

This FONSI/ROD presents the Federal Aviation Administration's findings and 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.

Any party having a substantial interest may appeal this order to the United States Court of Appeals for the District of Columbia Circuit or in the court of appeals of the United States for the circuit in which the person resides or has its principal place of business, upon petition filed within 60 days after entry of this order in accordance with 49 U.S.C. §46110.

Any party seeking to stay the implementation of this ROD must file an application with the FAA prior to seeking judicial relief, as provided in rule 18(a) of the Federal Rules of Appellate Procedure.

Terminal A Redevelopment Program
Newark Liberty International Airport

Final Environmental Assessment

Prepared for

THE PORT AUTHORITY OF NY & NJ

Submitted to

U.S. Department of Transportation
Federal Aviation Administration

Prepared by

AECOM

March 2017

This Environmental Assessment becomes a Federal document when evaluated, signed, and dated by the Responsible FAA Official.

May 10, 2017

Responsible FAA Official — Date

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Acronyms

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ADG	Aircraft Design Group
ALP	Airport Layout Plan
AOA	Aircraft Operating Area
APU	Auxiliary Power Units
AQCR	Air Quality Control Region
ASDE-X	Airport Surface Detection Equipment, Model X
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
ATA	Air Transport Association
ATO	Airline Ticket Office
BMP	Best Management Practices
BOD	Biological Oxygen Demand
CAA	Clean Air Act
CAFRA	Coastal Area Facilities Review Act
CEQ	Council on Environmental Quality
CFC	Chlorofluorocarbon
C.F.R	Code of Federal Regulations
CMAQ	Congestion Mitigation Air Quality
CMP	Coastal Management Program
CNG	Compressed Natural Gas
CO	Carbon Monoxide
CSO	Combined Sewer Overflow
CTA	Central Terminal Area
dB	Decibel
DNL	Day-Night Average Sound Level
E.O.	Executive Order
EA	Environmental Assessment
EDMS	Emissions and Dispersion Modeling System
EPA	Environmental Protection Agency
ESA	Endangered Species Act
EWR	Newark Liberty International Airport
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FHAP	Flood Hazard Area Permit
FIS	Federal Inspection Station
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
GSE	Ground Support Equipment
HOV	High Occupancy Vehicle
HVAC	Heating, Ventilating, and Air Conditioning
JFK	John F. Kennedy International Airport
Ldn	Day-Night Average Noise Level
LGA	LaGuardia Airport
LNAPL	Light Non-Aqueous Phase Liquid
LSRP	Licensed State Remediation Professional
LOI	Letter of Interpretation
LOS	Level of Service
LPG	Liquid Propane Gas
LTO	Landing and Take-Off Cycle

LQG	Large Quantity Generator
LWCF	Land and Water Conservation Fund
MAAP	Million Annual Air Passengers
MHW	Mean High Water
MMBTU	Million British Thermal Units
MOVES	Motor Vehicle Emission Simulator
MW	Megawatts
MWH	Megawatt-Hours
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969
NHP	Natural Heritage Program
NHPA	National Historic Preservation Act
NJDEP	New Jersey Department of Environmental Protection
NMFS	National Marine Fisheries Service
NO_2	Nitrogen Dioxide
NOx	Nitrogen Oxides
NRHP	National Register of Historic Places
NYACQR	New Jersey-New York-Connecticut Interstate Air Quality Control Region
NJDEP	New Jersey State Department of Environmental Protection
NJDOT	New Jersey State Department of Transportation
NJHPO	New Jersey State Historic Preservation Office
NJNHP	New Jersey State Natural Heritage Program
N.J.S.A.	New Jersey Statutes Annotated
O&D	Origin and Destination
OST	Office of the Secretary of Transportation
OWSS	Oil/Water Separator System
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyl
PD	Peripheral Ditch
PFC	Passenger Facility Charge
PVSC	Passaic Valley Sewerage Commission
PM_{10}	Inhalable particulate matter less than 10 microns in diameter
ppm	parts per million
SESC	Soil Erosion and Sediment Control Plan
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SO_x	Sulfur Oxides
SUP	Sewer Use Permit
NJPDES	New Jersey Pollutant Discharge Elimination System
SWPPP	Storm Water Pollution Prevention Plan
TAAM	Total Airspace and Airport Modeller
TAF	Terminal Area Forecast
TIP	Transportation Improvement Program
TSA	Transportation Security Administration
TSP	Total Suspended Particulates
UTB	Unit Terminal Building
USACOE	U.S. Army Corps of Engineers
U.S.C.	U.S. Code
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

V/C	Volume-to-Capacity
VOC	Volatile Organic Compound

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Executive Summary

Executive Summary

Introduction

This document is the Final Environmental Assessment (EA) prepared by the Port Authority of New York and New Jersey ("the Port Authority") to analyze the expected environmental effects of a Proposed Action involving the construction of a new Terminal A at Newark Liberty International Airport ("the airport" or "EWR"). This document is prepared in accordance with Federal Aviation Administration (FAA) policies and procedures for implementing the National Environmental Policy Act (NEPA), including FAA Order 5050.4B, *NEPA Implementing Instructions for Airport Actions*, and FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*. Compliance with these orders and guidance ensures that the project will meet the procedural and substantive environmental requirements set forth by the Council of Environmental Quality in its regulations implementing NEPA.

This EA has been prepared to provide an understanding of the Sponsor's Proposed Action, evaluate reasonable alternatives, identify potential environmental consequences associated with the Proposed Action, and suggest mitigation for potential adverse environmental impacts, if applicable.

A background and description of Newark Liberty International Airport can be found in Section 1.2.

The Proposed Action would replace the existing Terminal A (include demolition of concourses, with headhouse remaining for an undetermined airport use) with a new terminal and construct associated airside and landside improvements to replace an aging terminal and infrastructure. Doing so would accommodate current and forecast passenger and flight demand, address existing deficiencies, provide long-term operational flexibility, reduce delays, and allow for more efficient operations for the ease and convenience of passengers at the airport.

Purpose and Need

The Proposed Action would serve the following needs:

- **Replace a deteriorated and outdated Terminal A:** Replace the aging terminal and associated infrastructure that has deteriorated to unacceptable levels.

- **Provide an efficient and modern terminal:** Resolve functional space deficiencies and alleviate passenger congestion throughout terminal.

- **Accommodate existing and future passenger travel demand:** Accommodate current and projected aviation demand at acceptable levels of service.

- **Enhance airfield capacity and improve operations:** Resolve operational deficiencies and alleviate airfield and terminal ramp congestion.

- **Enhance landside access and parking at the terminal:** Improve deficiencies in roadway access and circulation, add parking facilities, and reduce traffic congestion.

As described in this EA, the ongoing and increasing level of maintenance and replacement of Terminal A components is unacceptable and is becoming more expensive as its condition deteriorates. Terminal A is the oldest terminal at the airport and is reaching the end of its useful service life without a major rehabilitation. Previous attempts to upgrade the facility could not address the fundamental problems associated with the age of the structure, the constraining size and the irregular shape of the building.

The interior layout of the key functional elements in Terminal A, both for departing and arriving operations, has essentially remained unchanged since the terminal's opening in 1973. As a result, the current facilities are deficient in functional space (such as check-in areas, passenger holdrooms and concessions), resulting in overcrowded conditions and reduced operational efficiency. With the substantial changes in Transportation Security Administration (TSA) security procedures, additional passenger processing and systems space has been required, which has not been adequately accommodated within the existing terminal area.

The airport currently operates with high levels of delay, in part because of inadequate ramp and gate infrastructure (see **Table 2-4**). Based on the forecasted demand in the *Long-Range Forecast for the Port Authority Airports* (April 2012), 33 gates sized to accommodate the forecast fleet mix are required to accommodate the gated design day flight schedule at Terminal A (see **Appendix A**).[1] Without an improvement in the terminal layout, the forecasted passenger demand would be achieved with severe delays and low levels of service. In addition, a reconfigured airside layout is critically needed to improve the efficiency of aircraft movements and reduce delays. Reconfigured airfield operations and enhanced airfield capacity would optimize the use of the aircraft parking stands and terminal facilities and reduce taxi times by approximately one minute and combined taxi and gate delays between 0.7 and 2.3 minutes.

Project Description

In an effort to resolve all of the current shortfalls of the existing Terminal A, the Port Authority has carefully developed the Proposed Action to handle the current and forecast passenger demand at acceptable levels of service, reduce delays and associated operational costs to airlines, enhance roadway access and parking, and improve airline services.

The Proposed Action would include the following elements:

- The existing 28-gate/34-position[2] Terminal A would be demolished and replaced with a new 33-gate terminal (the adjustment in gate accommodations is intended to respond to forecast passenger demand, the Proposed Action would not induce additional passenger demand);

- The airfield access to the new terminal would be reconfigured, including aircraft parking areas and taxilanes;

- A new 6-level, 2,300-space public parking garage and 321-space surface lot would be constructed, replacing existing surface parking lots providing a total of 2,199 spaces;

[1] FAA announced that Level 3 slot controls at the airport, limiting operations to 81 per hour would be replaced on October 30, 2016 with Level 2 schedule facilitation which included a rolling three-hour limit of 231 operations. See Section 2.3 for additional information about changes to FAA demand management procedures.

[2] Six gates have been subdivided to accommodate two smaller, regional jet (Aircraft Design Group II) aircraft.

- The stormwater collection system for the Project Area would be reconfigured;
- The terminal gates would be served by new aviation fuel hydrants;
- Separate access roadways to the new terminal from the airport entrance would be constructed along with new dedicated frontage roadways to service the new terminal, creating more efficient traffic circulation for Terminals B and C, and the entire airport;[3]
- Existing airport functions within the project area would be relocated to other areas of the airport.

The Proposed Action would not preclude a future expansion beyond the initial 33 gates; however future expansion is not reasonably foreseeable at this time. Assuming all approvals are obtained, construction of the Proposed Action would start in 2016 and be completed by 2022.

Alternatives, Including the Proposed Action

The alternatives evaluated consisted of the Restoration Alternative, the Modernization Alternative, the Proposed Action and the No-Build/No-Action Alternative.

The Restoration and Modernization Alternatives of the existing Terminal A would not meet the need to efficiently utilize the Terminal A site based on their limited ability to accommodate further passenger and operations growth, or provide efficient aircraft parking and movement, and passenger processing and security flexibility. Each alternative would also entail a high degree of operations interruption due to the complex construction phasing that would be required in and around an operating facility. For these reasons, both the Restoration and Modernization Alternatives of Terminal A were eliminated from further consideration.

The No-Build/No-Action Alternative would leave Terminal A as it currently exists, with only maintenance upgrades to the terminal. The forecasted passenger demand would be met by increasing the aircraft size (i.e., upgauging) which would result in low levels of service and increased delay due to the constrained apron layout around the existing satellite concourses.

Therefore, only the Proposed Action and No-Build/No-Action Alternative remain for detailed environmental evaluation. The environmental impacts of these two alternatives are summarized in comparative form in **Table 3-1** in Section 3.

Affected Environment

The airport and the Project Area are located in a highly developed area with disturbed landscape that is primarily paved as runways, taxiways, parking areas or airport facilities and other buildings. The area within five miles of the airport consists of industrial, urban, and suburban environments.

An open water ditch, identified as the Peripheral Ditch, is located within the Project Area. It is designated State Open Waters. There are freshwater wetlands along tributaries of the ditch along Carson Road, with a wetland fringe of palustrine emergent wetlands with patches of

[3] See Section 5.15 and Appendix F for additional detail.

palustrine scrub-shrub wetlands, and along Basilone Road, which contains forested wetlands along its banks.

A large portion of the Project Area is located in an area of marginal flood risk, Unshaded Zone X, or in an area mapped as a 500-year flood hazard risk. A smaller area, primarily in and adjacent to the Peripheral Ditch, is located in the 100-year floodplain (Zone AE). There are no defined Federal Emergency Management Agency (FEMA) floodway boundaries within the Project Area.

Environmental Consequences

This document presents the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision-maker and the public. This section briefly discusses the potential environmental consequences of the Proposed Action. Potential environmental impacts (or lack thereof) are summarized below in the same order as they are discussed in Section 5.

- **Noise and Compatible Land Use**. Because there will be no changes in the number of flights and the types of aircraft as a direct result of the Proposed Action, no permanent long-term noise impacts are expected to occur beyond the forecasted growth in passenger demand that would occur with or without the Proposed Action. Temporary construction-related noise is unavoidable; however, adverse impacts can be mitigated and the effects would diminish as the project nears completion. The No-Build/No-Action Alternative would not result in any new construction or changes to the number of operations or fleet mix beyond the forecasted growth in passenger demand; therefore, there would be no increase in noise in the area beyond normal background growth.

- **Land Use**. The airport is located in a heavily urbanized area but the Project Area is not within close proximity to residences, parks or recreational facilities. Under the Proposed Action, there would be no change in the area's existing zoning, surrounding area land use plans, or the land uses on the airport. The No-Build/No-Action Alternative would not change any of the physical characteristics of the airport and as a result would have no impact on land uses on or off the airport.

- **Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks**. Implementation of the Proposed Action would have no adverse impact on area residences, communities, businesses or children's health and safety located beyond the Project Area, and there would be no loss to the community's tax base. Implementation of the Proposed Action would not result in effects to any low-income or minority population because the Proposed Action does not include any impacts that would go beyond the airport property into adjoining neighborhoods. Under the No-Build/No-Action Alternative there would be no construction. Consequently, there would be no residential or business displacement, no fiscal impact, and no disproportionate impacts to low-income or minority populations.

- **Secondary (Induced) Impacts**. Neither the Proposed Action nor the No-Build/No-Action Alternative would result in off-airport property acquisition, residential relocations, division or disruption of established communities, or disruption of planned development. Thus, no significant adverse secondary (induced) impacts would occur.

- **Air Quality**. Because there would be no changes in the aircraft operations as a direct result of the Proposed Action and Terminal A would be replaced with a modern, more energy efficient terminal, there would be no direct/operational impact to air quality with the exception of traffic impacts as a result of the roadway improvements. Predicted worst-case carbon monoxide (CO) levels under the Build Condition in 2022 and 2027 at the worst-case intersections would be well below the National Ambient Air Quality Standard (NAAQS) with no hot spot CO adverse impacts. Air emissions calculated for the construction activities indicated that the increase in indirect emissions under the Proposed Action would be well below the applicable *de minimis* limits. Hot spot CO levels at the worst-case intersection would be well below the NAAQS, indicating no adverse hot spot CO impacts. The No-Build/No-Action Alternative would have no effect on air quality.

- **Water Resources**. The Proposed Action would have a temporary and negligible impact on water quality, and provide long term water quality benefits. Best management practices and the project's reconfigured stormwater collection system would ensure that the requirements of the New Jersey Pollutant Discharge Elimination System (NJPDES) permit would continue to be met. Water-related construction impacts would be adequately controlled with best management practices. The No-Build/No-Action Alternative would not result in any significant adverse impact to water quality.

    - **Floodplains**. Due to the airport's location within a floodplain, a loss of approximately 0.7 acres of effective floodplain storage volume would occur due to the placement of access roadway embankment material within the 100-year floodplain located in the area of the Peripheral Ditch. The project's final design would ensure compliance with NJDEP's Bureau of Floodplain Management's net fill requirements (N.J.A.C. 7:13-2.14) after construction is completed. The 100-year surface water elevation of the Peripheral Ditch would comply with the applicable NJDEP and Flood Hazard Area Control Act (N.J.A.C. 7:13) criteria and therefore would not create significant adverse impacts to the surrounding floodplain. The Proposed Action would comply with Executive Order 11988, Floodplain Management, and Executive Order 13690, Establishing a Federal Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input, Under the No-Build/No-Action Alternative there would be no construction; therefore, there would be no significant floodplain impact.

    - **Wetlands**. No wetlands are anticipated to be affected by either the Proposed Action or the No-Build/No-Action Alternative.[4] However, under the Proposed Action, there would be impacts to the Peripheral Ditch, which is designated as State Open Waters. The potential disturbance is less than the 1.5 acre threshold for a "smaller disturbance" and would be mitigated as required by NJDEP's Flood Hazard Area Permit (e.g., purchase of credits from a mitigation bank or other means as approved by NJDEP). Efforts would be made during Final Design to minimize or eliminate this impact; however, the exact level of disturbance is subject to change.

- **Department of Transportation Act, Section 4(f)**. Two Section 4(f) resources within the airport property, the Port Authority's Administration Building and the Medical Building,

[4] The area identified as a stormwater basin and designated ordinary wetlands in the letter of interpretation from NJDEP dated September 25, 2012 (see Appendix D) are no longer within the Project Area.

which are listed on the National Register of Historic Places (NRHP), are located outside of the Project Area. New Jersey State Historic Preservation Office (SHPO) concurred that the Proposed Action would result in no direct taking or constructive use of the resources. There are no Section 6(f) resources (recreational properties acquired or developed with funding through the Land and Water Conservation Fund (LWCF) Act of 1965) located in, or near, the Project Area. The No-Build/No-Action Alternative would not result in any construction nor any changes to the structures on the airport; therefore there would be no direct acquisition or constructive use of these resources.

- **Historical, Architectural, Archaeological, and Cultural Resources**. There are no historic or archaeological resources located within the Project Area. The Administration Building (built in 1935; NRHP-listed) and the Medical Building (built 1934-1938; NRHP-listed) are both located in the airport's North Area and are outside of the Project Area. Consequently, SHPO, has determined that no historic properties would be affected within the project's area of potential effects and no further consultation is required as part of Section 106 of the National Historic Preservation Act. The No-Build/No-Action Alternative would not result in any construction nor any changes to the structures on the airport; therefore there would be no direct acquisition or constructive use of these resources.

- **Biological Resources.** There are no known federally-listed species of flora or fauna known to exist in the vicinity of the Project Area and the Peripheral Ditch does not provide habitat for any federally threatened, endangered, or candidate fish species. Three State-listed species have been observed at the airport; however the Proposed Action would occur outside of the areas where they were observed. Therefore, there would be no impact to any federally- or state-listed threatened or endangered species, individuals, concentrations or critical habitat from the Proposed Action. The No-Build/No-Action Alternative would have no impact to grassland or wetland habitat; therefore, there would be no adverse impact to Federally- or State-listed species or other fish or wildlife populations or habitat.

- **Coastal Resources**. Because the site of the Proposed Action is located more than 500 feet from the mean high water line and outside any regulated adjacent area, and is located outside the Coastal Area Facilities Review Act (CAFRA) Zone, no impact to the coastal zone would occur under either the Proposed Action or the No-Build/No-Action Alternative.

- **Natural Resources and Energy Supply**. A preliminary energy model, based on assumptions available in this early stage of design, demonstrates incremental energy savings by the proposed terminal from a variety of energy efficiency measures. The Port Authority's *Sustainable Design Guidelines* require a 30 percent energy cost savings compared with the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) 90.1-2013 and the goal of this project is to achieve those savings. Electricity demand would decrease to 31.2 kilowatt-hour/square foot (kWh/sf) from 41.9 kWh/sf under the No-Action Alternative. The Proposed Action would utilize an integrated design process and recognize all sustainable opportunities through the use of ongoing sustainable design workshops and coordination meetings with all project disciplines. Under the No-Build/No-Action Alternative, existing conditions would remain unchanged – an energy inefficient passenger terminal building would remain in use and the inefficient use of resources would continue.

- **Visual Effects**. The Proposed Action would result in a minor reconfiguration of light sources, and minor changes to the views from adjacent roadways through alteration of curbfronts, shifting the new Terminal A further south, and addition of a parking garage. However, light emissions are not expected to be substantially different from existing conditions. Aviation lighting is abundant in the area, as required for operations, security, obstruction clearance, and aircraft navigation in the air and on the ground. Light emissions from the proposed Terminal A would be shielded from surrounding sensitive land uses by other airport infrastructure (i.e., fuel farm and the proposed garage) and by U.S. Routes 1&9. Under the No-Build/No-Action Alternative, the existing Terminal A and surrounding area would remain unchanged; therefore, there would be no change in lighting or to the visual environment. Only minimal nighttime construction is anticipated.

- **Hazardous Materials, Solid Waste and Pollution Prevention**. Implementation of the Proposed Action would not increase the quantity of hazardous materials present in the environment, and would require the removal and remediation of some hazardous materials from buildings and subsurface areas. With regard to the historic release of petroleum beneath satellite's A1 and A2 at Terminal A, a 2012 *Remedial Action Progress Report*[5] has recommended that as design and construction of the Proposed Action progresses, the Port Authority should evaluate opportunities to remediate areas impacted by the construction and implement remediation measures as determined feasible. At Building 331, United Airlines is currently completing an RI (remediation investigation) for this site. As part of the RI process additional soil samples were taken, along with setting up an additional monitoring well, in order to get the necessary sample data to closeout this case file, which is expected to occur prior to the construction of the new terminal. At Building 120, quarterly groundwater monitoring will continue at this site until levels are below regulatory criteria, however final remedial actions have not yet been determined. The Port Authority has had ongoing coordination with NJDEP regarding the on-airport remedial actions and, assuming that any further remedial work is conducted in accordance with all regulatory requirements, the Proposed Action could result in a beneficial impact with regard to hazardous materials by potentially reducing the level of hazardous substances in the environment. The No-Build/No-Action Alternative would not generate these beneficial impacts, but would result in hazardous materials remaining in place at existing levels in existing locations.

- **Traffic.** Under the Proposed Action all of the ramps, multi-lane roadways, and weaving sections at the terminal are projected to operate at LOS D or better during each of the three weekday peak hours analyzed in both 2022 and 2027, with two exceptions – the CTA Exit to Route 1 & 9 southbound is projected to operate at LOS E during the PM peak hour and the express roadway to Terminal C Arrivals is projected to operate at LOS E during the midday peak hour. All traffic movements at all study intersections are projected to operate at LOS D or better during the three weekday analysis peak hours, with the exception of the Earhart Drive/North Avenue intersection. There would be no off-airport roadway improvements. Finally, although several terminal frontages are projected to exceed 100 percent utilization under Future Build conditions, they would be below 130 percent, the desirable planning target per ACRP Report 40.[6]

[5] Newark Liberty International Airport, *Terminals A & B Remedial Action Progress Report* (March 2012), Port Authority of NY & NJ, page iv

[6] *Airport Cooperative Research Program Report (ACRP) 40: Airport Curbside and Terminal Area Roadway Operations*, Transportation Research Board, Washington D.C., 2010, page 41.

- **Climate Change.** Construction activities would result in the burning of fossil fuels by construction equipment as well as an increase in construction-related vehicle traffic. During the peak construction year (2018), the Proposed Action would result in the emission of approximately 1,500 tons of greenhouse gases (carbon dioxide equivalents). Airport operations in the form of aircraft takeoffs and landings, ground service vehicles, or passenger vehicle traffic, would not increase as a result of the Proposed Action; therefore, overall GHG emissions would remain the same when compared with the No-Build/No-Action Alternative.

- **Construction Impacts.** The construction period for projects within the Proposed Action would last for approximately six years. During construction, there would be minor and temporary air quality, noise and water quality impacts. There would be no construction under the No-Build/No-Action Alternative.

- **Cumulative Impacts**. The Proposed Action is not expected to cause or contribute to a significant adverse effect on the environment when considered with other past, present or reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. There would be no construction under the No-Build/No-Action Alternative; therefore, it would not create a cumulatively significant impact on the environment.

Mitigation

Measures to minimize environmental harm are discussed in **Section 6.** A potential one-acre impact to the Peripheral Ditch, designated State Open Waters, has been identified. Mitigation for any impact to the Peripheral Ditch would be determined through consultation with NJDEP and in conjunction with the Flood Hazard Area Permit requirements. Extensive consultation with NJDEP has already occurred[7] and is ongoing. An overall permitting strategy has been identified. Typical of a project of this size, permits will be filed as individual components of the action are developed, given the extended timeframe of the overall action, with an aim towards reducing overall project impacts as design proceeds.

Best management practices would also be utilized as the Port Authority is committed to implementing the Proposed Action in accordance with all environmental laws, regulations, policies, and permit requirements applicable to the project and in accordance with the *Newark Liberty International Airport Best Management Practices Plan*, the Port Authority's Sustainable Infrastructure Guidelines*,[8] the Newark Liberty International Airport Sustainable Management Plan*[9] and the FAA's AC 150/5370-10G, *Standards for Specifying Construction of Airports*.[10]

Agency Coordination

Appendix D lists the federal and state agencies consulted with during the EA process. The agencies contacted were:

[7] Meetings dated April 2, 2013, September 19, 2013 and April 2, 2014.
[8] https://www.panynj.gov/about/pdf/Sustainable-infrastructure-guidelines.pdf
[9] https://www.panynj.gov/about/pdf/ewr-sustainability-report.pdf
[10] http://www.faa.gov/airports/engineering/construction_standards/

Federal Agencies

- Federal Aviation Administration
- National Marine Fisheries Service
- U.S. Fish & Wildlife Service

State Agencies

- New Jersey Department of Environmental Protection
  - Land Use Regulation Program
  - Natural Heritage Program
  - Historic Preservation Office

Copies of the Draft EA were made available to any interested agency or person.

Public Participation

On February 16, 2017 an announcement was published in both the Star-Ledger and the Record that the Draft EA was available for public review and comment for 30 days. In addition, the Draft EA was posted on the Port Authority's website and made available at both the Elizabeth and Newark public libraries. The Proposed Action is not expected to be controversial on environmental grounds; therefore a public hearing is not currently planned. No comments were received during the public comment period.

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1 Background and Project Description

1 Background and Project Description

1.1 Introduction

The subject of this Environmental Assessment (EA) is the Terminal A Redevelopment Program (Proposed Action) at Newark Liberty International Airport in Newark and Elizabeth, New Jersey. The Proposed Action would be undertaken by the Port Authority of New York and New Jersey (the Port Authority) as the Project Sponsor. This EA has been prepared in accordance with Federal Aviation Administration (FAA) policies and procedures for implementing the National Environmental Policy Act of 1969 (NEPA) as amended.[11] A NEPA determination is needed because the Sponsor will seek Federal Aviation Administration (FAA) approval to amend its Airport Layout Plan (ALP) and accompanying ALP Drawing Set and because federal funds may be granted and the approval to collect and use Passenger Facility Charges (PFCs) may be sought to implement the project. This EA will analyze the potential environmental impacts of a Proposed Action involving an airport terminal redevelopment program.

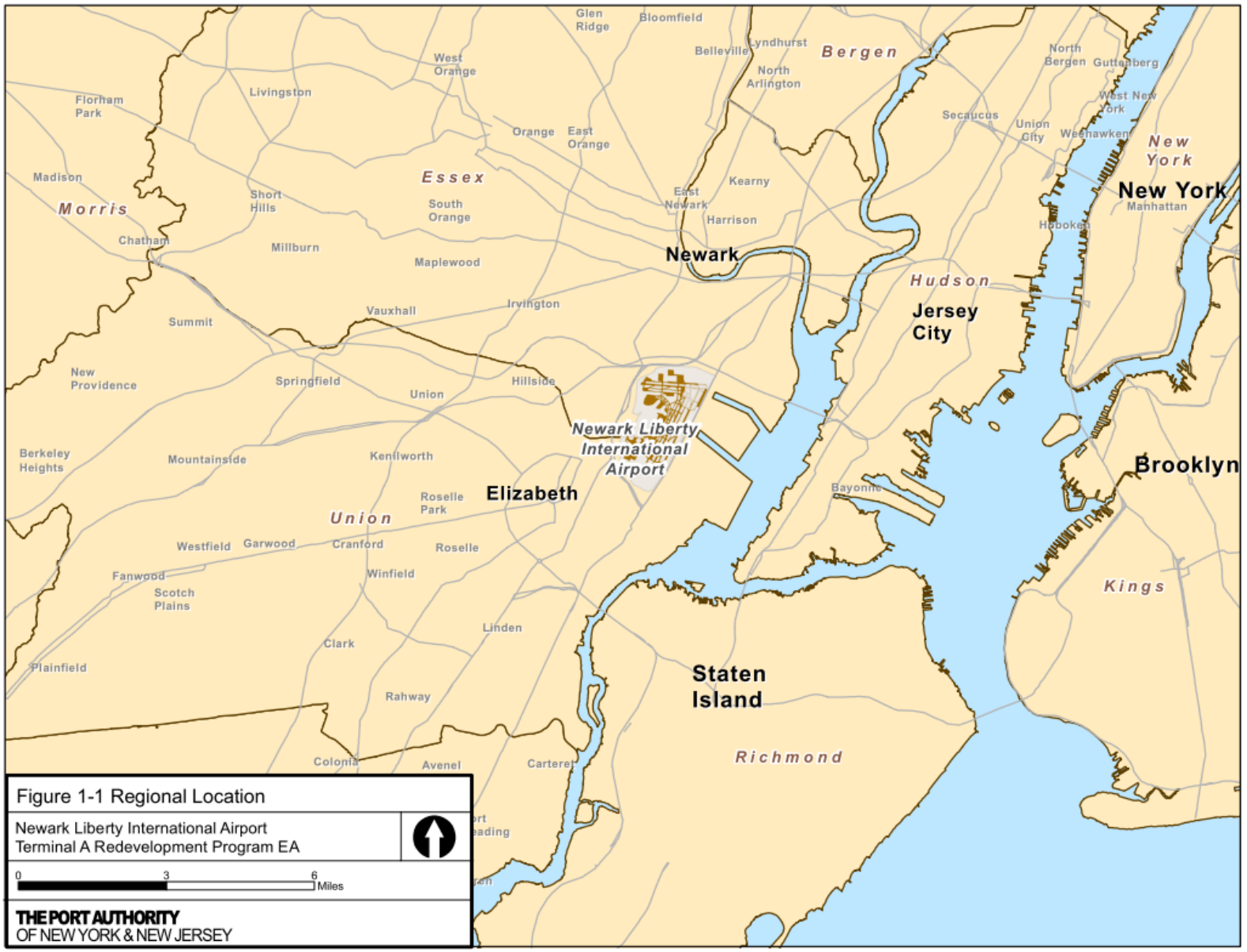
This EA was developed in accordance with FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*; FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*; and using FAA's *Environmental Desk Reference for Airport Actions* for guidance. Compliance with these orders and guidance ensures that the project will meet the procedural and substantive requirements set forth by the Council of Environmental Quality (CEQ) in its regulations implementing NEPA (40 C.F.R. §§ 1500-1508).

1.2 Background

Newark Liberty International Airport ("the Airport" or "EWR"), is operated by the Port Authority and is located in the southeastern portion of the City of Newark in Essex County and the northeastern section of the City of Elizabeth in Union County, adjacent to Newark Bay (**Figure 1-1**). It is only 12 miles from Lower Manhattan, New York, NY, by highway. The airport consists of 2,027 acres, including 320 acres in the Terminal A area. The Port Authority owns that portion of the airport located in Elizabeth and leases that portion of the airport located in Newark from the city. The airport has been operated by the Port Authority since March 22, 1948.

In 1973, the airport's original Central Terminal Area (CTA) opened, housing Terminals A, B and C. With ever-increasing passenger and air cargo demand, the airport has expanded over the years to accommodate its first international flights in the 1970s; the arrival of Virgin Atlantic Airways offering flights to London in 1984; Federal Express (FedEx) opening its second air cargo hub in 1986; and the expanded operations resulting from the 1987 People Express-Continental Airlines merger. To accommodate the fast-paced expansion of services, a steady progression of infrastructure and terminal upgrades has occurred over the years, including the Port Authority's Administration Building in the 1970s, the completion of Terminal C in 1988; a two-building maintenance complex in 1989; a Terminal B International Arrivals Facility in 1996; a Monorail (now AirTrain Newark) in 1996; Continental's Global Gateway Project to expand and modernize Terminal C from1998 to 2003; and a 325-foot FAA Air Traffic Control Tower commissioned in 2003.

[11] 42 U.S.C. §§ 4321- 4347.


Glen Ridge
Bloomfield
Belleville
Lyndhurst
Bergen
North Arlington
West Orange
Livingston
Florham Park
Orange
East Orange
Secaucus
North Bergen
Guttenberg
West New York
Union City
Weehawken
New York
Madison
Morris
Essex
Short Hills
South Orange
East Newark
Kearny
Harrison
Hoboken
New York
Manhattan
Chatham
Millburn
Maplewood
Newark
Hudson
Jersey City
Summit
Vauxhall
Irvington
New Providence
Springfield
Union
Hillside
Newark Liberty International Airport
Berkeley Heights
Mountainside
Kenilworth
Elizabeth
Roselle Park
Bayonne
Brooklyn
Union
Westfield
Garwood
Cranford
Roselle
Fanwood
Scotch Plains
Winfield
Kings
Linden
Clark
Plainfield
Staten Island
Rahway
Richmond
Colonia
Avenel
Carteret
Figure 1-1 Regional Location
Newark Liberty International Airport
Terminal A Redevelopment Program EA
0
3
6
Miles
THE PORT AUTHORITY
OF NEW YORK & NEW JERSEY

Today, the airport is the second busiest airport in the New York-New Jersey metropolitan area based on passenger enplanements and 14th busiest in the nation. The airport serves as a hub for one of the leading carriers in the New York market, United Airlines, along with 32 other scheduled carriers. United Airlines uses Terminals A and C[12] as its third-largest hub for its global operations. The airport's second largest tenant is FedEx, which operates its third largest air cargo hub from the airport. The airport has two parallel runways, 4R-22L and 4L-22R, and a crosswind runway, 11-29. Runway 4R-22L is 9,980 feet long by 150 feet wide, and is used primarily for landings. Runway 4L-22R is 11,000 feet long by 150 feet wide, and is located 950 feet west of and parallel to runway 4R-22L. Runway 11-29 is 6,800 feet long and 150 feet wide. More than 12 miles of 75-foot-wide taxiways, entirely equipped with centerline lighting, link the three runways with the central terminal and cargo areas.

In 2014, the airport handled more than 35.6 million domestic and international passengers and accommodated approximately 395,500 flights.[13] Currently, Terminal A has nine major airline tenants: American Airlines, US Airways, Frontier, ExpressJet, JetBlue, United, Southwest, Virgin America and Air Canada. Terminal C serves United Airlines exclusively, and Terminal B houses over 20 airline tenants. While the growth of the airport has vastly expanded the air service provided in northern New Jersey and in the New York metropolitan area, it has also resulted in reduced levels of service, increasing delays and concurrent increases in airline operating costs. With the growing delays and air traffic congestion, there is a pressing need to accommodate current and future flight and air-passenger demand. FAA announced that Level 3 slot controls at the airport would be replaced by Level 2 schedule facilitation and coordination beginning on October 30, 2016. EWR will be designated a Level 2, schedule-facilitated airport under the International Air Transport Association (IATA) Worldwide Slot Guidelines.[14]

Over the last 20 years, significant efforts have been made to modernize and redevelop the passenger terminals to respond to the increasing needs of airlines and passengers. Terminal A is the oldest terminal at the airport, and although it has gone through two minor upgrades (1995 and 2004), the facility is reaching the end of its useful service life. The previous attempts to upgrade Terminal A did not adequately address the deficiencies that impede modern airline and security requirements. In addition, the terminal does not offer passengers the amenities that are provided at other airports, or other terminals at EWR.

Terminal A is no longer able to compete with modern terminals. It contributes to passenger delays with inadequately configured check-in areas and security checkpoints. It contributes to flight delays because it is served by single taxilanes that can only support single direction aircraft movements. In addition, it needs a costly state of good repair program. Due to the conditions of this antiquated facility and the high cost of bringing the existing terminal up to current standards, the Port Authority has determined that constructing a new terminal is more cost effective than renovating the existing facility.

Based on forecast passenger demand, 33 gates are required to accommodate the gated design day flight schedule at Terminal A (see Appendix A). While the existing terminal has 34 aircraft parking positions served by 28 gates (holdrooms), the new Terminal A has larger gate positions that can accommodate the larger aircraft that are forecast to use Terminal A. A review of all

[12] Some United international arrivals use Terminal B. These aircraft are then towed to Terminal C for departures.
[13] http://www.panynj.gov/airports/ewr-facts-info.html (Retrieved May 10, 2016)
[14] Change of Newark Liberty International Airport (EWR) Designation, 81 FR 19861-19863, April 6, 2016; https://federalregister.gov/a/2016-07910

terminal facilities showed that most of the future demand at the airport would be absorbed by Terminal A because Terminal C is operating at capacity (with further gate constraints expected due to changing air fleet dimensions), while two of Terminal B's three Satellites, B2 and B3 are dedicated to international use. Terminal B, Satellite B1 has some limited ability to accommodate some additional domestic flights. Only Terminal A has adjacent space available to expand without encroaching on existing runways.

1.3 Description of the Proposed Action

In an effort to resolve all of the current shortfalls of Terminal A, the Port Authority has carefully developed the Proposed Action to handle the current and projected passenger demand at acceptable levels of service, reduce delays and concurrent increases in operational costs to airlines, enhance roadway access and improve airline services. The Terminal A Redevelopment Program Study Area is bound by the New Jersey Turnpike to the east, Route I-78 to the north, Amtrak's Northeast Corridor to the west and North Avenue in Elizabeth to the south (**Figure 1-2**). The Project Area is situated within the limits of the airport, located south of the existing Terminal A, west of Runway 4L-22R, north and west of the FedEx air cargo facilities, and east of U.S. Routes 1&9 (**Figure 1-3**). The Proposed Action includes the following elements:

- Replace the existing 28-gate/34-position Terminal A with a new 33 common use gate terminal.

- Relocate passenger airline operations from the existing Terminal A to the new Terminal A. The existing Terminal A headhouse would remain, although its future use is undetermined at this time.[15] Satellites A1, A2, and A3 would be demolished to accommodate new taxilanes and replacement of the remote aircraft parking positions that will be displaced by the construction of the new Terminal A.

- Reconfigure Terminal A airside features, including aircraft parking areas and dual taxilanes that improve aircraft movements.

- Construct a reconfigured stormwater collection system with the capability of isolating deicing fluids for collection and disposal.

- Construct a new 6-level, 2,300-space public parking garage and 321-space surface lot, to replace existing surface parking lots P1 (580 spaces) and P3 (1,619 spaces).

- Construct a fully enclosed pedestrian walkway/bridge between the new parking garage and the new Terminal A.

- Construct separate access roadways to the new Terminal A from the airport entrance, and install new dedicated frontage roadways to service the new Terminal A.

[15] When a use for the existing Terminal A headhouse is determined, that project will be subject to a separate NEPA analysis which will take into account the cumulative impacts of the new Terminal A and other relevant past, present, and future projects.

- Demolish multiple buildings and reallocate several airport leaseholds:

    - Demolish Building 350 (UPS), Building 331 (Chelsea Kitchen), Building 342 (FedEx support), and Building 345 (vacant; former US Postal Service facility).

    - Reclaim expiring UPS leasehold for proposed Terminal A construction and relocate UPS air cargo facility to another site on the airport.

    - Reclaim the expiring Chelsea Kitchen leasehold to allow for landside usage in the southern portion of the new Terminal A site and relocate the Chelsea Kitchen operation to another site on the airport.

    - Reclaim the expiring leasehold on Building 330 (Chelsea Kitchen) and transfer Building 330 as part of a 9-acre parcel to FedEx in exchange for a 9-acre parcel containing Building 342 (to be demolished).

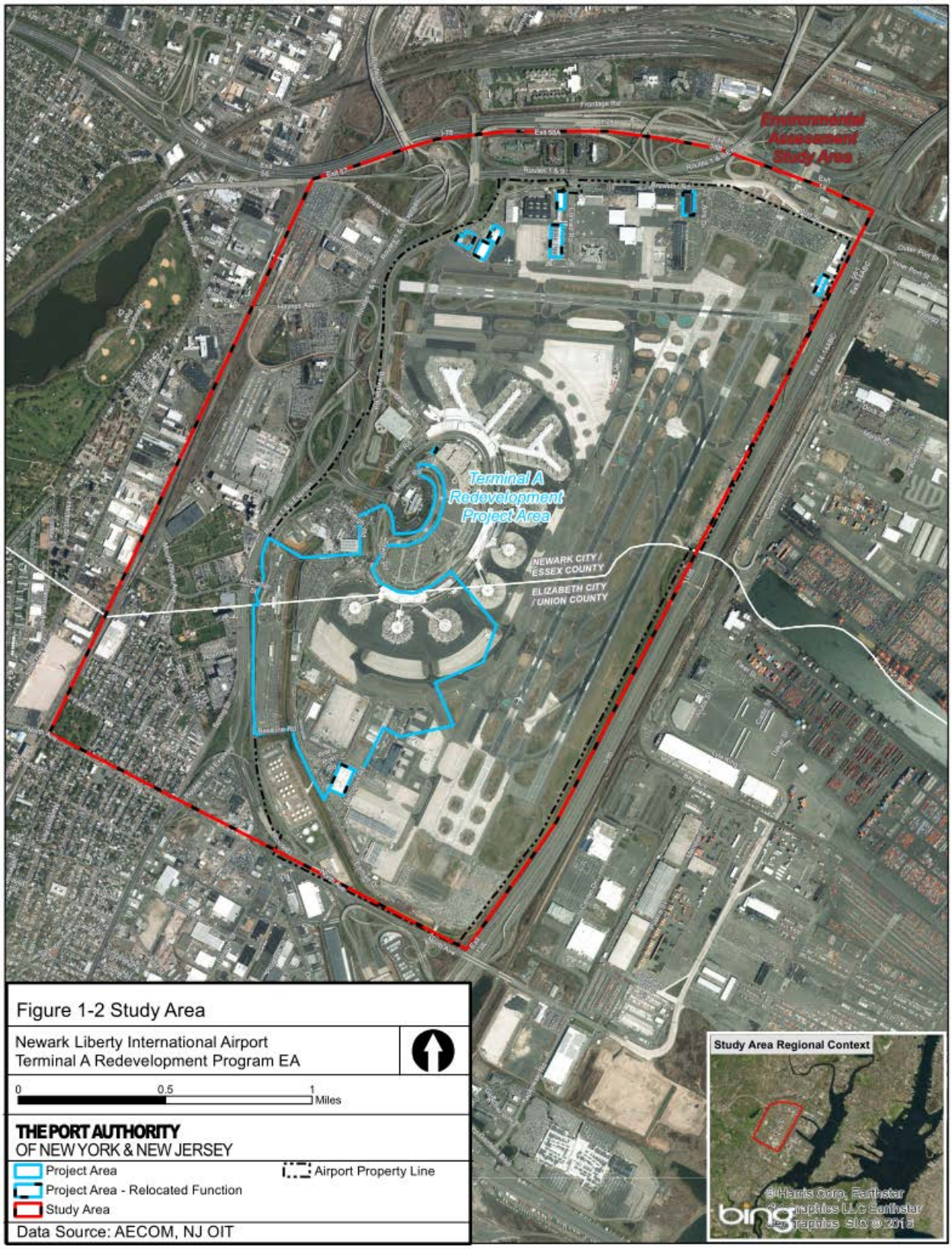
New Terminal A

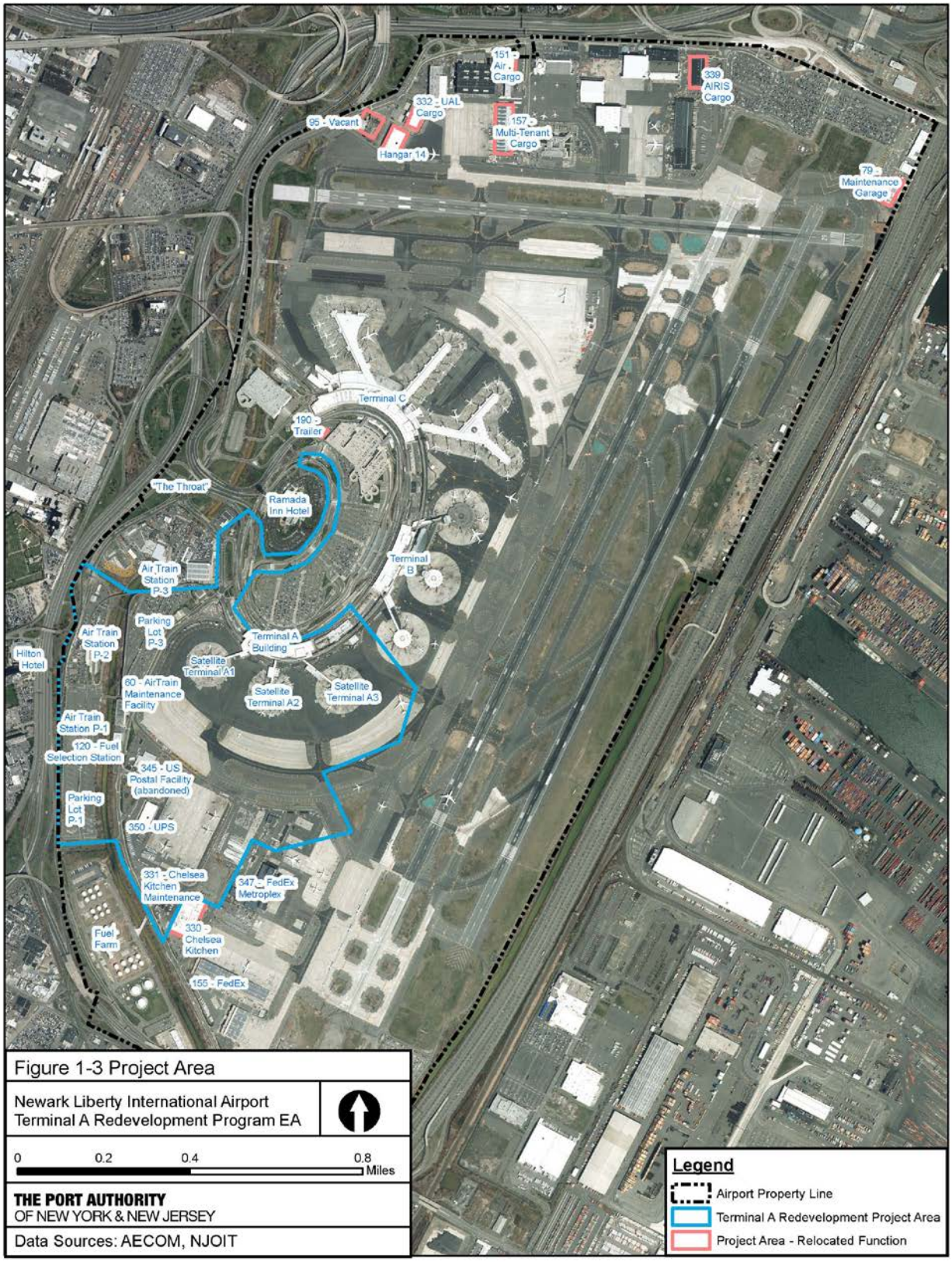
The new Terminal A would be designed to accommodate 13.6 million annual air passengers (MAAP), which is forecast for the year 2027.[16] The adjustment in gate layout from 28 hold rooms with 34 gate positions to 33 gates is intended to respond to forecast passenger demand; the Proposed Action would not induce additional passenger demand. The intent of the Proposed Action is to accommodate and improve terminal operations to meet this forecast future demand. The 33-gate terminal would be designed so as not to preclude future expansion should demand require it at some later undetermined date. The new Terminal A would be designed to meet Port Authority *Sustainable Design Guidelines* (see Section 5.15.3, Sustainable Design) and to achieve a minimum rating of Leadership in Energy and Environmental Design (LEED) Silver from the U.S. Green Building Council.

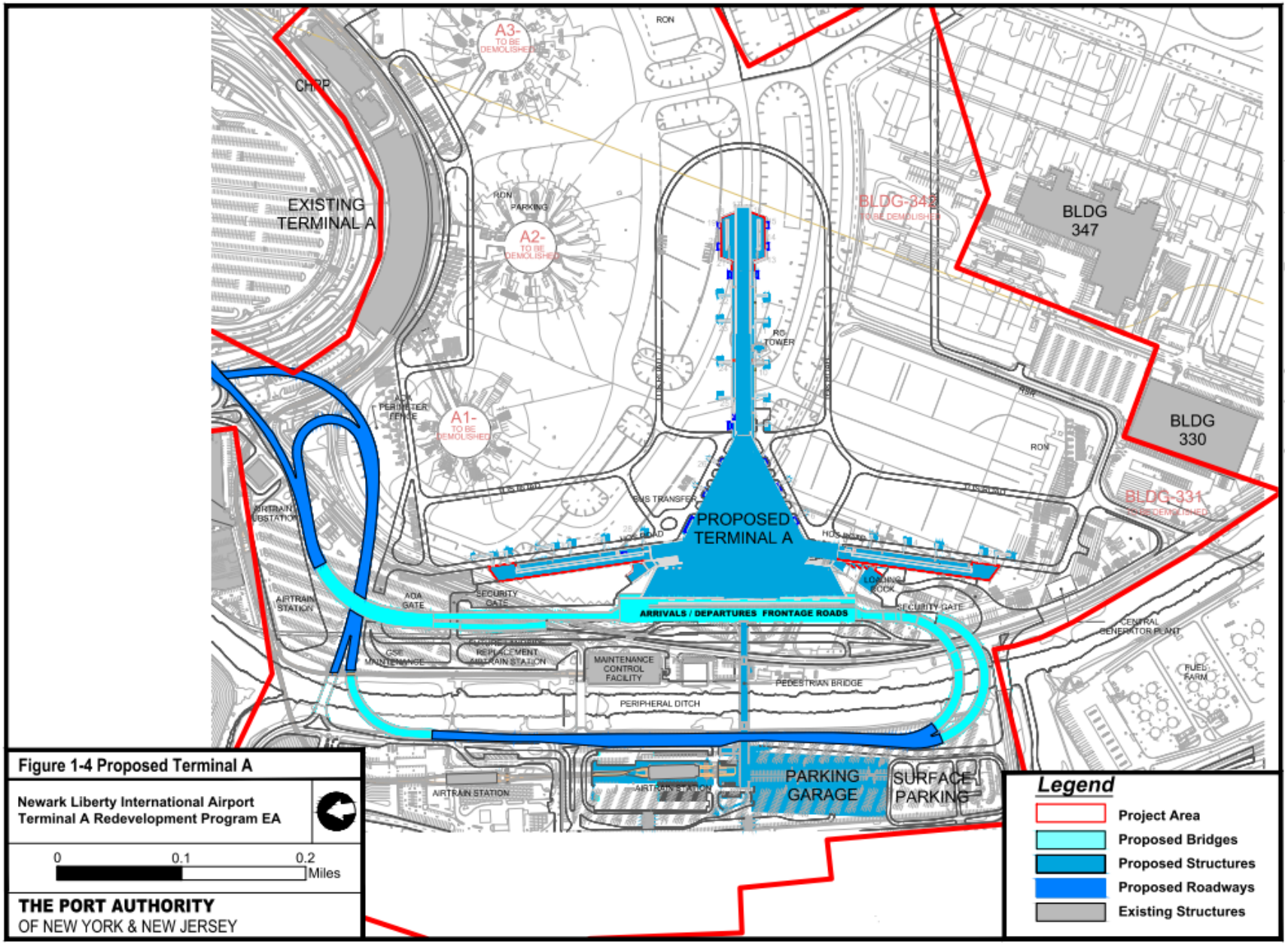
The proposed Terminal A would consist of three concourses with a central headhouse (see **Figure 1-4**). The headhouse would be a two-level building with a partial intermediate level mezzanine for terminal support space. The proposed Terminal A footprint would be situated outside of the Object Free Area of the existing Terminal A to maintain airside operations during construction. The headhouse would include a consolidated Security Screening Checkpoint, and two single-loaded 600-foot long concourses to the north and south, respectively and a 1,300-foot long double-loaded concourse to the east. At the apron level, the 100-foot wide double-loaded central concourse houses the baggage make up for all 33 gates. The departures ticketing hall would be located on the second level of the headhouse, approximately 37 feet above the arrivals level with an intermediate landing between the two floors for the pedestrian bridge to the parking garage.

The building's frontage roadway would be approximately 1,000 feet long, centered on the ticketing hall. A consolidated security screening area (compared to three separate screening areas in the existing terminal) would be located on the departures level just beyond the ticketing area. Screened passengers would arrive into the concourses down from either of the two vertical circulation points into a large central concessions area and could pass through to their boarding gates or up to a mezzanine level to access the airline clubs.

[16] *Long-Range Forecast for Port Authority Airports* (April 2012).


Environmental Assessment Study Area
Terminal A Redevelopment Project Area
NEWARK CITY / ESSEX COUNTY
ELIZABETH CITY / UNION COUNTY
Figure 1-2 Study Area
Newark Liberty International Airport
Terminal A Redevelopment Program EA
0
0.5
1
Miles
THE PORT AUTHORITY
OF NEW YORK & NEW JERSEY
Project Area
Airport Property Line
Project Area - Relocated Function
Study Area
Data Source: AECOM, NJ OIT
Study Area Regional Context


151 - Air Cargo
339 AIRIS Cargo
332 - UAL Cargo
95 - Vacant
157 - Multi-Tenant Cargo
Hangar 14
79 - Maintenance Garage
Terminal C
190 - Trailer
"The Throat"
Ramada Inn Hotel
Terminal B
Air Train Station P-3
Parking Lot P-3
Air Train Station P-2
Terminal A Building
Hilton Hotel
Satellite Terminal A1
60 - AirTrain Maintenance Facility
Satellite Terminal A2
Satellite Terminal A3
Air Train Station P-1
120 - Fuel Selection Station
345 - US Postal Facility (abandoned)
Parking Lot P-1
350 - UPS
331 - Chelsea Kitchen Maintenance
347 - FedEx Metroplex
Fuel Farm
330 - Chelsea Kitchen
155 - FedEx
Figure 1-3 Project Area
Newark Liberty International Airport
Terminal A Redevelopment Program EA
0
0.2
0.4
0.8
Miles
THE PORT AUTHORITY
OF NEW YORK & NEW JERSEY
Data Sources: AECOM, NJOIT
Legend
Airport Property Line
Terminal A Redevelopment Project Area
Project Area - Relocated Function


EXISTING TERMINAL A
PROPOSED TERMINAL A
A1- TO BE DEMOLISHED
A2- TO BE DEMOLISHED
A3- TO BE DEMOLISHED
BLDG 347
BLDG 330
BLDG-331 TO BE DEMOLISHED
BLDG-342 TO BE DEMOLISHED
CHPP
RON
RON PARKING
ARRIVALS / DEPARTURES FRONTAGE ROADS
AIRTRAIN STATION
AIRTRAIN SUBSTATION
AOA PERIMETER FENCE
AOA GATE
SECURITY GATE
MAINTENANCE CONTROL FACILITY
PERIPHERAL DITCH
PEDESTRIAN BRIDGE
CENTRAL GENERATOR PLANT
FUEL FARM
PARKING GARAGE
SURFACE PARKING
Figure 1-4 Proposed Terminal A
Newark Liberty International Airport
Terminal A Redevelopment Program EA
0 0.1 0.2 Miles
THE PORT AUTHORITY
OF NEW YORK & NEW JERSEY
Legend
Project Area
Proposed Bridges
Proposed Structures
Proposed Roadways
Existing Structures

Airside Layout

Airplane Design Group (ADG) is defined in FAA Advisory Circular (AC) 150/5300-13A, *Airport Design*, as a means of classifying aircraft based on wingspan and tail height. The larger the wingspan or tail height, the larger the group designation, so ADG IV airplanes (e.g., B767-400) are larger than ADG III airplanes. According to Table 1-2 of the AC, ADG III airplanes (e.g., B737) have tail heights between 30 and 45 feet and wingspans between 79 and 118 feet; ADG IV airplanes have tail heights between 45 and 60 feet and wingspans between 118 and 171 feet; and ADG V airplanes (e.g., B747-400) have tail heights between 60 and 66 feet and wingspans between 171 and 214 feet. ADG III airplanes are commonly referred to as narrow-body airplanes and ADG IV and V airplanes are commonly referred to as wide-body airplanes. The selection of a "design aircraft" enables airport planners and engineers to design the airport (or terminal) in a way that will satisfy geometric design standards for a representative aircraft that is intended to be accommodated by the airport. The aircraft is classified by three parameters: Aircraft Approach Category, Airplane Design Group, and Taxiway Design Group.

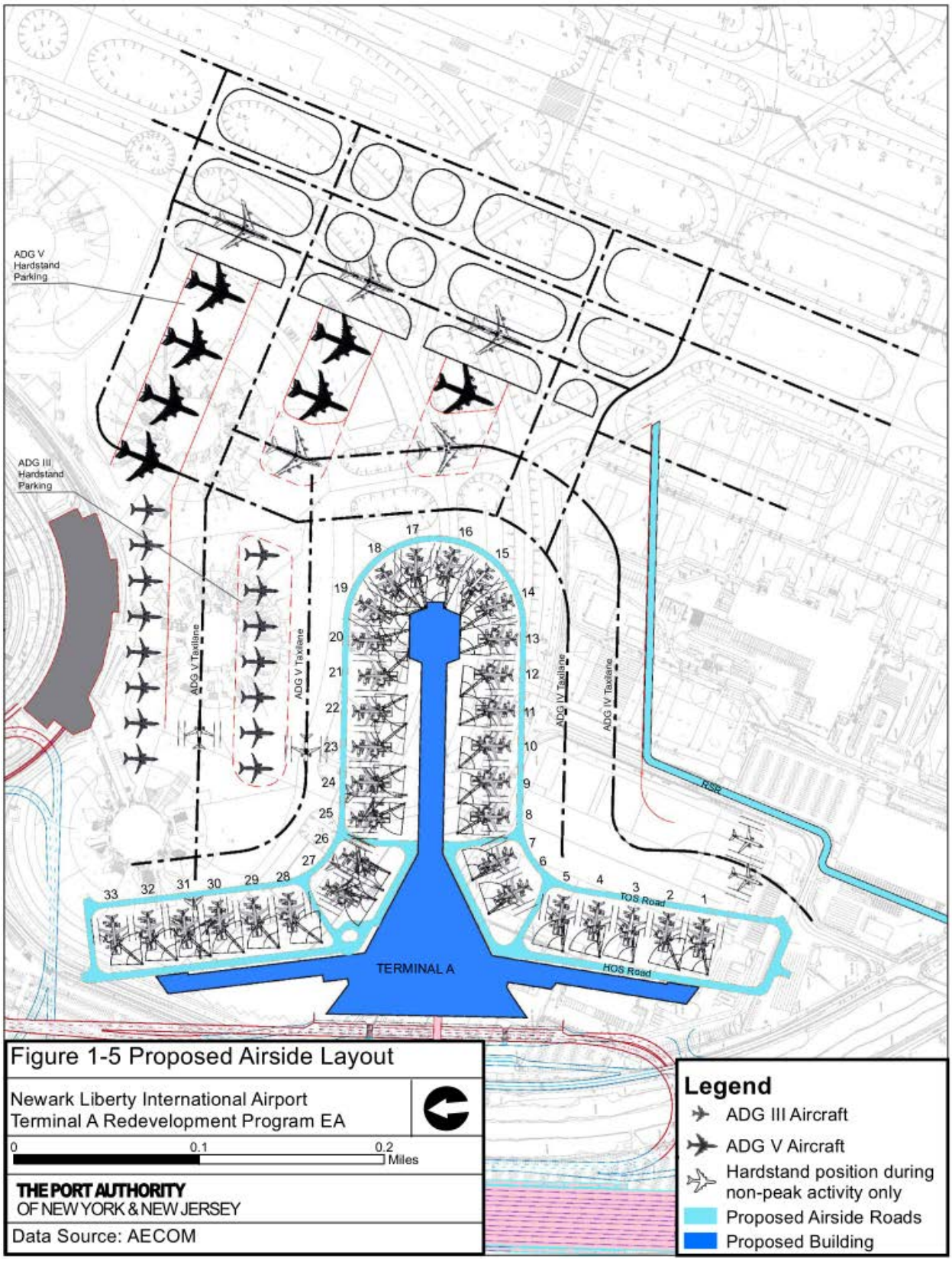
As shown in **Figure 1-5**, the proposed airside design would include 33 gates arranged around a central terminal building, with 25-foot wingtip clearances between gates. The design aircraft is B737-900W (ADG III) with some projected ADG V operations that would be located at Gates 24/25, 26/27, and 30/31. At the existing Terminal A building location there would be 8 ADG III hardstand positions and east of the proposed terminal building there would be 12 ADG V "Power In-Power-Out" hardstand positions. There would also be 7 ADG III hardstand positions located between the ADG V taxilanes on the north side of the terminal. In order to reduce apron congestion, the proposed design incorporates dual ADG IV taxilanes on the south side of the terminal that connect to the existing taxiway system.

It is not anticipated that the construction of the Proposed Action would require the replacement or relocation of FAA navigational equipment ("Navaids") within the Project Area. The Port Authority is coordinating with FAA Technical Operations as they perform analysis to determine if there would be an impact to FAA's South RTR Facility. The Port Authority will coordinate with the FAA regarding the installation of equipment for the Airport Surface Detection Equipment, Model X (ASDE-X), Runway Weather Monitoring, and other systems that are required by FAA. A duct bank for fiber optic lines used by the FAA and others would be relocated west of the Peripheral Ditch to avoid impacts from the proposed construction.

Airport Internal Access Roadways

A landside access concept plan was developed to service the new terminal. The landside plan includes new circulatory roadways connecting Terminal A to the CTA, to U.S. Routes 1&9 and to a new parking garage (**Figure 1-4)**. The landside improvements also include the construction of three new bridges over the Peripheral Ditch. As described below, these improvements would maintain a segment of Earhart Drive, avoid the existing AirTrain infrastructure, avoid a majority of the Peripheral Ditch and provide a loop ramp to the terminal's arrivals and departures frontages. There would be no off-airport roadway improvements.

Primary access to the new Terminal A would be facilitated through the existing main CTA access or the "Throat". Secondary access to the terminal would be provided from Brewster Road/Carson Road.


ADG V Hardstand Parking
ADG III Hardstand Parking
ADG V Taxilane
ADG V Taxilane
ADG IV Taxilane
ADG IV Taxilane
RSR
TOS Road
HOS Road
TERMINAL A
Figure 1-5 Proposed Airside Layout
Newark Liberty International Airport
Terminal A Redevelopment Program EA
0
0.1
0.2
Miles
THE PORT AUTHORITY
OF NEW YORK & NEW JERSEY
Data Source: AECOM
Legend
ADG III Aircraft
ADG V Aircraft
Hardstand position during non-peak activity only
Proposed Airside Roads
Proposed Building

The CTA approach to the new Terminal A from Route I-78 and U.S. Routes 1&9 Express would be via the current main CTA access and then a new ramp that would descend to the proposed terminal, below the existing AirTrain structure. The new CTA access road to the proposed Terminal A would turn west, span the Peripheral Ditch, and provide options of turning north to Carson/Brewster Road and long-term parking; or turning south to access: (1) the new parking garage, (2) AirTrain service at the P-1 and P-2 Stations, or (3) the new Terminal A. Continuing southward past the new parking garage and P-1 Station, vehicles could either exit to access Basilone Road or vehicles would continue to the new Terminal A via two approach bridges over the Peripheral Ditch to either the elevated departures or at-grade arrivals frontages. Additional at-grade access to both the proposed arrivals and high-occupancy vehicle (HOV; e.g., buses, vans) frontages would be provided via Earhart Drive and Basilone Road, as well as to the existing AirTrain Maintenance Control Facility (Building 60).

Upon exiting the HOV frontage area, vehicles would then merge with exiting taxi and at-grade arrivals traffic before ascending to join the departures level exiting traffic. This combined exiting traffic, supported on an elevated structure, would proceed north to either access the main airport exit via an upgraded Hotel Road or the Terminal A recirculation ramp. Exiting airport traffic would enter a realigned and widened three-lane section of Hotel Road, with the right-most lane mainly serving the exiting short-term parking vehicular traffic, while the latter two lanes would proceed to either the main CTA recirculation road or the main airport exit to Route I-78 and U.S. Routes 1&9 Express. The Terminal A recirculation ramp would provide recirculation to the Terminal A Arrivals/Departures/HOV frontages. The new roadway improvements would maintain access to rental car facilities and the proposed parking area through a modified access driveway. The proposed truck loading dock area at the southernmost point of the new Terminal A would be accessed by Earhart Drive or Basilone Road.

These roadway improvements would redistribute a portion of airport traffic further away from existing Terminals B and C and reduce traffic congestion airport-wide.

Parking and Pedestrian Bridge

As part of the project's preliminary design process, a landside access concept plan to serve the new terminal was developed. Key site constraints in developing the current concept included maintaining the southern segment of Earhart Drive, and avoiding the Peripheral Ditch and existing AirTrain stations and guideway. Components of this plan include providing direct ramp access from U.S. Routes 1&9 to the terminal's arrivals and departures frontages, and circulatory roadways to connect the terminal with the airport's central terminal area, U.S. Routes 1&9, and with a proposed parking garage and the South Cargo Area.

The proposed garage would be 6 levels in height, contain 2,300 spaces, and be located west of the proposed terminal on Parking Lot P-1. An adjacent 321-space surface lot is also proposed for this location. This location is necessary in order to connect the garage with the new terminal via an elevated, enclosed pedestrian walkway. Use of this location for the garage, as well as for a new PSE&G switching station, would displace the parking capacity of Lot P-1 (580 spaces). The construction of access roadways to the new terminal would also displace the parking capacity of Lot P-3 (1,619 spaces). The proposed parking structures would result in a net gain of 422 parking spaces. In addition, approximately 1,500 short-term spaces currently available at the existing Terminal A would still be available for air passengers using the new Terminal A via the AirTrain connection. The remaining parking facilities located on the airport would be unaffected. The locations of parking lots P-1 and P-3 are shown in **Figure 1-3**.

Vertical circulation for the proposed parking structure would be accomplished through one-way ramps for both ascending and descending traffic. The parking entry and exit toll plazas would be situated west of AirTrain Station P-1 and would share a common access point with Dollar and Budget rental car services. One of the intermediate levels of the parking garage would be connected to the pedestrian bridge.

The proximity of the proposed garage to the terminal eliminates the need to extend the AirTrain by providing an elevated connecting bridge from the proposed garage to the new terminal. AirTrain Station P-1 would function as the new Terminal A AirTrain station, and the former Terminal A AirTrain Station would remain in operation to serve the former Terminal A headhouse. Access to the new parking garage and surface parking adjacent to AirTrain Stations P-1 and P-2 would be provided via the main roadway section located immediately west of the Peripheral Ditch. The new garage would integrate with the existing toll collection system in the airport to allow for parking in airport parking lots.

Other Buildings

Site preparation for the new terminal, apron and taxiways would involve the demolition of four existing buildings (see Section 3.1).

- Building 350 (UPS) would be demolished. To assist UPS in relocating, an on-airport site (the former footprint of Buildings 14, 95 and 332) has been designated for construction of a new UPS facility.

- Building 331 (Chelsea Kitchen Maintenance) would be demolished. An on-airport site (Building 151) has been designated for construction of the new Chelsea Kitchen facility.

- Building 330 (Chelsea Kitchen) and nine acres of land would be conveyed to FedEx in exchange for Building 342 and nine acres of land. Building 342 would then be demolished.

- Building 345 (Vacant) would be demolished.

The leaseholds on three of these buildings (330, 331 and 350), will have expired prior to the start of the project and will not be renewed. The Port Authority has discussed relocation to the north side of the airport with UPS and Chelsea Kitchen over the past several years as part of ongoing lease negotiations. After relocation, the function and operational characteristics of each would remain unchanged.

2 Purpose and Need

2 Purpose and Need

2.1 Purpose

The purpose of the Proposed Action is to replace the existing Terminal A with a new terminal to accommodate current and 2027 forecast passenger and flight demand; address building, utility, airfield and road frontage deficiencies; provide long-term operational flexibility and accommodate a variety of aircraft; implement energy efficiencies; update safety and security features; replace an aging terminal and infrastructure; increase passenger levels of service, reduce delays and allow more efficient operations for the ease and convenience of passengers at Newark Liberty International Airport.

2.2 Need

The Proposed Action would serve the following needs of the Port Authority, the airlines, passengers, and the public at the airport:

- **Replace a Deteriorated and Outdated Terminal:** Replace the aging terminal and associated infrastructure that has deteriorated to unacceptable levels.

- **Provide an Efficient and Modern Terminal A:** Resolve functional space deficiencies and alleviate passenger congestion throughout terminal. Address safety and Transportation Security Administration (TSA) security requirements.

- **Accommodate Existing and Future Aviation Travel Demand:** Accommodate current and projected aviation demand at acceptable levels of service, including passenger and aircraft operational forecasts.

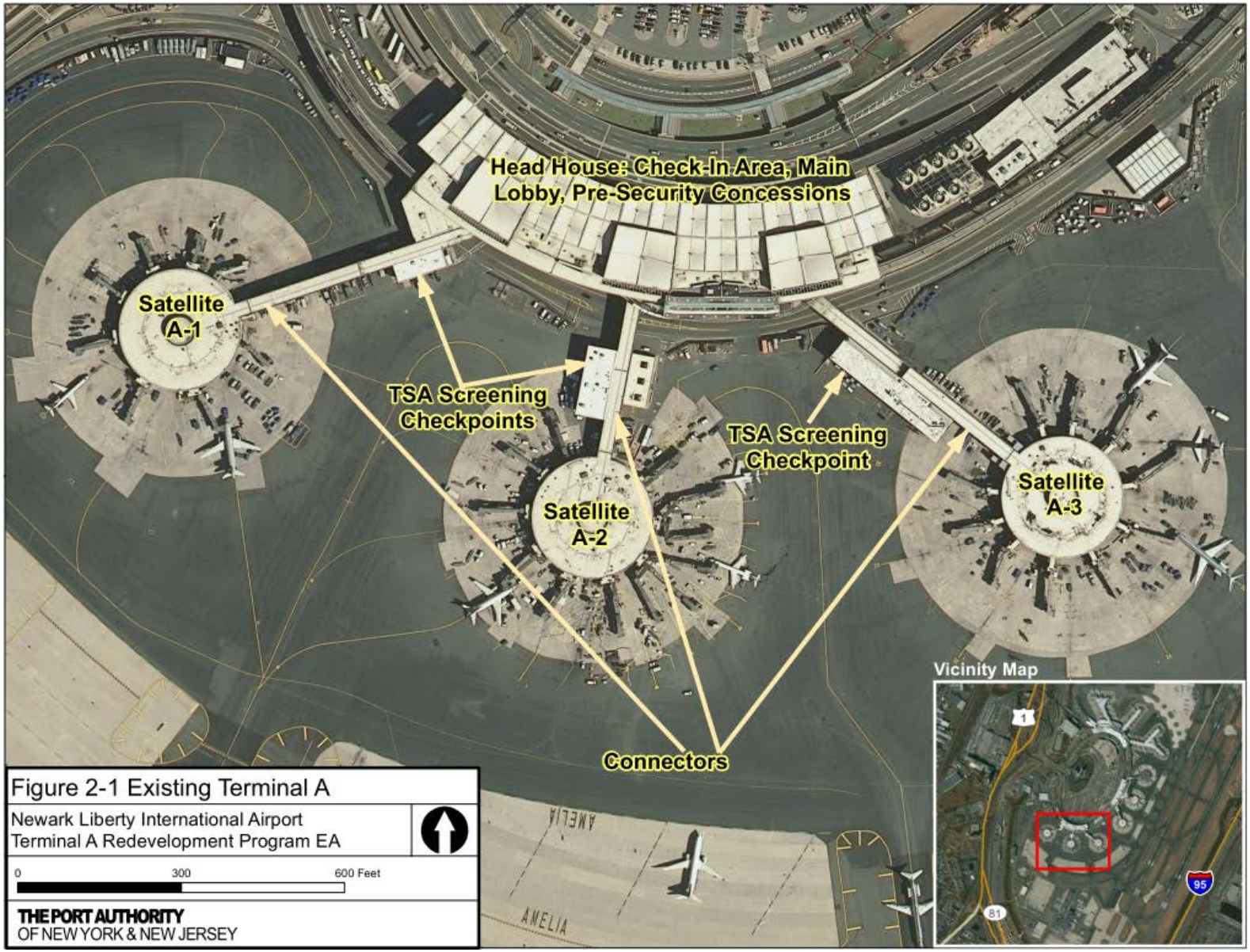
- **Enhance Airfield Capacity and Reconfigure Operations:** Resolve operational deficiencies and alleviate airfield and terminal ramp congestion.

- **Enhance Landside Access to the Terminal:** Improve deficiencies in roadway access and circulation, add parking facilities, and reduce traffic congestion.

2.2.1 Replace a Deteriorated and Outdated Terminal

2.2.1.1 Existing Terminal A

Terminal A is the oldest of the three terminals at the airport and is located furthest south in the CTA. Construction of the terminal began over 40 years ago and it opened for service in 1973. The main terminal branches out into three circular satellite airside concourses, designated as A1, A2 and A3 (**Figure 2-1)**, which accommodate 28 gates, six of which are split resulting in 34 active positions. The satellite concourses are linked to the main terminal by connectors that also contain security screening areas. After 9/11, security requirements, as dictated by TSA, significantly increased and the associated equipment and personnel were placed in already constrained corridors. The space limitations result in severe backups and poor passenger levels of service.


Head House: Check-In Area, Main Lobby, Pre-Security Concessions
Satellite A-1
TSA Screening Checkpoints
Satellite A-2
TSA Screening Checkpoint
Satellite A-3
Connectors
Vicinity Map
Figure 2-1 Existing Terminal A
Newark Liberty International Airport
Terminal A Redevelopment Program EA
0
300
600 Feet
THE PORT AUTHORITY
OF NEW YORK & NEW JERSEY

The satellites include flight departure lounges and airline and passenger service facilities. Terminal A is located on the Port Authority's leased property; however the air carriers that lease the terminal are responsible for its maintenance and operation. Satellite A1 houses 9 gates (designated 10 through 18). Satellite A2 houses 9 gates (20 through 28, 6 are split gates), and Satellite A3 has 10 gates (30 through 39). Twenty-two of these gates accommodate narrow body aircraft. Only six (Gates 15 through 17, 32, 33, and 35) can accommodate wide-body aircraft. Of the gates at Terminal A, 5 are controlled by the Port Authority while 23 are controlled by the airlines.

The departures level of Terminal A includes 125 ticketing positions, comprised of both single and double occupancy counters, and attached and stand-alone e-ticketing stations. The ticket counters are arranged in a typical configuration; they are grouped by airline, in a single line spanning the terminal. The groups of counters are separated by passenger vertical movement areas (stairs/escalators) and generally face the terminal entrance doors (curbside).

Terminal A is over 40 years old and has had only two systems upgrades (one in 1995 and a second in 2004). In spite of these upgrades however, the facility is reaching the end of its useful service life. The previous attempts to upgrade the facility could not address the fundamental problems associated with the age of the structure, the constraining size and the irregular shape of the building.

As such, alternatives were evaluated for Terminal A, including a rehabilitation of the existing terminal and a partial replacement of the terminal. In either circumstance, the designed life and functional purpose of the existing terminal would be exceeded. It would also require a longer and more complex construction period (up to 10 years) to ensure operations of Terminal A could be maintained throughout construction as opposed to a four-year construction period for a new terminal. A rehabilitation or partial replacement alternative would not provide the functional space necessary to support an acceptable level of passenger circulation to meet current and forecast future travel demand, nor would it adequately accommodate the space requirements of the TSA.

2.2.1.2 Maintenance Issues at Terminal A

One of the primary concerns about continuing operations at the existing Terminal A is that the ongoing and increasing level of maintenance is unacceptable, and is becoming more expensive as the terminal's condition deteriorates. Although some of the terminal's electrical, plumbing, heating, ventilating, and air conditioning (HVAC), and fire protection systems have been updated over time, the modernization attempts reflect a patchwork of repairs. A comprehensive and system-wide upgrade at Terminal A has never been undertaken. According to a recent building condition assessment (*Newark Liberty International Airport Terminal A Redevelopment Program – Draft Existing Conditions Study*, 2006), the following building code non-conformances and maintenance issues persist at Terminal A:

- The original 1973 power distribution system does not meet the current requirement for a reliable power supply for critical operations and life safety. The switchboards, panel boards and circuitry are obsolete and the main circuit breakers often fail to reset. The aging transformers are a fire hazard and are susceptible to simultaneous damage because the original design has the transformers located in very close proximity to each other. The backup power system can only power emergency lighting.

- The domestic water system has persistent leaks, and cracks are visible in the sanitary waste sump and discharge pipes.

- Fire protection systems are not up to recent codes and security alarms are not always functioning properly.

- Lightning protection systems are outdated.

- Lighting fixtures have exceeded their useful lifespan.

- The original (1973) communications system is not reliable and now obsolete, with many non-functioning amplifiers and electrical components overdue for replacement.

- The majority of the HVAC units have also surpassed their useful service life expectancy, with corrosion building on the coils. Some units do not have the proper space clearances to allow condensation traps to work properly. The air conditioning and heating systems were not designed to provide adequate airflow within the passageways.

- The mechanical rooms, pump rooms, and fan rooms were not designed with sufficient clearances to allow adequate maintenance and ventilation.

- The connector roofing is leaking, the departure-level roof slab is showing fine line cracking, and the exterior windows leak during storm events, and much of the roofing is cracked and deteriorated.

The terminal's utility services continually require repairs to sustain the terminal's demanding daily operations and are not sufficient to satisfy long-term operational demands. The condition of utility infrastructure within Terminal A, in addition to some of the undersized operational spaces and the fact that the building does not meet current seismic codes, makes cost effective modernization impossible without a complete replacement of these systems. Because of the high cost of retrofitting the existing terminal and the inefficient and outdated layout of the original terminal, the Port Authority has determined that constructing a new terminal is the most cost effective alternative.

2.2.2 Provide an Efficient and Modern Terminal A

To resolve the delays at the airport and provide an improved passenger experience, there is a need to "right-size" the Terminal A facilities to reduce existing passenger delays, enhance passenger circulation within the terminal, and accommodate projected passenger levels. The original terminal and functional space layout was designed in the late 1960s; the current operational delays are partly a result of the fundamental limitations and constraints of the original design.

The existing terminal configuration consists of a centralized check-in area, divided into three, long connector corridors that lead to three separate satellite concourses (**Figure 2-1**). Within each connector are separate security screening areas. This divided layout contributes to inefficient passenger movements and congestion, as well as the inability for the TSA to responsively and efficiently staff checkpoints. The interior layout of the key functional elements in Terminal A, both for departing and arriving operations, has essentially remained unchanged since opening in 1973. As a result, the current Terminal A facilities are deficient in functional

space and overcrowded in the following functional areas: check-in queuing area; bag claim area; airline ticket offices (ATOs); restrooms; circulation corridor widths; concessions beyond security; holdrooms; airline lounges; baggage screening; and passenger security screening areas.

The following subsections describe the space deficiencies of the existing terminal related to passenger circulation, services and amenities. These deficiencies compound one another, especially during periods of high passenger volume and delays, resulting in a cumulative deterioration of service levels and efficiencies. **Table 2-1** provides a summary of the major deficiencies within Terminal A.

Table 2-1 Existing Terminal A Deficiencies

Terminal Space	Deficiency
Curbside Check-in	• Little room for queuing or circulation in peak hours • Congested circulation during peak hours
Check-in Lobby	• Inadequate existing lobby depth for queuing • Congested circulation during peak hours • Some counters not served by outbound bag system
Vertical Circulation	• Lacking sufficient elevators and convenient access to elevators
Security Screening Checkpoints	• Unconsolidated, separated at three locations • Inefficient and confusing • Cattle-chute layout and narrow
Airside Circulation	• Concourses are separated by long connectors and do not allow convenient access between concourses
Concessions	• Inadequate concessions for overall passenger demand • Concessions lacking in post-security area • Use same security screening as passengers causing congestion
Outbound Bag System	• Non-centralized – multiple individual systems • Inadequate space for manual bag screening and automated in-line screening
Inbound Bag System	• Inadequate off-load area delays delivery to carousel • Bag claim lobby lacks area for queuing or circulation • Insufficient bag claim units
Hold Rooms	• Lack of seating capacity and space during peak periods
Restrooms	• Lack of restrooms on both departure and arrival levels
Airline Space	• Inadequate for ATO's, operations and airline clubs

Source: AECOM, 2012.

2.2.2.1 Check-In Areas

The curbside (outside) and lobby (inside) check-in areas for processing passengers and luggage are undersized and cause delays from the start of the check-in process. In the curbside area, there is insufficient space to allow for queuing of passengers using skycap check-in kiosks or circulation space for passengers trying to access the lobby area to check-in. Similarly, the current depth of the ticketing lobby does not adequately accommodate the existing queuing and circulation functions. Vertical circulation is also a problem in the check-in area. Passenger elevators are located at the extreme ends of the terminal, which is inconvenient for passengers using wheelchairs, baggage carts, or similar devices. Baggage conveyor systems do not meet current industry standard width requirements, and in some areas are not linked to the outbound screening rooms. Baggage equipment is antiquated and is in constant need of repair. Currently, there is limited accommodation for oversized bags at the check-in area with some bags having to be manually transported. Finally, the limited ATO space has been further reduced due to placement of baggage screening devices behind the ticket counters.

2.2.2.2 Passenger Screening and Inspection Areas

With the substantial post-9/11 changes in TSA security procedures and federal inspection requirements (U.S. Customs & Border Protection, Immigration and Naturalization Service, and Department of Agriculture), new systems space has been required. This has not been easily accommodated within Terminal A. To meet these requirements, each of the three terminal connectors has partitioned space within the narrow corridors to provide TSA security checkpoints and U. S. Customs & Border Protection secondary processing. Because of space constraints within Terminal A, security screening throughput has decreased substantially and passengers experience substantial delays and congestion, especially during peak periods. Merging of these services in new facilities would require less area and resources and provide a greater level of service (LOS). Modern terminals have centralized checkpoints that are more efficient for passengers and cost effective, however, the current configuration of Terminal A does not allow for consolidation of these services.

2.2.2.3 Passenger Holdrooms

Passenger holdrooms in Terminal A were originally designed to “hold” only the originating passengers who arrived early for a departing flight. These holdrooms are now unacceptable overcrowded from the combination of originating passengers and connecting passengers who may have extended delays awaiting flights. Connecting passengers waiting (holding) between flights do not have sufficient seating, concessions and other amenities in the existing Terminal A. The circular geometry of the holdrooms also limits seating capacity and there are a limited number of restrooms. These problems are exacerbated during flight delays; long lines occur for restrooms and passengers often have nowhere to sit but on the floor in circulation areas.

2.2.2.4 Baggage Handling Systems and Checked Baggage Inspection System

Similar to security requirements, the evolution of the airline industry has resulted in substantially increased baggage handling system requirements since 1973. The Terminal A baggage facilities were originally designed to accommodate a larger percentage of local arriving and departing passengers, and a smaller percentage of connecting passengers than today’s levels. As an added restriction, the current baggage screening rooms do not provide adequate space to house TSA staff and screening equipment. Within the airfield apron, there is insufficient space to handle the staging of tugs and carts for off-loading bags during peak periods. Terminal A existing baggage claim devices are not large enough to allow all passengers access to bags during peak arrivals. This slows down a passenger’s ability to remove bags from the conveyor, which backs up the conveyor lines and affects the baggage handler’s ability to feed bags.

Because the baggage handling and sorting facilities are not configured to meet modern demands in an efficient fashion, delayed baggage retrieval and baggage misconnections can occur. These inefficiencies also affect the airlines' ability to deliver baggage to the aircraft in time for departure and delays flights.

2.2.2.5 Concessions

Concession activities are increasingly important amenities in the terminal as security procedures require passengers to spend more time at the airport. Maximizing the revenue generated by the airport's commercial (non-airline) facilities is critical to offset physical and operational expenses. Currently, there is an insufficient amount of concessions in the post-security areas of Terminal A, which is where passengers spend most of their time. This inconvenience is only heightened during flight delays, creating lines at the post-security concession areas and often forcing passengers to go back through security screening to reach adequate retail, food and beverage services.

Additionally, concession deliveries must go through the connector security checkpoints. While they are typically restricted to off hour periods, there are instances where loads are brought up during operations causing conflicts and congestion with passenger screenings.

2.2.2.6 General Circulation Space

The circulation space on the concourse level is also insufficient. Currently, concessions are located in front of the entrances to Satellites A1, A2, and A3, and restrict circulation space. Meeters/greeters also stand in those locations, causing further congestion. As stated previously, the existing terminal lacks adequate check-in space, adequate security/screening and holdroom space, and convenient access to elevators. In addition, passengers cannot bypass security due to the lack of an airside connector for Satellites A1, A2, and A3; and airside circulation is not provided for passengers with connecting flights.

2.2.3 Accommodate Existing and Future Aviation Travel Demand

The New York/New Jersey metropolitan area is one of the most populated regions in the U.S., a major financial and entertainment center, and a top-ranked tourist destination. As a major airport serving this population center and highly attractive destination, air travel demand at the airport is immense. The globalization of the economy has also led to an increasing globalization of air travel. These demands have encouraged airlines to extend passenger and cargo services internationally, and provide connections to world markets from U.S. airports. These airports must offer frequent service to far-reaching destinations and function with high efficiency. The continuing globalization of air travel, combined with the economics and population of the New York/New Jersey region, contributes to the projected increase in demand at the airport.

As described in Section 2.3, Existing and Forecasted Passenger Demand, it is important to note that the design of the Proposed Action is intended to respond to forecast passenger demand; it will not induce additional passenger demand. The forecast passenger demand would occur in the future with or without the project. According to the Port Authority's forecast, the airport will experience an average annual growth of approximately 1.68 percent in passengers over the next 20 years. As shown in **Table 2-4**, by 2032, passenger levels at Terminal A are expected to reach approximately 14.1 million, compared to 8.5 million passengers in 2013. Aircraft operations at the terminal are anticipated to increase over 18 percent over the next 14 years, then decrease over the following five years as the aircraft size increases (i.e., upgauging). This

future growth would occur with or without the Proposed Action, but without the Proposed Action passengers using the terminal would experience increased delays and low levels of service.

In 2012, the airport handled 33.6 million passengers, compared with JFK's 46.5 million and LaGuardia's just under 24.0 million. In the same year, Terminal A handled approximately 8.4 million annual passengers and has been operating near capacity during peak periods. Based on the Port Authority's forecast (presented in Section 2.3), it is anticipated annual passenger demand will grow by over 5 million in the next 20 years at Terminal A alone. This level of passenger demand will occur with or without the Proposed Action; the issue is how efficiently that demand will be met with an acceptable LOS and minimal impacts to passengers. LOS is a measure of how well passenger demand is served and is defined as the quality or condition of service that passengers experience at an airport facility. Existing Terminal A passengers experience unacceptable congestion at the curbside check-in, long lines at the lobby check-in and security checkpoints; undersized passenger waiting areas, inconvenient and an insufficient number of concessions and bathrooms, and inconvenient access to elevators and delays claiming their baggage. As 5.6 million passengers are added over the next 20 years, these conditions will be exacerbated, further reducing the overall LOS. Without improvements, the LOS at Terminal A will continue to degrade and Terminal A passengers will suffer escalating delays and congestion. The Port Authority is committed to providing the most efficient and convenient air travel experience possible through improving the LOS for passengers at Terminal A and all of its facilities.

2.2.4 Enhance Airfield Capacity and Reconfigure Operations

The Total Airspace and Airport Modeler (TAAM) was used to model the existing and future airport operations under both the No-Build and Proposed Action assumptions, given the forecasted passenger demand. This simulation model of airspace and airfield operations facilitates evaluation of the impact of changes to infrastructure, operations and schedules. As demonstrated by the TAAM modeling performed in April 2016, Newark Airport currently operates with high levels of delay.[17] As such, airfield docking, taxiway and infrastructure improvements are critically needed at Terminal A to improve aircraft movements and reduce delays. There is a need to reconfigure airfield operations and enhance airfield capacity to reduce passenger and aircraft delays, and optimize the use of the aircraft stand and terminal facilities.

Today during peak periods, Terminal A and its airfield are severely congested. Congestion causes delays, lowers the passenger LOS, and inhibits safe operation of aircraft and the facilities. As passenger volumes increase over time, these periods of congestion will increase in duration and intensity, and further worsen delays, LOS, and safe operations. The space and operational deficiencies of Terminal A also place airline tenants at a significant competitive disadvantage compared to other airlines operating at the airport. Currently, the airport consists of 90 exclusively leased gates and 20 common use gates. There are five domestic common use gates in Terminal A; four of which are highly utilized and offer limited availability because their high utilization. There are fifteen international common use gates in Terminal B; all offering partial availability depending on desired arrival and departure times. An increase in the number of common use gates would allow for additional gating flexibility, particularly during periods of congestion.

[17] *TAAM Modeling Report for Terminal A Redevelopment* (April 2016); see Appendix A.

The Terminal A airfield is currently operating with delays and will be unable to accommodate the projected increase in aircraft operations. According to Port Authority projections and analysis by Landrum and Brown, between 2013 and 2032 aircraft operations at Terminal A are anticipated to increase by 40 percent. Fortunately, the airfield and land adjacent to Terminal A provides enough area to accommodate a reconfiguration of the airfield and a new terminal to serve existing and projected aircraft operations. As demonstrated in **Table 2-2**, a reconfigured airfield would reduce average taxi times at the terminal, as well as average taxi and departure gate delays, for the design day forecast in the year 2027.

Table 2-2 TAAM Modeling Results – 2027

Layout	Flow	Arrival	Departure
Average Taxi Times (minutes)			
No Build	NE	11.2	21.5
Proposed Action	NE	10.5	21.2
No Build	SW	11.6	25.1
Proposed Action	SW	11.8	23.8
Average Taxi Delays (minutes)			
No Build	NE	3.8	12.7
Proposed Action	NE	3.5	11.5
No Build	SW	4.1	17.0
Proposed Action	SW	3.8	15.0
Average Departure Gate Delay (minutes)			
No Build	NE	NA	10.2
Proposed Action	NE	NA	9.5
No Build	SW	NA	17.5
Proposed Action	SW	NA	15.2

Source: TAAM Modeling Report Terminal A Redevelopment, Landrum & Brown, April 2016; see Appendix A.
Visual Meteorological Conditions only. Instrument Meteorological Conditions resulted presented in report.

The existing Terminal A apron currently accommodates 28 gates/34 positions from 3 satellite structures and is at capacity during most peak periods. Based on the forecasted demand, 33 gates are required to accommodate the gated design day flight schedule at Terminal A in 2027 (see **Appendix A**). A review of all existing terminal facilities showed that most of the future demand at the airport would be absorbed by Terminal A because Terminal C is operating at capacity (with further gate constraints expected due to changing air fleet dimensions), while in

Terminal B, Satellites B2 and B3 are dedicated to international use. A review of the geometry of the three terminals reveals that only Terminal A, which is bound by parking lots and other airport support facilities that can be displaced, has room for any significant growth.

Aircraft congestion also occurs within the Terminal A airfield because the dimensions of the apron are physically constraining. This does not optimize the available space for aircraft movements including hardstand parking positions, taxilanes, ground support equipment storage, etc. The current configuration of taxilanes requires 90-degree turns, which create blind spots for pilots and slows their movements severely while they await directions from ramp controllers to coordinate aircraft movements. The single taxilanes also become blocked by aircraft pushing back from the gates to warm up their engines before departure. Aircraft are often prevented from moving through the taxilanes in either direction when other aircraft pushback from their gates, and result in awkward, time-consuming movements. These inefficiencies create increased delays and reduced safety because of the limited space for aircraft to maneuver.

Aircraft operations are also limited by each of the satellite building's circular configuration (see **Figure 2-1**), which was designed to accommodate narrow-body jet aircraft operating over 35 years ago. This outdated layout severely constricts operations of modern aircraft with wider wingspans. Similarly, the current terminal and available ramp space does not offer the flexibility to park additional and different-sized aircraft in the same area when necessary. Most major airports across the country have reconfigured the terminal gate geometry to accommodate new, wide-body aircraft, most recently at JFK, Los Angeles, Atlanta, Boston, Chicago and San Francisco. The Port Authority needs to modernize Terminal A's facilities to optimize their operations to successfully compete with other airports that have already undergone modernizations.

An updated apron layout would reduce congestion, resulting in lower taxi times, taxi delays and gate delays. The Port Authority seeks to improve airfield efficiency and reduce delays through the proposed action, as demonstrated by TAAM modeling.

2.2.5 Enhance Landside Access

Traffic congestion occurs along the CTA access roads, arrival and departure curbfronts of existing Terminal A, and circulation roadways because of existing roadway geometry, inadequate curbfront lengths and lack of efficient vehicle destination separation. Within the CTA access road, the traffic queues approaching Terminal A are compounded by the traffic ultimately bound for Terminals B and C, as the CTA access road is shared by all three terminals. Conversely, the traffic along the CTA access road loop destined for Terminal A becomes a bottleneck for all traffic bound for other terminals. Because of the insufficient length of curbfronts at Terminal A, vehicle queues occur, reducing vehicle circulation efficiency in the central terminal core and increasing idling emissions. **Table 2-3** summarizes the major landside access limitations at Terminal A.

Based on the existing landside access constraints at Terminal A, there is a need to improve roadway access and circulation, add parking facilities, and reduce traffic congestion. These infrastructure deficiencies will continue to increase traffic delays and congestion as passenger demand rises at the airport. Over the long term, these passenger delays will reduce the operational capacity of the airport, reduce its attractiveness to customers and lower the airport's competitive advantage.

Table 2-3 Existing Landside Access

Landside Access	Existing Conditions
Arrival and Departure Frontages	• Insufficient curb length for drop off and pick up • Not enough lanes for vehicle waiting or through traffic • Sidewalks are not deep enough • No holding station for taxis and other public vehicles
Roadway Weaving Segments	• Majority of roadway segments operating at acceptable levels of service
Frontage Roadway Bridges	• Deteriorated frontage roadway bridges
Parking Lots	• Parking spaces lost to other airside/landside development • Majority of the lots are presently reaching capacity during peak periods

Source: AECOM, 2012.

The design of the roadway improvements include the following major factors:

- Avoid impacts to existing AirTrain structures and support facilities
- Avoid impacts to, and maintain connectivity between, relevant existing airport roadways and functions
- Provide for all proposed connectivity to and from the new Terminal A
- Maintain some form of access to the existing Terminal A building
- Avoid significant impacts to the Peripheral Ditch
- Limit impacts to airside operations
- Provide sufficient terminal frontage length to accommodate various ground transportation modes and provide dedicated areas for private auto, taxi, and high occupancy vehicle (HOV) use to reduce traffic congestion and improve air quality

2.3 Existing and Forecasted Passenger Demand

As presented in **Table 2-4**, the airport has seen dramatic growth in both passenger and flight activity since 1980. The annual passenger volume of 37.4 million in 2015 is more than four times the 9.2 million passengers that used EWR in 1980. Similarly, the more than 413,000 total annual flights that operated at EWR in 2015 is 3.6 times the 115,000 flights that operated at the airport in 1980.

Table 2-4 Operations and Passenger Activity at Newark Liberty International Airport

Year	Domestic	International	Total
Operations			
1980	113,796	1,740	115,536
1990	242,583	22,588	265,171
2000	259,941	59,403	319,344
2010	300,353	91,369	391,722
2011	300,614	97,979	398,593
2012	307,321	95,731	403,052
2013	320,976	92,766	413,742
2014	303,669	91,856	395,525
2015	323,607	89,914	413,521
Passenger Activity			
1980	9,021,721	202,416	9,223,000
1990	19,688,367	2,566,635	22,255,002
2000	25,788,494	8,400,208	34,188,702
2010	21,872,000	11,248,000	33,120,000
2011	22,200,053	11,511,319	33,711,372
2012	22,836,683	11,177,344	34,014,027
2013	23,716,837	11,299,399	35,016,236
2014	23,762,627	11,848,060	35,610,687
2015	25,692,513	11,802,191	37,494,704

Source: Port Authority Strategic Analysis & External Affairs Division, Traffic & Forecasting Unit

Between 2000 and 2010, many major airports nation-wide experienced a decrease in passenger and flight demand, primarily because of the September 11th terrorist attacks, the early 2000s recession and the latest recession starting in 2008. These events have had lasting effects on the economy and airport patronage over the past 10 years. Similarly, EWR passenger travel declined slightly between 2000 and 2010, even as flight activity grew as airlines deployed smaller aircraft in response to the shrinking demand. However, the airport's 2011 passenger and flight activities reflect a significant rebound from air traffic levels earlier in the decade, and this trend has been steadily increasing through 2015.

The Port Authority periodically prepares forecasts for their airports. The forecasts used for planning Terminal A were prepared in 2011 and reviewed and approved by the FAA in April 2012. **Table 2-5** presents a comparison of the Port Authority approved forecast with the 2011 FAA Terminal Area Forecast (TAF). The Terminal Area Forecast (TAF), contained in Appendix A, is the official FAA forecast of aviation activity for U.S. airports. It contains active airports in the National Plan of Integrated Airport Systems (NPIAS) including FAA towered airports, Federal contract towered airports, nonfederal towered airports, and non-towered airports. Forecasts are prepared for major users of the National Airspace System including air carrier, air taxi/commuter, general aviation, and military. The forecasts are prepared to meet the budget and planning needs of FAA and provide information for use by state and local authorities, the

aviation industry, and the public. These two forecasts show the unconstrained forecasts of future airport-wide activity at EWR.

Table 2-5 Comparison of 2011 FAA TAF and Port Authority Forecasts

	Annual Passengers (millions)			Annual Aircraft Operations		
Year	2011 FAA TAF	Port Authority	Difference	2011 FAA TAF	Port Authority	Difference
2012	35.51	33.56	-5.5%	433,199	419,000	-3.3%
2017	40.45	38.11	-5.8%	479,807	449,000	-6.4%
2022	45.24	43.44	-4.0%	519,170	488,000	-6.0%
2027	50.67	49.75	-1.8%	561,993	535,000	-4.8%
2030	54.28	53.98	-0.6%	589,347	565,000	-4.1%
2032	56.85	56.88	0.1%	608,396	586,000	-3.7%

Source: Port Authority of New York and New Jersey**,** *Long-Range Forecast for the Port Authority Airports*, April, 2012 and Federal Aviation Administration, *Terminal Area Forecasts*, 2011.

The FAA imposed Orders Limiting Operations in 2008 at JFK and EWR in response to high delays in 2007 at JFK and announced service increases for 2008 at both JFK and EWR.[18] The FAA stated in their Orders: "We intend this proposed limitation on scheduled operations to relieve the substantial inconvenience to the traveling public caused by excessive congestion-related flight delays at the airport, which magnify as they spread through the National Airspace System." These Orders have been in place ever since.

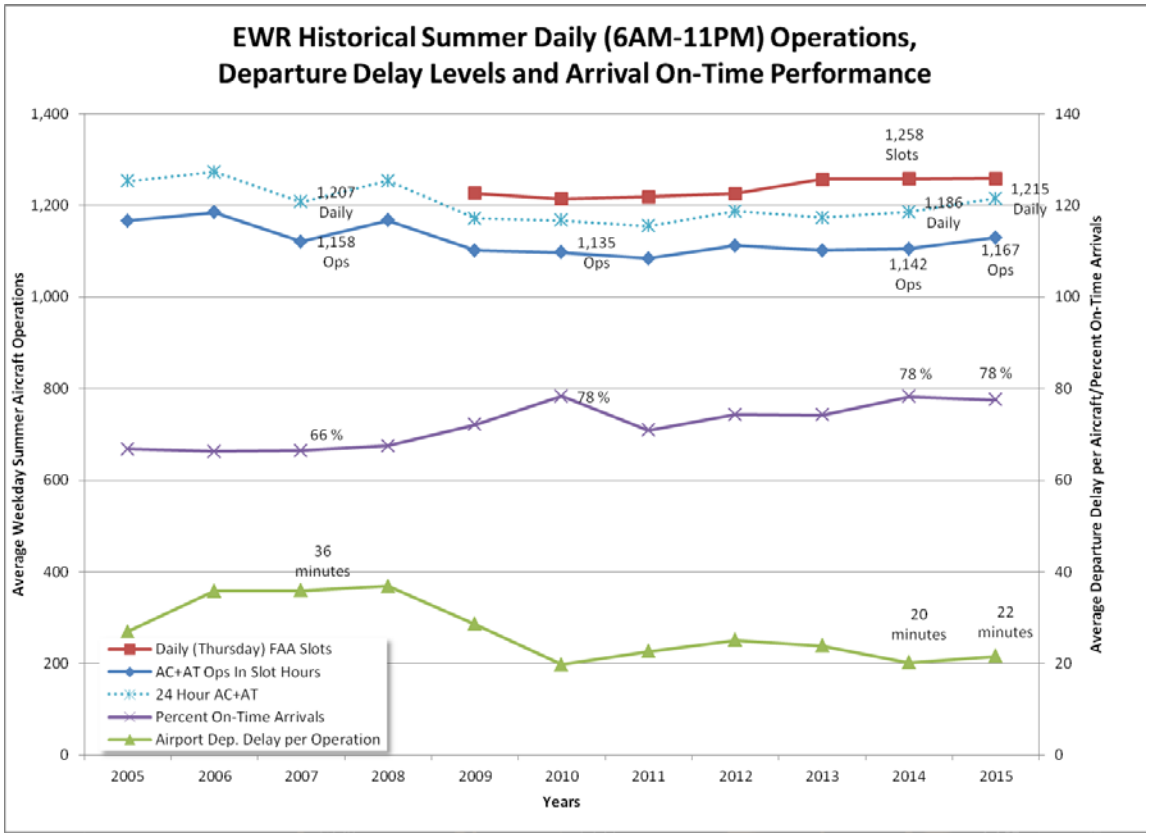
However, as a result of the FAA Orders being in place, both the FAA TAF and the Port Authority's unconstrained growth projections in passenger air carrier operations will likely not be achievable. In order to arrive at an annualized slot limit, peak season (June through August) operations counts for air carrier and air taxi operations (excluding air cargo), departure delays and arrival on-time performance were examined for the period 2005 through 2015. Peak day (Thursday being representative) slot counts were examined from selected databases that were periodically provided by the FAA. As shown in **Exhibit 2-1**, daily operations during slot hours have increased only slightly from 2010 through 2015.

In 2015, the daily (Thursday) slot-hour operations count of 1,167 reflected 93 percent of slots being operated. This is representative of an average weekday demand. In 2015, a total of 1,215 daily passenger air carrier and air taxi operations occurred, with approximately 4 percent of these operations occurring during non-slot-limited hours (11PM to 6AM).

As a practical consideration, 100 percent utilization is unlikely to be achieved since a percentage of flights get cancelled due to various unforeseeable causes such as weather or mechanical problems with aircraft. In addition, in 2009 the hub airline at EWR cut its schedule to improve on-time performance and overall service reliability. There is no indication that the hub airline will change its scheduling practices. Their public statements indicate the truth behind the FAA Benefit-Cost Guidance that airlines will eventually self-discipline growth when average annual delays reach the 15 to 20-minute range.[19]

[18] 14553 Federal Register / Vol. 73, No. 53 / Tuesday, March 18, 2008 / Notices.
[19] Federal Aviation Administration, *FAA Airport Benefit-Cost Analysis Guidance*, Office of Aviation Policy and Plans, December 15, 1999.

Exhibit 2-1 Comparison of Slot Availability and Slot Hour Operations with Departure Delays and Arrival On-Time Performance



Source: FAA APM Database and Landrum & Brown Analysis

Given this slot utilization history and this outlook on future airline slot utilization practices, the assumption is that ultimately 95 percent of peak season Thursday Level 3 slots will get used during the peak season, with 1,200 slots used out of 1,258 available. This equates to a 24 hour operations count of 1,248 passenger air carrier and air taxi operations during a weekday. Approximately 4 percent of air carrier and air taxi operations occur outside of slot hours. Using the 2011 ratio of annual operations to peak season average weekday of 323:1, 1,248 daily scheduled passenger carrier and air taxi operations equates to 404,000 annual operations by these two types of aircraft operations, which is forecast to occur by 2018. The annual volume of commercial passenger aircraft operations is forecast to remain flat after 2018.

Table 2-6 presents a comparison of the unconstrained and constrained passenger demand and aircraft operations forecasts. As shown, the slot constraint on aircraft operations growth would reduce airport-wide forecast passenger growth by 2017 and the loss of passengers would increase to approximately 10 million annual passengers by 2032.

Table 2-6 Comparison of Unconstrained and Constrained Demand Forecasts

	PANYNJ Annual Passengers (millions)			PANYNJ Annual Aircraft Operations		
Year	Unconstrained	Constrained	Difference	Unconstrained	Constrained	Difference
2012	33.56	33.56	--	419,000	419,000	--
2017	38.11	35.20	2.91	449,000	422,000	27,000
2022	43.44	38.92	4.52	488,000	434,000	54,000
2027	49.75	42.85	6.90	535,000	446,000	89,000
2030	53.98	45.20	8.78	565,000	453,000	112,000
2032	56.88	46.85	10.03	586,000	458,000	128,000

Source: Port Authority of New York and New Jersey, December 2016.

The analysis presented in **Table 2-6** assumes that airlines will increase the size of aircraft to accommodate increasing demand, but the aircraft gauge growth will be insufficient to accommodate all of the demand. This assumption is based on three factors. First, airlines are unlikely to purchase aircraft that are tailored to a single market (such as wide-bodies for domestic airline service), especially in their domestic route networks. Aircraft used in the domestic market need a seating configuration and size that works on a variety of routes on an airline's network in order to have sufficient utilization to make a return on the investment on that aircraft. Second, slot controls at the airport effectively preclude the introduction of competition in most air markets from EWR. The lack of competition enables the airline serving the market to raise prices instead of adding more service to increase their revenues. The price increases also drive away a portion of demand. Third, based on the analysis of aircraft orders by all airlines serving the airport prepared in 2012, the opportunities for aircraft size growth are fairly limited, especially for the operators of regional jet (RJ) and turboprop aircraft. These operators have very few aircraft on order. The best opportunity for aircraft gauge growth is on international routes currently being served with B-757 and B-767 aircraft. Over time, these aircraft will get replaced with larger B-787 and A-350 aircraft. In contrast, the opportunity for growth on domestic routes is for smaller narrow-body aircraft, such as the B737-700 or the A-319, to be replaced by the larger B-737-900 aircraft or A-321.

Table 2-7 shows the portion of forecast airport demand that will be served by Terminal A. This portion includes all of the domestic airlines other than United Airlines, and most of the United Express operations that uses the existing Terminal A. Terminal B would serve international arrivals and departures, including a portion of the United Airlines International aircraft activity. This includes international arrivals from airports that offer pre-clearance by the Customs and Border Protection Service of the US Department of Homeland Security. Terminal C would be used exclusively by United Airlines and departures by some of its Star Alliance Partners.[20]

According to the Port Authority's forecast, Terminal A will experience an average annual growth of approximately 1.68 percent in passengers between 2012 and 2032.[21] As shown in **Table 2-7**,

[20] From http://www.staralliance.com/documents/20184/680657/General+Star+Backgrounder/0e31a9c3-2a75-4091-b1ae-8324db1997d7: "The Star Alliance is a global airline network which was established on May 14th, 1997 by five airlines, Air Canada, Lufthansa, Scandinavian Airlines, THAI and United… The [current] member airlines are: Adria Airways, Aegean Airlines, Air Canada, Air China, Air India, Air New Zealand, ANA, Asiana Airlines, Austrian, Avianca, Avianca Brasil, Brussels Airlines, Copa Airlines, Croatia Airlines, EGYPTAIR, Ethiopian Airlines, EVA Air, LOT Polish Airlines, Lufthansa, Scandinavian Airlines, Shenzhen Airlines, Singapore Airlines, South African Airways, SWISS, TAP Portugal, Turkish Airlines, THAI and United."

[21] The Port Authority's forecast assumes that the non-hub domestic carriers and a portion of the United Express operation will use Terminal A. As gauge increases beyond 2027, the proportion of the United

by 2032, annual passenger levels at Terminal A are expected to reach approximately 14.1 million, compared to 8.5 million passengers in 2013. Aircraft operations at the terminal are anticipated to increase over 18 percent over the next 14 years, then decrease over the following five years as the aircraft size increases. This future growth would occur with or without the Proposed Action. As explained later in this section, FAA's recent announcement that its Level 3 slot controls at the airport would be replaced by Level 2 schedule coordination and facilitation beginning on October 30, 2016 does not substantially impact the Port Authority's forecast.[22]

Table 2-7 Passenger and Aviation Activity at Terminal A

Year	Aircraft Operations	Passengers
2013	161,200	8,500,000
2022	162,100	13,000,000
2027	196,900	13,500,000
2032	190,500	14,100,000
Compound Annual Growth Rate (CAGR) 2012 - 2032	0.63%	1.68%

Source: Port Authority of New York & New Jersey and Landrum & Brown analysis.

This analysis acknowledges that the original forecasts for Terminal A were prepared in 2012, based on 2011 baseline data, which is now almost five years old. In addition, the Port Authority has prepared updated forecasts for use in the Part 150 Study for the airport, which was started in late 2015.[23] The findings of the Part 150 Forecasts are as follows:

- The unconstrained growth rates for passenger demand forecast by the FAA are consistent with previous Port Authority analyses and nothing has changed sufficiently to persuade the Port Authority that these growth rates are not unreasonable. Therefore, the Port Authority adopted the FAA 2014 TAF unconstrained forecast of passenger demand as the Port Authority forecast of future passenger demand.

schedule operated by United Express decreases and as a result, Terminal A aircraft activity decreases. The analysis assumes that the existing "scope" clauses that limit United Express to operating aircraft with 76 or fewer seats will continue into the future.

[22] In Level 3 slot controls, the FAA assigns each airline in perpetuity a certain number of landing and take-off rights within each half hour period during slot controlled hours (6AM to 11PM at EWR). In Level 2 schedule facilitation and coordination, each airline submits their proposed schedule changes to the FAA and the FAA either confirms the ability of the airline to operate the proposed flight at the proposed time, suggests an alternate time for the proposed flight, or denies the ability to operate the flight. The FAA's denial of rights to fly the flight is non-binding. However, if the airline operates the flight without FAA concurrence, the flight gains no seniority for future schedules.

[23] Newark Liberty International Airport Aircraft Fleet Mix and Annual Aircraft Operations Forecast 2014-2033, February 24, 2016.

- However, the FAA 2014 TAF growth projections in passenger air carrier operations will likely not be achievable either in a Level 3 slot constrained environment, or in a Level 2 schedule facilitated and coordinated environment. Therefore, the Port Authority reapplied the same methodology used in the original 2012 forecast to constrain aircraft operations demand. This analysis concluded that while peak season daily activity would remain the same as in the original forecast, the volume of Saturday activity has declined slightly as compared to the rest of the week, and that seasonal variations in aircraft activity have increased. Thus, annual passenger aircraft activity will reach a constrained level of 385,000 aircraft operations by 2016. Activity during non-slot hours will continue to grow slightly throughout the forecast period.

- More recent airline orders show a more aggressive retirement of smaller regional jet equipment and more purchases of larger narrow-body aircraft. In addition, airlines are retrofitting many aircraft with thinner seats, which is enabling a seating capacity increase of 5 to 10 percent. Thus, the constrained aircraft operations forecast is able to accommodate most of the unconstrained passenger demand.

Use of the Part 150 forecast to evaluate the replacement of Terminal A with a new facility is unlikely to change the conclusions of the analyses. First, the peak season design day activity used to evaluate the terminal has the same number of passenger aircraft operations in both forecasts. Thus, the total daily aircraft activity in Terminal A would also be the same. The Part 150 forecast has larger narrow-body and RJ aircraft than the original 2012 forecast. However, all of the Terminal A gates can accommodate these aircraft. The larger aircraft means that the forecast annual volume of passengers using Terminal A would increase from 13.5 MAP to 15.2 MAP in 2027.

With the FAA announcement that Level 3 slot controls at the airport would be replaced by Level 2 schedule facilitation and coordination beginning on October 30, 2016, the Port Authority reviewed both the original 2012 forecasts and the Part 150 forecast to evaluate their continued validity. The review found that both forecasts are consistent with the Level 2 designation and no adjustments to the activity levels are necessary. The finding is supported by the following:

- FAA review of airline schedule requests under Level 2 schedule facilitation is essentially equivalent to the assumption that airlines would moderate their operations growth in a slot-controlled environment in order to reduce delays and increase service reliability. Future average annual aircraft delays are expected to remain within the 15 to 20 minutes per aircraft range over the forecast period.

- The FAA intends to limit flight activity to no more than 231 aircraft operations in any three hour period – approximately 77 operations per hour. While the Level 3 slot limit was 81 operations per hour, the FAA did not make all 81 slots available for use in most hours. The limitation on demand growth provided by the two different methods of capacity regulation are essentially equivalent.[24]

[24] Full Text of capacity limit: "The FAA will use the following EWR capacities for scheduled flights during the winter 2016 season, reflecting average airport runway statistics during the recent winter scheduling seasons. (3) The limits for purposes of Level 2 review are 79 scheduled operations per hour, 43 in a half-hour, 79 in consecutive half-hours, and 231 in rolling three-hour periods. The FAA believes that a transition from Level 3 to Level 2 should consider the need for air traffic control facilities and the airport terminal and gate infrastructure to adapt to the expected increase in operations. The three-hour limitation will allow a higher number of flights in some hours while also allowing for system recovery. In reviewing

- Analysis of past data on flight schedules and airline flight cancellation rates indicates that the flight cancellation rate will stabilize at 3 percent; therefore, a forecast that assumes 98 percent of available capacity provided under Level 2 schedule facilitation being implemented would result in only 95 percent of flights actually flown. This is equivalent to 95 percent of Level 3 allocated slots being actually flown in the previous analysis that supports the original 2012 forecast and the Part 150 forecast.

- The assumptions for demand, fleet mix and market factors used in the original 2012 forecast and the Part 150 forecast would remain valid after implementation of Level 2 schedule facilitation by the FAA.

Therefore, the original 2012 forecast and the Part 150 forecast do not need to be updated to reflect the implementation of Level 2 schedule facilitation by the FAA.

2.4 Required Land Use/Environmental Permits and Notifications

Various existing federal, state and county laws, policies and programs impose requirements with which the Proposed Action would need to demonstrate compliance. Agency coordination has been ongoing to identify specific requirements to be addressed in applications for permits or other approvals. Extensive consultation with NJDEP has occurred and is ongoing. An overall permitting strategy has been identified. Permits will be filed as individual components of the action are developed, with an aim towards reducing overall project impacts as design proceeds. All permits or approvals would be obtained prior to construction.

Federal

- Clean Water Act. Section 404 of the Clean Water Act (33 U.S.C. § 1344) regulates the discharge of dredged and fill material into waters of the United States, including wetlands.

- Endangered Species Act. Sections 7(a) through (d) of the Endangered Species Act of 1973 [16 U.S.C. § 1536(a) – (d)] require that any federal agency, in this case the FAA, consult with the U.S. Fish and Wildlife Service when any action the agency carries out, funds, or authorizes (such as through a permit) *may affect* a listed endangered or threatened species or their habitat.

- National Emission Standards for Hazardous Air Pollutants (NESHAPs), Asbestos. 40 C.F.R. §§ 61.145 - 61.155 and N.J.A.C. 7:26-2.12 require that prior to the commencement of the demolition of any facility, the facility must have a thorough survey done to determine the presence of asbestos-containing materials. The owner or operator of the facility that is being demolished must submit a NESHAPs notification to USEPA, the New Jersey Department of Community Affairs, the New Jersey Department of Labor, and the New Jersey Department of Health and Senior Services at least 10 working days prior to the commencement of work. This includes any site preparation that would

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proposed schedules, the FAA will also consider the distribution of scheduled arrivals and departures within a half-hour or hour and whether there is significant peaking due to the distribution of flights within the period. The FAA may seek adjustments to proposed schedules to address congestion issues." Source: Change of Newark Liberty International Airport (EWR) Designation, 81 FR 19861-19863, April 6, 2016; https://federalregister.gov/a/2016-07910

breakup, dislodge or disturb any asbestos-containing materials. All demolition activities require the submittal of a NESHAPs notification form whether or not the building was determined to contain asbestos.

- National Historic Preservation Act of 1966, Section 106. The National Historic Preservation Act [(NHPA) (16 U.S.C. § 470 *et seq.*)] and its implementing regulations require that a project's lead federal agency, in this case the FAA, consult with the State Historic Preservation Officer. The NHPA also requires that the FAA gather information to determine which properties in a project's area of potential effect are listed in or eligible for the National Register of Historic Places.

State

- Flood Hazard Area Individual Permit (FHAP). The New Jersey *Flood Hazard Area Control Act Rules* (N.J.A.C. 7:13) govern activities within flood hazard areas and the 100-year floodplain. The objective of these rules is to minimize potential damage to public or private property, to protect and enhance the public's health and welfare by minimizing the degradation of water quality from point and non-point sources discharging into the flood hazard area, and to protect wildlife and fisheries by preserving and enhancing water quality and the environment associated with the floodplains. An FHAP is required for the construction, installation or alteration of any structure or permanent fill along, in or across, the channel or floodplain of any watercourse. This permit is also required for any alteration of, or discharge into the watercourse itself. Therefore, if any such impacts would occur because of the Proposed Action, an FHAP would be required.

- Stormwater Management Approval. If a project or activity meets the definition of a "major development", then the project or activity must comply with the *Stormwater Management Rules*. "Major development" means any development that provides for ultimately disturbing one or more acres of land or increasing impervious surface by one-quarter acre or more. Disturbance for the purpose of this rule is the placement of impervious surface or exposure and/or movement of soil or bedrock or clearing, cutting, or removing of vegetation. Projects undertaken by any government agency that otherwise meet the definition of "major development" but which do not require approval under the Municipal Land Use Law, N.J.S.A. 40:55D-1 *et seq*., are also considered a "major development." Therefore, if the Proposed Action would result in the disturbance of more than one acre of land and/or would create new impervious surface of one-quarter acre or more, the project must comply with the *Stormwater Management Rules*.

- New Jersey Pollutant Discharge Elimination System (NJPDES) General Permit for Stormwater Discharge Associated with Construction Activities - Request for Authorization. A stormwater construction general permit is required under the NJDEP NJPDES program. This authorization applies to point source stormwater discharges from construction activities (e.g., clearing, grading, excavating) that disturb one acre or more. If the proposed project disturbs more than one acre of surface area of land, a Request for Authorization (RFA) for construction stormwater discharge will be required from the NJDEP. Soil Erosion and Sediment Control Certification(s) from the local Soil Conservation District(s) is required before the RFA to use the general permit can be submitted to NJDEP.

- Section 401 Water Quality Certification (WQC). A WQC is required pursuant to Section 401 of the federal *Clean Water Act*; but is facilitated by the NJDEP. NJDEP cannot issue a permit or approval for a proposed project or any activity that is inconsistent with the Statewide or area-wide Water Quality Management (WQM) Plan. A consistency determination is the review conducted by the NJDEP to determine whether regulated activities conflict with these plans. WQC review is conducted concurrently with review of Freshwater Wetlands Permit/FHAP applications. If the Proposed Action requires a Freshwater Wetland Permit and/or FHAP, a WQC would be required. This certification would be issued simultaneously with these permits.

- Water Main Extension Permit. Under the New Jersey Safe Drinking Water Act Rules (N.J.A.C. 7:10), any water main construction (extension or replacement) requires a permit from NJDEP's Bureau of Water Systems & Well Permitting.

- Treatment Works Approval. The New Jersey Treatment Works Approval program (N.J.A.C. 7:14A) regulates the construction and operation of industrial and domestic wastewater collection, conveyance and treatment facilities, including pumping stations, sewer mains and other collection, holding and conveyance systems.

Regional/County

- Passaic Valley Sewerage Commission (PVSC) Sewer Use Permit. A PVSC Sewer Use Permit is required before any sewage can be discharged into the PVSC treatment plant.

- Somerset-Union Soil Conservation District – Soil Erosion and Sediment Control Plan Certification. Approval of development by all public agencies is conditioned upon approval of a plan for soil erosion and sediment control. Certification is required for any activity that disturbs more than 5,000 square feet of surface area of land. Certification is also required for the demolition of structures, construction of parking lots, public facilities, operation of mining or quarrying activities, and for clearing or grading of land for other than agricultural or horticultural purposes. Public facility means any building, pipeline, highway, electricity, telephone or other transmission line; or any other structure to be constructed by a public utility, municipality, county or state, or any agency or instrumentality thereof.

- Hudson-Essex-Passaic Soil Conservation District – Soil Erosion and Sediment Control Plan Certification. Same requirements as Somerset-Union above.

3 Alternatives

3 Alternatives

FAA Order 1050.1F, *Environmental Impacts*, *Policies and Procedures*, Chapter 4, Paragraph 405d, *Alternatives (Including Proposed Action), and Other Special Purpose Environmental Laws*, in accordance with the CEQ regulations, requires that the environmental review process objectively considers and evaluates all reasonably available alternatives that might accomplish the purpose and need of a proposed action or project. Additionally, the examination of the no-action alternative is required and provides a baseline for the comparison of impacts that may be caused by the proposed alternatives. An alternatives analysis is of critical importance to the environmental review process and ensures that an alternative that accomplishes the purpose and need for the action has not been prematurely dismissed from consideration when it might be found to either enhance environmental quality or have a less detrimental effect than other possible alternatives.

This section describes the Proposed Action and alternatives, including the No-Build/No-Action Alternative, and evaluates the ability of each to meet the Purpose and Need described in Section 2, *Purpose and Need*. The Proposed Action, described in Section 3.1 below, would fulfill the Purpose and Need for the project. Although the No-Build/No-Action Alternative does not meet the Proposed Action's Purpose and Need criteria, it is retained for detailed environmental analysis and baseline comparative purposes pursuant to the requirements of FAA Order 5050.4B and NEPA.

This EA identifies and evaluates all potential adverse impacts to the natural and built environment that are expected to result from implementation of the Proposed Action and the No-Build/No-Action Alternative. Other alternatives were considered during the planning phase of the project, but were eliminated from further detailed environmental review for various reasons stated in Section 3.3.

3.1 Proposed Action

The Proposed Action (discussed in Section 1.4, *Description of the Proposed Action*) involves the construction of a new Terminal A, reconfiguration of the adjacent airside apron and taxilane area and relocation of several airport leaseholds, as well as the construction of new on-airport access and frontage roadways, and replacement parking facilities. The specific elements of the Proposed Action include:

- New Terminal A
  - Replace the existing 28-gate/34-position Terminal A with a new 33-common use gate terminal that can accommodate 13.6 MAAP
  - Three concourses with a central, two-level headhouse with a partial intermediate level mezzanine for terminal support space
  - Consolidated Security Screening Checkpoint within the headhouse
  - Approximately 1,000 feet of building frontage roadway

- Reconfigured Airside Layout
  - Accommodate design aircraft of B737-900W (ADG III) with some projected ADG V operations at certain gates
  - 25-foot wingtip clearances between gates
  - Dual ADG IV and Dual ADG V taxilanes

  - Relocated hardstand positions within the apron and taxilane areas (to replace those displaced by construction) – 8 ADG III positions at the existing Terminal A building location, 12 ADG V positions east of the proposed terminal, and 7 ADG III positions between the ADG V taxilanes

- Reconstructed Landside Facilities
  - New 6-level public parking garage with a 2,300-space capacity
  - Adjacent 321-space surface lot
  - Fully enclosed pedestrian bridge between the new parking garage and the new Terminal A
  - Improved roadways to the new Terminal A from the airport main entrance and dedicated frontage roadways to service the new Terminal A

- Building Demolition and Leasehold Relocations
  - Demolish Building 350 and reclaim the UPS leasehold to allow for construction of the new Terminal A and apron. Relocate UPS to parcel including Hangar 14, Buildings 95 and 332 on the north side of the airport.
  - Demolish Building 331 and reclaim the Chelsea Kitchen Maintenance leasehold to allow for Port Authority use in the southern portion of the new Terminal A site and relocate Chelsea Kitchen to Building 151 on the north side of the airport.
  - Reclaim the expiring leasehold on Building 330 (Chelsea Kitchen) and convey the structure as part of a 9-acre parcel to FedEx in exchange for a 9-acre parcel containing Building 342. Relocate Chelsea Kitchen to Building 151.
  - Demolish Building 342 and reconfigure the area of the existing FedEx cargo facility to accommodate a modified Terminal A taxilane system and aircraft parking.
  - Demolish the vacant Building 345, the former US Postal Service facility. The site would be reclaimed to allow for construction of the new Terminal A.

Table 3-1 presents a list of buildings located within the Project Area that would be affected by the Proposed Action. Building demolitions and tenant relocations are summarized in **Table 3-2**. The Port Authority has been discussing relocations within the airport with relevant tenants over the past several years as part of regular lease negotiations.

3.2 No-Build/No-Action Alternative

To satisfy the intent of NEPA and FAA Order 1050.1F, a No-Build/No-Action alternative is carried forward in the analysis of environmental consequences provided in Section 5, *Environmental Consequences*. Although not always reasonable, feasible, prudent, or practicable, the No-Build/No-Action alternative is a potential alternative under NEPA and serves as the baseline for the assessment of impacts associated with the Proposed Action.

The implementation of the No-Build/No-Action Alterative would essentially leave Terminal A as it currently exists with only maintenance upgrades to the terminal or energy-related upgrades as part of the Port Authority's ongoing sustainability initiatives. Additionally, internal renovations/modifications as part of ongoing systems rehabilitation may take place. A functionally obsolete terminal building and associated deteriorated infrastructure would remain in place and existing passenger congestion, safety and TSA security deficiencies would not be addressed. The number of gates would remain at 28, with 34 active positions. Current operational deficiencies, as well as the high cost of maintaining the current infrastructure, would continue. In addition, airfield and terminal ramp congestion would continue to degrade. Identified

deficiencies in roadway access and circulation, as well as traffic congestion, would also continue to degrade.

Table 3-1 Project Area Buildings – Existing and Proposed Uses

Building Number	Current Use/Occupant	Proposed Action Use
Building 4 (Terminal A Headhouse)	Multiple Airlines, Concessions, Retailers	Future Use TBD
Satellite Terminal A1	Multiple Airlines	New Terminal A Taxilane Area
Satellite Terminal A2	Multiple Airlines	New Terminal A Taxilane Area
Satellite Terminal A3	Multiple Airlines	New Terminal A Taxilane Area
AirTrain Station P-1	AirTrain Station For P-1 Parking Area	AirTrain Station For The New Terminal A and New Parking Garage
AirTrain Station P-2	AirTrain Station For Car Rental Services	AirTrain Station For Car Rental Services
AirTrain Station P-3	AirTrain Station For Car Rental Services	AirTrain Station For Car Rental Services
Terminal A AirTrain Station	AirTrain Station For Terminal A	AirTrain Station For Terminal A
Building 60	AirTrain Maintenance Facility	AirTrain Maintenance Facility
Building 120	Fuel Selection Station	New Building 60 Parking Lot
Building 330	Chelsea Kitchen	Conveyed to FedEx
Building 331	Chelsea Kitchen Maintenance	New Vehicle Parking Area
Building 342	FedEx Ground Support Equipment	New Terminal A Taxilane
Building 345	Former USPS (Vacant)	Portion of New Terminal A
Building 350	United Parcel Service	Portion of New Terminal A

Source: AECOM, 2016.

Table 3-2 Project Area Tenants or Occupants To Potentially Be Relocated

Building Number	Current Occupant	Potential Relocation/Disposition
Building 350	UPS	Site of Hangar 14 Buildings 95 and 332
Hangar 14	PA Maintenance Equipment	Building 79
Building 95	PA Maintenance Equipment	Building 79
	Federal APD	Building 190
	ABM Parking	Building 190
Building 332	United Airlines Cargo	Building 339
Building 331	Chelsea Kitchen Maintenance	Site of Building 151
Building 151	Customs and Border Protection	Building 157
Building 330	Chelsea Kitchen	Reclaim the expiring leasehold and transfer its 9 acre parcel to FedEx in exchange for the 9 acre parcel containing Building 342. Building 330's operations to be relocated to the site of Building 151.
Building 342	FedEx	Transferred from FedEx in Exchange for Building 330
Building 345	Vacant	None

Source: AECOM, 2016.

Selection of the No-Build/No-Action Alternative would conflict with the Port Authority's obligation and commitment to the public, its tenants, and to bondholders to provide and maintain adequate facilities at the airport in support of the traveling public. Neither the objectives of the Proposed Action nor the Port Authority's mission and responsibility would be met by this alternative. The consequences of selecting the No-Build/No-Action Alternative would result in exacerbating existing operational constraints as forecast demand increases.

The No-Build/No-Action Alternative would not fulfill the stated Purpose and Need for the project. This alternative would not correct the deficiencies and inadequacies of the existing Terminal A facilities and airfield. Presently, the terminal does not provide efficient roadways, passenger

processing facilities, and AOAs. As passenger demand and aircraft operations increase over time, the inefficiencies of the existing terminal would further degrade the LOS experienced by passengers, result in increased vehicular congestion in front of the terminal, and further complicate aircraft movements and gate scheduling. However, as discussed above, the No-Build/No-Action Alternative is required to be evaluated in an EA. As such, this alternative will be carried forward in the EA and used as the baseline against which the Proposed Action will be evaluated.

3.3 Alternatives Considered but Eliminated from Further Consideration

The following options were thoroughly considered as alternatives to the Proposed Action but were eliminated from further environmental analysis for the reasons listed below.

Existing Terminal A Restoration

The Restoration Alternative would not involve the physical expansion of the existing terminal but would include an overhaul of the facility, including a complete replacement of the electrical and mechanical systems and security upgrades. There would be no airside improvements under this alternative – the number of gates would remain at 28 with 34 active positions; but the existing landside frontage structures would be rebuilt to maintain a state of good repair. A new short-term 1,000- to 1,500-space garage in the P-1 Lot would also be constructed.

Implementation of this alternative would not optimize the efficient utilization of the existing Terminal A. The primary passenger handling facilities would remain inadequate for providing competitive services with a high LOS to current and future passengers. The need to accommodate increased aviation and passenger demand at an acceptable LOS would not be achieved under this alternative. Therefore, the Purpose and Need of the project would not be achieved.

Landside access roads and curbfronts at the existing Terminal A would retain the existing poor roadway geometry, inadequate curbfront lengths and vertical clearance, and lack of efficient vehicle separation.

Implementation of this alternative would not meet the need to efficiently utilize the existing Terminal A envelope. The existing Terminal A envelope would not be optimized to allow for the efficient parking and movement of aircraft around the terminal. Aircraft congestion occurs within and around Terminal A because the apron is physically constrained and does not utilize available square footage for highest and best uses (hardstand parking positions vs. taxilanes vs. GSE storage, etc.). This alternative would do nothing to address this need.

Implementation of this alternative would result in a high degree of operations interruption due to the complex construction phasing that would take place in and around an operating facility.

For the reasons stated above, the restoration of existing Terminal A was eliminated from further consideration.

Existing Terminal A Modernization

The Modernization Alternative includes extensive reconfiguration, renovation and modernization to expand gate capacity to 33 loading positions, and to convert the terminal headhouse to a three-level operation. The number of loading positions is designed to meet capacity

requirements although they require remote locations for hardstand loading positions in addition to contact gates. Next generation terminal elements would be featured in the upgrades where feasible.

Other characteristics of this alternative include:

- Consolidation of security screening
- Provision of additional concessions and club space beyond security and an airside corridor to connect the satellites
- Upgrades in utilities, a new baggage handling system, and curtain wall replacement
- Renovation of interior spaces and repair of roadway and sidewalk structures
- A new 1,500-space garage

Implementation of this alternative would not meet the need to efficiently utilize the existing Terminal A envelope due to the need for remote locations for hardstand positions, a lack of flexibility for aircraft operations due to dead-end taxiways, and a high degree of operations interruption due to the complex construction phasing that would take place in and around an operating facility (e.g., it would require working around the existing AirTrain system).

Landside access roads and curbfronts at the existing Terminal A would retain the existing poor roadway geometry, inadequate curbfront lengths and vertical clearance, and lack of efficient vehicle separation. This alternative would not address these problems.

Implementation of this alternative would result in minimal improvements to passenger levels of service and passenger processing and security flexibility, as well as a limited ability to accommodate further passenger and operations growth. Implementation of this alternative would also be prohibitive due to its high cost.

For the reasons stated above, the restoration of existing Terminal A was eliminated from further review.

3.4 Alternatives Selected for Further Evaluation in this EA

Only the Proposed Action and the No-Build/No-Action Alternative are further evaluated in this EA.

Proposed Action

The Proposed Action, with a Build Year of 2022, consists of building a new 33-gate Terminal A. No decisions with regard to the existing Terminal A headhouse have been made. The proposed Terminal A, featuring a sustainable design, would have a three-concourse layout with a central headhouse arranged in a “T” shape. The terminal’s airside features would be reconfigured. This would include relocating hardstands that would be displaced by construction and installing a new stormwater collection system with the capability of isolating deicing fluids for collection and disposal. The wastewater from the project area would be collected by a subsurface sanitary sewer system consisting of gravity pipes, force mains and lift stations that would enter PA Utility Building 42 and then be discharged into the City of Newark sewer system. A hydrant fueling system for the new terminal would be supplied from the existing subsurface hydrant fueling lines located under Wiley Post Road. These lines originate from the storage tanks located in the EWR fuel farm located just south of the project area. A 2,300-space parking garage and 321-

space surface lot would also be constructed and access/frontage roads would be reconfigured and rebuilt.

The Proposed Action would meet the stated purpose and need to replace a deteriorated and outdated terminal, provide an efficient and modern Terminal A, accommodate existing and future aviation travel demand, enhance airfield capacity and reconfigure operations, and enhance landside access to the terminal.

No-Build/No-Action Alternative

Under the No-Build/No-Action Alternative, Terminal A would remain unchanged, but would still experience the same increased forecast demand as under the Proposed Action. The current level of congestion would worsen as demand increases per forecast.[25] Terminal A's deteriorated infrastructure would remain, as would existing safety and security deficiencies. Consequently, the needs of the Proposed Action, as discussed in **Section 2**, *Purpose and Need*, would not be met.

3.5 Summary of Environmental Consequences

A summary comparison of impacts between the Proposed Action and the No-Action Alternative is provided in **Table 3-3**. The comparison of environmental impacts summarized in the table addresses material differences between the two in all impact categories. These environmental impacts are described in detail in **Section 5**, *Environmental Consequences*.

[25] *Long-Range Forecast for Port Authority Airports* (April 2012).

Table 3-3 Summary of Environmental Consequences

Environmental Impact Category	Level of Impact*	
	No-Build/ No-Action	**Proposed Action**
Noise • Noise sensitive sites exposed to a noise increase of at least DNL 1.5 dB	None	No change in aircraft or traffic noise; temporary increase in construction noise in compliance with local noise ordinances
Compatible Land Use • Changes in off-airport land use or zoning	None	None
Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks	None	None
Secondary (Induced) Impacts	None	None
Air Quality • Peak construction year emissions of ozone precursors (VOCs and NOx) and $PM_{2.5}$	None	VOC 0.6 tons/year NOx 8.8 tons/year $PM_{2.5}$ 0.3 tons/year
Water Quality • Changes in the quality or quantity or surface or groundwater resources • Contamination of a sole source aquifer or its recharge area	None	Temporary impacts to surface water quality during construction in compliance with NJPDES permit requirements; no impacts to groundwater resources.
DOT Sections 4(f) and 6(f) • Physical or constructive use of a Section 4(f) or 6(f) property	None	None
Historic Architectural/Archeological Properties • Number of resources with the APE	None	None
Fish, Wildlife, and Plants • Presence of federal- or state-listed species or critical habitat	None	None
Wetlands/State Open Waters • Impact to federal or state regulated wetlands	None	Potential 1-acre impact to State Open Waters
Floodplains • Encroachment upon 100-year floodplain	None	Loss of 0.7 acres of effective floodplain storage volume due to the placement of roadway embankment material within the 100-year floodplain

Environmental Impact Category	Level of Impact*	
	No-Build/ No-Action	**Proposed Action**
Coastal Resources • Development within a designated Coastal Zone Management Area	None	None
Wild and Scenic Rivers • River segments listed in the Wild and Scenic River System	None	None
Farmland • Conversion of farmland protected by the Farmland Protection Policy Act to nonagricultural use	None	None
Energy Supply, Natural Resources and Sustainable Design • Increase in energy or natural resource consumption	None	Yes, due to increase in building size
Light Emissions and Visual Impacts • When light emissions create annoyance to interfere with normal activity • Visual effects contrast with existing environments to the point where agencies state it is objectionable	None	No appreciable difference within broader context of airport operating conditions
Hazardous Materials, Pollution Prevention and Solid Waste • Use of land that may contain hazardous materials or generation of solid waste	None	Any contaminated media would be removed or remediated prior to construction, resulting in a beneficial impact
Construction Impacts • Air quality, noise, water quality, solid waste generation, and roadway use	None	Temporary increases in air, noise and water pollution; solid waste generation and off-peak traffic slowing and lane closures
Cumulative Impacts • Additive effects to other past, present or reasonably foreseeable projects	None	Temporary construction impacts

**Level of impact assessment based on FAA Order 5050.4B, Table 7-2 and 1050.1F Desk Reference (July 2015).*
Source: AECOM, 2016.

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4 Affected Environment

4 Affected Environment

Federal Aviation Administration Order 5050.4B, (*National Environmental Policy Act (NEPA) Implementing Instructions for Airport Projects*), states that the affected environment section of an EA should succinctly describe only those environmental resources that the Proposed Action and its reasonable alternatives, are likely to affect. The amount of information described on a potentially affected resource should be based on the extent of the expected impact and be commensurate with the impact's importance.

The following describes the area around the airport, as well as the on-airport setting for the Proposed Action. This is followed by discussions of the resources that may potentially be impacted: air quality, wetlands, water quality, and hazardous materials. In accordance with Order 5050.4B, the other resource categories are not discussed in this section due to the lack of presence of the resource in the Project Area or the absence of any expected impact to the resource. Section 5, *Environmental Consequences* includes a discussion about all of the resource categories, whether there are impacts to the category or not.

4.1 Environmental Setting

The Port Authority's airport system consists of five commercial service airports and one general aviation (GA) airport. Three of the commercial service airports, John F. Kennedy International (JFK), LaGuardia (LGA), and Stewart International (SWF) are located in New York State, while the remaining two, Newark Liberty International (EWR), the focus of this EA; and Atlantic City International (ACY), as well as the GA airport, Teterboro (TEB), are located in New Jersey. There are three airline passenger terminals at EWR. Terminal C is served by one airline, United, while Terminals A and B have multiple airlines. Figure 1-1 in Section 1 shows the location of the airport in its surroundings while Figure 1-2 depicts the airport's existing terminal layout.

The Terminal A apron consists of an approximately 317,520 square yard area delineated by Taxiway "A" and the Amelia and Lindy remote aircraft parking areas to the south and Taxiway "RC" to the northeast. The overall Terminal A apron includes four distinct areas exclusive of taxilanes.

The Concourse A1 apron encompasses an area of 49,000 square yards and provides nine marked aircraft parking positions. The largest aircraft it can accommodate is a Boeing 747 at Gates 15 and 16. Due to the lack of space between the passenger boarding bridge that serves Gate 10 and the corridor linking Terminal A to Concourse A1, the largest aircraft that can be accommodated at Gate 10 is a Boeing 757. The largest aircraft parking positions can accommodate up to a Boeing 767-300 type aircraft. The Concourse A2 apron provides an overall area of 46,620 square yards for the parking of 9 aircraft and staging of ground support equipment (GSE). This apron is marked to accommodate 10 parked aircraft, including one B767-300, five B757, two B737 and two A320 type aircraft. The 57,220 square yard Concourse A3 apron provides for the parking of 10 aircraft, but is larger and thus can accommodate larger aircraft. Seven Boeing 767s, two Boeing 757s, and one MD 80 type aircraft can be accommodated on the Concourse A3 apron. In addition to the aircraft parking areas described above, the remaining Terminal A apron space includes all areas for aircraft and vehicle movements around Concourses A1, A2, and A3.

Adjacent Land Use

The airport is encircled by major highways, commercial and light manufacturing facilities and the Port Newark/Elizabeth Marine Terminal complex. Commercial and light manufacturing dominate the land uses of the area, generally surrounding the airport. Industrial and commercial uses exist to the west of U.S. Routes 1&9, including a number of hotels, parking facilities, car rental facilities, and an Anheuser Busch brewery. A medium density residential area is located between North Avenue East and McClellan Street southwest of the airport. Land use is discussed in detail in Section 5.2, *Compatible Land Use*.

Surface Transportation

The airport is surrounded by a well-developed surface transportation system, which includes the Interstate Highway System, regional highways, major arterial roadways, and freight and passenger railroads.

The airport is located west of the New Jersey Turnpike and is accessible from Interchanges 13A and 14. Direct access to and from the airport is also provided by U.S. Routes 1&9 and Route I-78. Although the Turnpike primarily serves regional traffic passing through New Jersey, it also intersects with Route I-278 connecting to Staten Island and Brooklyn via the Goethals Bridge and Route I-495, which connects to Manhattan via the Lincoln Tunnel. U.S. Routes 1&9 primarily serve traffic within New Jersey while Route I-78 serves east-west traffic in New Jersey as well as Manhattan via the Holland Tunnel.

New Jersey Transit and Amtrak provide rail service to the airport at the Newark Liberty International Airport Station situated on Amtrak's Northeast Corridor. The AirTrain connects the station to the airport's terminals, rental car facilities, hotel shuttles and central parking lots. There is no local access to the station from the local area either by foot or by car.

4.2 Resources Potentially Affected

4.2.1 Air Quality

The US Environmental Protection Agency (USEPA), under the authority of the 1970 Clean Air Act (CAA) as amended in 1977 and 1990, has established primary and secondary National Ambient Air Quality Standards (NAAQS) for six contaminants, referred to as criteria pollutants (40 C.F.R. § 50) to protect public health and welfare. These criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter 10 and 2.5 microns in size (PM_{10} and $PM_{2.5}$), lead (Pb), and sulfur dioxide (SO_2).

Areas where ambient concentrations of a criteria pollutant are below the corresponding NAAQS are designated as being in "attainment" for this pollutant. Areas where a criteria pollutant level exceeds the NAAQS are designated as being in "nonattainment." O_3 nonattainment areas are categorized as marginal, moderate, serious, severe, or extreme. CO and PM_{10} nonattainment areas are categorized as moderate or serious. The Proposed Action would take place in Elizabeth and Newark, New Jersey, an area designated as:

- A moderate nonattainment area for O_3,
- A maintenance area for $PM_{2.5}$ and CO, and
- An attainment area for all other criteria pollutants.

The New Jersey Department of Environmental Protection (NJDEP) collects air quality data in terms of ambient concentration levels at representative sites throughout the state. The most recent available data (for the year 2013) from nearby monitoring stations are used to describe the existing baseline ambient air quality at the airport. All measurements are below the standards, with the exception of O_3 since the region (within which the airport is located) has been designated an 8-hour O_3 nonattainment area.

4.2.2 Water Resources

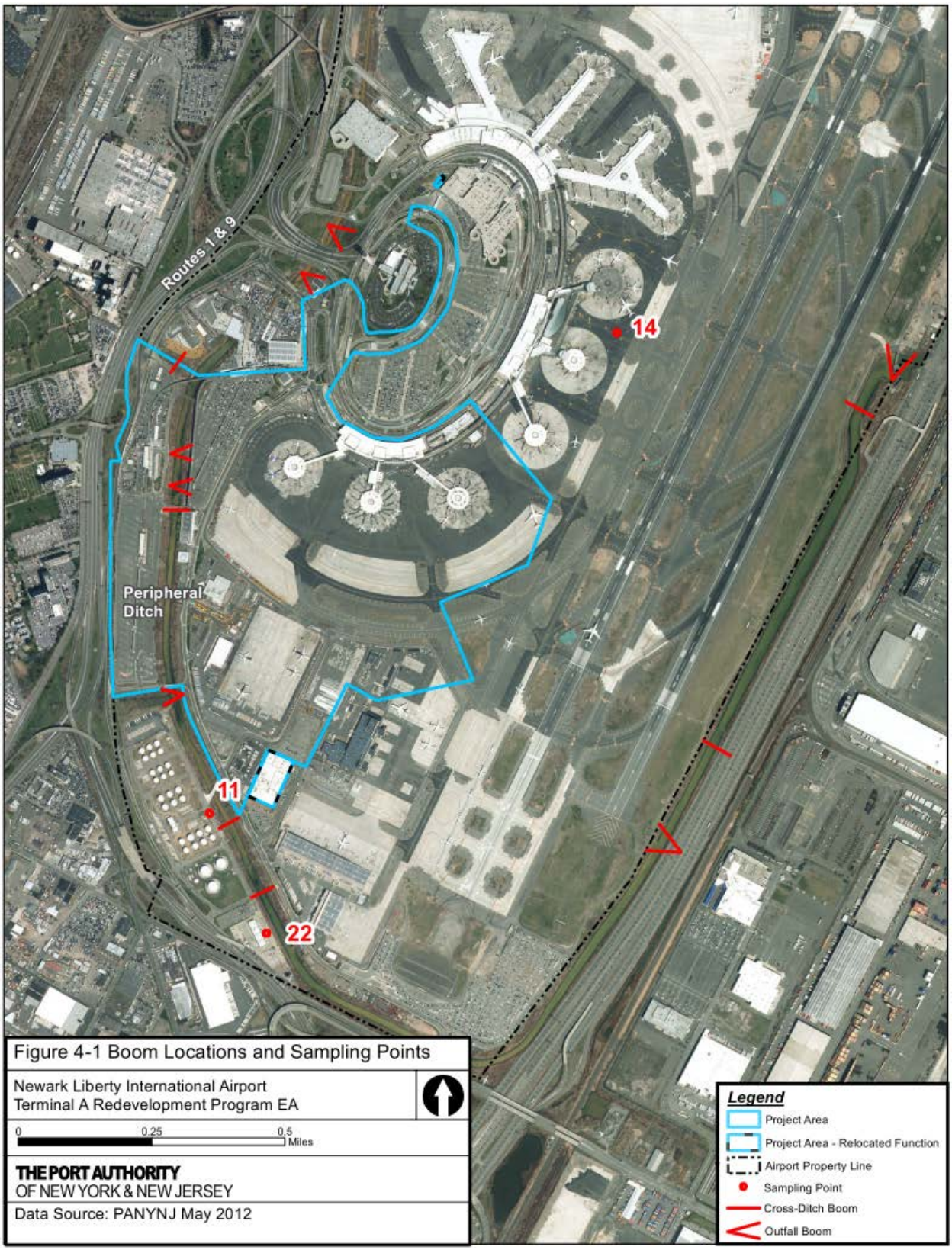
Airport development actions may temporarily or permanently affect surface waters and groundwater. Stormwater runoff from an airport has the potential to be impacted by airport operations such as aircraft and vehicle maintenance, fueling, washing, and seasonal aircraft deicing activities as well as snow storage. In addition, stormwater runoff from runway/taxiway pavement may also contain residuals from the buildup of tire rubber, oil, grease, fuel components, and pavement deicing fluids.

Surface Water

The only water body located near the Project Area is the Peripheral Ditch. In 1964, in anticipation of the redevelopment of the airport, Bound Creek, Woodruff's Creek, Adams Ditch, Dead Creek, and Peddie Canal, all of which flowed through the proposed terminal area, were relocated to the perimeter of the airport and renamed the Peripheral Ditch. The Peripheral Ditch extends approximately 4.5 miles near the approximate eastern, southern, and western perimeter of the airport, before emptying into the Elizabeth Channel through a tide gate operated by the City of Newark located just west of the New Jersey Turnpike. It varies in bottom width from 80 to 120 feet, is culverted for approximately 750 feet just west of the Central Terminal Area and is crossed by nine bridges. The ditch was originally designed to be 7 to 8 feet in depth with a hydraulic gradient of 0.00156 feet/feet. The NJDEP classifies the ditch as FW2-NT (freshwater, non-trout).

Stormwater Drainage

The Peripheral Ditch receives stormwater runoff from the airport and from highways off airport and land areas immediately north and west of the airport. Airport stormwater runoff is conveyed to the ditch via surface swales and a subsurface network of drains and pipes. Areas to the north and west of the airport also contribute runoff and combined sewer overflows via tributary swales, drains and pipes, as well as direct outfalls from storm sewer connections at Peddie and Waverly Streets in Newark and Alina Street and Adams Avenue in Elizabeth. The ditch drains an area of approximately 11.8 square miles in and around the airport. A series of outfall and cross-ditch booms are deployed at the airport to entrap debris and floating pollutants that find their way into the ditch (**Figure 4-1**).


Routes 1 & 9
Peripheral Ditch
14
11
22
Figure 4-1 Boom Locations and Sampling Points
Newark Liberty International Airport
Terminal A Redevelopment Program EA
0
0.25
0.5
Miles
THE PORT AUTHORITY
OF NEW YORK & NEW JERSEY
Data Source: PANYNJ May 2012
Legend
Project Area
Project Area - Relocated Function
Airport Property Line
Sampling Point
Cross-Ditch Boom
Outfall Boom

New Jersey Pollutant Discharge Elimination System (NJPDES) General Permit NJG0003824 lists 67 Discharge Serial Numbers, labeled DSN001 – DSN067, and 8 other discharges labeled R1 – R8 for the airport. The discharges to the Peripheral Ditch from the 72 outlets are regulated by NJDEP, under the NJPDES Permit Program. As required by the NJPDES permit, monthly water samples are collected from three locations on the airport (**Figure 4-1**). Sampling points are designated by NJDEP as being representative of industrial activity on the airport, primarily fueling operations and aircraft deicing. Sample location DSN011A is the last vessel of the oil/water separator prior to entering the separate storm sewer pipe down grade of the fuel farm. Sample location DSN014A is the manhole located next to Terminal B and east of Satellite Number B2, which collects runoff from the Terminal B apron, runways 4L/22R and 4R/22L, and taxiways. Sample location DSN022A contains runoff from Building 116 and is the ball valve of the effluent pipe prior to discharging to the separate storm sewer. At the present time, the Port Authority does not have comprehensive mapping for the 64 DSNs and R1 through R8.

Water quality data were obtained from NJPDES Permit Discharge Monitoring Reports (DMRs) for March 2016 (**Table 4-1**). The DMRs do not indicate water quality in the ditch, only the airport's discharge into the ditch from the outfalls requiring sampling under the NJPDES permit.

Table 4-1 Sampling Results, Newark Airport Outfalls – March 2016

Parameter	DSN011A	DSN014A	DSN022A	N.J.A.C. Standard
Chemical Oxygen Demand (COD)	42.6 mg/l (max 44 mg/l permitted)	190 mg/l (max 260 mg/l permitted)	36.6 mg/l (max 39 mg/l permitted)	N/A
pH	N/S	N/S	N/S	6.50 – 8.50
Total Suspended Solids	N/S	N/S	N/S	25 mg/l (max)
Nitrogen, Kieldahl Total	0.88 mg/l (max 0.89 mg/l permitted)	0.35 mg/l (max 0.41 mg/l permitted)	0.42 mg/l (max 0.64 mg/l permitted)	N/A
Petrol Hydrocarbons, Total Recoverable	.N/S	N/S	N/S	15 mg/L (max)
5 Day Biological Oxygen Demand (BOD-5)	7.1 mg/l (max 7.7 mg/l permitted)	123 mg/l (max 150 mg/l permitted)	10.6 mg/l (max 11 mg/l permitted)	N/A

Source: NJDEP, Surface Water Discharge Monitoring Report, Newark International Airport, March 2016.

The applicable standards are the Surface Water Quality Standards (SWQS), N.J.A.C. 7:9B-1.14(c). These standards list parameters for in-stream water quality criteria only. Currently there are no USEPA promulgated effluent limitations for stormwater discharges, so the SWQS are used to identify parameter benchmark concentrations. Biological and Chemical Oxygen Demand are the primary pollutants associated with the aircraft deicing/anti-icing agent propylene glycol. Since these pollutants are not listed parameters in the SWQS for the bodies of water surrounding the airport, and without USEPA promulgating effluent limits for the airport industry as a whole or for associated parameters, the permit requires stormwater monitoring and BMP development and implementation in order to minimize pollutants from entering the

surrounding waterways. As shown in Table 4-1, none of the samples collected in March 2016 exceeded the maximum limits authorized by the airport's NJPDES permit.

Groundwater

USEPA defines a sole source aquifer (SSA) as one where:[26]

- The aquifer supplies at least 50 percent of the drinking water for its service area
- There are no reasonably available alternative drinking water sources should the aquifer become contaminated

The airport is underlain by the Brunswick Aquifer, which is not a sole source aquifer. The primary pore spaces in consolidated rocks of the Brunswick Formation in this area are commonly so small that an insignificant quantity of water, if any, moves through them under natural hydraulic gradients or those established by pumping. However, a joint and fracture system that has developed in the consolidated rocks provides secondary porosity. It is largely in and through these openings that the storage and movement of groundwater takes place. The volume of all of these openings constitutes only a very small percentage of the total volume of the Brunswick Formation and consequently, their capacity to store and transmit water is limited. Groundwater quality in the vicinity of the Project Area is generally degraded due to the presence of fill material, soil contaminants from fill materials and various point and non-point sources of contamination. In addition, the presence of metals, petroleum-related compounds, and VOCs have been identified in localized, site-specific areas (see **Section 4.2.6**, *Hazardous Materials*).

Wastewater

The sanitary sewer system that collects much of the wastewater from the terminal buildings and several other airport buildings is centered in the basement level of Building 42 with duplex pumps in a dry-well configuration. Sanitary waste is gravity fed into a sewage tank within Building 42 where three 1,200 GPM pumps lift the sewage from the tank through a piping and valve system into a single 16-inch force main located across U.S. Routes 1&9 and then to the city main for eventual treatment and disposal.

Wastewater from the airport, as well as from the larger surrounding area, is treated at the Passaic Valley Sewerage Commission's (PVSC) nearby 550-million gallons a day wastewater treatment plant. In order to meet EPA requirements for water quality, the PVSC requires the airport to operate under a sewer use permit (SUP). The SUP establishes discharge limitations for particular parameters and specifies monitoring and sampling requirements that the airport must abide by. Sampling occurs at Outfall Location No. 14 at Building 42. Since 2005 the airport has been recognized annually by the PVSC for exceptional compliance.

Wetlands

In November 2011, a wetlands delineation was performed to determine the extent of jurisdictional wetlands and open waters in the Project Area and to identify and flag wetlands that may be impacted by the Proposed Action. An area within 150 feet of the Project Area limits was investigated. Vegetation, soils, and hydrology were considered in the characterization of wetlands. The wetland boundary flags were survey-located by a New Jersey licensed surveyor.

[26] https://www.epa.gov/dwssa/overview-drinking-water-sole-source-aquifer-program#What_Is_SSA

The majority of wetlands within the Project Area are located along the Peripheral Ditch and its tributaries, between the Avis car rental area/Building 42 and the Fuel Farm (see **Figure 4-2**). It consists of an open water ditch; one tributary along Carson Road with a wetland fringe of palustrine emergent wetlands with patches of palustrine scrub-shrub wetlands; and a second small tributary along Basilone Road that contains forested wetlands along its banks. There are no wetlands in the northern portion of the airport, in the location of relocated leaseholds.

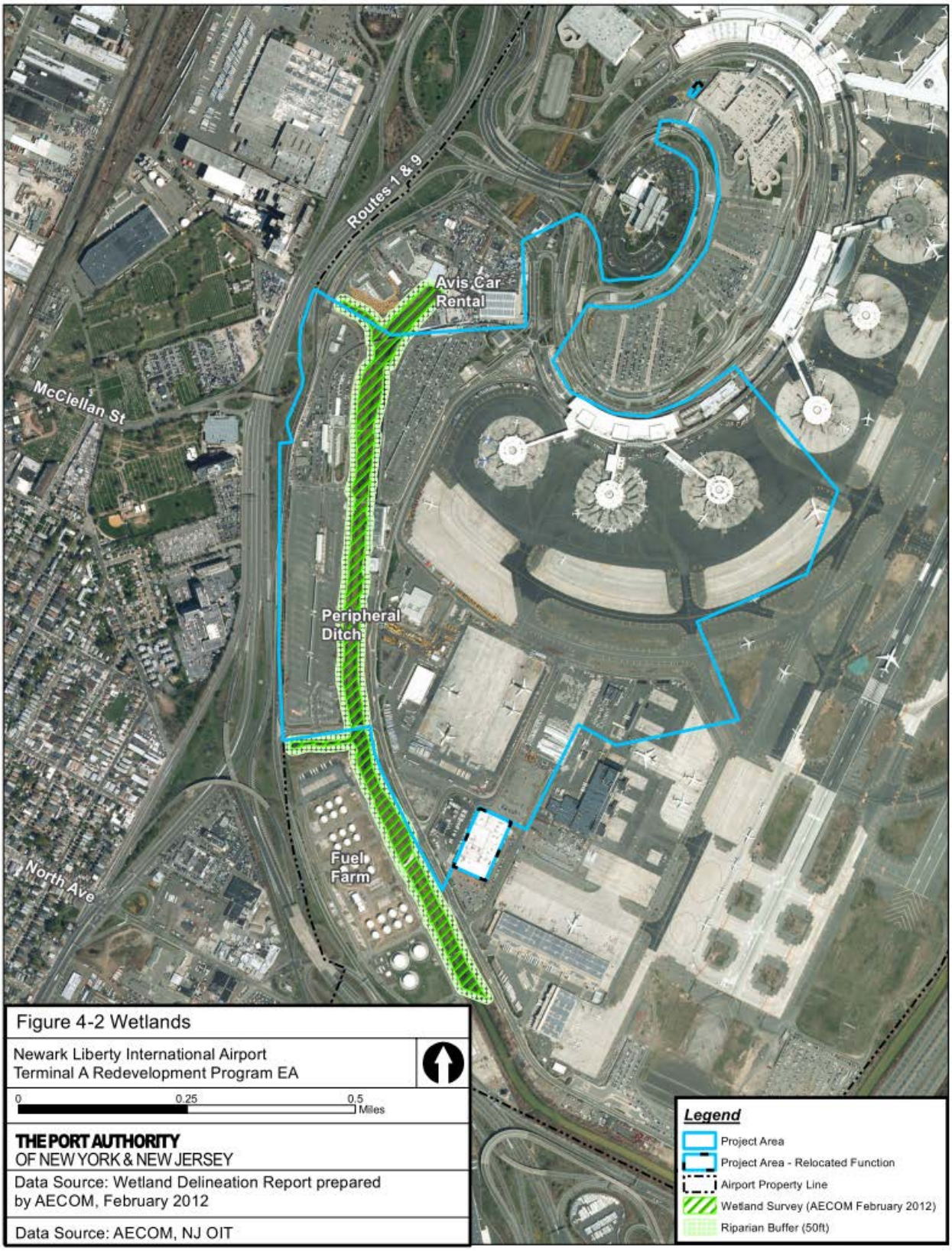
On March 16, 2012 an application for a *Letter of Interpretation (LOI) - Line Verification* was submitted to NJDEP and on May 23, 2012 a representative of NJDEP conducted a site inspection. In a letter dated September 25, 2012, NJDEP verified the wetland delineation as accurate and determined that the Peripheral Ditch and its tributaries are classified as State Open Water, with no resource value and no transition area (see Appendix D). The LOI is valid for at least five years and may be extended provided the information upon which the original letter was based remains valid. Requests for LOI extensions must be made in writing to NJDEP before the original letter has expired but no more than one year before the expiration date. Per N.J.A.C. 7:13-4.1, a riparian buffer of 50 feet is required around State Open Waters (Figure 4-2).

Floodplains

Floodplains are defined by Executive Order 11988, *Floodplain Management*, as "*the lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year*" (i.e., the base floodplain or area inundated by a 100-year flood).[27] The one-percent-annual-chance (100-year) flood has been adopted by the Federal Emergency Management Agency (FEMA) as the "base flood" for floodplain management purposes. United States Department of Transportation Order 5650.2 defines the values served by floodplains to include "natural moderation of floods, water quality maintenance, groundwater recharge, fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, and forestry."

Flood Insurance Rate Maps (FIRMs) are published by FEMA and are used by state and local governments for administering floodplain management programs, enforcing building codes, and litigating flooding losses in their communities. The floodplain information on the FIRM is based on historical data and hydrologic and hydraulic computations. FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, states that the FEMA maps are the primary

[27] E.O. 11988 was originally issued on May 24, 1977, and established a national policy requiring federal agencies to avoid, to the extent possible, the long and short term adverse impacts associated with the occupancy and modification of floodplains. On January 30, 2015, the President issued E.O. 13690 that amends E.O. 11988, and established the Federal Flood Risk Management Standard (FFRMS) and a process for public input prior to implementation of the FFRMS (E.O. 13690 at §1). However, in guidelines issued on October 8, 2015, federal agencies were directed not to apply the new requirements until after the agencies adopt new or revised regulations governing the proper implementation of E.O. 13690 and the FFRMS (E.O. 13690 at §3; *Guidelines for Implementing Executive Order 11988, Floodplain Management, and Executive Order 13690, Establishing a Federal Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*, October 8, 2015 ["Guidelines"]). The Guidelines state that agencies will continue to comply with the requirements of the 1977 version of E.O. 11988 until they update their regulations and procedures to incorporate the amendments from E.O. 13690. These regulations and procedures will describe an agency's schedule for applying any new requirements as well as how it will apply the new requirements (Id. at 5, 18). The new requirements of E.O. 11988 will not be applied retroactively (Id. at 18).


Routes 1 & 9
Avis Car Rental
McClellan St
Peripheral Ditch
Fuel Farm
North Ave
Figure 4-2 Wetlands
Newark Liberty International Airport
Terminal A Redevelopment Program EA
0
0.25
0.5
Miles
THE PORT AUTHORITY
OF NEW YORK & NEW JERSEY
Data Source: Wetland Delineation Report prepared by AECOM, February 2012
Data Source: AECOM, NJ OIT
Legend
Project Area
Project Area - Relocated Function
Airport Property Line
Wetland Survey (AECOM February 2012)
Riparian Buffer (50ft)

reference for determining the extent of the base floodplain. Preliminary FIRMs were developed by FEMA for certain communities in New York and New Jersey affected by Superstorm Sandy, including Newark Airport. The Preliminary FIRM (dated April 9, 2015) represents the best available data from FEMA. Zone AE is the flood insurance rate zone that corresponds to the 100-year floodplain where base flood elevations have been determined. At Newark Airport, the 100-year floodplain is controlled by the 100-year tidal elevation in Newark Bay. Shaded Zone X is an area of moderate risk and is described as an area of 500-year flood (0.2% annual chance), an area subject to 100-year flooding with average depths less than 1 foot, an area where the contributing drainage area is less than 1 square mile, or an area protected by levees from the base flood. The remaining area (unshaded Zone X) has minimal flood risk and is described as an area located outside the 0.2% annual chance floodplains.

As shown in **Figure 4-3**, a large portion of the Project Area is located in either an area of minimal flood risk or within the 0.2% annual chance flood. A smaller area, primarily in and adjacent to the Peripheral Ditch, is located in Zone AE (1% annual chance flood). FEMA defines a floodway as the portion of the 100-year floodplain within a channel or stream, plus any adjacent floodplain areas that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. There are no defined FEMA floodway boundaries within the Project Area.

4.2.3 Biological Resources

The airport and the Study Area are a highly developed and disturbed landscape that is primarily paved as runways, taxiways, parking areas or airport facilities and other buildings. The area within five miles of the airport consists of dense industrial, urban, and suburban environments.

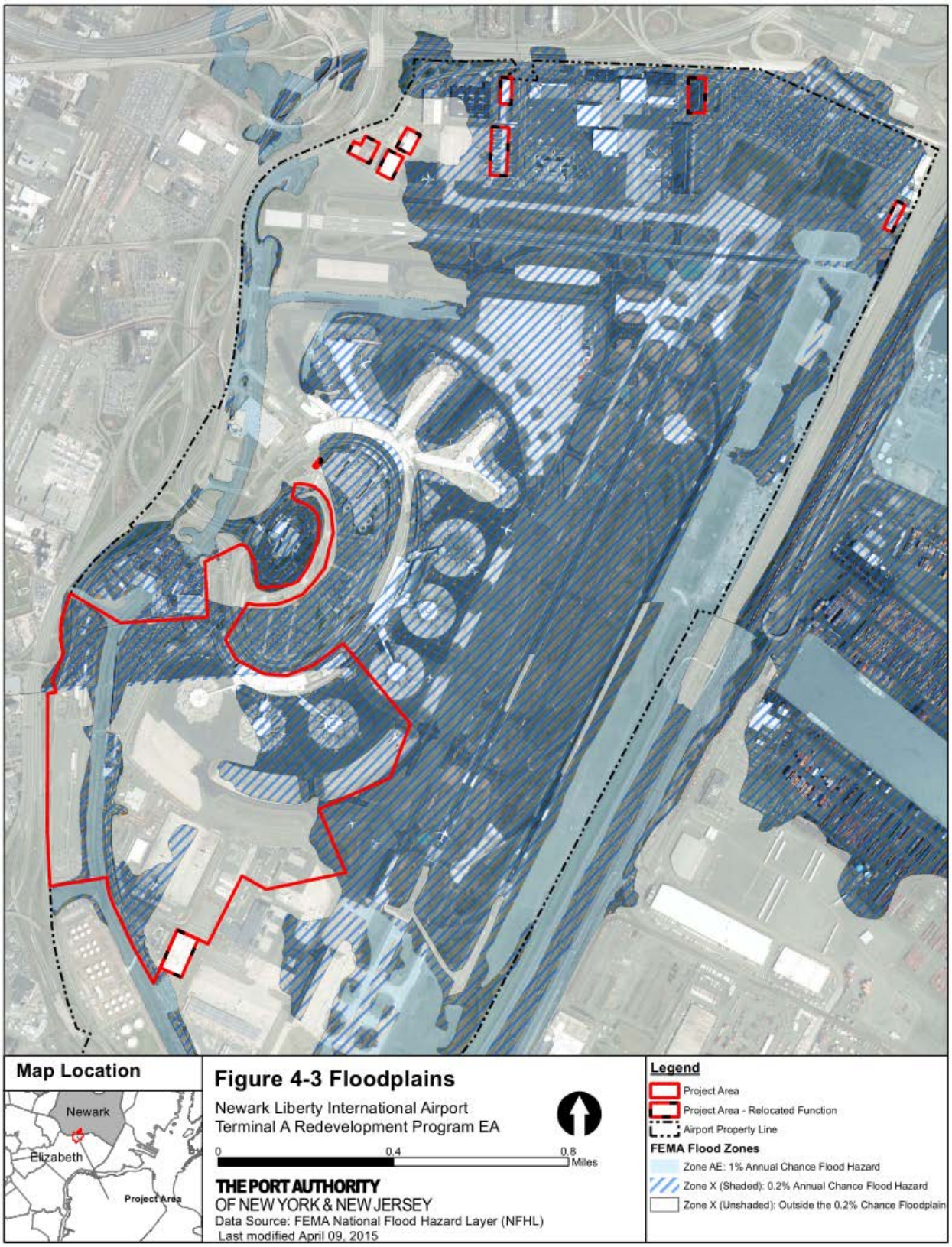
Vegetation

From the perspective of landscape ecology, the entire airport has suffered significant habitat degradation and disruption. In general, the land at and surrounding the airport is highly urbanized, with significant amounts of transportation-related infrastructure improvements, as well as commercial, industrial, retail, and residential land uses. The existing undeveloped lands have been reduced to small, isolated patches, which do not resemble the native landscape.

Mowed lawn, paved surfaces, and buildings occupy most of the Project Area. The major exception to these land uses is the Peripheral Ditch. The airport property has been disturbed to varying extents and contains little intact native vegetation.

The Peripheral Ditch extends around much of the perimeter of the airport property, along its western, southern, and eastern boundaries. The ditch was constructed as a “replacement in kind” of existing drainage on airport property and receives stormwater runoff from the airport, and from the highways and land areas immediately north, south and west of the airport. It ranges from 80 to 120 feet in width and was originally designed to be 7 to 8 feet in depth with a hydraulic gradient of 0.00156 feet/feet. Its flow to the Elizabeth Channel and Newark Bay estuary is controlled by a tide gate operated by the City of Newark, located just west of the New Jersey Turnpike.

The area located along the Peripheral Ditch is dominated by typical hydrophytic vegetation such as common reed (*Phragmites australis*) and late-flowering thoroughwort (*Eupatorium serotinum*). The palustrine scrub-shrub wetlands contain primarily groundsel-bush (*Baccharis halmifolia*), common elderberry (*Sambucus canadensis*), and northern bayberry (*Myrica pensylvanica*). The small forested wetlands along the Peripheral Ditch tributary at Basilone


Map Location
Newark
Elizabeth
Project Area
Figure 4-3 Floodplains
Newark Liberty International Airport
Terminal A Redevelopment Program EA
0
0.4
0.8
Miles
THE PORT AUTHORITY
OF NEW YORK & NEW JERSEY
Data Source: FEMA National Flood Hazard Layer (NFHL)
Last modified April 09, 2015
Legend
Project Area
Project Area - Relocated Function
Airport Property Line
FEMA Flood Zones
Zone AE: 1% Annual Chance Flood Hazard
Zone X (Shaded): 0.2% Annual Chance Flood Hazard
Zone X (Unshaded): Outside the 0.2% Chance Floodplain

Road consists of red maple (*Acer rubrum*), American elm (*Ulmus Americana*), sweet gum (*Liquidambar styraciflua*), and silver maple (*Acer saccharinum*). See Section 4.2.3 for additional information about on-site wetlands.

Most of the upland vegetative communities in the Project Area consist of landscaped mowed turf; regularly mowed grasslands in between runways and taxiways. There are some areas of upland species paralleling the Peripheral Ditch, consisting of sporadic upland trees and shrubs planted and maintained to discourage wildlife. A small forested area on the far eastern side of the property is located outside of the Project Area. Vegetation observed within the Project Area, along with the species' wetland indicator status (USFWS, 1999), is contained in **Appendix E**.

Figure 4-4 presents known biotic resources located within the Project Area. The data from NJDEP's Landscape Project (version 3.1), combines documented wildlife locations with NJDEP aerial photo-based land use/land cover data to delineate imperiled and special concern species habitat within New Jersey. The information is intended to be used for planning purposes before any action such as proposed development occurs. Grassland habitat is primarily located on the eastern portion of the airport property, in areas between the runways and taxiways and provides habitat for State endangered Least Tern and Upland Sandpiper. An area of wetland habitat adjacent to and including the Peripheral Ditch provides habitat for several State threatened bird species. As previously described, the Peripheral Ditch intersects the Project Area and wetlands have been delineated along its banks.

Wildlife

The commercial and airport-related development in the Study Area provides low quality habitat for wildlife; however, various species of birds and small mammals have been identified. The Peripheral Ditch is primarily surrounded by common reed, which provides cover for small mammals and songbirds. In addition, the Peripheral Ditch holds water year round, and provides habitat for various waterfowl species. During a site visit on December 8, 2011, the following wildlife species were identified: pigeons (*Columba livia*), Canada geese (*Branta Canadensis)*, marsh hawk (*Circus cyaneus*), snow goose (*Chen caerulescens*), mallards (*Anas platyrhynchos)*, common yellowthroat (*Geothiypis trichas)*, finches (*Fringilla coelebs*), downy woodpecker (*Picoides pubescens)*, Eastern cottontail (*Sylvilagus floridanus*), European starling (*Sturnus vulgaris*), and seagulls (*Larus sp., Leucophaeus sp.*). According to the *Wildlife Hazard Assessment for Newark Liberty International Airport (January 2010 – December 2010)*, broods of Canada geese and gadwall (*Anas strepera*) were observed along the Peripheral Ditch. A pair of red-tailed hawks (*Buteo jamaicensis*) was reported to be nesting near the Air Traffic Control tower. A large number of Eastern cottontail rabbits are frequently preyed upon by red-tailed hawks around the Administration Building (Building 1). Killdeer (*Charadrius vociferus*) nesting was observed in gravel areas between the asphalt service roads and short grass areas. Many small mammals have been observed on all parts of the airport operations area, including house mice (*Mus musculus*), meadow voles (*Microtus pennsylvanicus*), Norway rats (*Rattus norvegicus*), and muskrats (*Ondatra zibethicus*). Double-crested cormorants (*Phalacrocorax auritus*) and hooded mergansers (*Lophodytes cucullatus*) have been observed hunting for fish in the Peripheral Ditch along Patrol Road.


Peripheral Ditch
Routes 1 & 9
Legend
Terminal A Redevelopment Project Area
Project Area - Relocated Function
Airport Property Line
Species-Based Habitat - Piedmont Plains
RANK
Rank 1 - Habitat specific requirements
Rank 2 - Special Concern
Rank 3 - State Threatened
Rank 4 - State Endangered
Rank 5 - Federal Listed
Figure 4-4 Biotic Resources
Newark Liberty International Airport
Terminal A Redevelopment Program EA
0
0.5
1
Miles
THE PORT AUTHORITY
OF NEW YORK & NEW JERSEY
Data Source: NJ DEP

Threatened and Endangered Species

Based on correspondence from the NJDEP Natural Heritage Program (NHP, dated May 16, 2016), there are two state-endangered bird species, two state-threatened bird species, one state-threatened butterfly species and three bird species of special concern that have been identified in the vicinity of the Study Area (see **Table 4-2**). There are no records of any rare plants or ecological communities located on or within ¼ mile of the site.

There are no known federally listed species of flora or fauna known to exist in the vicinity of the Study Area. The *Official Species List* from the U.S. Fish and Wildlife Service (USFWS) New Jersey Ecological Services Field Office was consulted to determine if any federally listed species occur within the Study Area (see letter dated May 10, 2016 in Appendix D). Since there are no listed species identified for the vicinity of the Proposed Action and no critical habitats within the project area, no further consultation with the USFWS is required (see **Appendix D**). However, as species lists are only valid under the Endangered Species Act for a 90-day period, the list must be periodically checked throughout the Proposed Action's planning period to ensure that there are no new species listings.

Correspondence from the National Marine Fisheries Service (NMFS) indicated that there are no federally threatened, endangered or candidate species under their jurisdiction known to occur in the Study Area (**Appendix D**).[28] Although the Study Area is located in an upstream portion of a tidally influenced water body within the greater Newark Bay Complex, the nature of the Proposed Action indicates that impacts to species of concern and local habitat quality are expected to be minimal. In addition, adverse effects to designated essential fish habitat within the mixing zone of the Hudson-Raritan Estuary, including Newark Bay, are expected to be minimal.

Per FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, "The effects on fish, wildlife, and plants include the destruction or alteration of habitat and the disturbance or elimination of fish, wildlife, or plant populations." Under Section 7 of the Endangered Species Act, if the FAA determines that an action may affect an endangered or threatened species, the FAA must initiate consultation with USFWS (for terrestrial and freshwater species) and NMFS (for marine and anadromous species) as appropriate, to ensure that the action is not likely to jeopardize the continued existence of any federally-listed threatened or endangered species or result in the destruction or adverse modification of critical habitat.

The Peripheral Ditch does not provide habitat for any federally threatened, endangered, or candidate species under the jurisdiction of the NMFS. Neither the Proposed Action nor the No-Build/No-Action Alternative would have any adverse impact to any fish species of concern or designated essential fish habitat within the mixing zone of the Hudson-Raritan Estuary, including Newark Bay.

Per the USFWS, there are no known federally listed species of flora or fauna known to exist in the vicinity of the Study Area.

[28] Original response dated February 16, 2012 was confirmed in an email dated May 25,2016.

Table 4-2 NHP Listed Species Located Within Study Area

Common Name	Scientific Name	State Status	Global Status	State Rank
Black-crowned night-heron	*Nycticorax nycticorax*	T	G5	S2B,S3N
Cattle egret	*Bubulcus ibis*	T	G5	S3B,S3N
Glossy ibis	*Plegadis falcinellus*	SC/S	G5	S3B,S4N
Least tern	*Sterna antillarum*	E	G4	S1B,S1N
Little blue heron	*Egretta caerulea*	SC/SC	G5	S3B,S3N
Savannah sparrow	*Passerculus sandwichensis*	T	G6	S2B, S4N
Snowy egret	*Egretta thula*	SC/S	G5	S3B,S4N
Upland sandpiper	*Bartramia longicauda*	E	G5	S1B,S1N
Checkered white butterfly	*Pontia protodice*	T	G4	S3B,S4N

Source: USFWS, NJDEP Natural Heritage Database, 2016.

Notes:

State Status for species separated by a slash (/) indicates a dual status. First status refers to the state breeding population and the second status refers to the migratory or winter population.

E – Endangered
T – Threatened
SC – Special Concern
S – Stable

Global Status
G4 – Apparently secure globally; although it may be quite rare in parts of its range, especially at the periphery.

G5 – Demonstrably secure globally; although it may be quite rare in parts of its range, especially at the periphery.

State Rank

B – Breeding population within the state.

N – Non-breeding population within the state.

S1 – Critically imperiled in New Jersey because of extreme rarity. Elements so ranked are often restricted to very specialized conditions or habitats and/or restricted to an extremely small geographical area of the state. Also included are elements which were formerly more abundant, but because of habitat destruction or some other critical factor of its biology, they have been demonstrably reduced in abundance.

S2 – Imperiled in New Jersey because of rarity. Historically many of these elements may have been more frequent but are now known from very few extant occurrences, primarily because of habitat destruction. Diligent searching may yield additional occurrences.

S3 – Rare in state. Includes elements which are widely distributed in the state but with small populations/acreage or elements with restricted distribution, but locally abundant. Not yet imperiled in state but may soon be if current trends continue. Searching often yields additional occurrences.

S4 – Apparently secure in state, with many occurrences.

NJDEP's iMap habitat mapping identified emergent wetlands and grasslands within the Project Area that may be areas critical to dependent species. These areas, adjacent to the Peripheral Ditch, are a small percentage of the primarily paved Project Area. As described above, there are several State-listed bird species identified in the vicinity of the Project Area (see short description of species and common habitat below).

- **Cattle egret** (*Bubulus ibis;* State special concern) is a small white heron, mostly found in pastures and along roadsides. Typical habitat includes wet pastureland and marshes, freshwater and brackish habitat, dry fields, agricultural areas (especially irrigated ones), and garbage dumps. Cattle egrets nest in trees on islands, in lakes, swamps, along watercourses, in mangrove cays, and marshes.

- **Glossy ibis** (*Plegadis falcinellus;* State special concern) is a dark wading bird with a long, down-curved bill. Typical habitat includes marshes, swamps, lagoons, pond margins, lakes, flooded pastures; freshwater, brackish, and salt water. They usually nest with herons or other water birds, on the ground in marshes or in small trees or bushes such as *Baccharis*, *Iv*a, and *Myrica* near wateralong the U.S. Atlantic coast.

- **Little blue heron** (*Egretta caerulea;* State special concern) is a small heron of the southeastern United States. The little blue heron breeds in various freshwater and estuarine habitats.

- **Snowy egret** (*Egretta thula;* State special concern) is a small, active white heron that is found in small ponds, as well as along the ocean shore.

- **Black-crowned night heron** (*Nycticorax nycticorax;* State-threatened) is a medium-sized wading bird with a short neck, short legs and a stout, straight, pointed bill. Typical habitat includes marshes, swamps, wooded streams, mangroves, shores of lakes, ponds, lagoons; salt water, brackish, and freshwater areas. Eggs are laid in a platform nest in groves of trees near coastal marshes or on marine islands, swamps, marsh vegetation, clumps of grass on dry ground, orchards, and in many other habitats.

- **Least tern** (*Sterna antillarum;* State-endangered) is the smallest North American tern and is commonly found nesting on sandy beaches along the southern coasts of the United States and along the major river systems. Breeding typically occurs on seacoasts, beaches, bays, estuaries, lagoons, lakes, and rivers (AOU 1983). The least tern also utilizes sandy beaches, mudflats, and salt-pond dikes (Stiles and Skutch 1989). Nests are commonly found in shallow depressions on level ground on sandy or gravelly beaches and banks of rivers or lakes, typically in areas with sparse or no vegetation. Good nesting areas tend to be well beyond the high tide mark, have shell particles, stones, and/or debris for egg camouflage (Burger and Gochfeld 1990), are out of the way of off-road vehicles and public recreation areas, not subject to unusual predation pressure, and are adjacent to plentiful sources of small fishes. Interior populations nest mainly on riverine sandbars or salt flats that become exposed during periods of low water (Hardy 1957). According to the airport's recent *Wildlife Hazard Assessment*, Least terns have a history of nesting at the airport and did so in 2010. This colony chose an area that originally was asphalt, but was excavated in the fall of 2009 to meet requirements for permeable grass surface area on the AOA. However, into the spring of 2010 colonization by the terns continued.

- **Upland sandpiper** (*Bartramia longicauda;* State-endangered) is a shorebird of grasslands and inhabits native prairie and other open grassy areas in North America. During the recent

Wildlife Hazard Assessment, standardized surveys were conducted at routine locations around the airfield three to four times per month. Upland sandpipers were rarely observed during these surveys. These observations were made only during migratory periods; therefore, it can be deduced that residential or breeding populations of Upland sandpipers do not exist at the airport at this time.

- **White checkered butterfly** (*Pontia protodice;* State-threatened) is found in a wide variety of sites including dry weedy areas, vacant lots, fields, pastures, sandy areas, railroad beds and roads. In the past, white-checkered butterflies have been observed at the airport along the Peripheral Ditch near the Turnpike and portions of the airfield have been classified as suitable habitat for the butterflies. The Proposed Action will be conducted outside of the areas that have been designated as white-checkered butterfly habitat and should have no effect on the butterfly populations.

4.2.4 Hazardous Materials, Solid Waste and Pollution Prevention

A discussion of hazardous materials at the airport is contained in **Appendix B** and is summarized in this section. The locations discussed below are depicted in Figure 1-3. FAA Order 1050.1F defines a hazardous substance as any element, compound, mixture, solution, or substance defined as a hazardous substance under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and listed in 40 C.F.R. § 302. If released into the environment, hazardous substances may pose substantial harm to human health or the environment. In addition, hazardous waste is defined by Order 1050.1F as waste that is listed in, or meets the characteristics described by the Resource Conservation and Recovery Act of 1990 (RCRA), 40 C.F.R. § 261, or is flammable, corrosive, explosive in reaction, or toxic to humans and animal life.

Hazardous wastes include cleaning solvents, waste oil and Freon, contaminated oil booms and used tyvek suits, gasoline, gasoline-soaked rags, and polychlorinated biphenyls (PCBs). Other wastes of concern include paint-related waste, foreign object debris, antifreeze, sand blast residue, household hazardous waste (small quantities of various hazardous materials that cannot be combined with other materials for disposal), and ethylene glycol.

Aircraft operations require the storage and use of fuel and other hazardous materials. Although hazardous wastes are not disposed of on the airport, the handling of hazardous materials is common. Hazardous materials are stored in aboveground storage tanks (ASTs), underground storage tanks (USTs), warehouses, and other buildings located on airport property. The ground support for aircraft operations can create the potential for accidental releases of these substances, resulting in the potential for adverse environmental impacts. This section presents a summary of the known use, storage, and distribution of hazardous materials and waste sites on the airport.

General categories of hazardous materials that can be encountered on the airport include fill materials; known releases of petroleum products; chemical waste generation; bulk storage; container storage; and buildings containing lead, asbestos, and PCB-containing materials.

Fill Materials

Prior to airport development, the area consisted of an extensive tidal marsh. Some parts of the airport property, particularly in the southern and central areas, were used for municipal waste disposal. These activities originated in the mid-1920s and continued into the 1970's. Historic fill is widespread in New Jersey and often contains elevated concentrations of polycyclic aromatic

hydrocarbons (PAHs), heavy metals, and petroleum constituents in excess of NJDEP reporting thresholds. Contamination associated with historic fill at the airport is generally at low concentrations and is relatively uniform and not related to any identifiable release or spill.

Releases of Petroleum Products or Hazardous Materials

There have been five incidents involving the release of petroleum products or hazardous materials within or adjacent to the Project Area (**Appendix B**). These areas have been remediated or have remediation programs in place or under development.

- Terminals A & B Hydrant Pits – Discharges from historic jet fuel handling operations discovered in the subsurface area of satellites A1 and A2 in 1980. Monitoring wells and a subsurface remediation system were installed, ultimately removed 36,844 gallons of light non-aqueous phase liquid (LNAPL) and treating 1.2 million gallons of groundwater. Continued monitoring is recommended.
- Building 347 (FedEx Metroplex) – Groundwater was contaminated as a result of a leaking UST. The site was transferred to NJDEP's Licensed Site Remediation Professional (LSRP) program on March 12, 2102 for further action. As of December 2016, FedEx continues to remediate this location under the regulations of the NJDEP Classification Exception Area (CEA) program. This site is located adjacent to, but outside of, the Terminal A project area.
- Building 331 (Chelsea Flight Kitchen) – Per a meeting with United Airlines in December 2016, United indicated they have remediated completely soil and groundwater contamination at Building 331 and is awaiting approval/concurrence from their Licensed Site Remediation Professional (LSRP). During the course of remediation, however, historic fill (i.e. non-native material that was used in the past to raise the elevation of the airport) was identified at the site. NJDEP requires that the deed of the site be revised to reflect the presence of historic fill and United has proposed implementing this remedial action. Revision of the Deed, however, requires approval by the Authority. The Authority is currently in discussions with United Airlines to resolve this matter.
- Building 120 (Fuel Selection Station) – As of October 2016, the Authority obtained approval from their LSRP to excavate all contaminated soil and to treat contaminated groundwater encountered during excavation activities at the Building 120 site. These remedial actions have been incorporated into the three bridges contract and will occur in the last quarter of 2018.

Newark Liberty International Airport is not currently under any Administrative Consent Order or regulatory compliance action pertaining to hazardous materials.

Hazardous Waste Generation

USEPA classifies EWR as a Large Quantity Generator (LQG) of hazardous waste (EPA ID No. NJD 980648497), which indicates that it generates 1,000 kilograms or more of hazardous waste per month, or more than 1 kilogram per month of acutely hazardous waste. These wastes included organic fluids (paint, ink, lacquer or varnish, etc.), inorganic fluids (cleaners, solvents, etc.), and contaminated debris (waste rags, used tyvek suits, used absorbent pads and booms, etc.). These materials are stored in various locations throughout the airport and are disposed of at licensed facilities according to applicable regulations.

Bulk Storage Tanks

Bulk storage tanks in the Project Area are listed in **Appendix B** and summarized below. There are three existing underground storage tanks (USTs) located in the Project Area that hold gasoline and diesel fuel for ground service equipment. Two 6,000-gallon USTs (one diesel fuel and one gasoline) are located in Building 350. A 550-gallon gasoline UST is located in the existing Terminal A. There are 22 aboveground storage tanks (ASTs) located in the existing Terminal A and in Buildings 331, 342 and 350. These ASTs are of varying capacities and contain substances such as hydraulic fluid, transmission fluid, de-icing and anti-icing compounds, diesel fuel and used oil. As part of each building's demolition, all tanks would be closed and removed according to all applicable regulations.

Container Storage

Container storage in the Project Area is located in the existing Terminal A and Building 342 in the form of steel drums, bottles, batteries and pails (**Appendix B**).

Hazardous Building Materials

Terminal A, as well as other buildings located in the Project Area, may contain regulated materials that would require removal prior to demolition. Based on the age of the buildings, regulated materials may include the following:

- Asbestos
- Lead-based paint
- PCBs contained in caulk, fluorescent light ballasts and electrical transformers
- Mercury-containing fluorescent and other high-intensity light bulbs and thermostats
- Chlorofluorocarbons (CFCs) contained in refrigerants
- Radioactive materials contained in smoke detectors

A Hazardous Materials Survey of the Terminal A satellites and Building 331 was undertaken in early 2013 to identify the presence/absence of asbestos-containing materials, lead-based paint, PCBs, and other miscellaneous hazmat materials that could potentially be disturbed during any alteration and/or demolition of the structures. The assessment found quantities of these materials, which will be removed prior to demolition following all applicable regulations.

4.2.5 Traffic

Section 4.1, *Environmental Setting*, describes the existing transportation network in the vicinity of the airport. The CTA is accessed by internal roadways leading from the "Throat" and each terminal has separate curb fronts to provide passenger loading and unloading locations.

The Port Authority has developed a detailed airport-wide traffic model using a microscopic multi-modal traffic flow simulation model (VISSIM).[29] For the Proposed Action's traffic analysis, the VISSIM model was used to examine traffic conditions at various airport roadway facilities during three typical weekday peak hours: morning (AM), midday, and afternoon (PM). The analysis simulated traffic under baseline conditions (year 2010), projected future No-Build/No-Action conditions (for the years 2022 (future No-Build/No-Action) and 2027 (future No-Build/No-Action

[29] Port Authority of New York & New Jersey, EWR VISSIM Model, ARUP, 2012.

+ 5 years)), and projected future Build conditions (for the years 2022 (future Build) and 2027 (future Build + 5 years)). The detailed results are presented in Appendix F.

Roadway facilities throughout the airport were analyzed, including:

- Ramps and multi-lane frontage roads (14)
- Weaving sections (11)
- Frontages (12)
- Intersections (11)

The capacity and operation of a surface transportation network are constrained by the performance of its signalized intersections and the roadway links that comprise the network. The operational performance measure used for ramps, multi-lane roadways, weaving sections, and intersections is Level-of-Service (LOS). LOS is a letter-grade rating assigned to each facility based on its operational performance, with LOS A generally characterized by freely-flowing traffic, low delays, and little congestion, and LOS F characterized by long delays, building queues, over-capacity conditions, and considerable congestion. LOS for ramps, multi-lane roadways, and weaving sections is based on the density of traffic on each facility (in units of "vehicles per mile per lane"), whereas the LOS for intersections is based on the average delay (in units of "seconds per vehicle") experienced by motorists traveling through the intersection. Levels-of-service of A through D are considered acceptable for peak period traffic operations. LOS values E and F are considered unacceptable because of the associated severe congestion and long delays.

Ramps, Multi-Lane Roadways, and Weaving Sections

Based on the results of the existing conditions analysis, all ramps, multi-lane roadways, and weaving sections currently operate at LOS D or better, with the exception of the following:

- Ramp to Terminal C Arrivals – operates at LOS E during the weekday midday and PM peak hours.

- Weaving section on Express Roadway merge to Recirculation Road (near Terminal B frontages) – operates at LOS E during the weekday midday peak hour.

Intersections

All traffic movements at all study intersections currently operate at LOS D or better during all three weekday peak hours.

Curb Fronts and Frontage Roads

For curb fronts and terminal frontage roads, the operational performance measure used is Capacity Utilization (CU), which indicates the percentage of the available frontage that would be utilized by vehicles. A CU percentage greater than 100 percent indicates that demand on the frontage exceeds the curbside capacity. CU values below 100 percent indicate that curbside capacity is available on the facility.

All curb fronts and terminal frontage roads currently have adequate capacity to accommodate the traffic volume, with the exception of the following:

- Existing Terminal A Departure frontage – operates with a CU of 101 percent (i.e., slightly over capacity) during the weekday midday peak hour.

- Terminal C Lower Departure frontage – operates with a CU exceeding capacity during the weekday AM (108 percent), weekday midday (112 percent) and weekday PM (106 percent) peak hours.
- Terminal C Arrival frontage – operates with a CU exceeding capacity during the weekday AM (123 percent), weekday midday (121 percent) and weekday PM (117 percent) peak hours.

Parking

There are approximately 16,000 public parking spaces distributed throughout the airport across 6 surface lots and 2 garages (**Table 4-3**). These facilities offer several different parking options: valet parking, short-term parking, daily parking, and economy long-term parking. A brief description of each these options are as follows:

- **Valet Parking** is located at P4 and is located in close proximity to Terminals A, B, and C

- **Short Term Parking** is available at surface Lots A and B and the C Parking Garage (located in front of each terminal)

- **Daily Parking** is available at lots P1, P3, and P4

- **Economy Long-Term Parking** is located at remote Lot P6

Lots P1 and P3 are located within the Project Area (**Figure 1-3**).

Table 4-3 Airport Parking Facilities

Parking Facility	Current Capacity	Proposed Action Capacity
Proposed Terminal A Garage	0	2,300
Proposed Adjacent Lot	0	321
Daily Lot P-1	580	0
Daily Lot P-3	1,619	0
Daily Garage P-4	3,079	3,079
P-4 Outer Lot	360	360
Short-Term Lot A	1,516	1,516
Short-Term Lot B	1,070	1,070
Short-Term Garage C	3,643	3,643
Economy Lot P-6	4,249	4,249
Total:	**16,116**	**16,538**

Source: EWR Landside Operations, 2016.

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5 Environmental Consequences

5 Environmental Consequences

The environmental consequences section of the EA document provides analysis of the environmental categories that have the potential to be impacted by the No-Build/No-Action, Proposed Action, or reasonable alternatives. The CEQ states "that an EA is a "concise document" that takes a "hard look" at expected environmental effects of a proposed action." Section 3, *Alternatives*, determined that only the Proposed Action and the No-Build/No-Action Alternative were going to be carried forward for environmental analysis.

The analysis of environmental impacts compares the effects of the Proposed Action to the No-Build/No-Action Alternative. These alternatives are described in detail in Section 3, *Alternatives*, as are those alternatives that were rejected from further consideration. As stated in FAA Order 1050.1F, the environmental consequences section forms the scientific and analytical basis for comparing the Proposed Action and reasonable alternatives. It includes considerations of direct and indirect effects and their significance and possible conflicts between the Proposed Action and the objectives of federal, regional, state, and local land use plans, policies, and controls for the area concerned.

The analysis will be "concise" in terms of providing the level of detail commensurate with the degree of potential environmental impact. FAA Order 1050.1F states, "to avoid excessive length, the effects section may incorporate by reference such background data as necessary to support its effects analysis." Information on the regulatory background environmental impact category (i.e., special purpose laws) and existing conditions is presented in Section 4, Affected Environment,

Table 5-1 provides a list of the environmental impact categories that are included in this section. Each section includes analysis of impacts from the Proposed Action and proposed mitigation and/or best management practices, if applicable. The analysis of each impact category follows the implementation guidance presented in FAA Order 1050.1F, *Environmental Impacts: Policy and Procedures*, and the FAA 10501.1F *Desk Reference*. Construction impacts are presented together in Section 5.17 and Cumulative Impacts are presented in Section 5.19.

The analyses of environmental impacts in this EA are generally presented for the following years of analysis:

Baseline Conditions – The baseline conditions in most cases reflect 2012 conditions as this EA was initiated in 2012, with two exceptions: 1) The VISSIM roadway model used to simulate the existing conditions of the Central Terminal Area and airport roadway network used a baseline year of 2010 because the fieldwork to collect the data was done in that year. The growth factors used for the traffic modeling account for the increase in traffic since 2010. 2) The TAAM model was used to simulate the existing airfield operations conditions based on the existing flight schedule in 2015. This baseline was used because this year was the most recent data available at the time of analysis.

Table 5-1 Environmental Impact Categories Considered in Section 5

Noise and Noise-Compatible Land Use	Farmlands
Land Use	Natural Resources and Energy Supply
Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks	Visual Effects
Secondary (Induced) Impacts	Hazardous Materials, Pollution Prevention and Solid Waste
Air Quality	Traffic
Water Resources	Climate Emissions
DOT Act, Section 4(f)	Construction Impacts
Historic, Architectural, Archaeological and Cultural Resources	Cumulative Impacts
Biological Resources	
Coastal Resources	

Source: FAA Environmental Desk Reference for Airport Actions, October 2007.

Build Out – This is the year (2022) that all components of the Proposed Action are anticipated to be completed and operational.

Build Out +5 – This is a future year (2027) representing five years beyond the completion of all components (Build Out) of the Proposed Action.

5.1 Noise and Noise-Compatible Land Use

Noise is defined as any unwanted sound. Most individuals in urbanized areas are exposed to fairly high noise levels from many sources as they go about their daily activities. The airport is bound on three sides by major highways – U.S. Routes 1&9, Route I-78 and the New Jersey Turnpike – and by the Port Newark/Elizabeth Marine Terminal complex. As a result, the area surrounding the airport is dominated by high ambient noise levels (approximately 75-85 dBA), primarily from heavy truck traffic. On the airport proper, the dominant noise source is aircraft. Aircraft noise is described by combining information from flight operations, types of aircraft using the airport, flight paths and profiles, and runway utilization.

As described in Section 1, *Background and Project Description*, it is important to note that the design of the Proposed Action is intended to respond to forecast passenger demand; it will not induce additional passenger demand. As a result, implementation of the Proposed Action would not result in a change or increase in airport operations (types and number of aircraft used, runway layout, and runway utilization). Therefore, the area influenced by the airport's existing noise contours would not change as a result of the Proposed Action. The Proposed Action would not individually or cumulatively introduce noise to a previously unaffected area, or

significantly increase noise over a noise sensitive area. Therefore, no noise impacts are expected to occur as a direct result of the implementation of the Proposed Action.

A 14 CFR Part 150 Noise Compatibility Planning Study was initiated for Newark Liberty International and other Port Authority airports in 2015. The study will identify areas exposed to aircraft noise of day-night average sound level (DNL) 65 decibels (dB) and greater, and will recommend measures for reducing or mitigating aircraft noise in those areas.

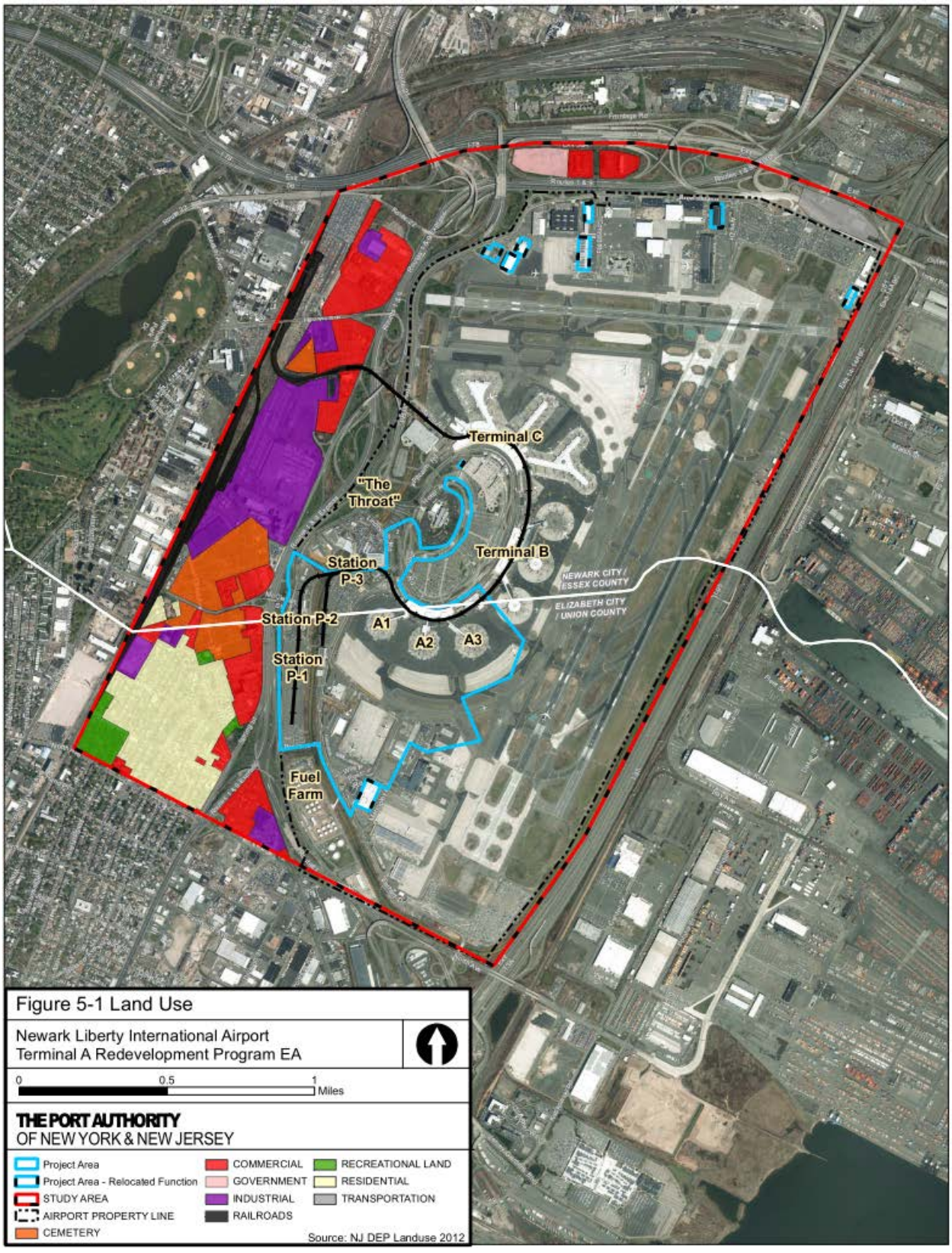
The No-Build/No-Action Alternative would not result in any new construction or changes to the airport's runway layout or utilization, therefore there would be no increase in noise in the area.

5.2 Land Use

Newark Airport is located within both Newark City in Essex County and Elizabeth City in Union County, New Jersey. The limits of the Project Area are located entirely within airport property. Specific land uses in and around the Project Area include a passenger terminal, aircraft apron areas, taxiways, parking facilities, aircraft hangars, air cargo facilities, ground support equipment facilities and rental car facilities.

Land use within the study area is presented in **Figure 5-1**. Transportation is a dominant land use immediately adjacent to the project area. The airport itself is encircled by major highways, commercial and light manufacturing facilities and the Port Newark/Elizabeth Marine Terminal complex. Located immediately north and west of the airport are Route I-78 and U.S. Routes 1&9 respectively; while the New Jersey Turnpike and North Avenue (a major truck route) border the east and south side respectively. Commercial and light manufacturing areas dominate the land uses of the Study Area, generally surrounding the airport. Located to the north, beyond Route I-78 and U.S. Routes 1&9, is Northern State Prison, a number of hotels and commercial facilities, an employee parking area, and an industrial facility. The Garden State Secondary (a Conrail freight line) lies immediately east of the Turnpike, beyond which is the Port Newark/Elizabeth Marine Terminal complex. Industrial and commercial land uses exist to the west of U.S. Routes 1&9, including a number of hotels, private parking facilities, car rental facilities, and an Anheuser Busch brewery. A medium density residential area is located between North Avenue East and McClellan Street in the southwestern portion of the Study Area. Located to the south of Study Area, along North Avenue, are two hotels, an industrial facility, a series of commercial uses, a NJDOT maintenance yard and vacant land.

The Project Area is isolated from residences, parks and recreational facilities, therefore the Proposed Action would have no effect on these entities. There would be no relocation of residences or non-airport businesses. There would be no change in the airport's relationship with the area's existing zoning, surrounding area land use plans, and the land uses on the airport. Because the Proposed Action would not change the urban nature of the existing land uses, it would not create a wildlife hazard as defined in AC 150/5200-33, *Hazardous Wildlife Attractants on or near Airports*, nor would it affect any existing wildlife hazard area.


Terminal C
"The Throat"
Terminal B
Station P-3
Station P-2
Station P-1
A1
A2
A3
Fuel Farm
NEWARK CITY / ESSEX COUNTY
ELIZABETH CITY / UNION COUNTY
Figure 5-1 Land Use
Newark Liberty International Airport
Terminal A Redevelopment Program EA
0
0.5
1
Miles
THE PORT AUTHORITY
OF NEW YORK & NEW JERSEY
Project Area
Project Area - Relocated Function
STUDY AREA
AIRPORT PROPERTY LINE
CEMETERY
COMMERCIAL
GOVERNMENT
INDUSTRIAL
RAILROADS
RECREATIONAL LAND
RESIDENTIAL
TRANSPORTATION
Source: NJ DEP Landuse 2012

The No-Build/No-Action Alternative would not change any of the physical characteristics of the airport and as a result would have no impact on land use on or off the airport. Therefore, neither the Proposed Action nor the No-Build/No-Action Alternative would result in an adverse land use impact.

5.3 Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks

Social impacts have been assessed to determine the effect, if any, that implementation of the Proposed Action would have on the social fabric of the surrounding community.

The types of social impacts that typically arise from airport development are:

- Relocation of residences without sufficient replacement housing being available
- Relocation of local businesses that would create extensive hardship for the affected community
- Disruption of planned development in the community
- Disruption of local traffic patterns that substantially reduce the levels of service on the roads serving the airport and its surrounding communities
- Substantial loss in the community's tax base
- Disproportionate impacts to minority or low-income populations (Environmental Justice)
- Children's environmental health and safety risks

Socioeconomic Impacts

According to FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* the significance threshold for residential displacement is "*extensive relocation of residents is required, but sufficient replacement housing is unavailable*". Implementation of the Proposed Action will not result in any residential displacement. The significance threshold for business relocation is "*extensive relocation of community businesses, that would create severe economic hardship for the affected communities*" and for local fiscal impact "a *substantial loss in community tax base*". The Proposed Action would require the relocation of UPS and Chelsea Kitchen to the north side of the airport. The businesses would stay within the airport property and operations would remain the same. Implementation of the Proposed Action would cause no relocation of community businesses and would have no effect on the tax base of either Elizabeth or Newark.

5.3.1.1 Regional Economics

The Proposed Action's estimated construction budget is approximately $1.8 billion. The majority of this figure would be allocated between labor and materials. Construction of the Proposed Action would have a beneficial economic impact because it would generate both jobs and material purchases in the region. The total economic impact of the Proposed Action incorporates what is known as the multiplier or ripple effect, which is composed of the direct, indirect, and induced effects as described below. The multiplier effect includes the successive rounds of economic activity stimulated by the initial construction spending. Expressed numerically, a multiplier of 1.5 for example, indicates that for every dollar directly generated by the industry under study, an additional $0.50 of ripple effects are felt within the local region, for a total impact of $1.50. The Proposed Action's total impact includes these three effects:

- **Direct Effect** corresponds to the initial changes in final demand generated by the project.

- **Indirect Effect** includes the consecutive rounds of industry spending that were triggered by the initial change in final demand. Local contractors and their employees typically purchase some of their materials and services from other local businesses, which then in turn purchase from their local suppliers, and so on.

- **Induced Effect** refers to the impact triggered by increased household spending by employees of the indirectly affected businesses. Employees spend part of their earnings at local establishments, which in turn purchase some of their input materials and services locally to satisfy this demand, and so on.

Because these impacts are expected to be beneficial, as a result of the jobs generated and the additional expenditures in the area for materials and supplies, no mitigation measures are necessary.

The No-Build/No-Action Alternative would not change any of the physical characteristics of the airport; therefore, there would be no construction spending and its related multiplier effects.

5.3.1.2 Surface Transportation

The significance threshold for traffic is "d*isruptions of local traffic patterns that substantially reduce the levels of service of the roads serving the airport and its surrounding communities*." The traffic analysis under Future Build conditions (assuming proposed roadway improvements and forecasted passenger growth) indicates that all ramps, multi-lane roadways, and weaving sections are projected to operate at LOS D or better in both 2022 and 2027, with two exceptions. All traffic movements at the 13 study intersections analyzed under Future Build conditions are projected to operate at LOS D or better during the three weekday analysis peak hours in both 2022 and 2027, with the exception of three specific movements at the Earhart Drive/North Avenue intersection. Under Future Build conditions, all terminal frontage roads are projected to operate under 130 percent utilization (the desirable planning target according to ACRP Report 40) during all three weekday peak hours in both 2022 and 2027. See **Section 5.15** for additional discussion of traffic impacts as a result of the Proposed Action. The Proposed Action would improve internal circulation at the airport and improve the utilization of the terminal's curbside frontages; there would be no impact to roadways in the surrounding communities and no change in demand as a result of the Proposed Action. In addition, there would be no changes to the airport's AirTrain system.

The No-Build/No-Action Alternative would not change any of the physical characteristics of the airport and would have no impact on or off the airport. Based on the above, neither the Proposed Action nor the No-Build/No-Action Alternative would result in adverse socioeconomic impacts.

5.3.1.3 Environmental Justice

Introduction

According to Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, FAA 1050.1, *Environmental Impacts: Policies and Procedures* and DOT Order 5610.2(a), *Environmental Justice in Minority Populations and Low-Income Populations*, the FAA is required to assess the effects of a project on minority and low-income populations in order to identify whether disproportionately high and

adverse effects on these populations will occur. One of the purposes of the regulations is to assure that areas of low-income and high minority concentrations do not become "dumping grounds" for land uses that cause significant adverse environmental impacts. A second consideration involves a determination of whether plans for a proposed project have been directed toward low-income and high minority areas because of factors such as lower property values or expectations that there might be less effective citizen opposition in these areas. A disproportionately high and adverse effect may only be carried out if further avoidance, minimization and mitigation measures are not practicable.

The Environmental Justice assessment was conducted to determine if a disproportionate share of the Proposed Action's potential impacts would be borne by low-income and/or minority populations. Furthermore, the review examines the extent to which populations of concern located in the area would experience disproportionately high and adverse environmental impacts as a result of the Proposed Action as well as project-induced benefits.

County averages for minority residents and for persons living below poverty serve as thresholds for determining areas with higher concentrations of minority persons or persons living below poverty. These county thresholds are shown in **Table 5-2** below.

Table 5-2 County Thresholds for Minority Residents and Persons Living in Poverty

County	Minority Threshold (%)	Poverty Threshold (%)
Union County	38.7	9.1
Essex County	57.4	14.6

Source: U.S. Census of Population and Housing, 2010.

Census block groups (BGs) demonstrating higher concentrations of either or both of these populations are further assessed to determine if potential project impacts would be greater in magnitude for low-income and minority populations than non-low-income and non-minority populations. According to the methodology employed for this analysis, disproportionately high and adverse effects, low-income and minority populations are defined as the following:

- **Disproportionately High and Adverse Effects** – An adverse effect that: "(1) is predominantly borne by a minority population and/or low-income population; or (2) will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or low-income population."[30]

- **Minority Populations** – Persons who identify themselves as a race other than non-Hispanic, White Alone.

- **Low-Income Populations** – Those families who identify themselves as living below the poverty line, based on the Census Bureau's annual statistical poverty thresholds for income and poverty.

[30] FHWA Order 6640.23A, *FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (June 14, 2012).

Affected Environment – Racial and Economic Characteristics

Recent racial and economic characteristics of the BGs that intersect the Study Area compared to Union and Essex Counties and the cities of Elizabeth and Newark are presented in **Table 5-3** below. There are six BGs located in the Study Area; four of these are located in Union County and two are located in Essex County (see **Figure 5-2**). The BG that encompasses the Project Area is located within and immediately adjacent to the airport and had 291 permanent residents in 2010. According to the 2010 Census, 38.7% of Union County's population was comprised of minorities and 9.1% of the population lived below the poverty line. In Essex County, 57.4% of the population in 2010 was comprised of minorities and 14.6% of the population lived below the poverty line. The cities of Elizabeth and Newark had substantially higher numbers of minorities, Hispanics, and persons living below the poverty line than their respective counties. A lower number of minorities, Hispanics, and persons living below the poverty line are present in the Study Area as compared to Union and Essex Counties. Just over half of the population (56%) of the BGs that intersect the Study Area is of Hispanic origin; more than double the percentage of Hispanic residents of Union and Essex Counties (27.3% and 20.3%, respectively). As indicated on **Table 5-3**, the two BGs located in Essex County and Newark have a higher percentage of persons below the poverty line when compared to the greater population of the city and county.

Environmental Consequences

The Study Area as a whole is not considered a potential Environmental Justice area. Six BGs located within the Study Area are considered potential Environmental Justice areas, including both minority and low-income communities.

Implementation of the Proposed Action would not result in effects to any low-income or minority population because the Proposed Action does not include any impacts that would go beyond the airport property into adjoining neighborhoods.

The No-Build/No-Action Alternative does not require any land acquisition; business or residential relocation; significantly increase noise levels or significantly reduce air quality. Therefore, there are no anticipated disproportionate impacts to low-income or minority populations resulting from the No-Build/No-Action Alternative.

Summary

The Environmental Justice assessment was conducted to determine if a disproportionate share of the Proposed Action's potential impacts would be borne by low-income and/or minority populations. As described in Tables 5-2 and 5-3, as well as in Figure 5-2, six Census Block Groups in the Study Area are considered potential Environmental Justice areas, including both minority and low-income communities. Because the Proposed Action does not include any impacts that would go beyond the airport property into adjoining neighborhoods however, no impact to these areas are anticipated.

Table 5-3 Minority and Low-Income Populations in the Study Area

Census Block Groups	2010 Total	Race and Ethnicity – 2010*										Total Minority (%)	Individuals Below Poverty Level (2009) (%)**
		White	%	African American	%	Asian	%	Other	%	Hispanic	%		
Elizabeth													
CT 313 BG 1	1,380	1,000	72.5	72	5.2	14	1.0	294	21.3	749	54.3	27.5	2.7
CT 315 BG 1	1,718	1,063	61.9	213	12.4	23	1.3	419	24.4	1,007	58.6	38.1	3.1
CT 315 BG 2	**1,464**	**997**	**68.1**	**120**	**8.2**	**13**	**0.9**	**334**	**22.8**	**816**	**55.7**	**31.9**	**14.3**
CT 398 BG 4	291	176	60.6	72	24.7	10	3.4	33	11.3	143	49.1	39.5	0.00
Elizabeth	124,969	68,292	54.6	26,343	21.1	2,604	2.1	27,730	22.2	74,353	59.5	45.4	16.7
Union County	536,499	329,052	61.3	118,313	22.1	24,839	4.6	64,295	12.0	146,704	27.3	38.7	9.1
Newark													
CT 48.02 BG 3	**1,487**	**272**	**31.4**	**1,009**	**67.9**	**2**	**0.1**	**204**	**13.7**	**406**	**27.3**	**81.7**	**40.8**
CT 9802 BG 1	**1,173**	**250**	**21.3**	**817**	**69.7**	**2**	**0.2**	**104**	**8.9**	**170**	**14.5**	**78.7**	**21.5**
Newark	277,140	72,914	26.3	145,085	52.4	4,485	1.6	54,656	19.7	93,746	33.8	73.7	25.0
Essex County	783,969	333,868	42.6	320,479	40.9	35,789	4.6	93,833	12.0	159,117	20.3	57.4	14.6

Notes:

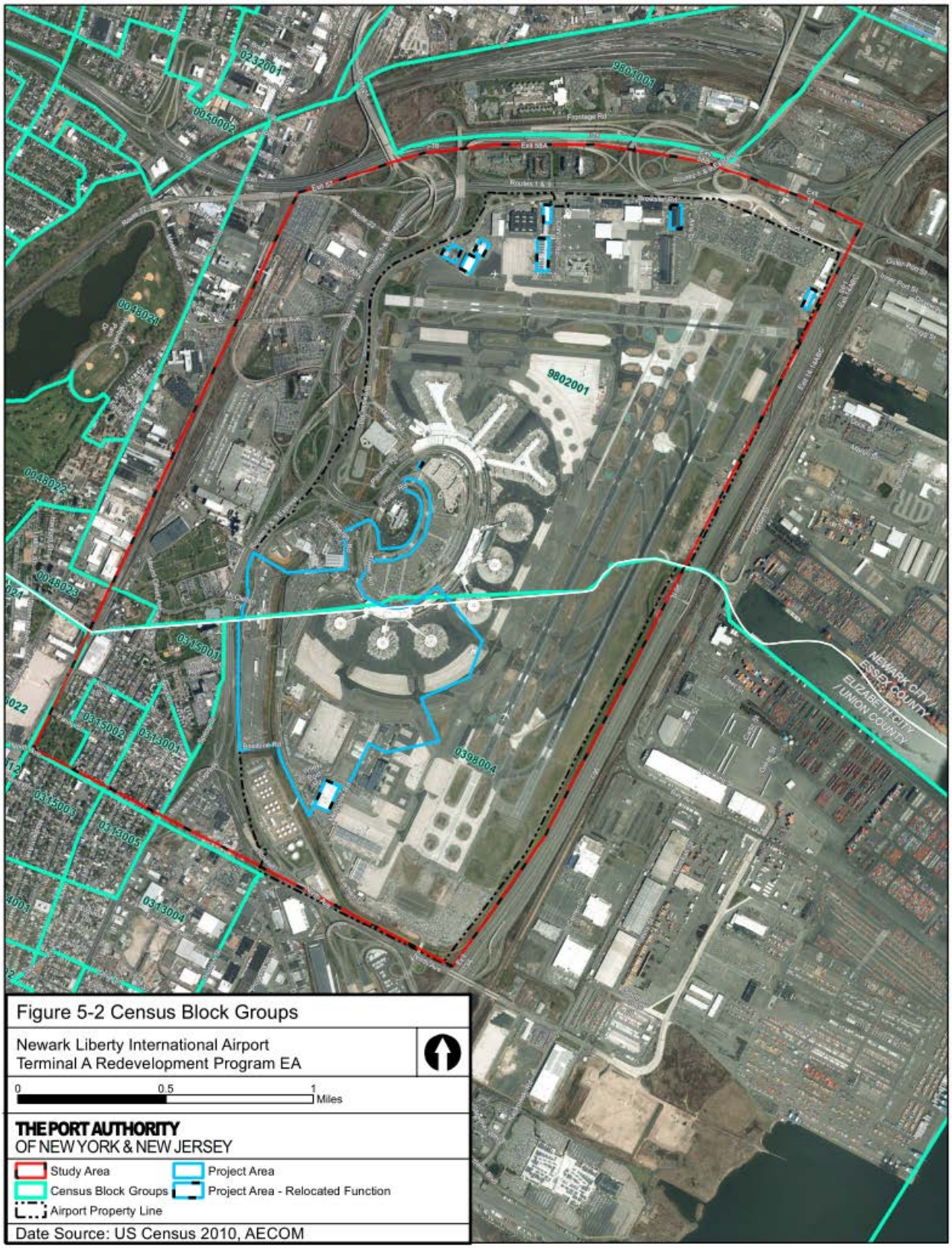
The Project Area is located in Block 398, Block Group 4.

BOLD indicates potential environmental justice areas.

* The racial and ethnic categories provided are further defined as: White (White alone, not Hispanic or Latino); Black (Black or African American alone, not Hispanic or Latino); Asian (Asian alone, not Hispanic or Latino); Other (American Indian and Alaska Native alone, not Hispanic or Latino; Native Hawaiian and Other Pacific Islander alone, not Hispanic or Latino; Some other race alone, not Hispanic or Latino; Two or more races, not Hispanic or Latino); Hispanic (Hispanic or Latino; Persons of Hispanic origin may be of any race).

** Percent of individuals with incomes below established poverty level. The U.S. Census Bureau's established income threshold for poverty level defines poverty level.

Source: U.S. Census Bureau, Census 2010.


0232001
9804001
0048024
9902001
0048022
0048023
0315001
0315002
0314001
0315003
0313004
0398004
NEWARK CITY
ESSEX COUNTY
ELIZABETH CITY
UNION COUNTY
Figure 5-2 Census Block Groups
Newark Liberty International Airport
Terminal A Redevelopment Program EA
0
0.5
1
Miles
THE PORT AUTHORITY
OF NEW YORK & NEW JERSEY
Study Area
Project Area
Census Block Groups
Project Area - Relocated Function
Airport Property Line
Date Source: US Census 2010, AECOM

Children's Environmental Health and Safety Risks

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risk*s, requires federal agencies to identify and assess environmental health and safety risks that may disproportionately affect children and ensure that its actions address any disproportionate risks. Environmental health risks and safety risks include risks to health or to safety that are attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products they might use or be exposed to. The Proposed Action would have no adverse impact on soil, air quality or water quality. No new facilities would be constructed in areas that are accessible to children, and there would be no increased chance for children to ingest or be exposed to harmful substances. Consequently, there would not be an impact to children's health and safety. The No-Build/No-Action Alternative would not change any of the physical characteristics of the airport and would have no impact on or off the airport. Therefore, neither the Proposed Action nor the No-Build/No-Action Alternative would result in adverse impacts to children's health and safety.

5.4 Secondary (Induced) Impacts

In accordance with FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, this section examines the potential for secondary or induced effects directly attributable to the alternatives under consideration. The Order states:

> *Major development projects often involve the potential for induced or secondary impacts on surrounding communities. When such potential exists, the [environmental assessment] shall describe in general terms such factors.*
>
> Secondary or induced effects are reasonably foreseeable and caused by a project, but occur at a different time or place. Examples of induced impacts as defined by the Order include, "*shifts in patterns of population movement and growth; public service demands; and changes in business and economic activity to the extent influenced by the airport development*."

The Proposed Action would induce positive secondary impacts in the region because of construction activity. These economic impacts would benefit surrounding communities during construction by increasing employment opportunities and expenditures on local services and materials.

The Proposed Action and the No-Build/No-Action Alternative would not result in property acquisition, residential relocation, division or disruption of established communities, or disruption of planned development. Aircraft arriving or departing the airport would do so in the same flight corridors as what currently occurs, there would be no increase in flights as a result of this project. Thus, no significant adverse secondary (induced) impacts would occur because of the Proposed Action or the No-Build/No-Action Alternative.

5.5 Air Quality

In 2015, an Air Quality Technical Report was prepared in support of this EA. The report is contained in **Appendix C** and discusses analyses, methodologies and modeling assumptions. Its main findings are summarized in the following subsections.

This section identifies the direct (operational) impacts from the Proposed Action, resulting primarily from the forecasted vehicle traffic on the proposed roadway improvements. There would be no change in aircraft operations or aircraft fleet mix as a result of the Proposed Action; therefore, emissions from aircraft were not calculated. However, the TAAM modeling results comparing the airfield conditions in the year 2027 under the Proposed Action with those under the No-Action Alternative indicate that there would be an average reduction in taxi times of approximately one minute and a reduction of average taxi and gate delays of 1.5 to 2.3 minutes (see **Table 2-2** and Appendix A). The reduced aircraft operation time would result in reduced emissions, including greenhouse gases. In addition, it is assumed that the modern, LEED-certified terminal building would result in a decrease in energy usage in order to meet the Port Authority's sustainability goals, producing no additional terminal-related emissions. The existing Central Heating and Refrigeration Plant (CHRP) would continue to serve the new terminal.

Implementation of the Proposed Action would not result in any emissions increase or an emissions increase that is clearly de minimis. The air quality assessment (**Appendix C**) demonstrates that the Proposed Action conforms to the New Jersey SIP and the Clean Air Act because the Proposed Action would not exceed the de minimis thresholds established by the EPA for the criteria pollutants. In addition, the hot spot analysis found that the Proposed Action would not contribute to new violations of the NAAQS, increase the frequency or severity of existing violations of the NAAQS, or delay attainment of the NAAQS. Consequently, no adverse impact on local or regional air quality is expected to occur as a result of the Proposed Action. No further analysis or reporting is required under the Clean Air Act or NEPA.

CO Hot Spot Analysis

Potential CO concentrations at the study intersection with the worst LOS (Earhart Drive and North Avenue) were modeled for comparison to the 1-hour and 8-hour CO NAAQS. Predicted worst-case CO levels under the Build Condition are well below the one-hour CO NAAQS of 35 ppm or eight-hour CO NAAQS of 9 ppm (see Table 5-4).

Table 5-4 Predicted Worst Case CO Concentration Levels

North Avenue E and Earhart Drive Intersection	1-hour CO Concentration (ppm)	8-hour CO Concentration (ppm)
Year 2022	5.5	2.3
Year 2027	5.5	2.2

Source: Air Quality Technical Report, AECOM, September 2015; see Appendix C.

Since these are worst-case levels, local CO levels under the Proposed Action at other locations would be equal or less, and, therefore, well below the threshold for CO impacts and the Proposed Action would result in no violation of the CO NAAQS.

$PM_{2.5}$ Hot Spot Analysis

A $PM_{2.5}$ impact analysis was performed based on the guidelines and procedures outlined by the USEPA in *Transportation Conformity Guidance for Qualitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas* (USEPA, March 2006).

The Proposed Action involves modifications to airport access roadway ramps to improve the airport terminal area ground traffic operation in the future. This would change traffic patterns around the terminal area and intersections around the airport, including the intersections that would experience LOS of D or worse. However, the overall traffic mix and volume within the studied traffic network, particularly at the congested intersections, would not be substantially different between the No-Build/No-Action condition and the Proposed Action. The number of diesel vehicles traveling through the airport area would not change because of the Proposed Action. While traffic conditions (volume and truck mix) may change between the present and 2022 and/or 2027, these changes are the result of natural background growth and would remain the same with or without the Proposed Action.

The project is not one of five categories of projects with air quality concern that requires a hot spot analysis for particulate matter or similar to the sample projects of air quality concern defined by the Transportation Conformity Guidance. Therefore, it can be concluded that the Proposed Action would not cause or contribute to a violation; or increase the frequency or severity of an existing violation; or delay timely attainment of the $PM_{2.5}$ NAAQS. Consequently, no further hot-spot analysis for $PM_{2.5}$ is required.

Air Toxic Pollutants Impact Analysis

For mobile source, and particularly for roadway traffic-related potential mobile source air toxics (MSAT) effects, FHWA's *Interim Guidance Update on MSATs in NEPA* (December 6, 2012) establishes a three-tiered approach to determine the level of MSAT analysis required by a project-level study (see memo in Appendix C).

Based on the FHWA guidance, which classifies projects into three categories with corresponding levels of impact assessment, the Proposed Action would only slightly affect the internal airport roadway network with some limited ramp improvements. Roadway traffic-related impacts on MSAT can be categorized as a *Project with No Meaningful Potential MSAT Effects*, requiring no MSAT analysis.

General Conformity Rule Applicability Analysis

The General Conformity Rule (GCR) applies to federal actions occurring in air basins designated as nonattainment for the NAAQS or in attainment areas subject to maintenance plans (maintenance areas). Federal actions occurring in air basins that are in attainment with the NAAQS are not subject to the conformity rule. Since the Proposed Action would occur in a nonattainment area for O_3 and a maintenance area for $PM_{2.5}$ and CO, the GCR applies for these nonattainment or maintenance pollutants.

To focus general conformity requirements on those federal actions with the potential to have significant air quality impacts, threshold (*de minimis*) rates of emissions were established in the final rule. A formal conformity determination is required when the annual net total of direct and indirect emissions from a federal action occurring in a nonattainment or maintenance area for a criterion pollutant would equal or exceed the annual *de minimis* limits for that pollutant. As shown in **Appendix C**, the expected annual increases in emissions under the Proposed Action would be well below the applicable *de minimis* limits. Therefore, a formal conformity determination is not required and air quality impacts under the Proposed Action would be negligible and non-significant.

Greenhouse Gas Emissions

Greenhouse gases (GHGs) are compounds that contribute to the greenhouse effect, a natural phenomenon where gases trap heat within the surface-troposphere (lowest portion of the earth's atmosphere) system, causing heating at the surface of the earth. The primary long-lived GHGs directly emitted by human activities are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). The heating effect from these gases is considered the probable cause of the global warming observed over the last 50 years (USEPA, December 7, 2009). Climate is discussed further in Section 5.16.

Currently there are no federal standards for reporting greenhouse gas (GHG) emissions from aviation sources, as well as no significance thresholds. As directed by the *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas* (CEQ, February 2010) and the CEQ Final Guidance (August 1, 2016), the focus of this GHG analysis was only to disclose emissions from the Terminal A Redevelopment.

Most of the EPA tools that are widely used for NEPA study purposes (e.g., NONROAD emission factor model) do not provide emission factors for equivalent emissions of carbon dioxide (CO_2e). The recent EPA inventory report demonstrates that the GHG contribution from methane and nitrous oxide is less than one percent of the total CO2e for fossil fuel combustion sources.[31] Given such small contributions from other GHG equivalents to carbon dioxide, for the purposes of this EA, CO_2e levels were predicted as 101% of estimated carbon dioxide levels.

Since the Proposed Action would not generate additional aircraft operations or passenger traffic, a quantitative analysis of carbon dioxide emissions from operation of the Proposed Action was not calculated. Carbon dioxide and CO_2e emissions from construction were calculated and are presented in Section 5.17.3.

5.6 Water Resources

The following discussion provides an analysis of the potential impacts to water resources resulting from the implementation of the Proposed Action or the No-Build/No-Action Alternative. A description of existing conditions is provided in Section 4, *Affected Environment*.

Surface Water

The Proposed Action would have no adverse impact to the surface water quality at the airport. None of the redevelopment activities would require any alteration to the Peripheral Ditch.

As part of the Proposed Action, three new crossings of the Peripheral Ditch would be constructed to service the new Terminal A (see **Figure 5-3**). These proposed access road structures will have to meet the bridge and culvert design requirements of the Flood Hazard Area Control Act (N.J.A.C. 7:13-2.16). Significant adverse impacts to the existing stream hydraulics of the Peripheral Ditch are not anticipated to result from the Proposed Action. Potential temporary impacts to surface water resulting from construction activities (e.g., sedimentation) are discussed in Section 5.18, *Construction Impacts*.

[31] EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2007*, April 15, 2009.

The No-Build/No-Action Alternative would not result in any impact to the Peripheral Ditch as there would be no construction and no change in existing stream hydraulics.

Stormwater

The Proposed Action would not adversely impact the quantity or quality of stormwater runoff at the airport, nor would it alter the location or type of impervious surfaces. Stormwater runoff volume and velocity would not change because of the Proposed Action. A minor adjustment to the location of catch basins and storm sewer lines in the Project Area may be required, but in general, the storm sewer system on the airport would continue to collect and convey stormwater as it does currently.

Under the Proposed Action, the Port Authority would continue to comply with the requirements of its current NJPDES stormwater discharge permit. In addition, an effort would be made to evaluate the feasibility of capturing and reusing stormwater (e.g., for toilet flushing, if practical) as part of the Proposed Action's sustainability efforts.

The No-Build/No-Action Alternative would not result in any significant adverse impact to the collection and conveyance of stormwater on the airport as there would be no increase in impervious surfaces. Operational activities that could contribute pollutants to stormwater would remain at the same level in the future as they are today, including deicing, snow storage, fueling, and aircraft maintenance.

Groundwater

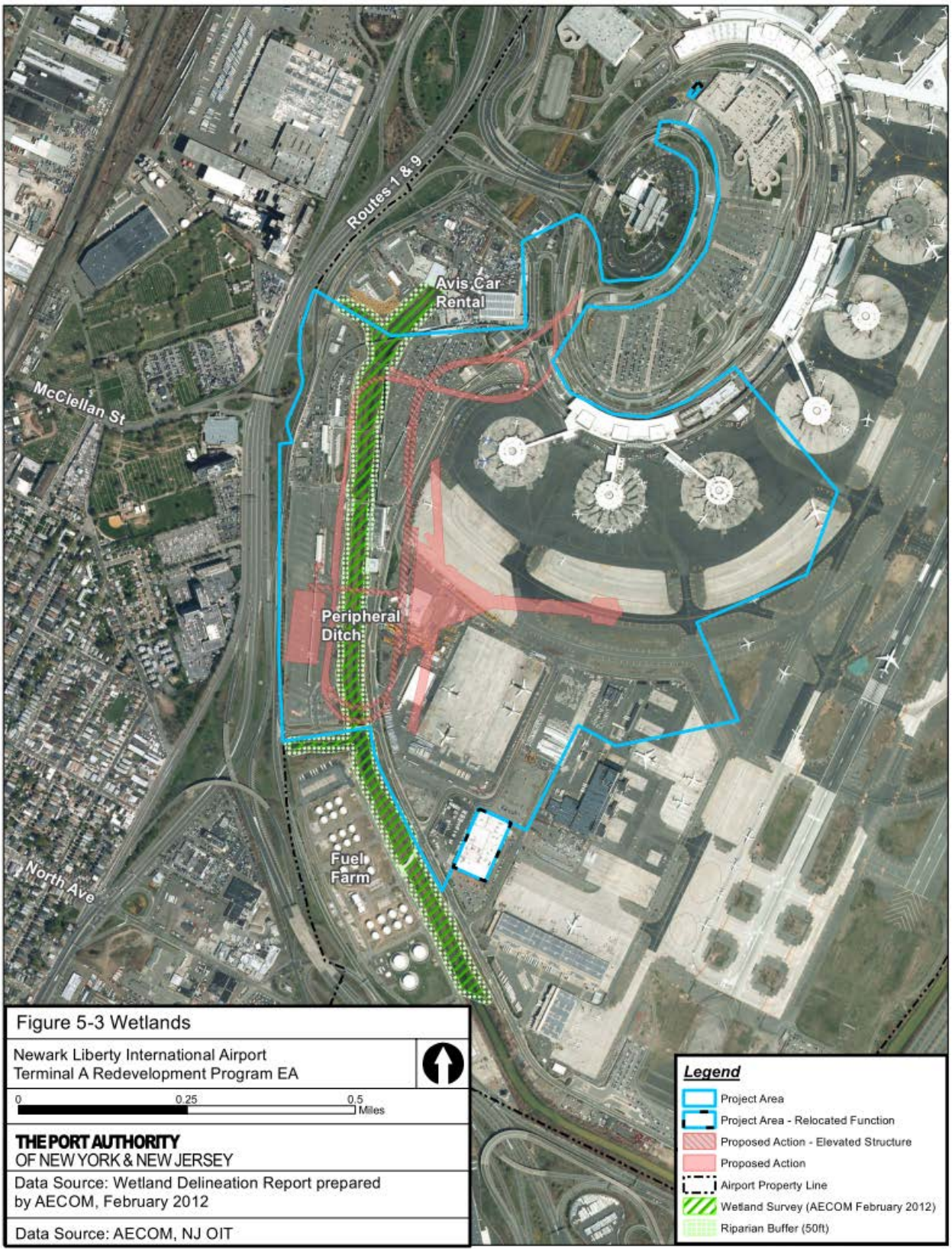
Implementation of the Proposed Action would improve groundwater quality at the airport. The fill and groundwater at several locations beneath the Project Area are known to contain various levels of contamination because of historical airport activities (See Section 4, *Hazardous Materials*). During project implementation, contaminated soil and groundwater would be removed and disposed of in accordance with applicable regulations. During dewatering operations as part of construction, contaminated groundwater would be collected and treated to levels required by the Port Authority's NJPDES Permit and discharged.

Under the No-Build/No-Action Alternative, there would be no construction and existing levels of contamination would remain in the area's soil and groundwater.

Wetlands

As described in Section 4.2, after a May 2012 site inspection, NJDEP has classified the Peripheral Ditch in the area of Terminal A as "State Open Waters" with no transition area required (see Letter of Interpretation in Appendix D).[32] As part of the Proposed Action, three new bridges will be constructed to service the new Terminal A, each requiring a crossing of the Peripheral Ditch (see **Figure 5-3**).

[32] Per N.J.A.C. 7:13-4.1, a riparian buffer of 50 feet is required around State Open Waters.


Routes 1 & 9
Avis Car Rental
McClellan St
Peripheral Ditch
Fuel Farm
North Ave
Figure 5-3 Wetlands
Newark Liberty International Airport
Terminal A Redevelopment Program EA
0
0.25
0.5
Miles
THE PORT AUTHORITY
OF NEW YORK & NEW JERSEY
Data Source: Wetland Delineation Report prepared by AECOM, February 2012
Data Source: AECOM, NJ OIT
Legend
Project Area
Project Area - Relocated Function
Proposed Action - Elevated Structure
Proposed Action
Airport Property Line
Wetland Survey (AECOM February 2012)
Riparian Buffer (50ft)

No wetlands are anticipated to be affected by the Proposed Action. There would be impact to approximately 1-acre of State Open Waters. The potential disturbance is less than the 1.5 acre threshold for a "smaller disturbance" and shall be mitigated as required by NJDEP's Flood Hazard Area Permit (e.g., purchase of credits from a mitigation bank or other means as approved by NJDEP). Efforts will be made during Final Design to minimize or eliminate this impact; however, the exact level of disturbance is subject to change.

Proper soil erosion control measures and Best Management Practices (BMPs) would be implemented during project construction to minimize sedimentation into nearby waterbodies and freshwater wetlands. The erosion control measures would be implemented throughout the construction process until the site is permanently stabilized to ensure the protection of any exposed soils and downstream areas.

Water pollution control measures, including those contained in FAA Advisory Circular 150/5370-10F, *Standards for Specifying Construction of Airports (*September 30, 2011), would be enforced during proposed construction activities so that any potential construction material spills are minimized. Specifically, construction material would not be stockpiled in or near any waterbodies. If materials require stockpiling for significant durations, they would be covered with an impermeable liner to eliminate runoff and leachate during precipitation.

There would be no impact to wetlands from the No-Build/No-Action Alternative.

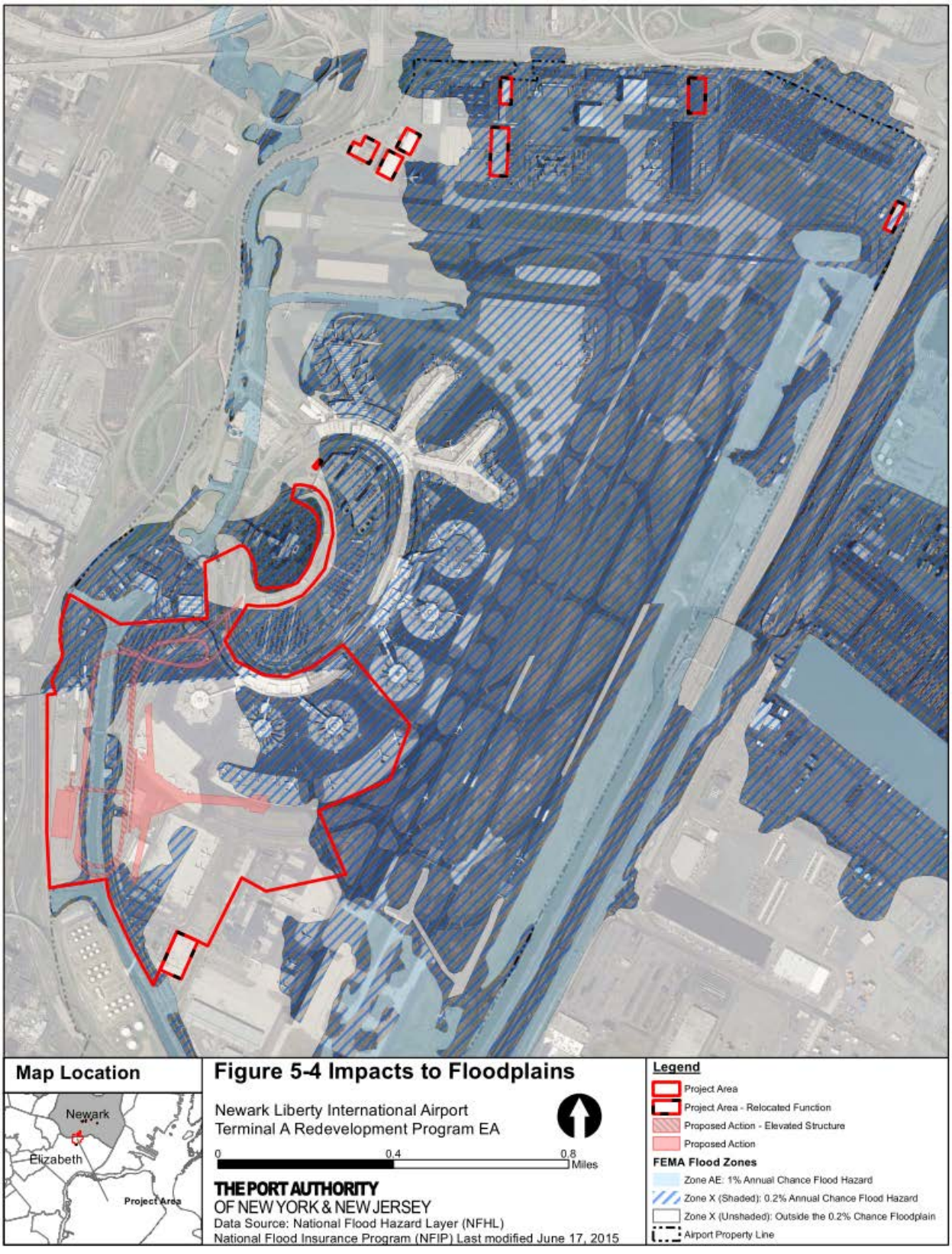
Floodplains

Portions of the Proposed Action would be constructed within a FEMA-designated floodplain (see **Figure 5-4**). NEPA regulations that address floodplains are discussed in FAA Order 5050.4B, *NEPA Implementing Instructions for Airport Actions*, and FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*. Pursuant to Executive Order 11988, *Floodplain Management*, all Federal agencies are required to avoid impacts on floodplains to the degree practicable and to minimize impacts that cannot be avoided.[33] When it is not practicable to avoid developing within a floodplain, the USDOT Order 5650.2, *Floodplain Management and Protection*, prescribes policies and procedures to implement Executive Order 11988.

No Practicable Alternative

According to the Preliminary Flood Insurance Rate Maps (FIRMs) for the airport and the surrounding area (dated April 9, 2015), the area primarily in and adjacent to the Peripheral Ditch is located in the 100-year floodplain, with a larger area located within the limits of the 500-year floodplain (see **Figure 5-4**). The Port Authority examined alternatives that would locate the Proposed Action outside the floodplain and determined that no practicable alternative exists.

[33] As stated in *Guidelines for Implementing Executive Order 11988, Floodplain Management, and Executive Order 13690, Establishing a Federal Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input* (October 8, 2015), agencies will continue to comply with the requirements of E.O. 11988 until they update their regulations and procedures to incorporate the amendments from E.O. 13690 (issued January 30, 2015).


Map Location
Newark
Elizabeth
Project Area
Figure 5-4 Impacts to Floodplains
Newark Liberty International Airport
Terminal A Redevelopment Program EA
0
0.4
0.8
Miles
THE PORT AUTHORITY
OF NEW YORK & NEW JERSEY
Data Source: National Flood Hazard Layer (NFHL)
National Flood Insurance Program (NFIP) Last modified June 17, 2015
Legend
Project Area
Project Area - Relocated Function
Proposed Action - Elevated Structure
Proposed Action
FEMA Flood Zones
Zone AE: 1% Annual Chance Flood Hazard
Zone X (Shaded): 0.2% Annual Chance Flood Hazard
Zone X (Unshaded): Outside the 0.2% Chance Floodplain
Airport Property Line

The Proposed Action

Because it is not practical to locate the Proposed Action outside the floodplain, the Port Authority has identified and incorporated flood hazard mitigation strategies into the design of the Proposed Action. These strategies focus on the use of specific design criteria to minimize impacts on human safety and minimize future damages or costs to equipment, facilities, and structures to the degree practicable. Flood hazard mitigation is a priority for the Terminal A Redevelopment Program because of the geography of its location with elevations just above sea level. These efforts intensified after Superstorm Sandy in 2012 and the release of revised preliminary FEMA flood maps in 2014.

Using the design criteria as mentioned above, a comprehensive flood hazard mitigation plan would be implemented to the degree practicable, with special emphasis on critical equipment associated with the terminal building. The flood hazard mitigation plan would comply with applicable federal, state, and local laws and regulations for the protection of floodplains and with the referenced standards for flood resistant design and construction.

Probable impacts on the floodplain would be limited to built land; no secondary or induced development has been identified that would cause or contribute to indirect or cumulative effects on the floodplain. Although it is inevitable that a minor (approximately 0.7 acres) loss of effective floodplain storage volume would occur due to the placement of access roadway embankment material within the 100-year floodplain, the 100-year floodplain on the airport is controlled by coastal storm surges and tidal flooding; therefore, it is not anticipated to create significant adverse impacts to the surrounding floodplain.

The final design of the Proposed Acton would ensure compliance with NJDEP's Bureau of Floodplain Management's net fill requirements (N.J.A.C. 7:13-2.14) after construction is completed. The 100-year water surface elevation of the Peripheral Ditch would comply with the applicable NJDEP and Flood Hazard Area Control Act (N.J.A.C. 7:13) criteria and therefore would not create significant adverse impacts to the surrounding floodplain.

Significant Impact Threshold

When it is not practicable to avoid the floodplain, DOT Order 5650.2 establishes the criteria used to determine if a "significant encroachment" would occur. Based on DOT's policy, a significant encroachment on the floodplain would not occur for the following reasons:

- The probability of the loss of human life is low. There are no residences located within the floodplain boundary; therefore, the human population would be limited to building occupancy consisting of passengers, visitors, and employees. The new terminal would comply with applicable building code and life safety requirements, including general provisions for flood hazard design and construction. In addition, coastal storms are predictable, and the Port Authority has the authorization to cease operations and to evacuate the airport in the event of a coastal storm; in which case, access to and egress from the airport is by roadways located outside the floodplain.

- The Proposed Action would be designed to avoid or minimize future extensive damage or costs, including damage that would interrupt airport service. It is the Port Authority's intention to set the floor elevations and critical equipment higher than the design flood elevation and to dry flood-proof critical areas if it is impracticable to meet the design criteria.

- There would be no notable adverse impacts on the floodplain's natural and beneficial values. Project-related impacts on the floodplain would be limited to built land. As discussed in other sections of this EA, the Proposed Action would have no adverse impacts on biotic communities, coastal resources, or water quality.

Buildings located in FEMA designated floodplains must comply with the National Flood Insurance Program, the International Building Code, the American Society of Civil Engineers national reference standards, and with New Jersey codes and standards. Compliance with these requirements and the project's flood hazard mitigation plan provides adequate assurance that project-related impacts on the floodplain would be less than significant.

Under the No-Build/No-Action Alternative, Terminal A would remain as it currently exists. There would be maintenance and energy-related upgrades to the terminal, as well as internal renovations/modifications as part of ongoing systems rehabilitation. The No-Build/No-Action Alternative would not result in any encroachment on the floodplain. The probability of the loss of human life would remain low and there would be no notable adverse effects on the floodplain's natural and beneficial values. This alternative would have no effect on the 100-year flood elevation.

5.6.5 Wild and Scenic Rivers

No wild or scenic rivers, as defined by the Wild & Scenic Rivers Act, are present near the airport. Therefore, there would be no wild or scenic river impacts associated with either the Proposed Action or the No-Build/No-Action Alternative.

5.7 Department of Transportation Act, Section 4(f)

The Department of Transportation Act of 1966 (Public Law 89-670) included a special provision, Section 4(f), which stipulated that the Secretary of Transportation may approve a transportation program or project requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of an historic site of national, state, or local significance only if there is no prudent and feasible alternative to using that land; and the program or project includes all possible planning to minimize harm to these resources.

Section 4(f) has been recodified as 49 U.S.C. § 303 (c). Consistent with FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, this EA refers to Section 303(c) as "Section 4(f)" to avoid unnecessary confusion.

In addition to lands identified under Section 4(f), other lands funded by the Land and Water Conservation Fund Act of 1965 (Public Law 88-578), 16 U.S.C. § 4601-8(f)(3), commonly referred to as Section 6(f), must be considered. When proposed improvements affect lands purchased or developed using Section 6(f) funds, changes in use to other than public outdoor recreation at assisted sites may only be made with the prior approval of the Secretary of the Interior. In addition, converted properties must be replaced by substitute properties of at least equal fair market value and of reasonably equivalent location and usefulness.

An evaluation of resources in the Study Area was conducted to determine if any Section 4(f) or Section 6(f) sites would be impacted by the Proposed Action.

There are no Section 4(f) resources located in the Project Area. The airport's Administration Building, Building 1, which is listed on the National Register of Historic Places, is located on the airport, but approximately two miles north of the Project Area, with Terminals B and C intervening between it and the Project Area. The Proposed Action would result in no direct taking or constructive use of this resource. In a letter dated May 23, 2012, the Deputy State Historic Preservation Office concurred with the finding that there are no historic properties affected within the projects area of potential effects (see Appendix D). There are no Section 6(f) resources located in or near the Project Area.

The No-Build/No-Action Alternative would not result in any construction nor any changes to the structures on the airport; therefore there would be no direct acquisition or constructive use of Section 4(f) or Section 6(f) resources.

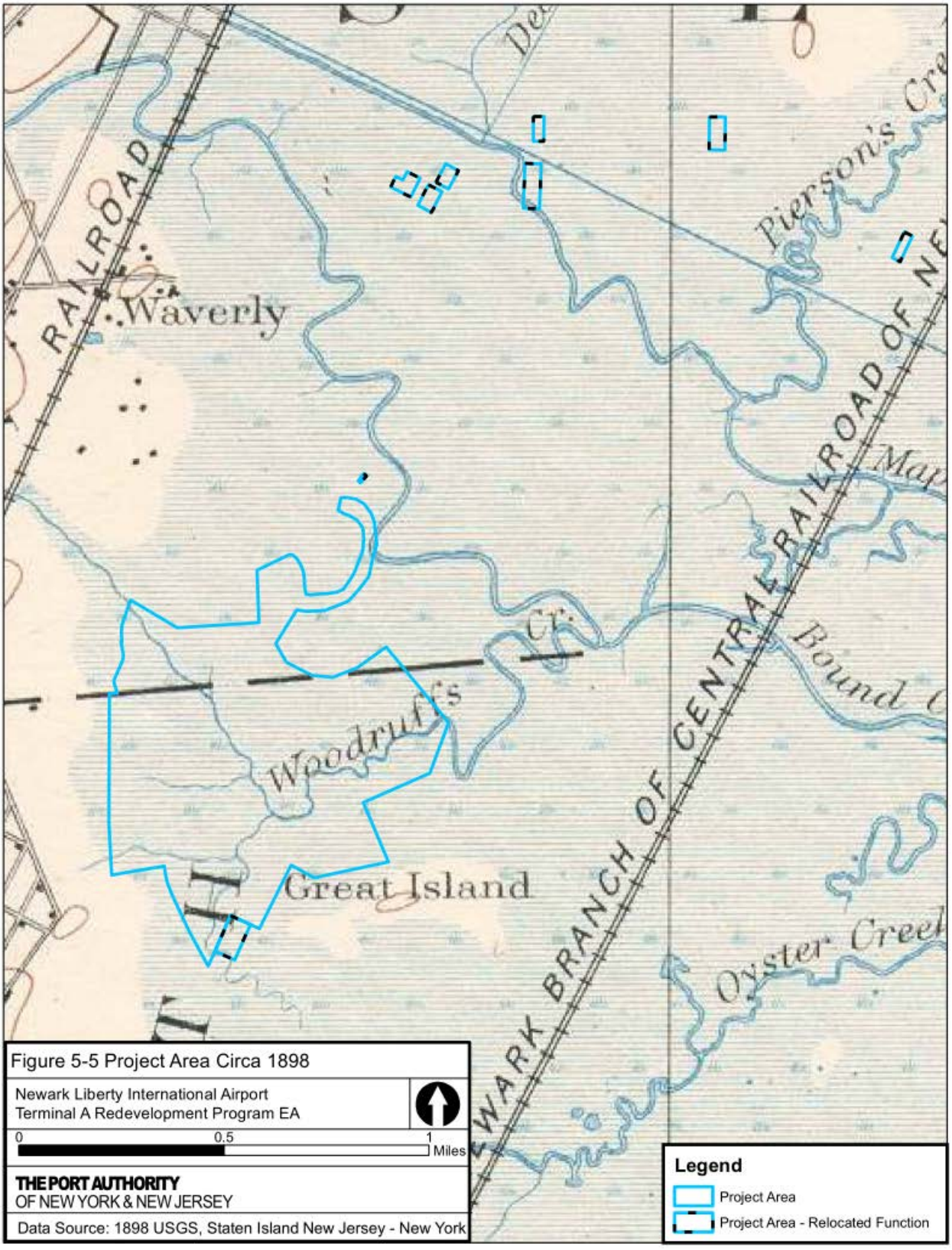
5.8 Historical, Architectural, Archaeological and Cultural Resources

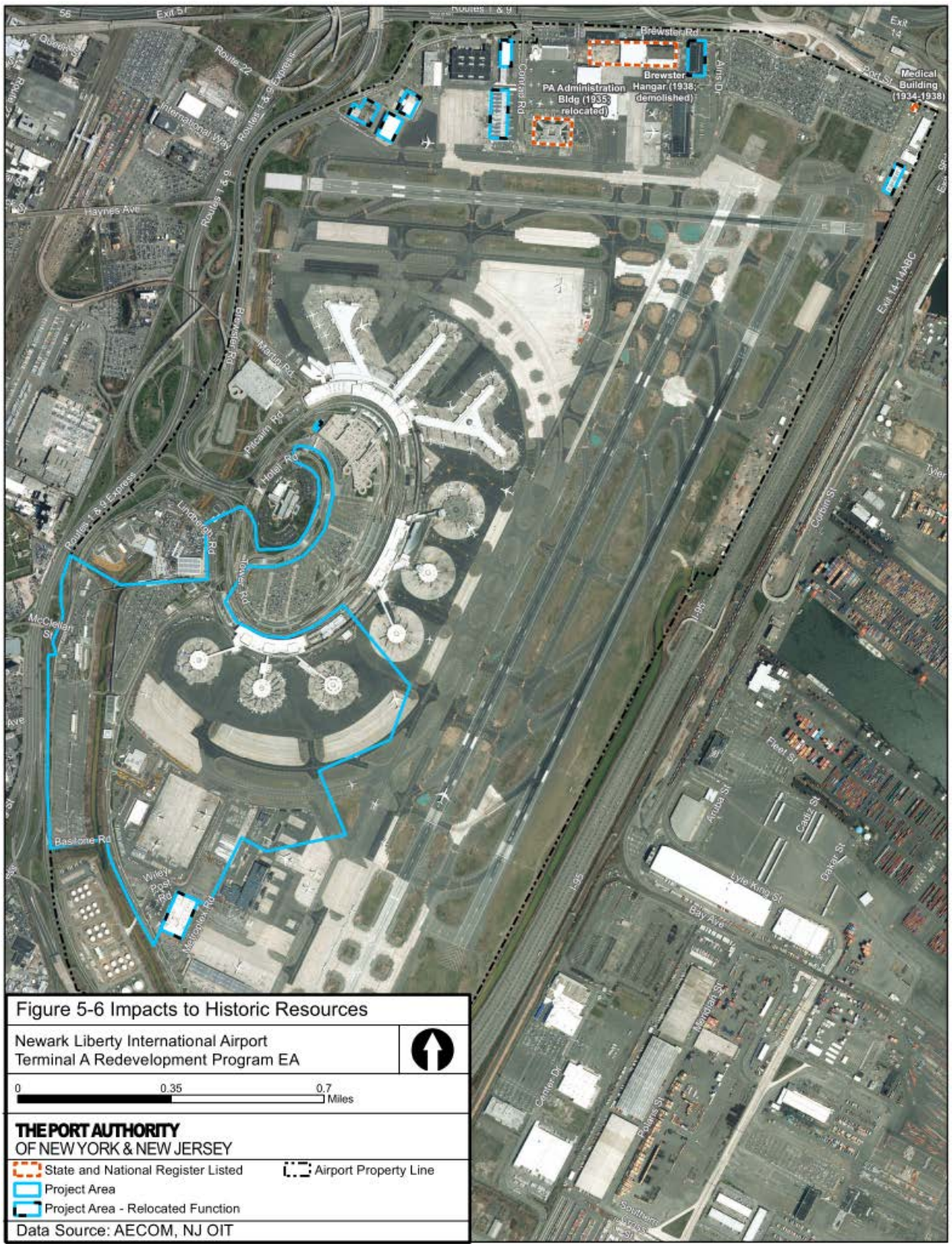
The National Historic Preservation Act (NHPA) is the primary federal law governing the preservation of historic and prehistoric resources, encompassing art, architecture, archaeological, and other cultural resources. Section 106 of the NHPA requires that, prior to approval of a federal or federally assisted project, or before the issuance of a license, permit, or other similar approval, federal agencies take into account the effect of the project on properties that are on, or eligible for, listing on the National Register of Historic Places (NRHP).

The Project Area is located in a former marsh, and in 1928 about 68 acres of the marshland were raised to a height of almost 20 feet above sea level for the initial airfield (**Figure 5-5**). Land filling continued through the 1930s, as the airport expanded. A 1989 cultural resources survey conducted subsurface testing in two small areas at the western limits of the Project Area that were areas of naturally higher ground, unaffected by the filling of the marshland. No prehistoric or historic sites were identified because of this effort and no further work was recommended. Recent research conducted at the State Historic Preservation Office (SHPO) and the New Jersey State Museum indicates that there are no eligible archaeological resources located within the Project Area.

Research conducted at the SHPO also revealed that there are no previously identified NRHP-listed or eligible historic architectural resources located within the Project Area. Three buildings located outside the Project Area, but still within the airport, were previously listed in the New Jersey State Register of Historic Places on June 25, 1980 and in the NRHP on December 12, 1980 (see **Figure 5-6**). These buildings are the 1935 Administration Building, the 1938 Brewster Hangar, and the Medical Building (built between 1934 and 1938). The Administration Building was relocated 2,500 feet southwest of its original location in 2002, but is still located outside the Project Area in the Airport's North Area. The Brewster Hanger was demolished in 1998. The Medical Building is the only one that remains in its original location in the airport's North Area (but outside the Project Area).

There are no historic or archaeological resources located within the Project Area and as a result there would be no direct impacts from the Proposed Action. The 1935 Administration Building and the Medical Building are both located in the airport's North Area, well removed from the Project Area. Consequently, the Proposed Action would neither significantly affect views to or from these resources, nor would it significantly alter any other aspect of their context.


RAILROAD
Waverly
Pierson's Cre
Woodruff's
Great Island
Oyster Creek
Bound
NEWARK BRANCH OF CENTRAL RAILROAD OF NE
Legend
Project Area
Project Area - Relocated Function
Figure 5-5 Project Area Circa 1898
Newark Liberty International Airport
Terminal A Redevelopment Program EA
0
0.5
1
Miles
THE PORT AUTHORITY
OF NEW YORK & NEW JERSEY
Data Source: 1898 USGS, Staten Island New Jersey - New York


Brewster Rd
Brewster Hangar (1938; demolished)
PA Administration Bldg (1935; relocated)
Medical Building (1934-1938)
Exit 14
Exit 14A/14B/C
Route 22
International Way
Routes 1 & 9
Routes 1 & 9 Express
Haynes Ave
Marion Rd
Pecan Rd
Hotel Rd
Lindbergh Rd
Tower Rd
McClellan St
Baseline Rd
Wiley Post Rd
Newark Rd
Corbin St
Tyler
I-95
Fleet St
Aruba St
Cadiz St
Dakar St
Lyle King St
Bay Ave
Monroe St
Center Dr
Roberts St
Southern Access
Figure 5-6 Impacts to Historic Resources
Newark Liberty International Airport
Terminal A Redevelopment Program EA
0
0.35
0.7
Miles
THE PORT AUTHORITY
OF NEW YORK & NEW JERSEY
State and National Register Listed
Airport Property Line
Project Area
Project Area - Relocated Function
Data Source: AECOM, NJ OIT

Consultation with the SHPO was begun on April 11, 2012. In a letter dated May 23, 2012, the SHPO concurred with the Port Authority's conclusion that there would be no direct impacts from the Proposed Action to any historical resources in the area. Correspondence from the State Historic Preservation Office is contained in **Appendix D**.[34]

The No-Build/No-Action Alternative would not result in any construction nor any changes to the structures on the airport; therefore there would be no impacts to historic, architectural, archaeological or cultural resources.

5.9 Biological Resources

The airport and the Project Area are a highly developed and disturbed landscape that is primarily paved as runways, taxiways, aprons or airport facilities and other buildings. From the perspective of landscape ecology, the entire airport has suffered significant habitat degradation and disruption. In general, the land at and surrounding the airport is highly urbanized, with significant amounts of transportation-related infrastructure improvements, as well as commercial, industrial, retail, and residential land uses. The existing undeveloped lands have been reduced to small, isolated patches, which do not resemble the native landscape. Mowed lawn, paved surfaces, and buildings occupy most of the Project Area. The major exception to these land uses is the Peripheral Ditch, a manmade replacement of existing drainage on airport property and receives stormwater runoff from the airport, and from the highways and land areas immediately north, south and west of the airport.

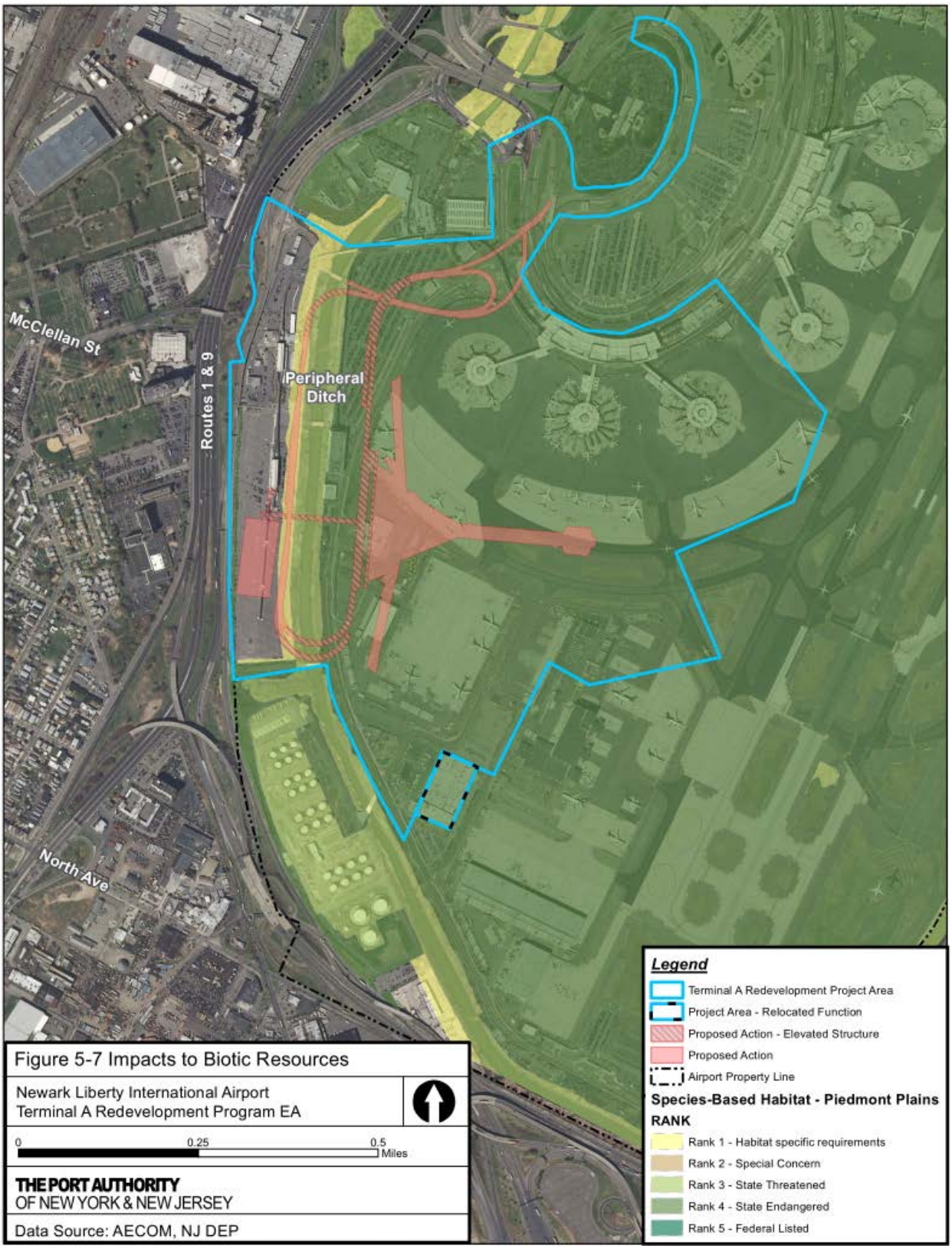
The airport property has been disturbed to varying extents and contains little intact native vegetation. Because of these factors, any impact to fish, wildlife or vegetation resulting from the Proposed Action is expected to be minor (see **Figure 5-7**).

There would be no significant adverse impact to wildlife species or their habitat as a result of the Proposed Action. The Proposed Action would impact a small amount of mowed grassland and open water habitat. NJDEP has determined that the Peripheral Ditch has a Resource Value Classification of "ordinary", which is not considered suitable habitat for any listed species (see LOI in **Appendix D**). Any impact to fish, wildlife or vegetation would be small and would not adversely affect any special-status populations.

Since this area is currently an active, developed airport, construction activities would not adversely impact wildlife, except for possible displacement to equivalent adjacent habitat.

The No-Build/No-Action Alternative would have no impact to grassland or wetland habitat; therefore, there would be no adverse impact to State-listed bird species or other fish or wildlife populations or habitat.

[34] Rquest for updated consultation was submitted May 11, 2016.


McClellan St
Routes 1 & 9
Peripheral Ditch
North Ave
Legend
Terminal A Redevelopment Project Area
Project Area - Relocated Function
Proposed Action - Elevated Structure
Proposed Action
Airport Property Line
Species-Based Habitat - Piedmont Plains
RANK
Rank 1 - Habitat specific requirements
Rank 2 - Special Concern
Rank 3 - State Threatened
Rank 4 - State Endangered
Rank 5 - Federal Listed
Figure 5-7 Impacts to Biotic Resources
Newark Liberty International Airport
Terminal A Redevelopment Program EA
0
0.25
0.5
Miles
THE PORT AUTHORITY
OF NEW YORK & NEW JERSEY
Data Source: AECOM, NJ DEP

5.10 Coastal Resources

5.10.1 Coastal Zone Management Act

Coastal areas are managed through the federal Coastal Zone Management Act of 1972. This law authorizes individual states to develop plans that incorporate the strategies and policies they will employ to manage development and use of coastal land and water areas. Each plan, which must be approved by the National Oceanic and Atmospheric Administration, must contain enforceable policies (i.e., state policies that are legally binding and by which a state exerts control over coastal uses and resources). In New Jersey, the enforceable policies are contained in the Coastal Zone Management rules at N.J.A.C. 7:7, among other regulations.

Three major state laws are implemented through the Coastal Zone Management rules: the Waterfront Development Law, N.J.S.A. 12:5-3, the Wetlands Act of 1970, N.J.A.C. 13:9A, and the Coastal Area Facility Review Act (CAFRA), N.J.S.A. 13:19.

The defining jurisdictional boundary of the NJDEP Coastal Zone Management/Coastal Permit Program Rules is the Coastal Area Facility Review Act (CAFRA) Zone. The northern limits of the CAFRA Zone end in Middlesex County, south of the Project Area. The defining jurisdictional boundary of the NJDEP Waterfront Development Law is the mean high water line (MHW). Areas adjacent to the water are also regulated. The adjacent area extends from the MHW to the first paved public road, railroad or surveyable property line. At a minimum, the zone extends at least 100 feet but no more than 500 feet inland from the tidal water body. Within this zone, NDEP must review the construction, reconstruction, alteration, expansion or enlargement of structures, excavation, and filling.

MHW terminates at the tide gate located on the Peripheral Ditch near the far eastern boundary of the airport. This tide gate controls the Peripheral Ditch drainage to the Elizabeth Channel. Because the Proposed Action is located more than 500 feet from MHW and outside any regulated adjacent area, and is located outside the CAFRA Zone, no impacts to the coastal zone would occur and, therefore, no Coastal Zone Management Consistency Certification or related mitigation would be required.

5.10.2 Coastal Barrier Resources Act

There are no coastal barriers or components of the Coastal Barrier Resource System located near the airport, as regulated by the Coastal Barrier Resources Act of 1982 and the Coastal Barrier Improvement Act of 1990. Therefore, there would be no coastal barrier impacts associated with either the Proposed Action or the No-Build/No-Action Alternative.

5.11 Farmlands

The airport is not located on prime farmland, unique farmland, or land of statewide or local importance, but rather on what the Farmland Protection Policy Act defines urban built-up land. In addition, the land is not zoned for agricultural preservation. Therefore, there would be no impact to farmlands under the Proposed Action or No Action alternatives.

5.12 Natural Resources and Energy Supply

Executive Order 13123, *Greening the Government through Efficient Energy Management* (64 C.F.R. § 30851, June 8, 1999) requires each federal agency to reduce petroleum use, total energy use and associated air emissions, and water consumption in its facilities. Per FAA Order 1050.1F, it is also the policy of the FAA, consistent with NEPA and CEQ regulations, to encourage the development of facilities that exemplify the highest standards of design including principles of sustainability. The airport relies on public utilities for electricity and natural gas.

The operation of an airport requires high energy and water usage and produces significant quantities of waste based on a 24-hour operation. Therefore, significant effort has been undertaken to evaluate and integrate resource efficiency into the design of the Proposed Action to minimize these impacts.

The existing facilities at Terminal A are outdated and inefficient. The Proposed Action to build a new terminal would improve overall building performance and incorporate major energy saving measures such as employing a high efficiency HVAC system, low-energy solid-state lighting systems, and external shading of windows.

Energy

The Proposed Action would seek to minimize energy consumption through investigating potential strategies that include a high performance building envelope, efficient HVAC and lighting systems, installation of building management systems, and automated controls including daylight and occupancy sensors, if feasible. Additional potential strategies, such as daylight harvesting (a system that reduces the use of artificial lighting in building interiors when natural daylight is available) and undertaking commissioning to ensure systems are coordinated and working as intended could be employed. The integration of renewable and alternative energy technologies such as ground source heat pumps and solar photovoltaic where feasible, and avoidance of chlorine-based refrigerants and insulation products are other potential strategies.

A preliminary energy model for the Proposed Action was completed in February 2012 by Croxton Collaborative Architects (*Terminal A Pre-Stage I Energy Analysis Report*). This model demonstrates incremental energy savings from a variety of energy efficiency measures based on assumptions available in this early stage of design. The energy model scope includes the new Terminal A, adjacent parking garage, and relevant portions of the Central Heating and Refrigeration Plant. The model is based on Appendix G of the American Society of Heating, Refrigerating and Air Conditioning Engineers Standard 90.1 (2007), per LEED. Also included in the model are the source Energy Use Index (EUI) (kBtu/sf) values, CO_2 emissions, and energy use impact by category (lighting and HVAC). The Port Authority's *Sustainable Building Guidelines* require a savings in energy cost of 30 percent compared with the American Society of Heating, Refrigerating and Air Conditioning Engineers Standard (ASHRAE) Standard 90.1 (1999). It is the goal of this project to achieve that energy cost savings.

Table 5-5 provides a comparison between the projected annual energy demand of the Proposed Action and the No-Build/No-Action Alternative. The table indicates a greater energy demand under the Proposed Action relative to the No-Build/No-Action Alternative, which is a function of the proposed terminal being larger than the existing terminal. Ample energy resources are available to meet this increased demand.

Another potential energy saving/emissions reducing strategy would be the use of 400Hz power units and pre-conditioned air (PCA). Aircraft require electrical energy during ground time (400Hz) and depending on climate conditions also PCA for cabin heating or cooling. Traditionally, these ground energy needs are provided by an Auxiliary Power Unit (APU) located at the rear of the aircraft, which burns aircraft fuel and generates exhaust emissions and noise while the aircraft is parked at the gate. As a result of the poor efficiency of this unit (8-14%), the APU is a major contributor to pollutant emissions and noise at airports.

A 400Hz power unit would be installed at each gate to deliver standby power for aircraft operating systems and PCA devices would be installed to provide heated/cooled air as needed to maintain a comfortable cabin temperature between flights.

Using 400Hz power and PCA devices reduces the amount of time aircraft are otherwise required to operate their APUs. Typical fuel savings of up to 90% (excluding grey energy) can be achieved when compared to the fuel consumption of an APU. In addition, the emissions of CO2, NOx and other pollutants are reduced respectively by approximately 90%, while ramp noise levels drop considerably.

Table 5-5 Projected Annual Energy Demand: No-Build/No-Action vs. Proposed Action

	Building Size (Sq. Ft.)	Electricity Demand (kWh)	kWh/Sq. Ft.	Natural Gas Demand (Therms)	Therms/Sq. Ft.
No-Build/No-Action	606,000	25,443,316	41.9	75,729	0.125
Proposed Action	948,000	29,570,442	31.2	143,419	0.151

Source: Croxton Collaborative Architects, February 2012.

Natural Resources

No unusual materials or materials in short supply would be used for the construction of the new Terminal A and associated facilities. The Proposed Action would specify materials that have a reduced impact on the environment. Potential strategies include the following:

- The use of materials that contain recycled content to minimize the demand for virgin materials
- The use of durable materials to reduce replacement due to wear and tear
- The use of regional materials that require less transportation and therefore reduce transportation-related emissions (where feasible)
- The use of products that are verified as sustainable by a third party certifier
- The recycling of waste generated during construction and operation.

Sustainable Design

The Proposed Action would utilize an integrated design process and evaluate sustainable opportunities, as well as environmental, economic and societal impacts, by using sustainable design workshops and coordination meetings with all project disciplines.

The Port Authority has developed sustainability policies and guidelines to ensure that sustainable design practices are implemented in each of the design, construction, operation and maintenance phases:

- PANYNJ Sustainable Building Guidelines, 2011
- PANYNJ Environmental Sustainability Policy, 2008
- PANYNJ Climate Change Adaptation/Resilience, 2008
- PANYNJ Bicycle Policy, 2010
- PANYNJ Sustainable Design Guidelines, 2010
- PANYNJ Sustainable Infrastructure Guidelines, 2011
- Newark Liberty International Airport: Sustainable Management Plan, November 2012

The Proposed Action could reduce the impact of development by addressing issues relating to hardscape, landscape, and wider site considerations. The Proposed Action could incorporate sustainable stormwater management, which will assist the project in meeting environmental permitting requirements. Potential strategies may include the use of light colored roofing and paving materials and vegetation (where feasible) to minimize heat island effects and implementing measures that increase site permeability to reduce stormwater runoff.

The Proposed Action could minimize potable water demand through strategies that include the use of ultra-low flow toilets and urinals, flow controls on faucets and the harvesting and reuse of rainwater for irrigation and flushing of toilets and urinals.

The Proposed Action could ensure high quality indoor spaces that would provide healthier and more productive environments that contribute to the comfort and well-being of visitors and occupants. Potential strategies may include the use of low-emitting materials, effective ventilation strategies, such as the use of carbon dioxide monitoring, to better respond to occupancy fluctuations, access to views and natural daylight, and, in non-public areas, occupant-controllable heating, cooling and lighting.

The Proposed Action would consider numerous opportunities to create innovative solutions in order to achieve a high performance terminal. These strategies may include the implementation of an integrated pest management plan, measures to reduce the transmission of exterior ambient noise, and the development of maintenance and operations programs to support the environmental sustainability of the facility during its operation.

LEED

The Proposed Action includes a U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) certification goal to achieve a minimum rating of LEED Silver. The LEED rating system is the predominant, and most widely accepted, market-based green

building rating system in the United States. A certified project indicates that sustainable criteria have been successfully integrated into the overall design of a project.

Summary

The Proposed Action would not result in adverse impacts to energy supply or to the use or supply of natural resources. Although energy demand under the Proposed Action would be greater than existing conditions, this is the result of a larger building size and would be tempered by the use of energy-saving devices and an energy efficient building design. There would be little appreciable impact to the energy supply of local residences or businesses.

Under the No-Build/No-Action Alternative, existing conditions would remain unchanged – an energy inefficient building would remain in use and the inefficient use of resources would continue. This alternative would not conform to the Port Authority's sustainability guidelines and would prevent the airport from meeting the Port Authority's overall sustainability goals.

5.13 Visual Effects

Per FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, any lighting associated with an airport action that could cause an annoyance to receptors in the vicinity of the airport or interfere with normal activities has been evaluated. In addition, aesthetic impacts were considered with respect to the extent that development contrasts with the existing environment.

The airport is located in a densely developed area but separated from any residential neighborhoods or other light-sensitive land uses by multiple busy highways. The Project Area is located on airport property and is bordered by aviation uses to the north and east. Located immediately west and south of the site is a surface parking lot and a bulk fuel storage facility, as well as U.S. Routes 1 & 9.

Light Emissions

Airfield and landside lighting systems at the airport include a rotating beacon, taxiway edge and centerline lights, runway edge and centerline lights, runway threshold lights, runway end identifier lights, runway approach light systems, lighted runway and taxiway signs, obstruction lights, terminal building lighting, and parking lot and access road lighting.

The Proposed Action would result in a minor reconfiguration of light sources, alteration of curbfronts, a shifting of the new Terminal A further south, and the addition of a parking garage. The new terminal and parking garage would utilize newer and more efficient and sustainable lighting products than what exists, resulting in reduced light emissions.

Aviation lighting is abundant in the area, as required for security, obstruction clearance, and aircraft navigation in the air and on the ground. Light emissions from the proposed Terminal A would be shielded from surrounding sensitive land uses by other airport infrastructure (e.g., fuel farm and proposed garage) and U.S. Routes 1&9. The parking garage would not generate significantly more lighting than the existing surface parking lot. The Proposed Action would not produce significantly more lighting impacts on nearby residential areas and cemeteries. Considering the Project Area is located in a dense metropolitan area and surrounded by major roadways, any new light emissions are not expected to cause an annoyance to people. As such, no adverse impact would result with regard to light emissions from the Proposed Action.

Under the No-Build/No-Action Alternative, the existing Terminal A and surrounding area would remain unchanged; therefore, there would be no change in lighting.

Visual Resources and Visual Character

The Proposed Action would alter the area's visual environment by removing the existing concourses and satellite holdrooms to Terminal A, constructing a new Terminal A further south and replacing an existing surface parking lot with a five-level garage. The proposed Terminal A headhouse would be a two-level building with a third level mezzanine. It would be mostly blocked from view to the west and south by the proposed parking garage and existing fuel farm. The proposed parking garage would connect with the existing elevated AirTrain station P-1 via an at-grade covered pedestrian walkway, blending with the transportation infrastructure (i.e., roads, rail, parking) already present. The proposed garage would be consistent with the existing infrastructure within the viewshed.

The project would be most evident to people driving north and south along U.S. Routes 1&9 and along North Avenue. However, the proposed structures are consistent with the existing airport infrastructure; therefore, the visual environment would not be appreciably different. The Proposed Action would not obstruct any existing long views and there would be minimal visual impact to the adjacent residential neighborhoods and cemeteries. The Proposed Action would not result in adverse visual or aesthetic impacts.

Under the No-Build/No-Action Alternative, the existing Terminal A, parking lots and roadways would remain in their current configuration. Since there would be no structures demolished or new structures added, there would be no change to the visual environment.

5.14 Hazardous Materials, Pollution Prevention, and Solid Waste

According to FAA Order 1050.1F*, Environmental Impacts: Policies and Procedures*, the impacts to solid waste collection, control, and disposal due to airport construction projects must be assessed in an EA. Airport construction projects, such as terminal redevelopment, do not normally generate significant amounts of perishable or nonperishable waste, but rather wastes associated with construction activities. The following sections discuss the potential hazardous materials and solid waste impacts.

Hazardous Materials

Section 4, *Affected Environment*, and **Appendix B** discuss the potential hazardous materials present in the Project Area that may be impacted by the Proposed Action. Hazardous substances and other contaminants, including asbestos, PCBs, CFCs, mercury, and petroleum hydrocarbons have been identified in and around the Project Area. Project construction activity would be coordinated with any ongoing remediation activities. Depending upon the material, certain handling and disposal restrictions would be in place during building demolition and construction.

There are two active remediation sites currently located within the Project Area, as described below. Remedial activities are expected to be completed at both prior to the start of any Terminal A construction activity.

- Building 331 (Chelsea Flight Kitchen) – Per a meeting with United Airlines in December 2016, United indicated they have remediated completely soil

and groundwater contamination at Building 331 and is awaiting approval/concurrence from their Licensed Site Remediation Professional (LSRP). During the course of remediation, however, historic fill (i.e. non-native material that was used in the past to raise the elevation of the airport) was identified at the site. NJDEP requires that the deed of the site be revised to reflect the presence of historic fill and United has proposed implementing this remedial action. Revision of the Deed, however, requires approval by the Authority. The Authority is currently in discussions with United Airlines to resolve this matter.

- Building 120 (Fuel Selection Station) – As of October 2016, the Authority obtained approval from their LSRP to excavate all contaminated soil and to treat contaminated groundwater encountered during excavation activities at the Building 120 site. These remedial actions have been incorporated into the three bridges contract and will occur in the last quarter of 2018.

Health and Safety Plans (HASPs) approved by NJDEP would be developed for the various construction activities associated with the Proposed Action to reduce the potential for worker or public contact with any contamination found in either the soil or groundwater. Each HASP would address both the known contamination issues (e.g., the need for air monitoring if excavating in known solvent contaminated soil) as well as contingency items (e.g., if unknown tanks or drums are encountered). Each HASP would be developed in accordance with U.S. Occupational Health and Safety Administration (OSHA) regulations and guidelines. HASP would also generally include routine monitoring of both air and soil (in place and/or as spoils).

Because implementation of the Proposed Action would not increase the quantity of hazardous materials present in the environment, and would require the removal and remediation of some hazardous materials from buildings and subsurface areas, the existing levels of contamination would be reduced. These hazardous materials would be properly disposed of, reclaimed, or recycled as appropriate. Pollution prevention measures identified in Section 5.17, *Construction Impacts*, would limit the adverse environmental effects from these materials. In addition, the Port Authority's *Best Management Practices* requires facilities with petroleum and/or chemical bulk storage areas to comply with all applicable regulations including those involving releases, registration, handling, and storage. The Port Authority currently has a Spill Prevention, Control and Countermeasure (SPCC) Plan for the airport. Entitled *Spill Prevention Control and Countermeasures Plan for Facilities at Newark Liberty International Airport*, the plan contains appropriate spill prevention and clean up measures. Tenants at the airport that store chemicals must also comply with all applicable regulations and prepare and maintain their own SPCC plans.

The removal and remediation of hazardous materials in the Project Area will be conducted in accordance with all regulatory requirements; therefore the Proposed Action would result in beneficial impacts with regard to hazardous materials by reducing the level of hazardous substances in the environment. The No-Build/No-Action Alternative would not generate these beneficial impacts, but would result in hazardous materials remaining in place at existing levels in existing locations.

Pollution Prevention

The airport currently has standard operating procedures and preventive maintenance procedures in place to reduce the risk associated with hazardous waste management. Some of these procedures and initiatives include:

- Established a Right to Know Survey in 2009 (and updated in 2011) to outline hazardous material quantities and locations around the airport.
- Developed a spill prevention plan that contains procedures for drainage controls, discharge prevention, disposal, and reporting of oil and other materials.
- Producing a biennial hazardous waste report outlining the amount of waste produced by the airport and where it was shipped.

Solid Waste

Because the Proposed Action will not create additional air traffic or passengers, the only increase in solid waste will be because of the construction debris. During construction, solid waste would be generated by site clearing, structural demolition and other construction activities. The Proposed Action will be designed to address and implement, where practical, feasible and appropriate, the Port Authority's current sustainable design guidelines.

In New Jersey, construction and demolition (C&D) debris is defined as solid waste Type 13C, which includes building and structural material and rubble resulting from the construction, remodeling, repair, and demolition of houses, commercial buildings, pavement and other structures. C&D debris generated by project-related demolition and construction will be recycled to the greatest extent possible. An Authority-wide policy requires that contractors recycle 75% of certain demolition debris items, which currently include steel, asphalt, Portland cement concrete (PCC) and clean soil.

The disposal of C&D debris would be done in accordance with the Union County Solid Waste Management Plan, the Essex County Solid Waste Management Plan and with the regulations of the state's *Solid Waste Management Act* (N.J.S.A. 13:1 E-1).

5.15 Traffic

A detailed, airport-wide traffic simulation model (VISSIM) was prepared by Ove Arup & Partners, P.C. (Arup) under the Port Authority's direction and used to compare traffic conditions for the Existing, Future No-Build/No-Action, and Future Build (Proposed Action) conditions. Traffic conditions at various airport roadway facilities (i.e., ramps and multi-lane frontage roads, weaving sections, frontages, and intersections) were analyzed using the VISSIM model during typical weekday morning (AM), midday, and afternoon (PM) peak hours. The results of those traffic analyses are presented in **Appendix F**.

It should be noted that the Future Build condition reflects the existing configuration at McClellan Street (rather than the McClellan Street interchange) and is referred to as "Future Build 2 model" in Arup's December 1, 2014 memorandum titled *EWR VISSIM Phase 2, Revised Forecast Analysis*. Furthermore, as noted in the memorandum, on-airport growth for the No-Build condition in 2022 and 2027 was assumed to remain unchanged from the original 2018 and 2023 forecasts.

Proposed Action

The Future Build conditions traffic analysis identifies how the airport's roadway system would operate in both of the future horizon years – build out (2022) and build out + 5 years (2027) – with the implementation of the Proposed Action and its associated road and intersection improvements. As such, the network analyzed in the VISSIM traffic analysis for Future Build conditions includes anticipated future increases in background traffic volumes and projected growth in passenger traffic as well changes and improvements to the roadway network analyzed under existing conditions. It is important to note that the overall passenger demand and level of traffic accessing the airport would remain the same with or without the Proposed Action.

Ramps, Multi-Lane Roadways, and Weaving Sections

Under Future Build conditions, all ramps, multi-lane roadways, and weaving sections are projected to operate at LOS D or better in both 2022 and 2027, with the exception of the following:

- CTA Exit to Route 1 & 9 Southbound which is projected to operate at LOS E during the PM peak hour in both 2022 and 2027.

- Express Roadway to Terminal C Arrivals which is projected to operate at LOS E during the midday peak hour in both 2022 and 2027.

Intersections
All traffic movements at the 13 study intersections analyzed under Future Build conditions are projected to operate at LOS D or better during the three weekday analysis peak hours in both 2022 and 2027, with the exception of the following movements at the Earhart Drive/North Avenue intersection:

- The northbound right-turn movement is projected to operate at LOS E during the PM peak hour in both 2022 and 2027.

- The eastbound left-turn movement is projected to operate at LOS E during the midday peak hour in 2027.

- The southbound through movement is projected to operate at LOS E during the AM and PM peak hours in 2027.

Terminal Frontage Roads

Under Future Build conditions, all terminal frontage roads are projected to operate under 130 percent utilization during all three weekday peak hours in both 2022 and 2027. [35]

[35] As noted in *ACRP Report 40: Airport Curbside and Terminal Area Roadway Operations* (TRB, 2010), curbside utilization is the recommended performance measure for airport curbside roadways. Curbside utilization indicates the ability of a roadway to accommodate existing or projected requirements for vehicles loading or unloading at the curbside. It also indicates if spare capacity is available to serve additional demand and surges in demand. Typically, a utilization factor of 130 percent or less (i.e., 65 percent of the combined capacity of the inner and second curbside loading/unloading lanes) is a desirable planning target for new curbside roadways. A utilization factor of 170 percent (i.e., 85 percent of the combined capacity of the inner and second curbside lanes) is acceptable for existing facilities,

Parking

The Proposed Action would result in the loss of parking lots P1 and P3, with total a capacity of 2,199 spaces. The average daily utilization of Lots P1 and P3 is 68%, or approximately 1,495 spaces. As part of the Proposed Action, a new garage and surface lot would be constructed that would provide a total of 2,621 spaces, resulting in an increase of 422 spaces. Therefore, parking demand would continue to be met under the Proposed Action.

No-Build/No-Action Alternative

The Future No-Build/No-Action analysis identifies how the roadway system is projected to operate in the future horizon years (2022 and 2027) *without* the Proposed Action. As such, the No-Build/No-Action Alternative traffic analysis includes anticipated future increases in background traffic volumes and projected passenger demand, but does not include roadway changes and improvements that are part of the Proposed Action. It is assumed that the current configuration and operation of, and access to/from, the airport would be retained.

Ramps, Multi-Lane Roadways, and Weaving Sections

Under Future No-Build/No-Action conditions, all ramps, multi-lane roadways, and weaving sections are projected to operate at LOS D or better during all three weekday peak hours in both 2022 and 2027, with the exception of the following:

- The express roadway to Terminal C Arrivals is projected to operate at LOS E during the midday and PM peak hours in both 2022 and 2027.

- The express roadway between the Terminal A Frontage merge and the Terminal C Frontage diverge (in front of Terminal B) is projected to operate at LOS E during the midday peak hour in both 2022 and 2027.

- The weaving section between the CTA Entrance/Lindbergh Road merge and Existing Terminal A and the new Terminal A roadway diverge is projected to operate at LOS E during the PM peak hour in 2022.

- The weaving section between the new Terminal A roadway between the CTA Entrance/Terminal A recirculation merge and the Terminal A Parking Frontage diverge is projected to operate at LOS E during the PM peak hour in 2022.

- The weaving section on Carson Road between the Frontage/Parking merge and the Frontage/Carson to Basilone Road diverge is projected to operate at LOS E during the PM peak hour in 2022.

- The weaving section of the new Terminal A outbound roadway between the Terminal A Frontage merge and the Hotel Road(Exit)/Terminal A recirculation diverge is projected to operate at LOS E during the PM peak hour in 2022.

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recognizing that during peak hours and days of the year, demand will exceed capacity. Individual airport operator policies regarding parking in multiple lanes may dictate different utilization factor planning targets.

Intersections

All 13 of the study intersections analyzed under Future No-Build/No-Action conditions are projected to operate at LOS D or better during all three weekday peak hours in both 2022 and 2027.

Terminal Frontage Roads

Under Future No-Build/No-Action conditions, all terminal frontage roads are projected to operate under 130 percent utilization (i.e., the desirable planning target for new curbside roadways, as identified in *ACRP Report 40*) during all three weekday peak hours in both 2022 and 2027, with the exception of the Terminal C Arrival frontage which is projected to operate with a utilization rate of 133 percent during the weekday midday peak hour in both 2022 and 2027.

Parking

Under the No-Build/No-Action Alternative, parking lots P1 and P3 would remain in place, maintaining a total capacity of 2,199 spaces. The average daily utilization of Lots P1 and P3 is 69%, or approximately 1,495 spaces. With or without the Proposed Action, passenger travel at the airport is projected to continue to increase over time. As a result, usage of the airport's parking facilities would increase as well. However, it is not expected that parking demand would be exceeded by the available spaces.

5.16 Climate

5.16.1 Introduction

"*Climate*" is defined as average weather patterns over a period of time – from a few decades to thousands of years. Climate fundamentally shapes our surroundings. Temperature, precipitation, winds, and meteorological events (for example, the timing of the first and last frost, the beginning and end of a rainy season, or a severe storm causing flooding) all influence the distribution of water, soils, plants, and wildlife across the globe. Consequently, climate is extremely important to local ecosystems as well as human health and infrastructure.

Significant, lasting change to existing weather patterns is commonly called "*climate change*." The term "greenhouse gases" refers to a variety of gases in the Earth's atmosphere that react with sunlight in a way that influence global air temperature. Greenhouse gases (GHGs) are defined as including carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, in accordance with Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*. These greenhouse gases are typically reported in units of *carbon dioxide equivalent* (CO_2e).

Research has shown a direct correlation between fuel combustion and greenhouse gas emissions. In terms of U.S. contributions, the General Accountability Office reports that "domestic aviation contributes about 3 percent of total carbon dioxide emissions, according to [Environmental Protection Agency (EPA)] data" compared with other industrial sources, including the remainder of the transportation sector (20%) and power generation (41%).[36] The International Civil Aviation Organization estimates that greenhouse gas emissions from aircraft

[36] U.S. General Accountability Office, Report to Congressional Committees: Aviation and Climate Change (June 2009).

account for roughly 3% of all anthropogenic greenhouse gas emissions globally. Climate change due to greenhouse gas emissions is a global phenomenon, so the affected environment is the global climate.

The scientific community is continuing efforts to better understand the effects of aviation emissions on the global atmosphere. The FAA is leading and participating in a number of initiatives intended to clarify the role that commercial aviation plays in greenhouse gas emissions and climate. The FAA, with support from the U.S. Global Change Research Program and its participating federal agencies (for example, the National Aeronautics and Space Administration, the National Oceanic and Atmospheric Administration, the EPA, and the Department of Energy) have developed the Aviation Climate Change Research Initiative in an effort to advance scientific understanding of regional and global climate effects from aircraft emissions. The FAA also funds the Partnership for Air Transportation Noise and Emissions Reduction Center of Excellence research initiative to quantify the effects of aircraft exhaust and contrails upon global and U.S. climate and atmospheric composition. Similar research topics are being examined at the international level by the International Civil Aviation Organization.

There are currently no federal standards for greenhouse gas emissions or climate change related to aviation projects. However, in 2009 the EPA determined that greenhouse gases at current and projected levels are a threat to public health and welfare. This finding (*Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act* [EPA 2009:66496]) and a 2007 U.S. Supreme Court ruling (*Massachusetts v. EPA*, 549 U.S. 497 [2007]) allow greenhouse gases to be regulated by the EPA under the authority of the Clean Air Act of 1970, as amended.

In 2012, the FAA issued its own guidance for assessing greenhouse gases and climate change (*Order 1050.1F, Guidance Memo #3: Considering Greenhouse Gases and Climate Change under the National Environmental Policy Act; Interim Guidance to FAA Order 1050.1F* [FAA 2012b]). This memo explicitly identifies climate change as a category of potential environmental effect to be considered in NEPA documents, and provides additional details on what data to collect and how to document the extent and context of greenhouse gas emissions for aviation projects. As with Council on Environmental Quality guidance, the FAA memo states that the climate change section should not attempt to determine the effects of greenhouse gas emissions on climate change.

5.16.2 Regional Climate

Newark and the airport lie in the transition area between a humid subtropical and humid continental climate, with cold, damp winters and hot, humid summers. The January daily mean is 31.6 °F, and although temperatures below 10 °F are to be expected in most years, sub-0 °F readings are rare; conversely, some days may warm up to 50 °F. The average seasonal snowfall is 29.5 inches, though variations in weather patterns may bring sparse snowfall in some years and several major Nor'easters in others, with the heaviest 24-hour fall of 25.9 inches occurring on December 26, 1947. Spring and autumn in the area are generally unstable yet mild. The July daily mean temperature is 77.4 °F, and highs exceed 90 °F on an average 27 days per year, not factoring in the often-higher heat index.

The region receives precipitation ranging from 2.9 to 4.8 inches per month, usually falling on 8 to 12 days per month. Extreme temperatures have ranged from −14 °F on February 9, 1934 to 108 °F on July 22, 2011.

5.16.3 Proposed Action

The new terminal would be larger than the existing Terminal A and would utilize more energy. Airport operations in the form of aircraft takeoffs and landings and associated ground vehicle traffic (e.g., tugs, food service and security vehicles, etc.) would result in fossil fuel combustion. However, since the new terminal would consume a relatively small incremental amount of energy, and since there would be no increase in flight operations as a result of the Proposed Action, overall global or national GHG emissions would remain the same under the Proposed Action, resulting in an insignificant cumulative impact to global climate change.

5.17 Construction Impacts

Introduction

In accordance with FAA Orders 1050.1F*, Environmental Impacts: Policies and Procedures*, and 5050.4B, *NEPA Implementing Instructions for Airport Actions*, the environmental impacts resulting from construction activities must be assessed when preparing an EA. While the long-term impacts of a project are usually greater than construction impacts, construction can cause major short-term impacts. Construction impacts are commonly minor, short-term and temporary in nature. Impacts resulting from the construction of the Proposed Action would not be permanent, lasting only for the duration of construction activities. FAA Order 1050.1F requires, at a minimum, the incorporation of the construction guidance found within FAA Advisory Circular 150/5370-10F, *Standards for Specifying Construction of Airports* and FAA AC 150/5370-7, *Controls to Prevent Air and Water Pollution*. In addition, guidelines contained in the Port Authority's *Sustainable Infrastructure Guidelines*, which aim to optimize infrastructure project design through sustainable engineering practice, will be incorporated.

Construction activities are expected to occur over a six-year period with the peak period occurring during from the fourth quarter of 2018 through the fourth quarter of 2019. The primary construction shift would be from 7 a.m. to 3 p.m., with approximately 10 percent of work being performed from 3 p.m. to 11 p.m. Work would occur on weekdays only, with minimal nighttime work (typically defined as being between 10:00 pm and 7:00 am) anticipated. The work would include existing pavement and building demolition; excavation and grading; building construction (terminal and garage); paving (concrete and asphalt); installation of drainage and fuel system infrastructure for the terminal; electrical work (terminal as well as airfield lighting and navigation systems); pavement markings; on-airport access road construction; and the establishment of a temporary construction staging site. The location of the staging area would be finalized during the project's final design phase. At the present time, a potential location has been identified as being a portion of existing Parking Lot P-3, displacing up to 1,619 spaces. During the construction phase, the displaced parking spaces will be absorbed into the other parking lots on and off the airport. After the closure of the P1/P3 lots there will be an average of 2,505 spaces available daily of the 12,455 spaces available in the other parking lots on the airport. There are also an additional 9,473 spaces available to airport patrons in the off-airport parking lots surrounding the airport. Coincident with the terminal opening, 2,621 additional spaces will be provided in the new parking garage and surface lot for airport patrons, resulting in an additional 422 spaces when construction is completed. Construction methods would employ common techniques, equipment, and materials, and would occur mostly daylight hours, with minimal nighttime work anticipated.

Construction activities would involve the use of vehicles, heavy construction equipment, and machinery. **Table 5-6** presents the construction equipment and hours of operation for the peak

year of construction (2018). Construction would require the use and storage of fuels, solvents, paints, and lubricants; and the use and storage of common construction materials. Airport construction has the potential to cause various environmental effects, primarily due to dust, noise, heavy equipment air emissions, disposal of construction debris, and storm water runoff containing sediment and other pollutants. In most cases, these potential effects are subject to state or federal regulations.

Table 5-6 Construction Equipment and Hours of Operation for Peak Construction Year (2018)

Construction Equipment Type	Horsepower	Hours of Operation
Asphalt paver	170	1,280
Backhoe loader	100	2,080
Gradall	150	800
Mobile crane	275	80
Pneumatic roller	100	1,280
Skid steer loader	60	1,600

Due to the airside location of the proposed Terminal A, the landside access and frontage roadways to the existing terminal will not be impacted by any proposed construction. On the airfield, it is intended that the construction of the new terminal will be accomplished by phased construction. The primary assumption associated with this phased construction is to maintain, to the extent possible, the existing airport facilities' functionality, operations and supporting infrastructure for designated durations of the project. Fencing would be installed around the perimeter of the terminal site to maintain a secure AOA. The preliminary phasing plan for the project has been developed around various assumptions related to construction phasing, including operational issues and detailed interfaces with the concurrent adjacent roadway and airside projects. The current assumptions, broken down by the three major areas of construction are as follows:

Airside Facilities

- Maintain existing Terminal A, Satellite A1, A2 and A3 operations to a maximum capacity for Group III Aircraft
- Maintain the Restricted Service Road from existing Terminal A around the construction site to the South Cargo Area
- Maintain the UPS site (Building 350) until a new UPS facility on the north side of the airport (in the area of Hangar 14 and Buildings 95 and 332) is completed early in the phasing
- Minimize disruption to airside activity
- Airfield pavement improvements that impact taxilane object free areas would be phased

Landside Facilities

- Maintain existing Earhart Road as long as possible

- Defer new CTA roads/Terminal A entry road work as long as possible to minimize Satellite A1 impact

Terminal A Facility

- Defer infrastructure and foundation work near and on the existing UPS (Building 350) site until UPS moves
- Defer south concourse work until UPS Building 350 can be demolished

This phased construction would not cause a major impairment of day to day airside operations. During construction of the new terminal, 11 hardstand parking positions would be temporarily displaced by construction activities (Aircraft Parking Areas Wilbur and Amelia). These positions would be temporarily relocated to an area near the construction zone, and would be accommodated by the use of phased construction of the airfield paving at these locations.

It is not anticipated that construction would require the replacement or relocation of FAA Navaids within the project area. The Port Authority is coordinating with FAA Technical Operations as they perform analysis to determine if there would be an impact to FAA's South RTR Facility. The Port Authority would coordinate with the FAA during design development regarding the installation of equipment for the ASDE-X Surface Detection, Runway Weather Monitoring, and other systems that are required by FAA. A duct bank for fiber optic lines used by the FAA and others would be relocated west of the Peripheral Ditch to avoid impacts from the proposed construction.

The current plan is to construct the entire new terminal building to the south of the existing terminal in an area currently used for aircraft parking. After completion of the building, the airlines currently operating in Satellites A1 and A2 would be relocated to new gates on the south side of the new building. Airlines operating in Satellite A3 would remain. Satellites A1 and A2 would then be demolished and the airfield paving reconstructed. Upon completion of that work, the airlines operating in Satellite A3 would be relocated to the north side gates of the new terminal. Satellite A3 would then be demolished, and airfield paving in that area reconstructed, completing the project. The Port Authority coordinated with the airlines through a series of workshops that were used to communicate the redevelopment plans and address any concerns regarding the construction phasing and impacts to operations.[37] The existing Terminal A headhouse would remain, although its future use is undetermined at this time.

The No-Build/No-Action Alternative assumes that there would be no construction of any facilities at the airport to address the established "purpose and need". No construction impacts would be expected under this alternative.

Construction activities required for development of the Proposed Action were evaluated to determine potential construction-related impacts. Construction impacts, as defined under Order 1050.1F, can involve a wide range of potential impact categories that are separately discussed in this document. The following environmental resource categories were evaluated to determine the potential for the Proposed Action to incur adverse impacts: noise, air quality, solid waste, roadway use, hazardous materials, water quality and historic resources.

[37] Workshops were dated April 3, 2014, January 14, 2015, and December 7, 2015. See Appendix D for a list of airline attendees.

5.17.2 Noise

Noise impacts are generally localized in the vicinity of the construction and demolition sites. Earthmoving equipment, pile drivers, asphalt pavers, dump trucks, cranes, jackhammers and other construction machinery and vehicles will create localized increases in noise levels. Although pile drivers and rock drills produce the highest individual sound levels, it is dump trucks, air compressors and concrete mixers that, due to their greater number or longer operating times, produce the most total sound energy. Noise from construction equipment would vary according to the type and model of equipment and would change according to the operation involved. Noise pollution cannot be avoided but the effects can be mitigated to help reduce the potential for annoyance by ensuring that nighttime operations are minimized and that all construction vehicles and equipment meet the applicable standards contained in 40 C.F.R. § 204, *Noise Emission Standards for Construction Equipment* and N.J.A.C. 7:29, the *New Jersey Noise Code*.

Distance from the construction site must be considered when evaluating potential noise impacts to land uses located near construction areas. As discussed in Section 5.2, *Land Use*, a medium density residential neighborhood is located between North Avenue East and McClellan Street southwest of the airport and south of the McClellan Street bridge, on the opposite side of U.S. Routes 1&9 from the airport. However, distance rapidly attenuates noise levels and this neighborhood is located far enough away (approximately ½ miles) so as not to be impacted by construction noise.
FAA facilities that might be impacted by noise and vibration from activities such as pile driving include the ATCT, which is located approximately one-half mile from the project site. Construction activity will therefore be sufficiently isolated from sensitive on-airport facilities.

Additionally, the area around the airport has an existing high background noise level due to highway traffic and aircraft operations. The noise generated during construction activities would not be discernible from the airport's normal background noise levels.

5.17.3 Air Quality, Including Greenhouse Gas Emissions

Air quality analysis is presented in **Appendix C**. Emissions from construction equipment and airborne dust from construction activities have the potential to impact air quality. Emissions and dust related to demolition and construction activities will be temporary and limited to the duration of individual demolition and construction projects.

Dust will be minimized with best management practices such as sweeping, watering, or seeding exposed soils, covering trucks when hauling dirt or transporting construction materials or using windbreaks to prevent accidental dust pollution. Additional measures are listed in Section 5.17.7.

Although construction activity is expected to last approximately six years from 2016 to 2022, emission levels would vary. An air emissions analysis was performed on construction activities and the results indicate that the expected annual increases in construction emissions under the Proposed Action would be well below the applicable *de minimis* limits (**see Table 5-7**). In general, impacts would be typical of those from a medium-to-large scale construction project in Elizabeth or Newark. Since construction emissions are anticipated to be below *de minimis* limits, and because there are no sensitive land uses located immediately adjacent to the Project Area, air quality impacts are not expected to be significant.

Table 5-7 Total Annual Construction Emission Levels

Construction Period Emissions (ton)							
Year	VOC	NO_x	CO	$PM_{2.5}$	SO_2	CO_2	CO_2e
2016	0.2	3.0	0.9	0.1	0.1	506.0	511.1
2017	0.5	7.2	2.4	0.3	0.3	1,123.8	1,135.0
2018	0.6	8.8	2.8	0.3	0.3	1,496.4	1,511.4
2019	0.3	4.0	1.5	0.2	0.1	621.6	627.8
2020	0.3	4.5	1.5	0.2	0.2	844.0	852.4
2021	0.1	1.0	0.5	0.0	0.0	259.9	262.5
de minimis limits	*50*	*100*	*100*	*100*	*100*	*NA*	*NA*

Source: Air Quality Technical Report, AECOM, September 2015; see Appendix C.

Construction activities would result in the burning of fossil fuels by construction equipment as well as an increase in construction-related vehicle traffic over the six year construction period. The recent EPA inventory report demonstrates that the GHG contribution from methane and nitrous oxide is less than one percent of the total CO_2e for fossil fuel combustion sources.[38] Given such small contributions from other GHG equivalents to carbon dioxide, for the purposes of this EA, CO_2e levels were predicted as 101 percent of estimated carbon dioxide levels. As shown in Table 5-6, during the peak construction year (2018), the Proposed Action would result in the emission of approximately 1,511 tons of greenhouse gases (presented as CO_2e).

5.17.4 Solid Waste

Solid waste was discussed in detail in Section 5.14, *Hazardous Materials, Pollution Prevention and Solid Waste*. Construction waste is expected to be comprised of waste materials normally generated by demolition, earthwork, and paving projects. Typical waste may include, but not be limited to, demolition debris and waste (concrete, asphalt, and building materials); pavement construction waste materials; soils; excess building, electrical, shipping/storage containers and pallets; utility materials and waste; and municipal solid waste generated by construction workers. The generation of these materials would be short-term and disposal would be addressed at local facilities. These materials will be recycled to the extent practical, feasible and appropriate.

In New Jersey, construction and demolition (C&D) debris is defined as solid waste Type 13C, which includes building and structural material and rubble resulting from the construction, remodeling, repair, and demolition of houses, commercial buildings, pavement and other structures. C&D debris generated by project-related demolition and construction would be recycled to the greatest extent possible. Contractors would also adhere to Authority-wide policies that require contractors to recycle 75% of certain demolition debris items (which currently include steel, asphalt, Portland cement concrete (PCC) and clean soil.

C&D debris would be disposed of in appropriate facilities that have the capacity to handle the additional waste. The disposal of C&D debris would be done in accordance with the Union

[38] EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2007*, April 15, 2009.

County Solid Waste Management Plan, the Essex County Solid Waste Management Plan and with the regulations of the state's *Solid Waste Management Act* (N.J.S.A. 13:1 E-1).

5.17.5 Roadway Use

During the construction period, construction-related vehicles would traverse the airport access roads and internal roadways to deliver materials and equipment to the construction site. This increase in roadway use would be managed to avoid impact to normal airport operations and passenger access to and from the airport. The contractor would be required to follow the approved Maintenance and Protection of Traffic Plan. The access roads and internal roadways may experience a slight increase in traffic volume; the increase would be easily accommodated on the existing roadways. To mitigate the impacts from an increase in traffic volume, delivery of construction materials and large or bulky construction equipment that is slow moving and could temporarily congest roadway traffic would be scheduled for non-peak hours. These deliveries would likely be intermittent and infrequent. Use of streets in residential neighborhoods and adjacent to noise-sensitive land uses is not anticipated. All construction vehicles would access the airport from U.S. Routes 1&9. Prior to construction, the Port Authority would initiate outreach with Newark and Elizabeth to inform the local agencies and the public of the project. Construction-related vehicles working near the airfield would be required to follow specified traffic patterns in areas where aircraft operate, in order to avoid interrupting airfield operations. Construction-related vehicles working near the airfield would be separated from aircraft operations by security fencing and would be required to follow specific traffic patterns, in order to avoid interrupting airfield operations.

5.17.6 Hazardous Materials

As detailed in Chapter 4, *Affected Environment*, and **Appendix B**, it is possible, based upon the age of the buildings involved, that hazardous substances, including asbestos containing materials (ACMs), PCBs, CFCs, mercury and lead-based paint are present in the buildings located in the Project Area. Each structure has been surveyed to determine the presence of any of these materials. All regulations governing the management, removal, transportation and disposal of these materials would be complied with.

There are several confirmed or potential petroleum or hazardous material release areas located within or adjacent to the Project Area. Depending upon the material, certain handling and disposal restrictions would be in place during building demolition and construction within these areas. All work would be done in accordance with an NJDEP-approved Health and Safety Plan. If construction-related activities, such as excavation, result in the discovery of previously unknown hazardous substances, then the Port Authority would be responsible for removing and disposing of contaminated media in accordance with state laws and regulations for hazardous waste management. Refer to Section 5.14, *Hazardous Materials, Pollution Prevention and Solid Waste* for more information about hazardous materials, pollution prevention and solid waste management.

Heavy equipment typically used during construction may require fueling operations, routine maintenance and minor repairs while onsite. There is a risk of minor spills or leaks of petroleum products during maintenance and equipment refueling. If a spill or leak of fuel or other hazardous substance occurs, it would be addressed according to NJDEP containment and remedial action procedures. Potential risks to human health and the environment attributable to an accidental release can be reduced by implementing a SPCC plan prior to construction, which would be required of all contractors.

5.17.7 Water Quality

Water quality was discussed in detail in Section 5.6, *Water Resources*. Construction would take place immediately adjacent to the Peripheral Ditch and include three new roadway crossings of the ditch. The potential for degradation of water quality is greatest during the construction period when topsoil is exposed, thereby making it more susceptible to erosion that can cause or contribute to increased sediment loading on downstream receiving waters. Soil erosion cannot be completely avoided but the resulting effects on surface water resources can be mitigated so as to avoid potentially significant water quality impacts. The guidelines and standards outlined in the state Department of Agriculture's *Standards for Soil Erosion and Sediment Control in New Jersey* will govern the design, implementation and maintenance of soil erosion and sediment control measures.[39] In addition, Soil Erosion and Sediment Control plans would be filed with Somerset-Union and Hudson-Essex-Passaic Soil Conservation Districts.

In addition, the following BMPs would be written into the project's construction contract documents and become an obligation of the contractor:

- Use watering trucks to minimize fugitive dust
- Cover trucks when hauling dirt
- Prevent material leakage from truck bed, sideboard, tailgate, or bottom dump gate
- Use windbreaks to prevent accidental fugitive dust pollution
- Cover trucks when transferring materials
- Minimize unnecessary vehicular and machinery activities
- Clean up spillage as necessary to prevent particulates from being pulverized and released into the atmosphere
- Minimize dirt track-out by washing or cleaning trucks before leaving the construction site
- Use temporary sediment barriers such as silt fences, straw bale barriers, sand bag barriers, and gravel filter barriers for areas that produce sheet flow runoff
- Schedule regular inspections of storm water and sediment control devices
- Repair and/or replace storm water and sediment control devices as often as necessary to maintain their effectiveness

Finally, project specifications would include applicable provisions of FAA AC 150/5370-10G, *Standards for Specifying Construction of Airports*, Item P-156 Temporary Air and Water Pollution, Soil Erosion, and Siltation Control,[40] AC 150/5320-5D, *Airport Drainage Design*,[41] and AC 150/5320-15A, *Management of Airport Industrial Waste*.[42]

5.17.8 Historic and Archaeological Resources

The project's limit of disturbance was evaluated and a preliminary determination was made that the archaeological sensitivity is low. The project area is located in a former marsh that was filled to construct the airfield in the 1920s and 1930s. Research, including review of previous surveys,

[39] http://www.nj.gov/agriculture/divisions/anr/pdf/2014NJSoilErosionControlStandardsComplete.pdf
[40] http://www.faa.gov/airports/engineering/construction_standards/media/AC-150-5370-10G-part-2.docx
[41] http://www.faa.gov/airports/resources/advisory_circulars/index.cfm/go/document.current/documentNumber/150_5320-5
[42] https://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/74205

indicates that there are no eligible archaeological resources located in the Project Area. If construction-related activities, such as excavation, result in the discovery of a historic property or artifacts, then those construction activities would be suspended until the FAA, in consultation with the SHPO, determines what actions must be taken to address the potential for adverse effects. Refer to Section 5.8, *Historic Resources*, for more information about historic resources.

5.18 Coordination with Public Agencies and Officials

The public has become aware of the Proposed Action through various news reports regarding the Port Authority's Capital Plan. The project has been periodically discussed at public meetings of the Port Authority Board of Commissioners. The Port Authority has discussed impacts to tenants (such as FedEx, UPS and Chelsea Kitchen) with the relevant entities as part of lease agreements and negotiations. The Proposed Action and the availability of the Draft EA for public review were described in a public notice dated February 16, 2017 and published in the Star-Ledger and the Record.

Agency coordination has also been conducted. A list of agencies contacted appears in **Table 5-8**.

Table 5-8 Stakeholder and Agency Coordination

Stakeholders	PANYNJ	Federal Agencies	State/Regional Agencies	Utilities
Air Canada	Various Departments	FAA	NJDEP	PSE&G
American Airlines		NMFS	NJDOT	NJ American Water
United Airlines		USFWS	Passaic Valley Sewerage Commission (PVSC)	Elizabethtown Gas
US Air			NJSHPO	Verizon
Southwest Airlines				
JetBlue				
WestJet				
Federal Express				
UPS				
Chelsea Kitchen (United)				

Copies of agency consultation letters and responses are provided in **Appendix D.**

5.19 Other Considerations

This section discusses consequences and other considerations that do not fall into the categories discussed previously in Section 5, *Environmental Consequences*. Specifically, the following are discussed as they pertain to the Proposed Action: possible conflicts with land use plans, policies, and controls; consistency with approved state or local plans; mitigation to avoid environmental impacts; and the degree of controversy on environmental grounds.

Potential Conflicts with Land Use Plans, Policies, and Controls

Based on consultation with agencies and review of existing regulations and statutes, the Proposed Action has no known conflict with the objectives of federal, state, regional, or local land use plans, policies, or controls in the Elizabeth or Newark area.

A number of environmental approvals, such as, dewatering and NJPDES permits, and Soil Erosion and Sediment Control plans, would be obtained prior to implementation of the project. The Proposed Action would follow the requirements of all applicable building codes and other relevant local regulations. As a result, the Proposed Action is not likely to conflict with any federal, state or local law or administrative determination relating to the environment.

Consistency with Approved State or Local Plans

The Proposed Action is consistent with approved state and local land use plans. The Proposed Action would occur on airport property and would not affect resources located outside the airport's boundary. Appropriate state agencies will be provided the opportunity to review the Environmental Assessment for conformance with state and local plans.

Means to Mitigate Adverse Environmental Impacts

Means for preventing, minimizing or mitigating potential adverse environmental impacts have been incorporated into the plans for constructing and operating the Proposed Action, as noted in the relevant impact category descriptions above. See Section 6, *Mitigation*.

Degree of Controversy on Environmental Grounds

The Port Authority is not aware of any major environmental controversy being generated regarding the Proposed Action.

The Proposed Action would increase terminal operational efficiency, but would not affect flight patterns, runway utilization, or the number of passengers. The Proposed Action is consistent with the historical pattern of progressive infrastructure improvements that have occurred over the years at the airport. The Proposed Action would have no significant environmental impacts. Therefore, the Proposed Action is not expected to be controversial on environmental grounds.

5.20 Cumulative Impacts

This section addresses the cumulative effects of past, present, and reasonably foreseeable future actions in combination with the alternatives (Proposed Action and No-Build/No-Action Alternative). The basis for this analysis is the recognition that while the impacts of many actions

may be individually small, the cumulative effect of past, present, and reasonably foreseeable actions on populations or resources can be considerable.

Introduction

The CEQ regulations (40 C.F.R. §1508.7) define a cumulative impact as "*...the impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency, Federal or non-Federal, or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time*." This cumulative impact analysis was conducted to comply with the intent of FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, DOT Order 5610.1C, and the January 1997 CEQ guidance.

NEPA requires that cumulative effects be evaluated along with the direct and indirect effects of the Proposed Action. As with direct and indirect project-related effects discussed previously in this section, the No-Build/No-Action Alternative serves as the reference point against which to evaluate cumulative effects.
The geographic area of concern for a cumulative impacts analysis is typically defined by the extent of the influence of a potential action and its alternatives (CEQ, 1997). The geographic scope of this cumulative impacts analysis is the existing airport property.

The timeframe of concern for this cumulative impacts analysis is limited to the construction years (2016 to 2022). The construction schedule of the Proposed Action would overlap with other projects at the airport, including the modifications to the aviation fuel system, enhancements to the new primary utility substation and service being constructed by PSE&G, and maintenance and overhaul of elements of the AirTrain. With the exception of temporary construction related impacts, the cumulative adverse environmental impact of the Proposed Action is expected to be minimal. Extensive preventive procedures would be put into place to avoid and minimize any potential adverse impacts during construction. As described in the following sections, the Proposed Action is consistent with the overall planning mission of the Port Authority and would not result in unmitigated adverse cumulative impacts.

Past, Ongoing and Reasonably Foreseeable Projects

As is true for any large and complex airport facility, the airport serves a constantly changing industry and relies on adopting modern technology in a constantly evolving environment to serve its users efficiently and effectively. Therefore, this airport along with many others throughout the country requires regular maintenance and modernization. The Port Authority has in the past and will continue to undertake an array of improvements at the airport to maintain and improve the efficient movement of aircraft and travelers. As is evident from a review of the projects listed below, each of them has demonstrated independent utility and can go forward without regard to whether any or all of the other listed actions are adopted. Each is proceeding separately and has or will go forward based on its own merits. The Proposed Action also has demonstrated its independent utility and need. The projects listed below represent the Port Authority's most recent steps to maintain and to improve the airport's functionality and also to enhance customer service.

The following is a summary of the ongoing or recently completed projects and projects anticipated in the foreseeable future:

- **Relocate Brewster Road and Site Preparation for Engineered Materials Arresting System (EMAS) Installation** – To address FAA Runway Safety Area (RSA) program requirements, work included the realignment of approximately 800 feet of Brewster Road east of Runway 11, the removal of approximately 74 feet of runway to accommodate the installation of an EMAS in the RSA at the end of Runway 11, and the relocation of Taxiway "Z" westward to accommodate the shortened runway. Completed in 2014.

- **Terminal A Vertical Circulation Improvements** – The work entailed the installation of two centrally located passenger elevators inside Terminal A to serve as the primary means of vertical circulation in the terminal. The new elevators will provide adequate capacity to meet current and future passenger demands and will reduce wear on existing elevators. Completed in 2014.

- **Design/Build Runway 11 EMAS** – The work entailed the design and construction of a 40-knot EMAS for Runway 11, including computer modeling, paved support surface, manufacturing and block installation and construction. The project was undertaken in order to comply with the FAA requirement to improve RSAs at all federally obligated airports. Completed in 2015.

- **Rehabilitation of Runway 4L-22R and Implementation of Delay Reduction Initiatives** – This project replaced the deteriorated asphalt and concrete surfaces on Runway 4L-22R in accordance with the Pavement Management Plan criteria for a state of good repair. It included milling and paving of the asphalt pavement surfaces, installation of concrete sections at the intersection of Runway 11-29, slab jacking at the south end and new drainage systems; complete replacement of the electrical infrastructure including lights, duct banks, wiring and cables and guidance signs; and the complete replacement of the FAA approach lighting NAVAIDS (MALSR) system. Completed in 2015.

- **CTA 26kV Electrical Distribution Loop Closure** – This project included the construction of five isolation stations located on the primary PSE&G electrical distribution circuits serving the CTA. These installations will allow for isolation of any segment between switches in case of a localized failure, thereby allowing the balance of the CTA to be re-energized. Completed in 2015.

- **Building 157 Infrastructure Improvement** – The existing spare unmetered 800-amp breaker located in the first floor Electrical Service Room was utilized to bring power to the second floor for future tenants at 480/277 volts. The unfinished space directly above the first floor Electrical Service Room was fitted out as an electrical closet to locate the new PSE&G-approved meter centers. Completed in 2015.

- **Rehabilitation of Taxiway P and Implementation of Delay Reduction and Other Infrastructure Improvements** – The project entailed the rehabilitation of sections of Taxiway P and consisted of milling and paving with modified asphalt concrete, completion of two new high-speed exits, completion of the realignment of two existing taxiways, replacement of existing centerline lights and guard lights with LED fixtures, installation of updated guidance sign and pavement markings, installation of FAA's Runway Status Light system duct-bank, remediation of AOA ponding areas and other related work. Completed in 2015.

- **Replacement of High Temperature Hot Water Generators at the Central Heating and Refrigeration Plant** – The project entails the replacement of the four existing high temperature hot water (HTHW) generators at the Central Heating and Refrigeration Plant (CHRP) in order to remove unsafe conditions for the maintenance and operations staff. The work would be done in two phases. The first phase was awarded in November 2011 to install a new generator in a temporary location outside the CHRP. This will accommodate peak load demands and ensure redundancy in the event of a failure of one of the existing generators during the construction phase of the second contract. The second phase furnishes and installs three new generators and relocates the generator installed under the first phase into the CHRP. Completed in 2016.

- **AirTrain Base Guideway – Mid-Life Overhaul** – The work entails repairs and corrective maintenance on the guideway structural elements of the AirTrain System as needed to ensure continued safe operation of service. Areas of scope include, but are not limited to, the guideway superstructure, columns and base plates, and the guideway running surface. To be completed in 2018.

- **AirTrain Capital Asset Replacement Program (CARP)** – The project includes major overhauls or replacements of several sub-systems and elements to the AirTrain System, including vehicle propulsion, mainline switches, platform doors, Emergency Call System, passenger information displays and communication network, Maintenance Recovery Vehicle, power distribution system metering and main breakers, power and signal rails, car washer, and the NEC Extension guideway traction coating. To be completed in 2018.

- **Replacement of CHRP North Electrical Switchgear and Chiller Upgrades** – The project includes the replacement in kind of the original 4,000-amp North electrical switchgear, as well as the provision for an electrical interface to allow cross connection support from North to South and reverse for a selective redundant electrical power capability. The project also includes the installation of two new chillers at the lower North switchgear operating voltage to balance the CHRP plant cooling capacity and allow for a minimum cooling and heating ability under any electrical power disruption. To be completed in 2019.

- **4TH Electrical Substation at Terminal B** –The project entails a new electrical substation to meet the long-term operational growth of the terminal. The PSE&G substation will be located in the courtyard between Terminal B and Building 125. The switchgear rooms will be located in the lower level parking area of Terminal B. To be completed in 2018.

- **End-of-Life Replacement of AirTrain HVAC** – The project would provide for the replacement of the train HVAC for the entire AirTrain fleet. The work consists of design, fabrication, installation, testing and commissioning of new HVAC units for the entire fleet of 18 trains. To be completed in 2017.

- **Rehabilitation of CTA Entrance and Frontage Bridges** – The project entails rehabilitation work on Bridges N1 and N2 (bridge decks, expansion joints, bearings and bearing supports); Bridge N18 (longitudinal joint and steel faced curbs); Bridge N20 (bridge deck Spans 6-7A, 7A-8A and 8A to Abutment, expansion joints and concrete safety walks); and Bridges N21 and N22 (drainage troughs and concrete safety walks). To be completed in 2021.

- **End-Around Taxiways for Runway 4L-22R** – The work involves the construction of End-Around Taxiways to increase capacity and improve safety by eliminating or minimizing runway crossings. To be completed in 2024.
- **Infrastructure Renewal - Electrical Distribution** – The project provides for Authority enhancements to the new substation and service being constructed by PSE&G in order to comply with the stricter hardening standards of the Port Authority as well as the augmented infrastructure design for system redundancy. The work includes construction of electrical duct banks, rehabilitation of bridges to support the duct banks, associated civil and utility works in the area of construction, provision of final paved roadway surfaces and Port Authority-mandated security hardening of the new substation. An EA and Finding of No Significant Impact (FONSI) was approved for this project in January 2015. To be completed in 2018.

- **Infrastructure Renewal - Aviation Fuel System Modifications, Phase I** – The project includes the decommissioning of approximately 120,000 feet of aged single-wall distribution pipe and replacement with 29,000 feet of environmental code compliant double wall piping with leak detection. Upgrade inventory control and tank gauging systems and provide for airside tanker refueling operations as well as additional bulk storage capacity. An EA and FONSI was approved for this project in January 2014. To be completed in 2018.

- **Rehabilitation of Bridge Expansion Joints and Structural Elements** – This project will be accomplished under two phases. Phase 1 includes the replacement of the expansion joints on Bridges N5, N6, N19 and N20. Phase 2 includes the replacement of expansion joints on Bridges N3, N9, N13, N17, N19 and N29.[43] To be completed in 2018.

- **Terminal B International Arrivals Meeter-Greeter Queuing Area Modifications** – The project entails modifications to the Terminal B Level 2 International Arrivals Meeter-Greeter (B1 Lobby) and Interline Area, which includes the Baggage Recheck area and the Airline Services area. These areas are experiencing overcrowding and queuing issues related to insufficient processing space and lack of baggage staging space required to accommodate incoming international passengers with connecting flights. Completed in 2016.

- **Preconditioned Air Units and Ground Power Units at Terminal B Jet Bridges** – The project will furnish and install one point-of-use preconditioned air (PCA) unit and one ground power unit (GPU) on the jet bridges at Gate Nos. 62 and 63 (Satellite B3), including the provision of power at the apron, which will be extended to support the PCA & GPU equipment. Completed in 2016.

- **Overnight Aircraft Parking** – The project consists of demolishing, abating and disposal of debris resulting from the demolition of existing Buildings 14, 95 and 332, and paving over a portion of the leaseholds for overnight aircraft and vehicular parking. The work includes fire suppression upgrades, utility removal and capping, oil tank removals and concrete/asphalt paving, with associated drainage and electrical lighting and airside/landside fencing. This project received a Categorical Exclusion in September 2013. Completed in 2016.

[43] Bridge numbering starts at the main entrance and continues around the CTA loop.

- **Route 278, Goethals Bridge Replacement** – This project provides for the replacement of the existing Goethals Bridge, between Elizabeth, NJ and Staten Island, NY, along the I-278 Corridor. The new bridge, immediately to the south of the existing, will include separate roadway decks for eastbound and westbound travel, each providing three 12-foot wide lanes, one 12-foot wide outer shoulder, one 5-foot wide inner shoulder and will also include a pedestrian/bikeway. The new structure also incorporates seismic protection, security and comprehensive Intelligent Transportation System (ITS) features. To be completed in 2018.

- **Route 440, Bayonne Bridge Navigational Clearance Project** – This project entails increasing the air draft of the Bayonne Bridge by raising the roadway within the existing arch span by 64 feet, from 151 feet to 215 feet. Additionally, the new roadway will be wider (to better conform to AASHTO standards), and the new 6- foot wide pedestrian walkway will be widened to a 12-foot shared use path accommodating pedestrians and cyclists. ITS sign structures will also be constructed. To be completed in 2019.
- **Route 1&9, Pulaski Skyway Project** – This project will rehabilitate the 3.5 mile- long structure that carries Route 1&9 over the Hackensack and Passaic Rivers, the New Jersey Turnpike, several railroads and industrial facilities. The work consists of rehabilitating the ramps, steel superstructure and substructure; strengthening the structure against seismic events; improving drainage and lighting; and repainting the structure in ten contracts. To be completed in 2020.

- **Port Newark Container Terminal (PNCT) Access Improvement and Expansion Project** – This project will demolish both dry and refrigerated warehouses and gate facilities then pave all areas and construct new gates that include truck comfort and service stations at the Port of Newark. It will combine modern facilities with new technologies and will significantly update the storage capacity of the PNCT for containerized goods. To be completed in 2017.

- **Route 1&9, Haynes Ave. Operational Improvements** – This project will eliminate the substandard geometric features that currently exist connecting Route 1&9 southbound to Haynes Avenue. The addition of acceleration/deceleration/weaving lane along southbound Route 1&9 will improve safety and traffic flow. To be completed in 2018.

- **Route 1&9, Interchange at Route I-278** – This project will complete the existing partial interchange between Route 1&9 and I-278 in the vicinity of New Jersey Turnpike Interchange 13 and the Goethals Bridge. Currently, connections exist between the portion of I-278 east of the interchange and the portion of Route 1&9 south of the interchange (from westbound I-278 to southbound Route 1&9 and from northbound Route 1&9 to eastbound I-278). This project seeks to provide direct connections from southbound Route 1&9 to eastbound I-278, and from westbound I-278 to northbound Route 1&9. To be completed in 2019.

- **Newark Bay – Hudson County Extension Bridge Deck Reconstruction** – This project entails the replacement of the bridge deck on the NJ Turnpike between Interchanges 14 and 14A. To be completed in 2020.

Cumulative Impacts by Environmental Category

Even when impacts are determined to be individually insignificant, the impacts can be collectively significant when taking place over a period of time. Therefore, the cumulative effects of environmental impacts were considered only for those categories determined to have impacts due to the Proposed Action. The construction schedule of the Proposed Action (end of 2016 through 2021) would overlap with the construction of other projects at the airport, including the following:

- Rehabilitation of Bridge Expansion Joints and Structural Elements (project to be completed in 2018, CatEx received in June 2014)
- 4TH Electrical Substation at Terminal B (project to be completed 2018, CatEx received in December 2016)
- Infrastructure Renewal - Electrical Distribution (project to be completed 2018, FONSI received in January 2015)
- Infrastructure Renewal - Aviation Fuel System Modifications, Phase I (project to be completed in 2018, FONSI received in January 2014)
- Replacement of CHRP North Electrical Switchgear and Chiller Upgrades (project to be completed in 2019, NEPA review not needed as there was no change in the ALP)

In addition, the following projects are being contemplated for future implementation and will require some level of NEPA review:

- AirTrain Base Guideway – Mid-Life Overhaul
- AirTrain Capital Asset Replacement Program (CARP)
- Rehabilitation of CTA Entrance and Frontage Bridges
- End-Around Taxiways for Runway 4L-22R

As described below, the cumulative impacts in each resource category were evaluated, with a focus on water resources (including wetlands and floodplains) and construction impacts. The various projects would occur at different locations throughout the 2,027-acre airport property and any impacts would be minor (i.e., below *de minimis* thresholds for air quality or would not create significant adverse impacts to the surrounding floodplain) and in the case of construction impacts, temporary. Therefore, cumulative impacts are not expected to be significant.

Noise and Compatible Land Use

The Proposed Action will not impact airport noise. The projects that would overlap with the Proposed Action projects occur completely on airport property and are not expected to create noise impacts. No other past projects or future projects planned within the five-year time period that would combine with the noise impacts of the Proposed Action that would result in significant cumulative impacts.

Land Use

The projects that would overlap with the Proposed Action occur completely on airport property and are compatible with existing zoning, surrounding area land use plans, and the land uses on the airport. In addition they would not create a wildlife hazard as defined in FAA AC 150/5200-33 nor affect any existing wildlife hazard area. Therefore, no cumulative adverse impacts on compatible land use would occur.

Socioeconomic Impacts, Environmental Justice, and Children's Health and Safety Risks

The Proposed Action is not expected to contribute to any significant adverse cumulative socioeconomic impacts when considered in conjunction with the other projects at the airport. This is because the other projects occur on airport property. The Proposed Action and other projects in the planning or construction stages do not appear to include any activities that would result in impacts to surface transportation. Therefore, no cumulative adverse impacts are expected.

Secondary (Induced) Impacts

No adverse cumulative secondary (induced) impacts would occur from the Proposed Action.

Air Quality

The Proposed Action would cause a temporary change in net emissions due to the operation of construction equipment. However, the emissions were shown to be *de minimis* under the Clean Air Act (as amended in 1990) General Conformity Rule and would, therefore, conform with the New Jersey SIP. The *de minimis* emissions would not cause an exceedance of any of the NAAQS, delay the attainment of any NAAQS, or worsen an existing violation any NAAQS.

No cumulative adverse air quality impacts are anticipated from the Proposed Action in combination with the other projects whose construction overlaps with the Proposed Action.

Climate

The cumulative impact of the Proposed Action on the global climate when added to other past, present, and reasonably foreseeable future actions is not currently scientifically predictable. Aviation has been calculated to contribute approximately three percent of global carbon dioxide (CO_2) emissions; this contribution may grow to five percent by 2050. Actions are underway within the U.S. and by other nations to reduce aviation's contribution through such measures as new aircraft technologies to reduce emissions and improve fuel efficiency, renewable alternative fuels with lower carbon footprints, more efficient air traffic management, market-based measures and environmental regulations including an aircraft CO_2 standard. The U.S. has ambitious goals to achieve carbon-neutral growth for aviation by 2020 compared to a 2005 baseline, and to gain absolute reductions in greenhouse gas (GHG) emissions by 2050. At present there are no calculations of the extent to which measures individually or cumulatively may affect aviation's CO_2 emissions. The EPA issued an *Advance Notice of Proposed Rulemaking* on June 1, 2015 to provide an overview of and seek input on a variety of issues related to setting an international $C0_2$ standard for aircraft at the International Civil Aviation Organization. The FAA, with support from the U.S. Global Change Research Program and its participating federal agencies (e. g., NASA, NOAA, EPA, and DOE), has developed the Aviation Climate Change Research Initiative in an effort to advance scientific understanding of regional and global climate impacts of aircraft emissions, with quantified uncertainties for current and projected aviation scenarios under changing atmospheric conditions. The airport has a long history of proactively initiating projects that reduce GHG emissions from aircraft, buildings, and vehicles, including construction of high speed runway exits to reduce aircraft fuel use, comprehensive energy efficiency retrofit programs in its buildings, use of biodiesel in Authority vehicles, and the construction of AirTrain, providing passengers with additional mass transit options to and from the airport, among many other actions.

Water Quality

The Proposed Action would have a beneficial impact on water quality because there would be less aircraft deicing fluids entering the environment due to the project's reconfigured stormwater collection system. The Proposed Action is not expected to increase the quantity of stormwater runoff. All construction activities would be conducted following Best Management Practices and applicable state and federal regulations. A plan for soil erosion and sediment control would be required of all contractors. Such procedures are routinely implemented for all airport projects; therefore no significant cumulative water quality impacts would be expected.

Section 4(f) Resources

There are no Section 4(f) resources located within the area of the other projects and there would be no impacts to Section 4(f) resources resulting from the Proposed Action. Therefore, there would be no cumulative adverse impacts to Section 4(f) resources.

Historic, Architectural, Archaeological, and Cultural Resources

Neither the Proposed Action, nor the other projects to be constructed on the airport would have an impact on any prehistoric, historic, archaeological, or paleontological resources. As a result, there would be no cumulative adverse impacts to these resources.

Wetlands

No wetlands are anticipated to be affected by the Proposed Action, though it would impact the Peripheral Ditch, designated State Open Waters. The anticipated impact is less than the 1.5 acre threshold for a "smaller disturbance". The rehabilitation of the CTA Entrance and Frontage Bridges would occur in the vicinity of the wetlands adjacent to the Peripheral Ditch; however, no cumulative adverse impacts to wetlands are expected.

Floodplains

Some portion of the Proposed Action would be located within the 0.2% annual chance floodplain, while a smaller portion, primarily in and adjacent to the Peripheral Ditch, would be located within the limits of the 1% annual chance floodplain. Compliance with NJDEP's net fill requirements would be met after construction is completed and the 100-year surface water elevation of the Peripheral Ditch would comply with the applicable NJDEP and Flood Hazard Control Act criteria. With the exception of the End-Around Taxiways for 4L-22R, all the projects to be constructed simultaneous to the Proposed Action are rehabilitation-type projects and would not result in additional impacts to floodplains. If the End-Around Taxiway project would impact the 1% annual chance floodplain, the Port Authority would ensure the final design complies with NJDEP's net fill requirements.

Probable impacts on the floodplain would be limited to built land; no secondary or induced development has been identified that would cause or contribute to indirect or cumulative effects on the floodplain. Although it is inevitable that a minor loss of effective floodplain storage volume would occur due to the placement of access roadway embankment material within the 100-year floodplain, the 100-year floodplain on the airport is controlled by coastal storm surges and tidal flooding; therefore, it is not anticipated to create significant adverse impacts to the surrounding floodplain.

Coastal Resources

Coastal Zone Management Program

Because the Proposed Action would not affect the coastal zone for the State of New Jersey, there are not expected to be cumulative adverse impacts to the coastal zone.

Coastal Barriers

There would be no coastal barrier impacts associated with the Proposed Action. As a result, there would be no cumulative impacts to Coastal Barriers.

Natural Resources and Energy Supply

The Proposed Action will result in incremental energy savings from a variety of energy efficiency measures. The combination of the concurrent projects will not result in the need for additional energy facilities. Based on the list of recent, ongoing and future projects, no cumulative adverse impacts on energy supply or natural resources are expected.

Hazardous Materials, Pollution Prevention, and Solid Waste

The Proposed Action would not increase the quantity of hazardous materials present in the environment or exacerbate existing contamination. The Proposed Action would require the removal and remediation of some hazardous materials from buildings and subsurface areas. Based on the list of recent, ongoing, and future projects, there does not appear to be other projects that, when combined with the Proposed Action, would result in significant adverse cumulative impacts from hazardous materials. Therefore the Proposed Action would not contribute to any cumulative impacts from future actions with respect to hazardous materials.

Solid waste would be generated from the Proposed Action in the form of building and construction debris and soil from the demolition of certain parts of existing structures and excavation activities. Materials and debris would be recycled to the greatest extent feasible. Materials that cannot be recycled would be disposed of in accordance with all federal and state, regulations. There is sufficient disposal capacity (out-of-state landfills, recycling centers, and incinerators) in the greater metropolitan area to handle the potential waste load. None of the other projects would result in significant amounts of solid waste. Therefore, the Proposed Action would not contribute to any cumulative impacts from future actions with respect to solid waste.

Construction Impacts

The Proposed Action is not anticipated to cause any significant adverse construction-related impacts. This is due to the temporary nature of construction and mitigation procedures set forth in FAA AC 150/5370 10F, *Standards for Specifying Construction of Airports*, as well as the Port Authority's *Sustainable Infrastructure Guidelines*. However, the cumulative impact of related construction projects, in addition to the Proposed Action, might have potential temporary impacts related to noise, air quality, and roadway use.

Noise Impacts

As discussed in Section 5.17.2, potential construction noise impacts are a localized and temporary occurrence. Related projects may have similar localized and temporary impacts, and may add to ambient noise levels. Because the project area is isolated from neighboring communities by the surrounding roadways, no significant cumulative impacts are expected to occur due to the Proposed Action with respect to construction noise.

Air Quality Impacts

As discussed in Section 5.17.3, the incorporation of the previously referenced procedures into the Proposed Action's construction specifications would reduce emissions of dust (particulate matter) and prevent particulate matter from becoming airborne. Such measures are anticipated to reduce any potential construction impacts to air quality in the immediate project area. All related projects at the airport are subject to similar construction mitigation measures and are isolated from any neighboring community by the surrounding roadways, therefore no significant cumulative impacts are expected to occur due to the Proposed Action with regard to construction related activities.

Roadway Use

As discussed in Section 5.17.5, no significant impacts related to construction traffic are anticipated due to the Proposed Action. Related projects at the airport are subject to similar coordination measures, therefore no significant cumulative impacts are expected to occur due to the Proposed Action with respect to construction related surface traffic

Summary of Cumulative Impacts

As no potentially significant impacts would result from the Proposed Action, it is unlikely that the incremental impact of the Proposed Action would cause or contribute to a significant impact on the environment when added to past, on-going, or reasonably foreseeable future projects or actions involving the airport. The Proposed Action is not expected to cause or contribute to a significant impact on the environment when considered with other past, present or future actions regardless of what agency or person undertakes such other actions.

5.21 Adverse Impacts that Cannot be Avoided if the Proposed Action is Implemented

The implementation of the Proposed Action is not expected to result in any significant adverse environmental impacts. As a result, there would not be any adverse impacts that cannot be avoided.

6 Mitigation

6 Mitigation

This chapter identifies the mitigation measures the Port Authority proposes to reduce or minimize the environmental impacts identified in this EA. The following explanations describe each measure's benefits by noting how the measure would avoid or reduce the adverse environmental effects.

6.1 Floodplain Development

Because it is not practical to locate the Proposed Action outside the floodplain, the Port Authority has identified and incorporated flood hazard mitigation strategies into the design of the Proposed Action. These strategies focus on the use of specific design criteria to minimize impacts on human safety and minimize future damages or costs to equipment, facilities, and structures to the degree practicable. The final design would ensure compliance with NJDEP's Bureau of Floodplain Management's net fill requirements (N.J.A.C. 7:13-2.14) after construction is completed. The 100-year water surface elevation of the Peripheral Ditch would comply with the applicable NJDEP and Flood Hazard Area Control Act (N.J.A.C. 7:13) criteria and, therefore, would not create significant adverse impacts to the surrounding floodplain.

A potential one-acre impact to the Peripheral Ditch, designated State Open Waters, has been identified. Mitigation for any impact to the Peripheral Ditch would be determined through consultation with NJDEP and a wildlife biologist, as well as in conjunction with the Flood Hazard Area Permit requirements. Extensive consultation with NJDEP has already occurred[44] and is ongoing.

The Authority has had several meetings and continuous coordination with NJDEP on the permitting strategy for the program. It was agreed between the agencies that for the construction of the three new bridges crossing the Peripheral Ditch, a Flood Hazard Area (FHA) Individual Permit (also known as a Stream Encroachment permit) is required. A revised permit application was submitted on July 27, 2016, and notification of NJDEP's approval of this permit was received on December 1, 2016. In addition, a FHA Verification for the overall project site was included in that submission. This FHA Verification is still under review by NJDEP. If as a result of their review any mitigation is required, it could be one of the following options: Off-site mitigation at a NJ Meadowlands Commission site, LPS Industries site in Moonachie, NJ, or another approved site; riparian mitigation credits from an approved bank; or, fee payment to the State Environmental Conservation Fund. The appropriate option will be selected once NJDEP provides the Authority with concurrence of the impact area.

6.2 Noise

Though construction equipment noise levels are expected to be well below applicable significance thresholds and not readily discernible from background levels, the Port Authority would require the contractor to ensure that all construction vehicles and equipment meet the applicable standards contained in 40 C.F.R. § 204, Noise Emission Standards for Construction Equipment and N.J.A.C. 7:29, the New Jersey Noise Code.

[44] Meetings dated April 2, 2013, September 19, 2013, April 2, 2014, and April 25, 2016.

Additional strategies to reduce noise and vibration during construction are provided in the Port Authority's *Sustainable Infrastructure Guidelines*. They include:

- Require all debris conveyors and containers to be lined or covered with sound absorbing materials;
- Require all pneumatic support equipment to have intake and exhaust mufflers recommended by the manufacturer;
- Require all impact devices to be equipped with acoustically attenuating shields or shrouds recommended by the manufacturer;
- Require all internal combustion equipment to have mufflers and shield paneling recommended by the manufacturer;
- Require idling time for both on-road and off-road equipment and vehicles to be limited to three minutes;
- Minimize the use of equipment that generates more than 80 db(A) of noise, and use such equipment only during daylight hours (i.e. not at night in residential areas);
- Limit vibration resulting from construction equipment when work is close to tunnels, utilities or other sensitive structures and closely monitor peak particle velocity compliance through seismograph readings;
- Utilize an approved sound level meter for self-monitoring and proactively correct conditions where the noise generated by specific pieces of equipment exceeds allowable levels; and
- Utilize noise barriers to contain noise where practicable.

After construction, no additional noise mitigation measures are proposed.

6.3 Water Quality

Construction activities would comply with applicable state and local water quality standards and permit requirements. In accordance with the airport's State Pollutant Discharge Elimination System (SPDES) permit, the Port Authority would implement appropriate water quality measures to minimize erosion and sedimentation during construction. All the improvements and changes needed for airport operations to comply with applicable water quality standards and permit requirements after construction are included in the design of the Proposed Action.

In addition, the following BMPs would be written into the project's construction contract documents and become an obligation of the contractor:

- Use watering trucks to minimize fugitive dust

- Cover trucks when hauling dirt
- Prevent material leakage from truck bed, sideboard, tailgate, or bottom dump gate
- Use windbreaks to prevent accidental fugitive dust pollution
- Cover trucks when transferring materials
- Minimize unnecessary vehicular and machinery activities
- Clean up spillage as necessary to prevent particulates from being pulverized and released into the atmosphere
- Minimize dirt track-out by washing or cleaning trucks before leaving the construction site
- Use temporary sediment barriers such as silt fences, straw bale barriers, sand bag barriers, and gravel filter barriers for areas that produce sheet flow runoff
- Schedule regular inspections of storm water and sediment control devices
- Repair and/or replace storm water and sediment control devices as often as necessary to maintain their effectiveness

With regard to operations, the following would be part of the Proposed Action:

- Subsurface oil/water separators would be installed to slow the rate of runoff from the aircraft park apron and to ensure that pollutants are captured and collected during and after rainfall events, and;
- A deicing containment system would be installed as part of the apron storm drainage to allow spent aircraft deicing fluid to be isolated, pumped out, and properly disposed, preventing the discharge of contaminants to surrounding waters.

6.4 Roadway Use

During construction, to avoid impact to normal airport operations and passenger access to and from the airport, the contractor would be required to follow an approved Maintenance and Protection of Traffic Plan. To mitigate the impacts from an increase in traffic volume from construction activity, delivery of construction materials and large or bulky construction equipment would be scheduled for non-peak hours. Use of streets in residential neighborhoods and adjacent to noise-sensitive land uses is not anticipated. All construction vehicles would access the airport from U.S. Routes 1&9. Construction-related vehicles working near the airfield would be required to follow specified traffic patterns in areas where aircraft operate, in order to avoid interrupting airfield operations.

The Port Authority is committed to implementing the Proposed Action in accordance with all federal, state and local environmental laws, regulations, policies, and permit requirements applicable to the project. In addition, to reduce adverse environmental impacts associated with Port Authority projects and actions, the Port Authority is committed to having each contractor perform the work in accordance with the following recent and relevant standards and guidelines:

- PANYNJ *Sustainable Design Guidelines (AI 45-2)*
    - *Sustainable Building Guidelines*
    - *Sustainable Infrastructure Guidelines*
- PANYNJ *Newark Liberty International Airport Sustainable Management Plan*
- Item 156 of FAA Advisory Circular (AC) 150/5070-10A, *Standards for Specifying Construction of Airports*
- PANYNJ *Spill Prevention Control and Countermeasures Plan for Facilities at Newark Liberty International Airport*

7 Public Involvement

7 Public Involvement

The Draft EA was made available for public comment for 30 days from February 16 to March 16, 2017. A *Notice of Availability* was published in the Star-Ledger and the Record (see **Appendix G**). The Draft EA was available for review at the airport's Administration Building at 1 Conrad Road, Newark; the Port Authority's headquarters office at 4 World Trade Center in Manhattan; and at both the Elizabeth and Newark public libraries. A copy of the document was also available for review on the Port Authority's website at http://www.panynj.gov/about/studies-reports.html. Since the Proposed Action is not expected to be controversial on environmental grounds, a public hearing or meeting is not warranted at this time.[45] No comments were received during the public comment period.

The Draft EA's public review and comment period fullfilled the public involvement requirements of the special purpose law triggered by the Proposed Action – Executive Order 11988, *Floodplain Management*.

[45] FAA Order 1050.1F, Section 2-5.3.

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8 Preparers

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Port Authority of New York and New Jersey

Edward Knoesel – Manager, Environmental Programs, Aviation Department

Adeel Yousuf – Airport Environmental Specialist, Aviation Department

Nathaniel Kimball, Airport Environmental Specialist, Aviation Department

Catherine Cronin – Senior Program Manager, EWR Redevelopment Program

Patricia Fox – Program Manager, EWR Redevelopment Program

AECOM

John Azzaro, P.E. – Program Director

Michael Lorczak, P.E. – Program Manager

Donald E. Ehrenbeck, P.P., AICP – Environmental Manager

Christopher Bath, P.E. – Project Manager

Brian Brownworth – Air Quality/Noise Specialist

James Coyle – Senior QA/QC Specialist

Stacy Eastman – Environmental Scientist

Amy Garrod, LEED AP BD+C – Sustainability Coordinator

George Greenberg – Program Scheduler

Thomas Herzog – Air Quality/Noise Scientist

Jacek Kleczkowski – Graphic Designer

John Lawrence, RPA – Cultural Resources Analyst

Matthew Lorenz, P.E., PTOE – Traffic Engineer

Priyal Pandya – Air Quality/Noise Specialist

Jordan Smith – Air Quality/Noise Specialist

Atma R. Sookram, AICP, PP, PTP – Traffic Engineer

Marko Stamenovic – Air Quality/Noise Specialist

Christine Tiernan – Environmental Department Manager

Xiaojing Wei – Senior GIS Specialist

Nicole Weymouth – Senior Environmental Planner

Fang Yang – Senior Air Quality Specialist

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Appendices

Appendix A
TAAM Modeling Report and Terminal Area Forecast

Newark Liberty International Airport

TAAM Modeling Report

Terminal A Redevelopment

Prepared by Landrum & Brown
May 2016

1. Introduction

Aviation activity at Newark Liberty International Airport (EWR) has grown strongly since the recession that followed the events of 9/11. Much growth occurred between 2003 and 2007 when passenger traffic increased at an average rate of 5.4 percent annually while aircraft operations grew 1.8 percent over the same period. However, traffic declined between 2007 and 2010 because of the global recession. As traffic recovered from that downturn, EWR has experienced average passenger growth of 2.5 percent annually, between 2010 and 2015. In 2015, EWR handled 413,521 aircraft operations and carried 37.5 million annual passengers (MAP)[1]. The Port Authority of New York and New Jersey (PANYNJ) has developed and calibrated baseline simulation models of EWR based on the 2015 demand level which will be used in this analysis.

In 2011, The Port Authority prepared unconstrained forecasts of passenger and aircraft activity for EWR, which the FAA approved for use in long-range planning in April 2012[2]. For planning Terminal A, the Port Authority assumed that the existing FAA slot constraints would remain in place. These constraints would result in only five percent growth in commercial passenger aircraft operations between 2012 and 2027. The constraint on passenger aircraft operations would also limit growth in passenger volumes to 1.7 percent per year versus 2.7 percent in the unconstrained case.

Terminal A at EWR is approaching the end of its service life and is in need of replacement. The existing Terminal A has been evaluated as having a maximum capacity of 12 MAP. By 2027, it is forecast that Terminal A (T-A) will be handling 13.6 MAP. Due to space constraints and the high cost of bringing the existing terminal up to current standards, PANYNJ has determined that constructing a replacement terminal with room for expansion to meet the future air passenger demand is more cost effective than renovating the existing facility.

The T-A Redevelopment Program was tasked with developing a safe, efficient, and flexible airside layout that yields the most favorable operational characteristics. The airside, terminal and landside plans were designed to provide maximum flexibility for accommodating changes in demand with respect to activity levels, airline tenants, aircraft fleet mix, and the Air Traffic Control system, and to provide appropriately sized terminal, roadway, parking and passenger access facilities. The planning of the proposed Terminal A also considered and incorporated the requirements of PANYNJ's long-term plans. The objective was to develop a Near-term 33-Gate Concept. Opening day for the 33-Gate Concept is scheduled in 2022.

This study assessed the ability of the proposed new 33-Gate Terminal-A layout to efficiently handle the forecast future traffic and to identify any concerns regarding the operations on the new apron. In particular, this study compared the No Build scenario to the 33-Gate Scenario five years after the opening day (2027). **Section 2** presents the model assumptions, **Section 3** presents the future Design Day Flight Schedule, and **Section 4** presents the results of the modeling effort.

[1] Airport Traffic Report, 2015 – The Port Authority of New York and New Jersey

[2] Long-Range Forecast for The Port Authority Airports, April 2012 – The Port Authority of New York and New Jersey

2. General Modeling Assumptions

This section outlines the assumptions in PANYNJ's baseline TAAM model that were carried forward in this study and highlights any assumptions that were changed in this model.

a. Runways

The current airfield at EWR consists of three runways: two closely spaced parallel runways oriented in a northeast/southwest direction (Runways 4L/22R and 4R/22L) and one crosswind runway (Runway 11/29) that are shown in **Figure 1**:

- Runway 4L/22R – 11,000' x 150'
- Runway 4R/22L – 10,000' x 150'
- Runway 11/29 – 6,726' x 150'

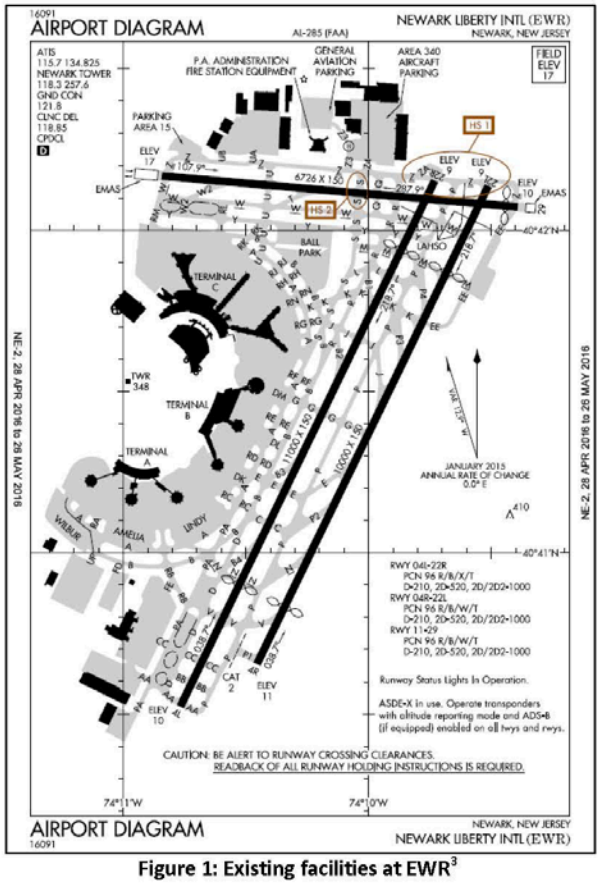


Figure 1: Existing facilities at EWR[3]

[3] FAA 2016

b. Runway Use

Two flow combinations, Northeast Flow (NE) and Southwest Flow (SW), are used at EWR with the Southwest Flow being used 58% of the time while the Northeast Flow was used 42% of the time in 2015[4].

- Northeast Flow: Arrivals use Runway 4R with Runway 11 used for a few arrivals during peak arrival traffic conditions. Departures mainly use Runway 4L. Runway 4R is used for departures only if Runway 4L is closed.
- Southwest Flow: Arrivals use Runway 22L with Runway 11 used for arrivals during peak arrival traffic conditions. Runway 29 can be used for arrivals instead of Runway 11 in very windy conditions. Departures mainly use Runway 22R, with Runway 29 used for a few turboprop departures during peak departure traffic conditions. Runway 22L is used for departures only if Runway 22R is closed.

Since both configurations are used significantly, the new Terminal's impact was evaluated in both flow conditions. To determine runway capacities, FAA Aviation System Performance Metrics (ASPM) data was analyzed from the 2015 calendar year. The maximum number of operations per hour that was repeatedly achieved represents the runway capacity. As depicted in **Figure 2** and **Figure 3**, a maximum arrival rate of 48 operations per hour is repeatedly achieved in both the North Flow and South Flow. Meanwhile, a maximum departure rate of 45 operations per hour is repeatedly achieved in both flows[5].

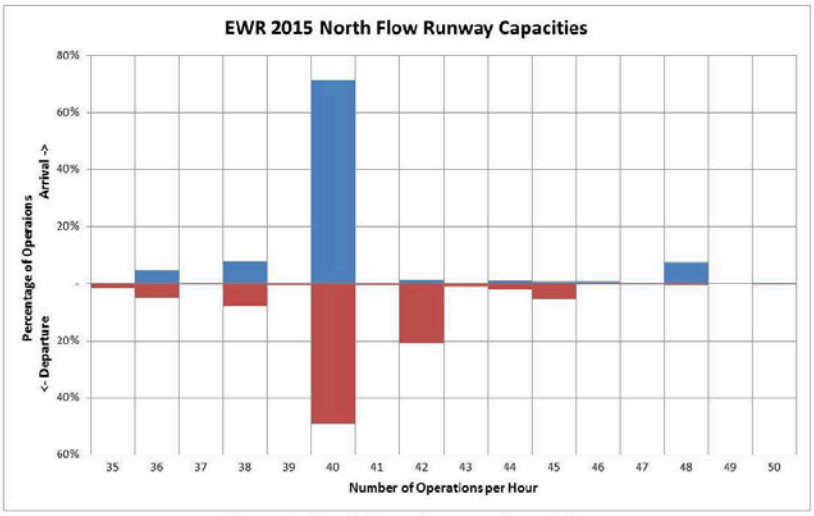


Figure 2: North Flow Runway Capacities

[4] FAA's Aviation System Performance Metrics (ASPM); Landrum & Brown Analysis
[5] FAA's Aviation System Performance Metrics (ASPM); Landrum & Brown Analysis

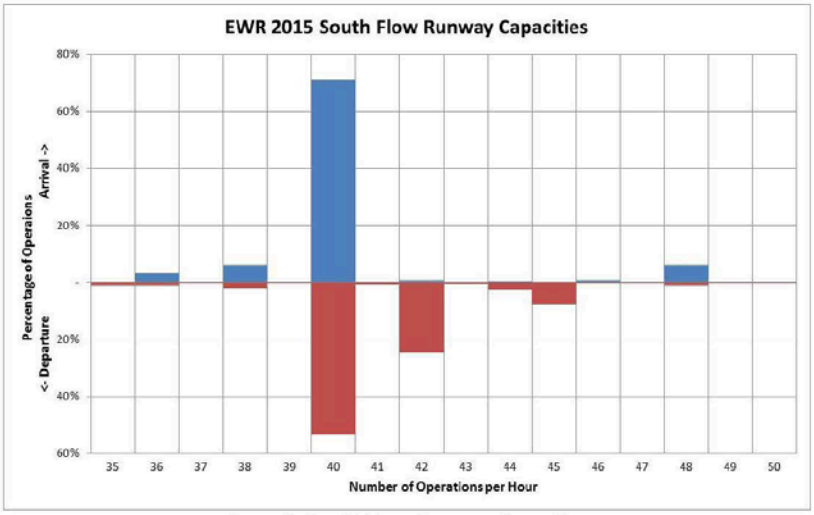


Figure 3: South Flow Runway Capacities

c. Airspace

In the Northeast Flow, all departures turn right after takeoff to a heading of 060 to maintain a parallel path with TEB Runway 06 approaches. After crossing TEB, EWR departures turn left to a heading of 290. Multiple headings are not available immediately after take-off. However, if TEB is not using Runway 06 for arrivals, EWR Air Traffic Control Tower (ATCT) approves left turns to a heading of 290 immediately after take-off from Runway 4L.

In the Southwest flow, multiple departure headings have been approved. Departing aircraft climb to 500 feet and are then allowed to use one of several approved headings - turn left, heading 190; turn right, heading 215 (Turnpike Climb - Liberty One Departure); turn right, heading 239 (Parkway Climb - Liberty One Departure); or turn right, heading 263 (Bud Climb - Liberty One Departure). Although these multiple departure headings have been authorized by the FAA, they are used infrequently by EWR ATCT.

Departure separation is based on time between aircraft, and the values used in the models are presented in **Table 1.** For aircraft assigned to the same departure fix, a departure distance separation of approximately 6.0 nm is used to account for the longer common departure path. In recent years, the FAA has implemented Wake RECAT (recategorization), a revision to in trail separation minima for aircraft on approach. The FAA has concluded that in trail separation can be safely reduced for some aircraft pairs, thereby increasing efficiency and throughput without compromising safety. **Table 2** presents the Wake RECAT minimum arrival separations that were used in the models. These values are greater than the FAA published separation minima because the values include a buffer typically added by air traffic controllers to ensure safe operations.

Table 1: Departure – Wake Turbulence Separations (min)[6]

		Follower					
		A	B	C	D	E	F
Leader	A	1.100	1.833	2.200	2.567	2.567	2.933
	B	1.100	1.100	1.430	1.778	1.778	2.512
	C	1.100	1.100	1.100	1.228	1.228	2.090
	D	1.100	1.100	1.100	1.100	1.100	1.742
	E	1.000	1.000	1.000	1.000	1.000	1.000
	F	1.000	1.000	1.000	1.000	1.000	1.000

Table 2: Arrival – RECAT Wake Separation Standards (nm)[7]

		Follower					
		A	B	C	D	E	F
Leader	A	3.8	6.3	7.3	8.3	8.3	9.3
	B	3.2	4	4.2	4.9	4.9	6.8
	C	3.2	3.8	3.8	4.8	4.8	5.8
	D	3.2	3.2	3.2	3.2	3.2	4.2
	E	3.2	3.2	3.2	3.2	3.2	4.2
	F	3.2	3.2	3.2	3.2	3.2	3.2

d. Taxi Flows

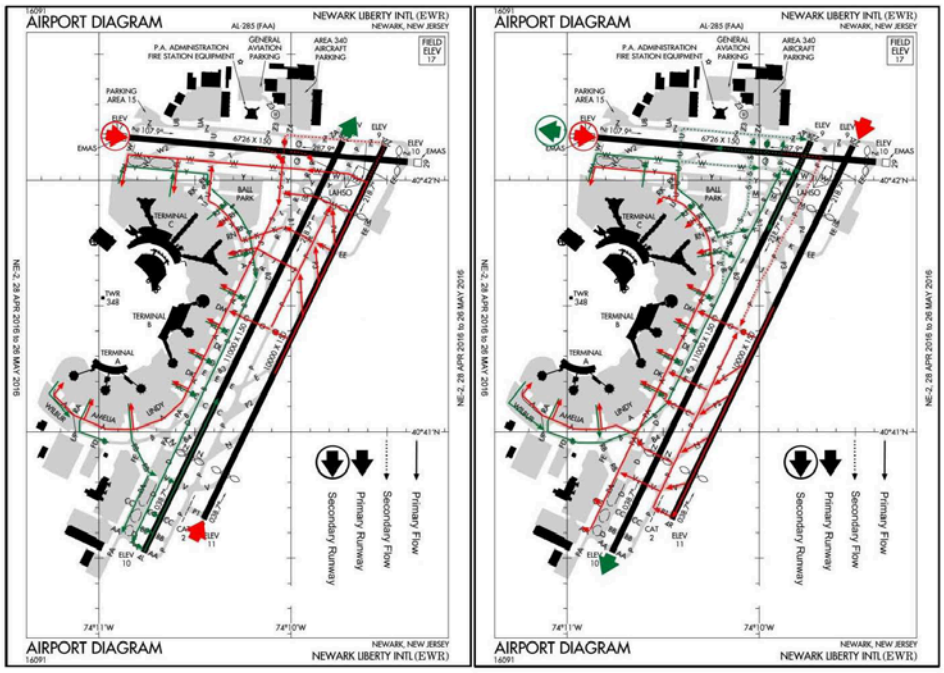
Figure 4 presents the typical aircraft ground movements in each flow configuration. The outboard runway is primarily used for arrivals, whereas the inboard runway is primarily used for departures. In the Southwest Flow configuration, most departures on Runway 22R perform intersection departures from Taxiway W. Only ultra-long haul departure routes use full length departures (e.g., Beijing, Dubai, Hong Kong, Mumbai, Tokyo). Departures on Runway 29 typically perform intersection departures using Taxiways R and Z. Arrivals on Runway 11 have varying taxi flows that depend on the airport flow. In the Northeast Flow, Runway 11 arrivals exit the runway prior to reaching the Runway 22R intersection. In the Southwest Flow, Runway 11 arrivals continue their landing roll-out beyond the Runway 22R intersection and exit Runway 11 on Taxiway P. These aircraft taxi south on Taxiway P until reaching Taxiway G and then cross the inboard runway (Runway 22R) to the apron.

e. Existing Terminals

As of April 2016, the airport hosts nine domestic airlines and 17 international airlines. The airport is dominated by one carrier, United Airlines. United uses a split operation with most flights in Terminal C and United Express regional jets in Terminal A. Terminal C is equipped with an FIS facility in Concourse C3 and is used for United's international arrivals. United domestic flights and international departures use all concourses in Terminal C as well as part of Terminal A. Concourses B2 and B3 have FIS facilities, and are used by all international airlines. United international arrivals are allowed to overflow to

[6] TAAM Model, Landrum & Brown Analysis
[7] TAAM Model, Landrum & Brown Analysis

Terminal B if FIS gates are unavailable in Terminal C. Terminal A accommodates traffic from other domestic carriers.



(a) **(b)**

Figure 4: Taxi flows; (a) Northeast configuration; (b) Southwest configuration

EWR presently has 115 contact gates as shown in **Figure 5**.

- Terminal A – 34 gates
- Terminal B – 24 gates
- Terminal C – 57 gates

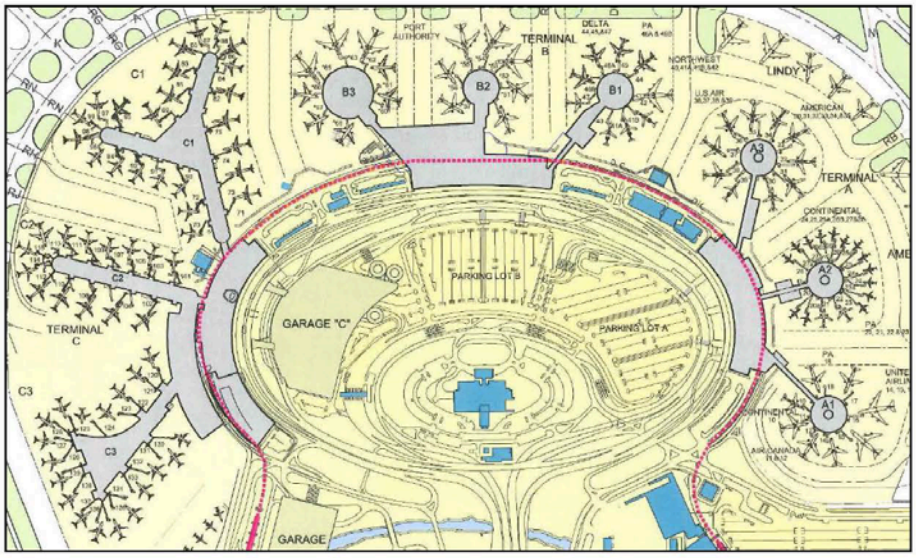


Figure 5: Current EWR Terminal Layout

i. Terminal A

Figure 6 illustrates the existing Terminal-A layout. The terminal has a maximum capacity of 34 aircraft spread over 3 concourses – A1, A2, and A3.

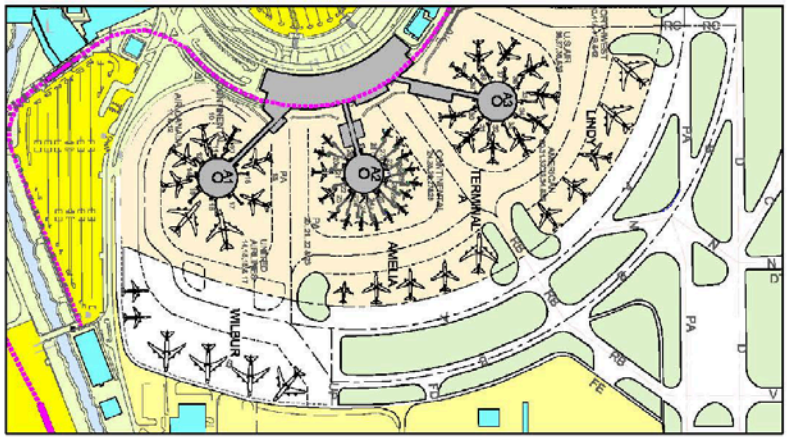


Figure 6: Existing Terminal A

Table 3 summarizes the gate capacity of each concourse. In addition to the contact gates, there are three remote parking aprons positioned near Terminal A – Amelia, Lindy, and Wilbur. In addition to the airlines using Terminal A, these remote aprons are also used by United Airlines (Terminal C), Delta Air

Lines and several international carriers (Terminal B). These remote positions are important for maintaining efficient airfield operations.

Table 3: Terminal A gate capacity

	Gate Size				
Concourse	II	III	IV	V	Total
A1			6	2	8
A2	14	2			16
A3		1	9		10
Total	14	3	15	2	34

Terminal A is operated by PANYNJ, and 11 airlines use the existing facilities. Air Canada, JetBlue, and Southwest are the primary carriers in Concourse A1. ExpressJet Airlines, doing business as United Express, is the primary carrier in Concourse A2, and American Airlines is the primary carrier in Concourse A3.

ii. Terminal B

Figure 7 illustrates the existing Terminal-B layout. The terminal has a maximum capacity of 24 aircraft across three concourses – B1, B2, and B3. **Table 4** summarizes the gate capacity for each concourse. Concourse B1 is not FIS equipped and is currently used exclusively by Delta Air Lines. Concourses B2 and B3 are FIS capable and are used by all international carriers. Porter Airlines is the primary user of Gate 50 in Concourse B2. When all the FIS gates in Terminal C are occupied, United Airlines uses the FIS gates in Terminal B to accommodate international arrivals.

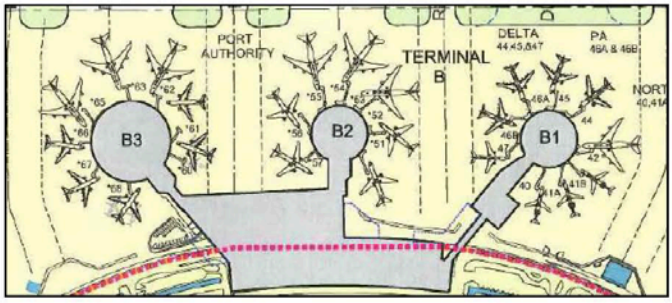


Figure 7: Existing Terminal B

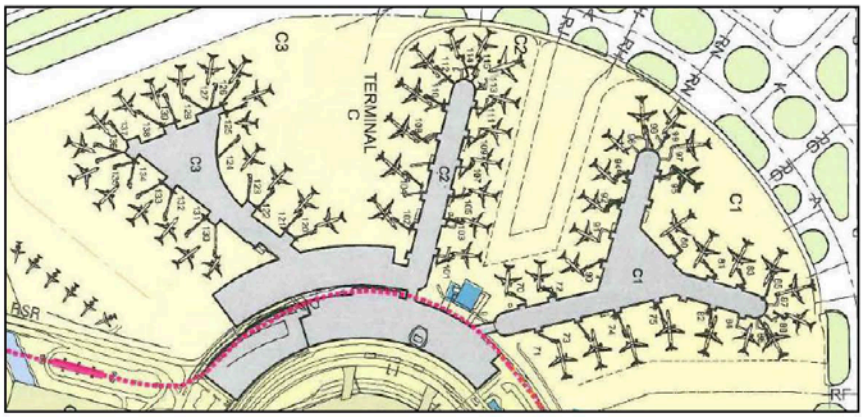
Table 4: Terminal B gate capacity

	Gate Size				
Concourse	II	III	IV	V	Total
B1		3	5	1	9
B2			4	3	7
B3			5	3	8
Total		3	14	7	24

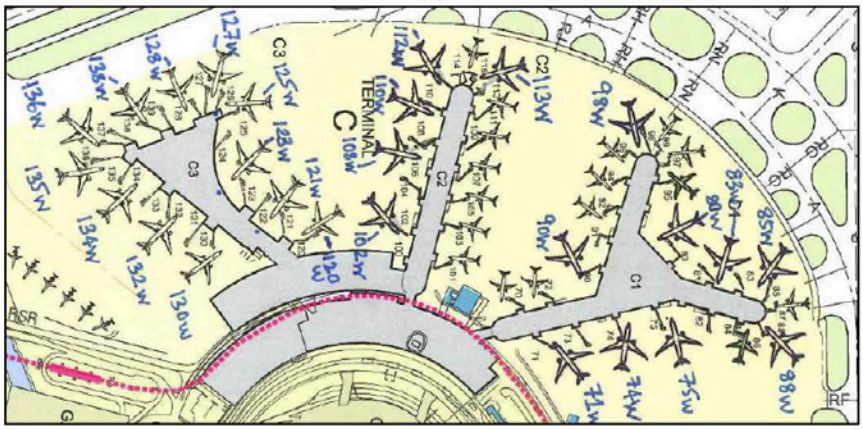
iii. Terminal C

Figure 8(a) illustrates the existing Terminal-C layout. The terminal has a maximum capacity of 57 aircraft across three concourses – C1, C2, and C3. **Table 5** summarizes the gate capacity for each concourse based on the maximum capacity configuration. To handle United Airline's varied fleet mix, several gates in Terminal C can be reconfigured to service wide-body aircraft as shown in **Figure 8(b)**. **Table 6** summarizes the gate capacity for each concourse using the maximum number of wide-body positions.

Concourse C3 is the only FIS facility in Terminal C. All gates in Concourse C3, except Gate C-124, can accommodate international arrivals. Concourses C1 and C2 can accommodate domestic arrivals and all departures. In addition to these contact gates, United Airlines uses the hardstand positions in the "Ballpark" area near Concourse C2.



(a)



(b)

Figure 8: Existing Terminal C

Table 5: Terminal C maximum gate capacity

	Gate Size				
Concourse	II	III	IV	V	Total
C1		10	14		24
C2		8	6		14
C3		19			19
Total		37	20		57

Table 6: Terminal C maximum wide-body gate capacity

	Gate Size				
Concourse	II	III	IV	V	Total
C1		6	4	9	19
C2		7		5	12
C3			4	8	12
Total		13	8	22	43

f. Layout updates

As part of the Terminal A redevelopment, Delta Air Lines will be moving to the new Terminal A, and Concourse B1 will be reconfigured to accommodate wide-body aircraft.

i. Terminal A

The new Terminal A was designed to have a 33-gate terminal. Although the design was also influenced by landside concerns, this study only focused on evaluating the airside design. **Figure 9** shows the 33-gate new Terminal-A layout overlaid on the existing airport facility. The new terminal has 33 ADG III gates arranged around a central terminal building. In addition to the 33 contact gates in the terminal, the layout provided six ADG VI (or 12 ADG III) hardstands. In the figure, the yellow lines indicate the new taxilanes and taxiways, and the purple area indicates the FedEx ramp.

A preliminary analysis concluded that the Terminal would need to be operated as a common-use terminal to accommodate future demand. **Table 7** presents the important design specifications of the new Terminal A layout. The new terminal layout is built over existing remote aprons Amelia and Wilbur, and consequently 11 hardstand positions would be removed. Remote apron Lindy is not affected by the new terminal and may continue operations. Due to the single taxilane between concourses in the existing terminal, there is much apron congestion. One of the major improvements in apron operations is the provision of dual taxilanes in the new layout as seen in **Figure 9**. ADG V aircraft are planned for the north side, but they can be accommodated on the south side.

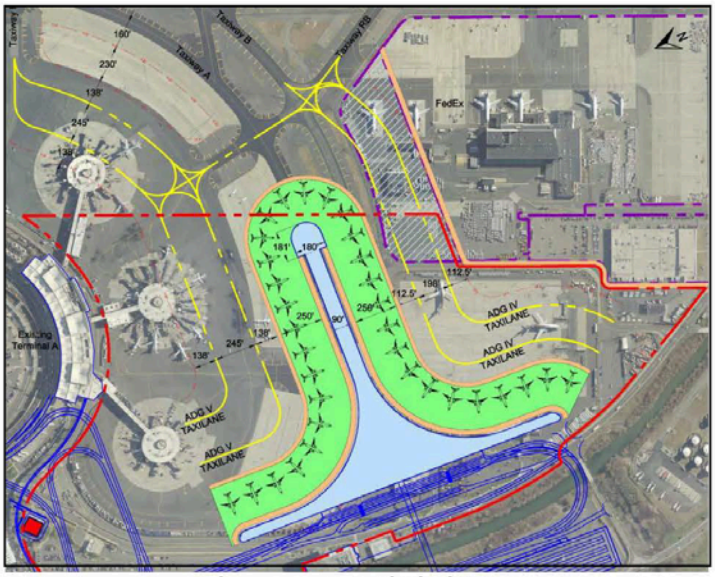


Figure 9: New Terminal A layout

Table 7: Design specifications of new Terminal A

Item	Parameter
Design Aircraft	• ADG III: B737-900W (with flexibility to accommodate ADG IV and ADG V aircraft) • Some projected ADG V and ADG VI operations
Taxiway/Taxilane Clearances	• Dual ADG V taxilanes on the north side • Dual ADG IV taxilanes on the south side • Single ADG V taxilane on the east side
Gate Clearances	• 25-foot wingtip clearance between gates
Aircraft Jet Blast	• Minimize 50-mph impact on aircraft stands
Aircraft Startup Pad Locations	• Maximize the number of start-up positions • Should be clear of jet blast
Off-gate Aircraft Hardstand Locations	• Six ADG V positions to support existing Terminal B • No more than 10 ADG III positions to support proposed T-A

ii. Interface

A new interface between the new Terminal A apron and the existing taxiway layout has been developed, including a provision for remote stands. After a discussion with PANYNJ Operations and other stakeholders, pushbacks will be positioned onto the inboard taxilane. In addition, rather than designate directional flows for each taxilane, flows are allowed in both directions on both taxilanes to maximize the benefit of the parallel taxilanes. This arrangement would be particularly useful during peak arrival and departure periods.

The features of the updated Terminal A taxilane layout include:

- Triple parallel taxilanes on the north-side of Terminal A
- Perpendicular interface between the Terminal A taxilanes and existing Airport taxiway structure
- Additional taxilane parallel to Taxiways A and B
- Eight ADG III hardstands at the existing Terminal A building location
- 12 ADG V 'Power In-Power out' hardstands/standoff positions
- Ability to use central taxilane on north-side for RON parking

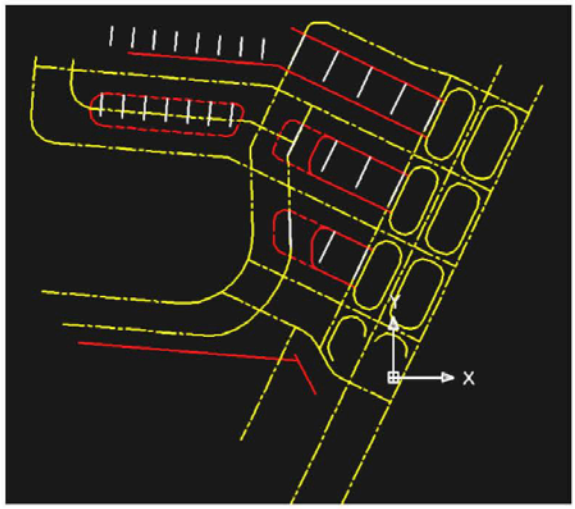


Figure 10: Updated Terminal A apron taxilane layout

The new pushback procedures, taxilane layout and taxilane usage were incorporated into the final TAAM models.

iii. Terminal B

The existing Concourse B1 has nine gates: three ADG III, five ADG IV and one ADG V. Concourse B1 will be reconfigured to handle more wide-body aircraft. **Figure 11** illustrates the new Terminal B layout. The new Concourse B1 will have one ADG III, one ADG IV and five ADG V gates. Because the Department of Homeland Security is expected to open 10 new preclearance locations[8], the anticipated number of international flights would be accommodated within the existing gate allocation in Concourses B2 and B3. Therefore, is it assumed that Concourse B1 would accommodate preclearance flights (narrow-body and wide-body aircraft) and would not require FIS capability.

[8] https://www.dhs.gov/news/2015/05/29/dhs-announces-intent-expand-preclearance-10-new-airports

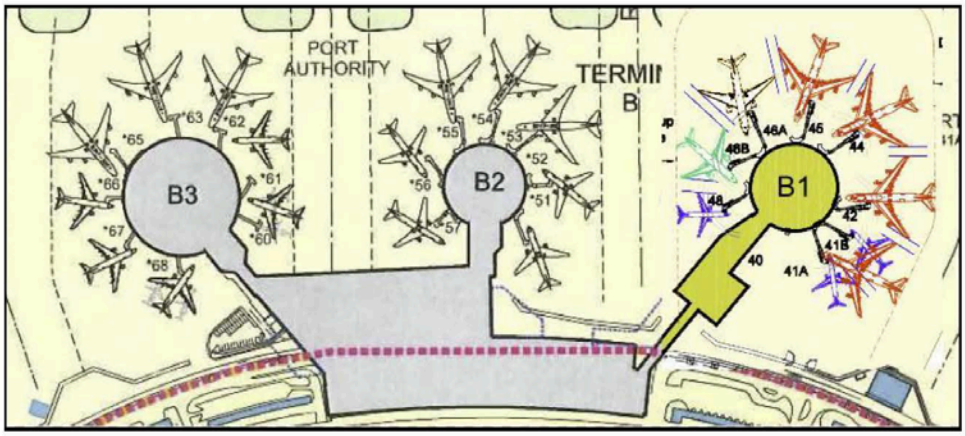


Figure 11: New Terminal B layout

iv. Cargo Aprons

The following changes in the cargo aprons would accommodate the new Terminal A:

- Building 350 (UPS) would be demolished. To assist UPS in relocating, an on-airport site (the former footprint of Buildings 14, 95 and 332) has been designated for construction of a new UPS facility.
- Building 331 (Chelsea Kitchen) would be demolished. An on-airport site (Building 151) has been designated for construction of the new Chelsea Kitchen facility.
- Building 330 (Chelsea Kitchen) and nine acres of land would be conveyed to FedEx in exchange for Building 342 and nine acres of land. Building 342 would then be demolished.
- Building 345 (Vacant) would be demolished.

g. Pushback Times

An aircraft pushback operation can be organized into five phases: (1) actual push-back; (2) pull-forward; (3) detach tug; (4) engine start and (5) obtaining taxi clearance. Some factors that affect pushback times are listed below:

- Gate location: Generally speaking, gates that are positioned closer to the terminal building result in longer pushback times
- Aircraft size: Larger aircraft require more time to complete the pushback operation
- Adjacent gates: Time required for a pushback operation depends on the presence of other aircraft at adjacent gates and the size of those neighboring aircraft
- Time of day: Pushback operations generally require more time during peak hours due to possible ramp congestion
- Pushback distance: The distance an aircraft is pushed affects the time required for the pushback operation

Aircraft pushback operations were timed for each phase of the operation for existing Terminals A, B and C. For the existing Terminal A, the total time required to complete a pushback operation from any gate is fairly consistent between 2.5 and 3 minutes. In the baseline schedule, a large percentage of aircraft operating in Terminal A are ADG II. In the 2027 design day flight schedule, the majority of Terminal A operations have been up-gauged to ADG III or larger aircraft. Therefore, in the No Build scenario, the average pushback time at Terminal A has been increased to between 4.5 and 5.0 minutes per operation. Due to the dual taxilanes and pushback operation onto the inboard taxilane, the average pushback time for the proposed Terminal A was assumed to be 2.5 to 3.0 minutes per operation.

Due to the configuration of Terminals B & C, several factors influence the time required to complete an aircraft pushback operation. It may require between 4 and 20 minutes depending on aircraft type and gate.

3. Design Day Flight Schedule

The design day flight schedule (DDFS) is a critical input to the simulation model. Typically, an average day from the peak month is chosen as a representative day for the simulation.

a. Future (2027)

The future forecast DDFS for this study was specified as the year 2027. The 2027 DDFS has 691 arrival flights and 691 departure flights (1,382 total flights). Of those flights, 1,202 flights are scheduled airline operations comprised of 599 arrival flights and 603 departure flights. All remaining flights are cargo or general aviation operations. This DDFS was gated using the Gate Management System (GMS) software by Landrum & Brown. The Gantt charts are included in Appendix A of this document.

A rolling-hour chart of the 2027 DDFS for scheduled airline service is presented in **Figure 12** (does not include cargo or general aviation operations). The maximum rolling-hour arrival demand is 45 while the maximum rolling-hour departure demand is 50. The maximum total rolling-hour operations are 84. The chart shows a departure peak between 0700 and 1000 hours. There is also a sustained level of airport activity (both arrivals and departures) between 1200 and 2230 hours. Although Terminal A follows the general airport arrival and departure profiles, it has more defined periods of peak activity.

The rolling-hour chart provides information on the airspace and airfield capacity required at the airport but does not provide information about the number of positions required on the ground. **Figure 13** presents the number of aircraft on the ground across the design day. This chart enables accurate planning of the terminal facilities. The maximum number of aircraft on the ground, 170, occurs in the early morning hours. Although the early morning is the numerical maximum, the early evening peak consists primarily of wide-body aircraft and therefore, these aircraft may be more difficult to accommodate.

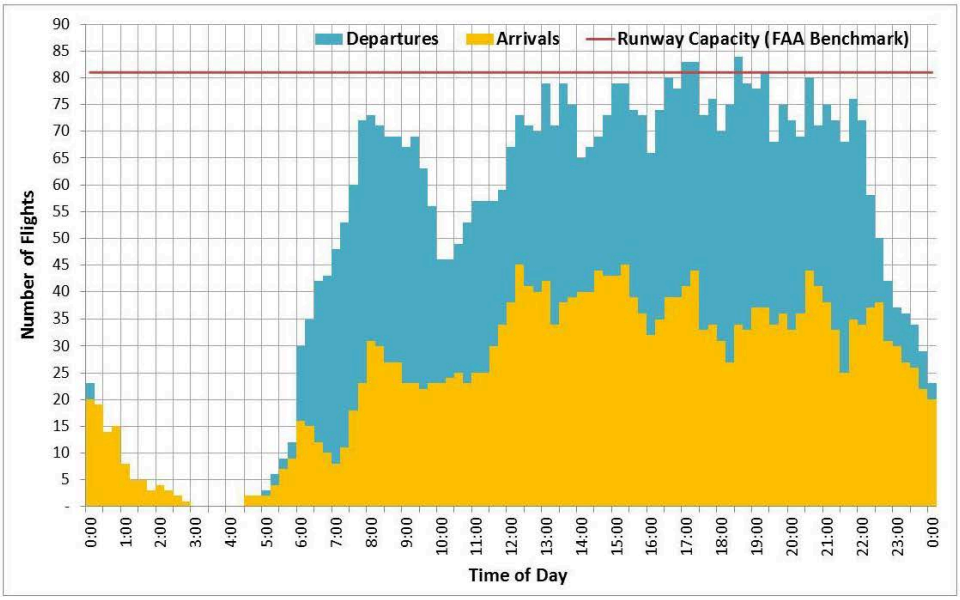


Figure 12: Rolling-hour operations – 2027 DDFS

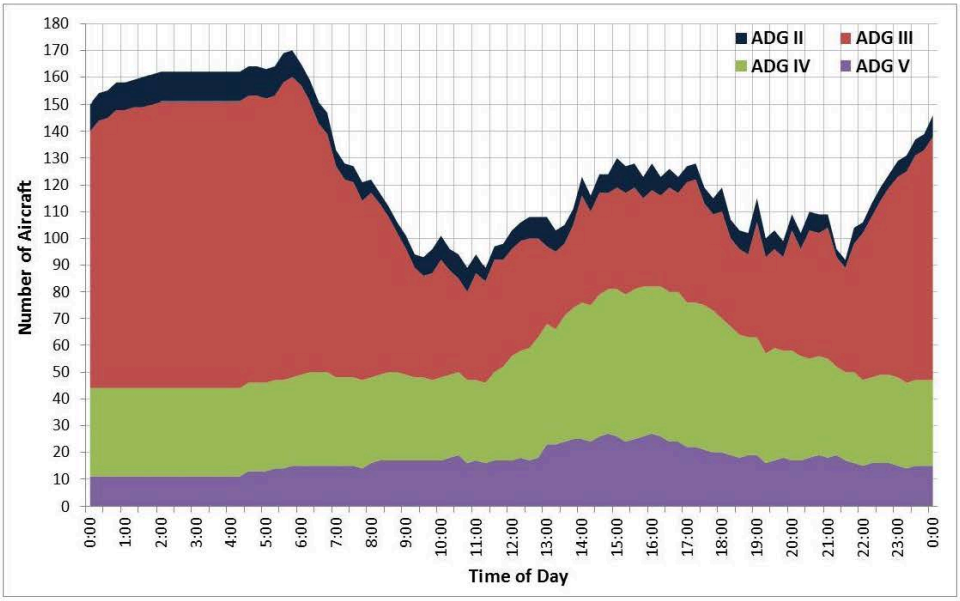


Figure 13: Aircraft on ground - 2027 DDFS

4. Results

PANYNJ provided calibrated TAAM models to Landrum & Brown. Calibration charts for each model are included in Appendix B.

Landrum & Brown developed and evaluated the following scenarios:

1. 2027 NE Flow, Terminal A (VMC)
2. 2027 NE Flow, No Action (VMC)
3. 2027 SW Flow, Terminal A (VMC)
4. 2027 SW Flow, No Action (VMC)
5. 2027 NE Flow, Terminal A (IMC)
6. 2027 NE Flow, No Action (IMC)

Each of the six scenarios was run five times using the multi-run feature of TAAM. These five results were then averaged to yield the results that follow. Although IMC results have been included, an all-day IMC scenario with a full flight schedule is not probable as airlines would likely cancel flights in anticipation of all-day inclement weather. Therefore, the IMC results in this report should only be used as a reference and should be interpreted in an absolute manner.

The No Build scenarios included the reconfiguration of Terminal B for wide-body aircraft and the reconfiguration of Concourse A2 parking positions for ADG III aircraft instead of regional jets.

a. Performance Metrics

The following metrics were used to quantify the performance of the new Terminal A:

- Average Overall Taxiing Time: The combination of average unimpeded taxi time and average taxi delay.
- Average Taxiing Delay: Average delay incurred by an aircraft while taxiing. The delay reported in this metric is incurred due to aircraft taxiing at lower-than-default speeds or stopping-and-starting on the taxiways due to the presence of other aircraft in the vicinity.
- Average Gate Delay: Delays due to gate unavailability and/or impediments that delay timely pushback from gates (e.g., apron congestion).

b. Average Taxi Time

Average taxi time measures the impact of the new Terminal layout on the ground flow at the airport. Improving taxi times to one part of the Airport results in taxi time improvement for other aircraft as well due to the reduction in ground congestion. **Table 8** presents the average taxi times for all airport operations. The departure taxi flows in the North Flow configuration are much "cleaner" than the taxi flows in the South Flow configuration because the departure queue in the North Flow does not interfere with other Airport operations. Therefore, the South Flow is more sensitive to demand increases than the North Flow. This higher sensitivity to departure delays is reflected in the departure taxi times in the South Flow model. The taxi time savings for the Terminal A scenarios should be measured against the No Build model, not the baseline model. The Terminal A scenarios generally reflect lower taxi times compared to the No Build scenarios.

Table 8: Average Taxi times

Year	Layout	Flow	Conditions	Avg. Taxi Time	
				Arr	Dep
2015	No Action	NE	VMC	10.6	17.6
	No Action	SW	VMC	10.0	17.3
	No Action	NE	IMC	7.2	27.3
2027	Terminal A	NE	VMC	10.5	21.2
	No Action	NE	VMC	11.2	21.5
	Terminal A	SW	VMC	11.5	23.4
	No Action	SW	VMC	11.6	23.6
	Terminal A	NE	IMC	11.6	30.5
	No Action	NE	IMC	12.0	30.7

c. Average Taxi Delay

The average taxi delay measures the level of ground congestion on the airfield. Reduction in taxi delay lowers operating costs and reduces the environmental impact of airport operations. It also helps maintain schedule integrity and lowers the impact of passenger delays. The average taxi delay is also useful when evaluated in conjunction with the average taxi time. Subtracting the average taxi delay from the average taxi time yields the unimpeded taxi time. Comparison of the unimpeded taxi time indicates the contribution of the delay savings to travel time savings. **Table 9** compares the average taxi delays for the future scenarios.

Table 9: Average Taxi Delays

Year	Layout	Flow	Conditions	Taxi Delay	
				Arr	Dep
2015	No Action	NE	VMC	3.1	8.8
	No Action	SW	VMC	3.0	8.7
	No Action	NE	IMC	1.7	18.8
2027	Terminal A	NE	VMC	3.5	11.5
	No Action	NE	VMC	3.8	12.7
	Terminal A	SW	VMC	3.6	14.6
	No Action	SW	VMC	4.0	15.5
	Terminal A	NE	IMC	4.6	21.2
	No Action	NE	IMC	4.6	22.0

d. Average Departure Gate Delay

Although departure gate holds based on departure queue length are not commonly used at EWR, it is anticipated that such procedures may be required at higher demand levels in future years. Therefore, the VMC simulation models included a departure gate hold when the departure queue reached 18 aircraft. This threshold was set at 17 aircraft for the IMC models. Aircraft are also held on gate for other reasons including ramp congestion, especially related to pushback operations. The average gate delay measures the effectiveness of the new apron layout. **Table 10** presents the average departure gate delay for the various scenarios.

Table 10: Average Departure Gate Delay

Year	Layout	Flow	Conditions	Dep Gate Delay
2015	No Action	NE	VMC	4.1
	No Action	SW	VMC	5.6
	No Action	NE	IMC	0.6
2027	Terminal A	NE	VMC	9.5
	No Action	NE	VMC	10.2
	Terminal A	SW	VMC	13.7
	No Action	SW	VMC	15.8
	Terminal A	NE	IMC	56.1
	No Action	NE	IMC	56.7

e. Apron Delay Visualization

Figure 14(a) presents the apron delays on the Terminal A apron in the North Flow configuration, while **Figure 14(b)** present the apron delays in the South Flow configuration. The severity of the delay on each link is color coded, where green indicates lowest delay, yellow/orange indicates moderate delays and red indicates higher delays. The delay visualization has been overlaid on a current image from Google Earth[9] to provide perspective.

In the North Flow, the only noticeable delays stem from the often lengthy departure queue to Runway 4L (depicted as the mostly red line in the graphic below). Despite the departure queue delays, the delays immediately surrounding the Terminal are minimal due to the efficient use of the multiple taxilanes. As expected, the South Flow configuration does not impact Terminal A apron operations in a significant manner. In both flows, aircraft do not experience much delay in arriving or departing gates.

[9] http://earth.google.com

(a)

(b)

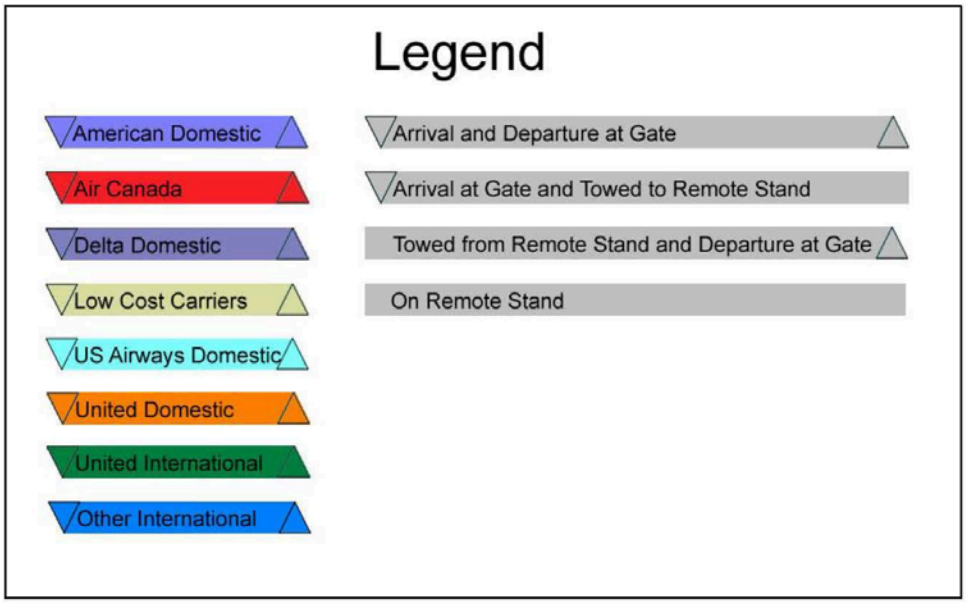
Figure 14: Apron Delay Visualization

5. Conclusions

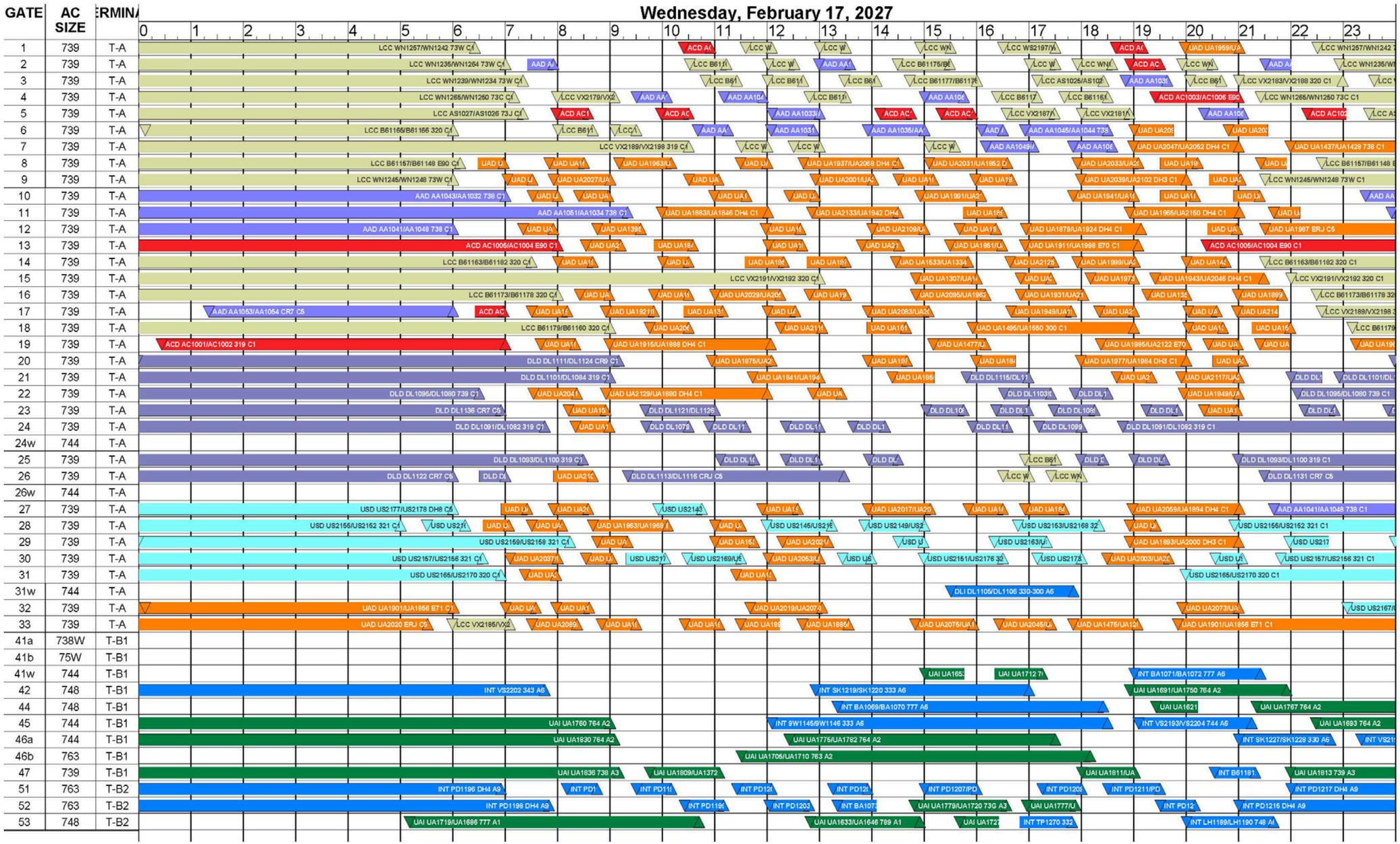
- The new Terminal A can handle the forecast demand for 2027 under a common-use scenario
- The number of hardstands provided in the updated apron layout prepared by PANYNJ is adequate for the needs of the Airport
- The updated Terminal layout allows for efficient apron operations
- Terminal B can handle the forecast demand for 2027, including United Airlines' overflow operations
- The taxi in and taxi out times for the new Terminal are lower than the No Build scenario
- The new Terminal reduces apron congestion, which results in lower taxi times, taxi delays and gate delays across the airport

Appendix A – Gate Management System (GMS) Gantt Charts

The following Gantt charts depict the gated 2027 schedule as seen in Landrum & Brown's Gate Management System (GMS) software.



EWR 2027 Schedule

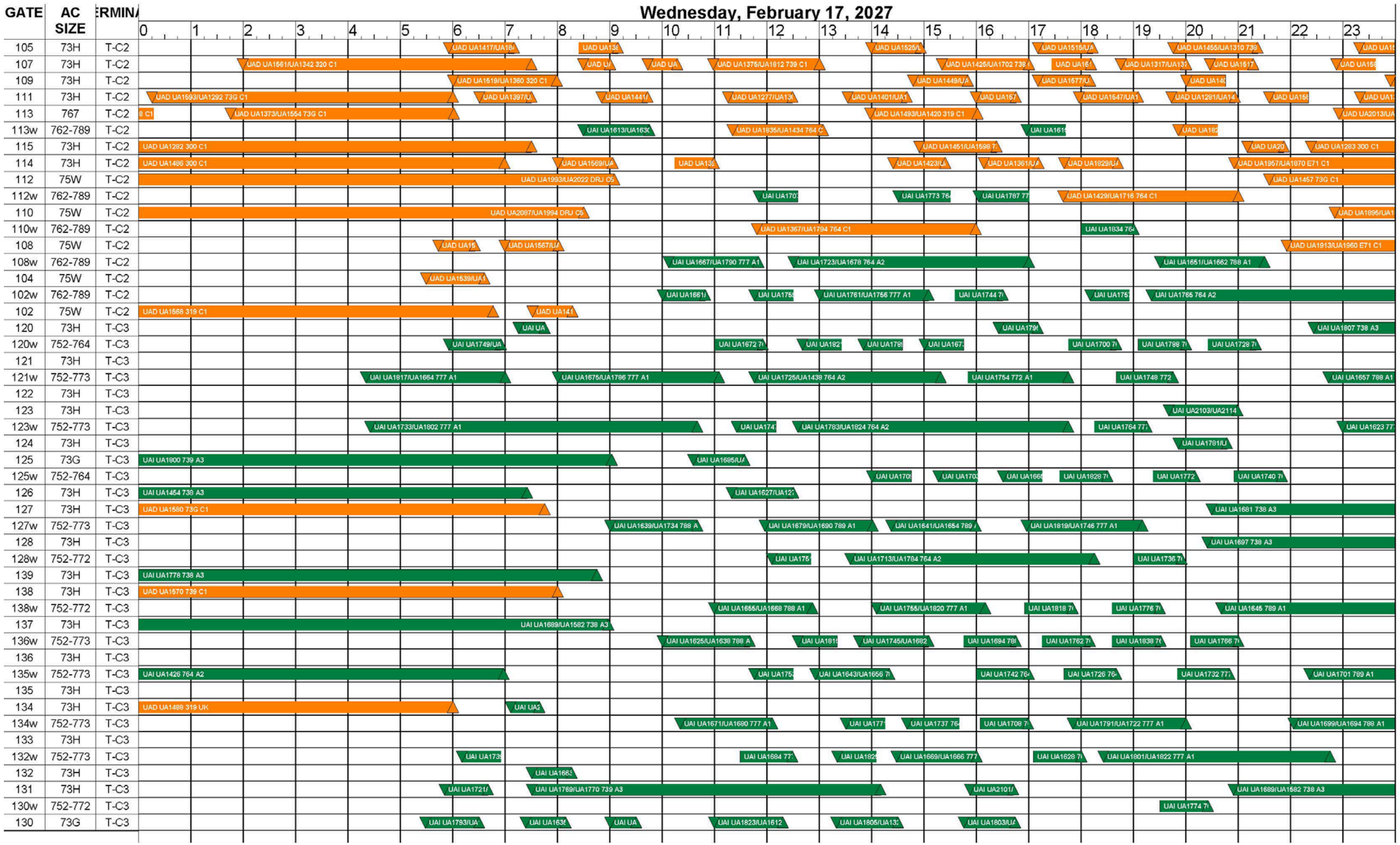


EWR 2027 Schedule

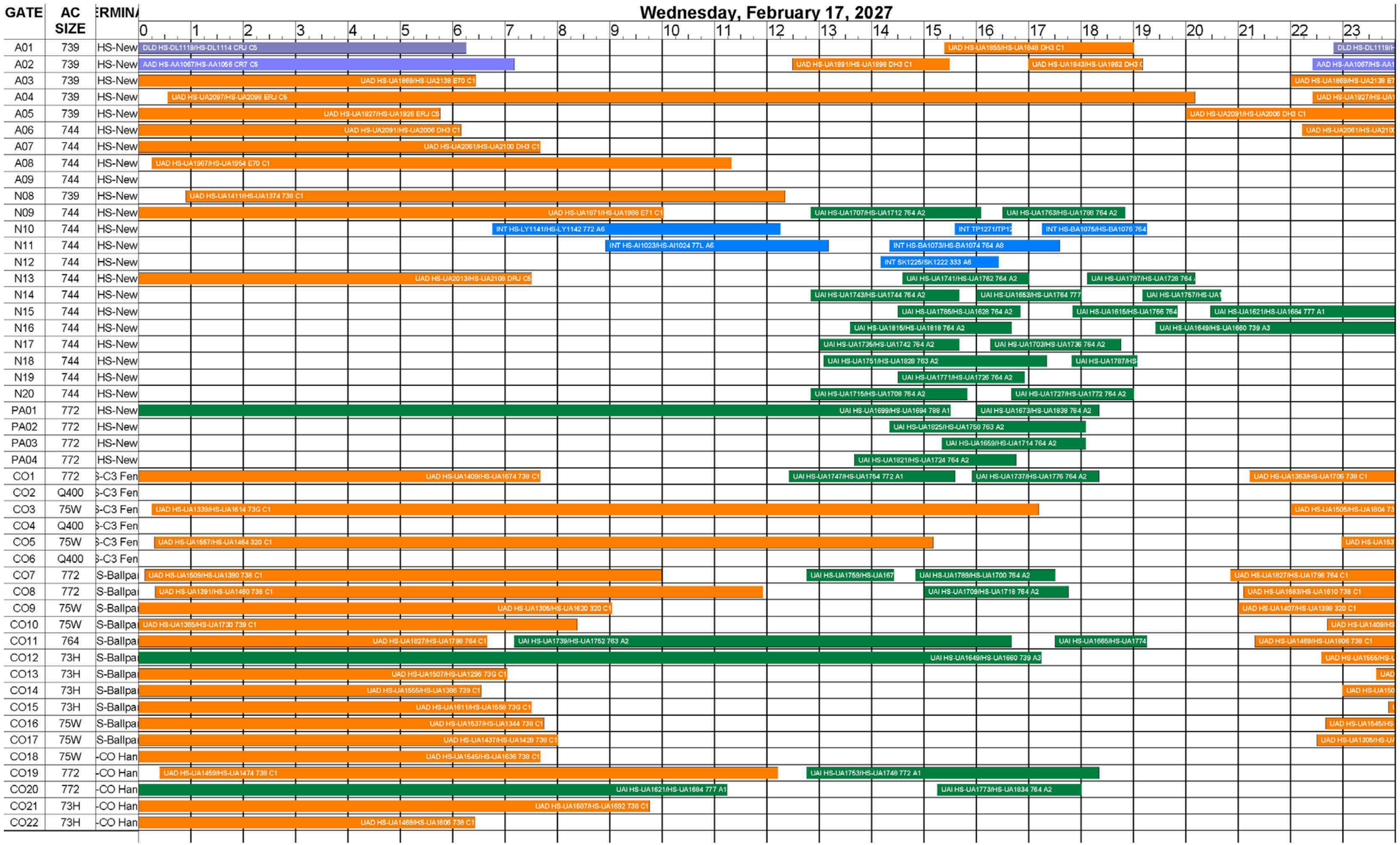
Wednesday, February 17, 2027

GATE	AC SIZE	TERMINAL
54	744	T-B2
55	744	T-B2
56	764	T-B2
57	763W	T-B2
60	763	T-B3
61	763	T-B3
62	748	T-B3
63	744	T-B3
65	744	T-B3
66	763	T-B3
67	763	T-B3
67A	772	T-B3
68	772	T-B3
71	753	T-C1
71w	762-789	T-C1
73	753	T-C1
74w	762-789	T-C1
74	753	T-C1
75	753	T-C1
75w	762-789	T-C1
82	753	T-C1
84	75W	T-C1
86	75W	T-C1
88w	762-789	T-C1
88	73H	T-C1
87	75W	T-C1
85	738	T-C1
85w	762-789	T-C1
83	752	T-C1
83w	762-789	T-C1
81	763	T-C1
80	753	T-C1
80w	762-789	T-C1
95	752	T-C1
97	73H	T-C1
99	73H	T-C1
98w	762-789	T-C1
98	75W	T-C1
96	73H	T-C1
94	73H	T-C1
92	73H	T-C1
91	73H	T-C1
90w	762-789	T-C1
90	73H	T-C1
72	73H	T-C1
70	73H	T-C1
101	73H	T-C2
103	73H	T-C2

EWR 2027 Schedule



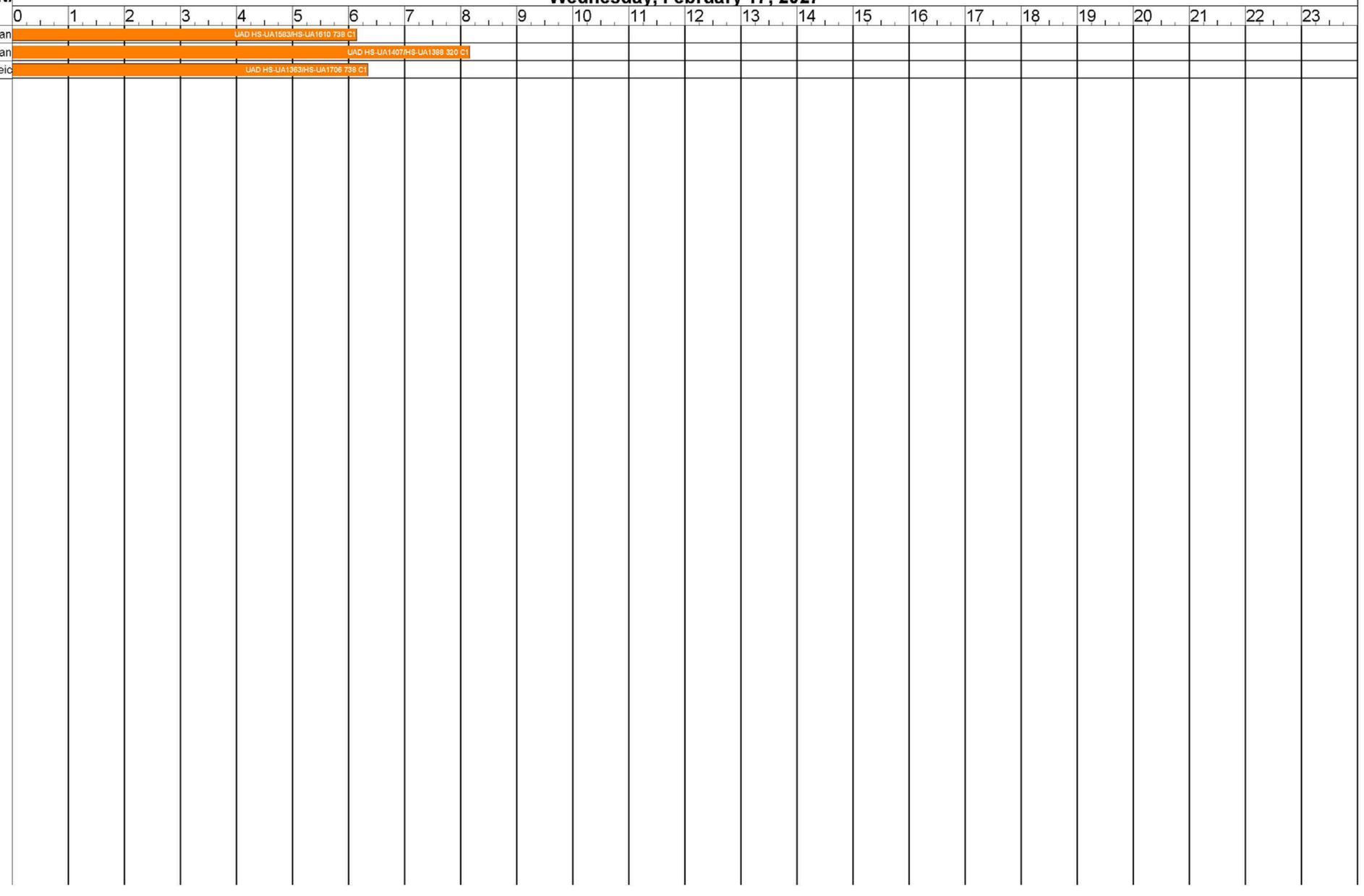
EWR 2027 Schedule



EWR 2027 Schedule

Wednesday, February 17, 2027

GATE	AC SIZE	ERMINA
CO23	73H	-CO Han
CO24	73H	-CO Han
CO25	73H	-PA Deic



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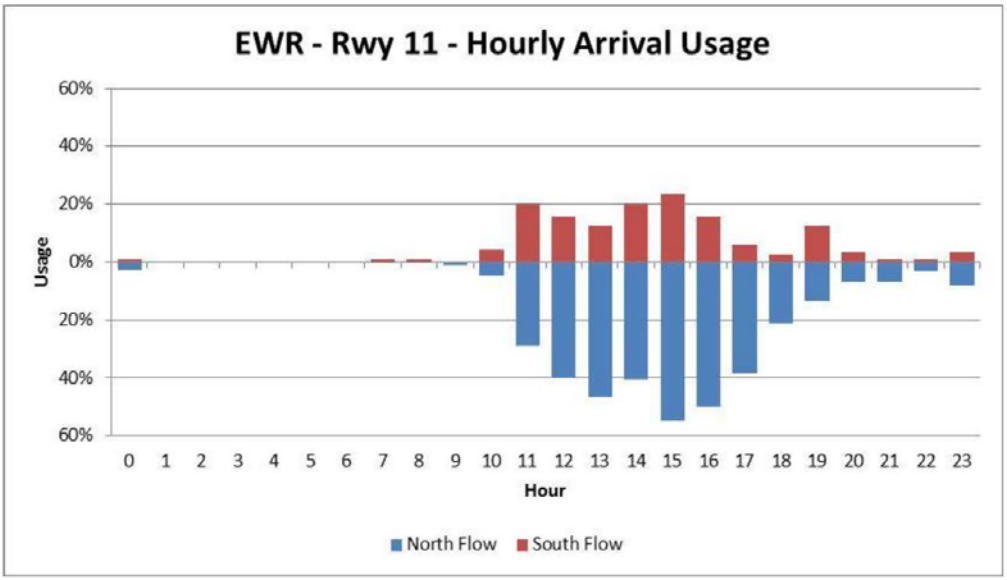
Appendix B – Runway Throughput Calibration

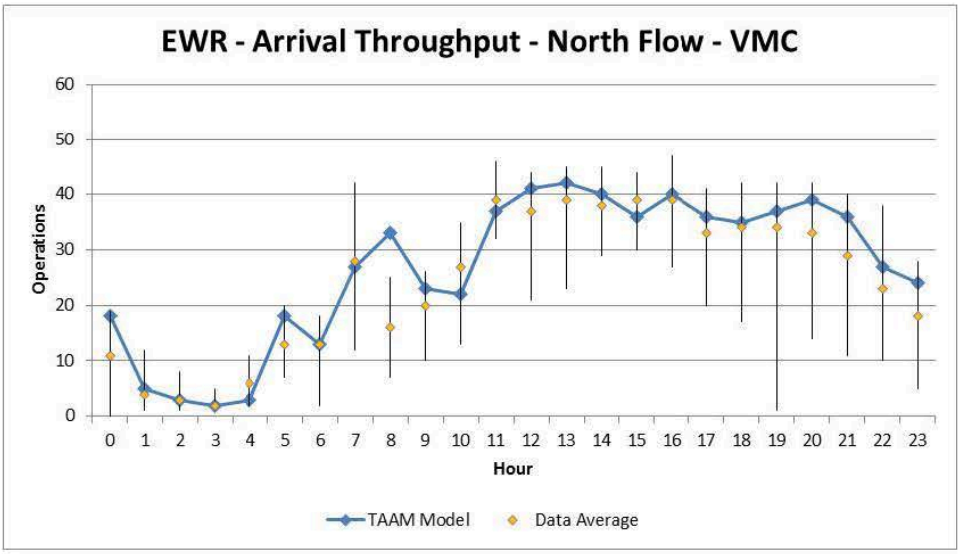
The following chart depicts the percentage of time that Runway 11 is used for arrivals during each hour. The data indicates that Runway 11 is most often used for arrivals between 1100 and 1800. Therefore, Runway 11 arrivals are used only between 1100 and 1800 in the VMC models. Due to operational restrictions, Runway 11 arrivals are not included in the IMC models.

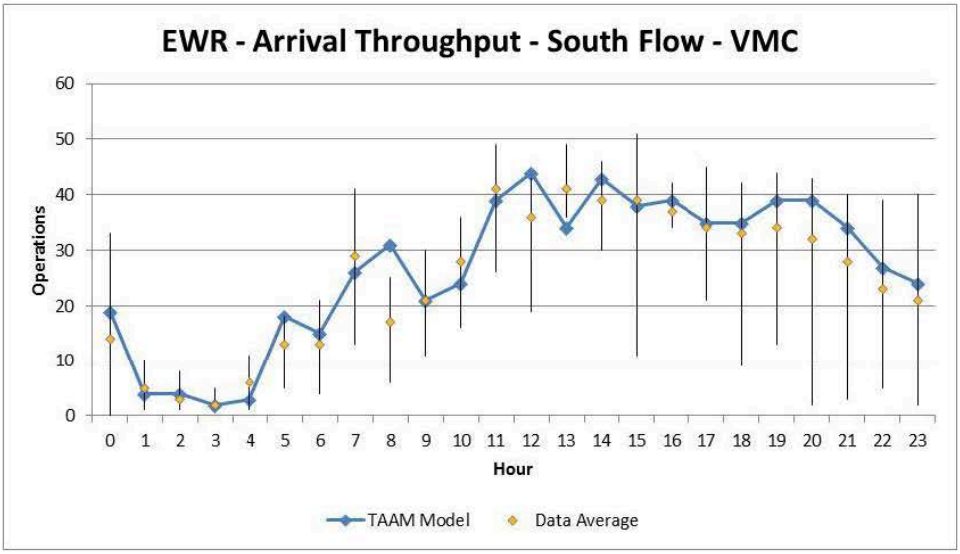


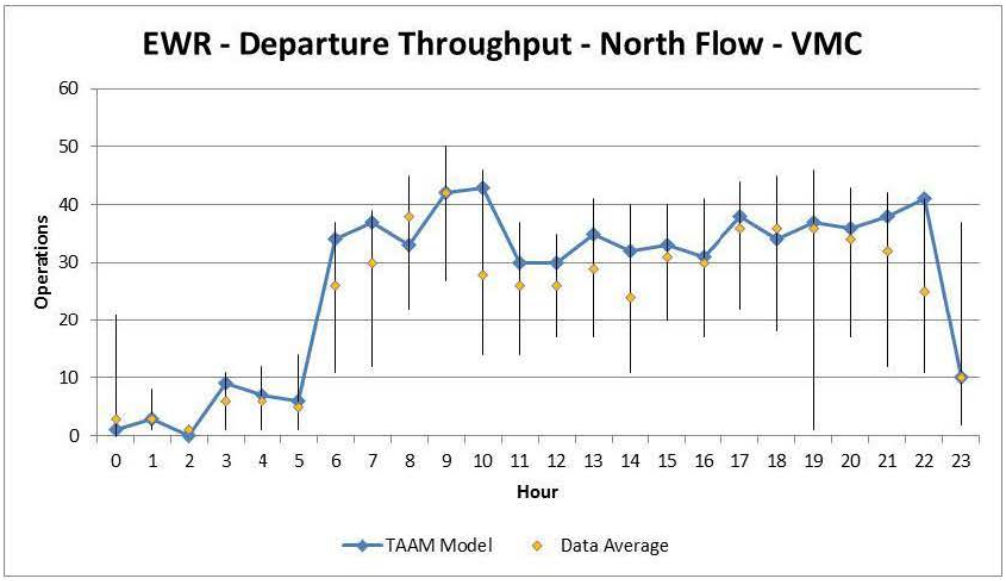
The following calibration charts are based on Aerobahn operations data[10]. The bars within each hour indicate the minimum and maximum observed values while the orange diamonds indicate the average throughput. This data is plotted against the TAAM model output which is indicated with the blue line.

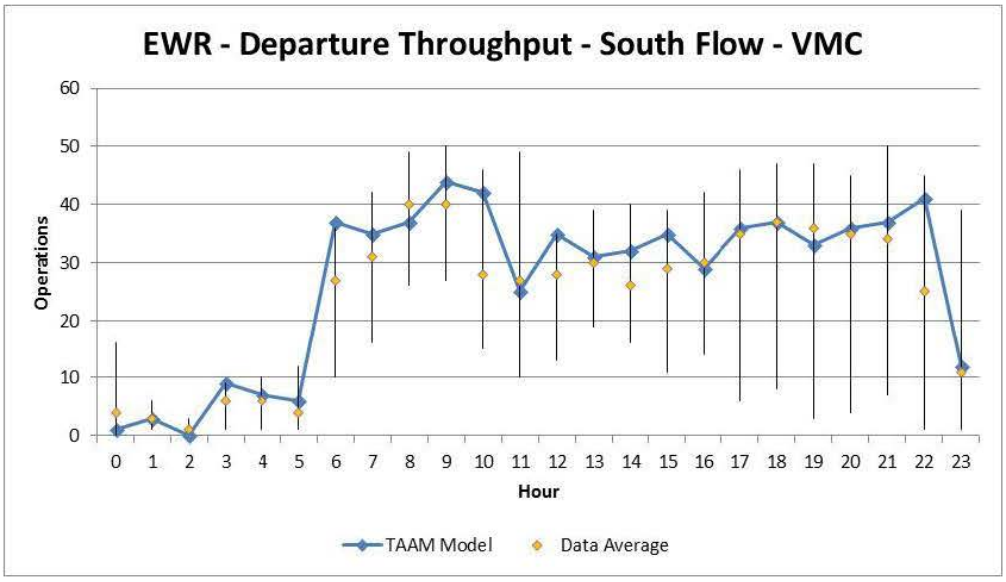
[10] Landrum & Brown analysis; Aerobahn operations data 20150601 - 20160131

VMC Models

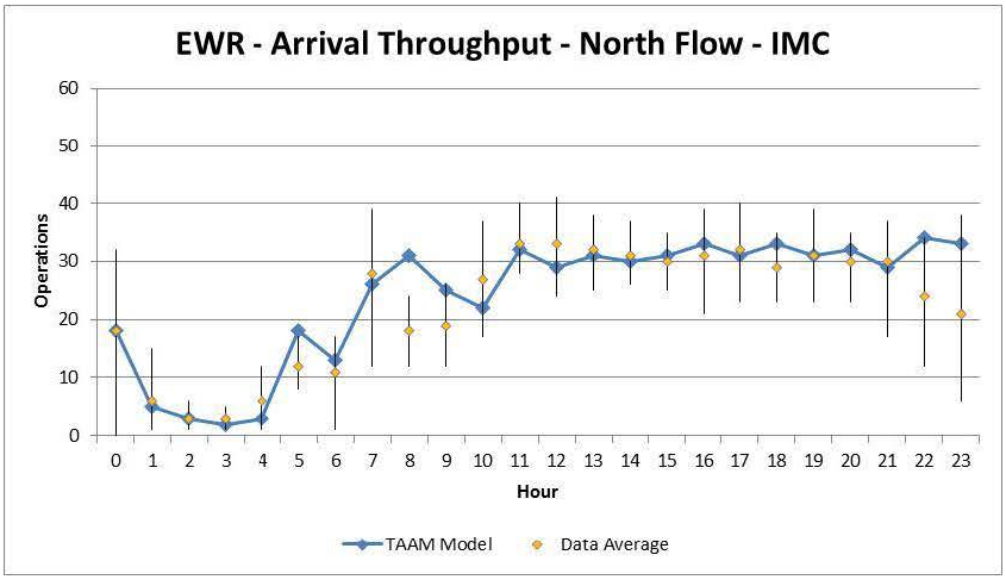

EWR - Arrival Throughput - North Flow - VMC
Operations
Hour
TAAM Model
Data Average

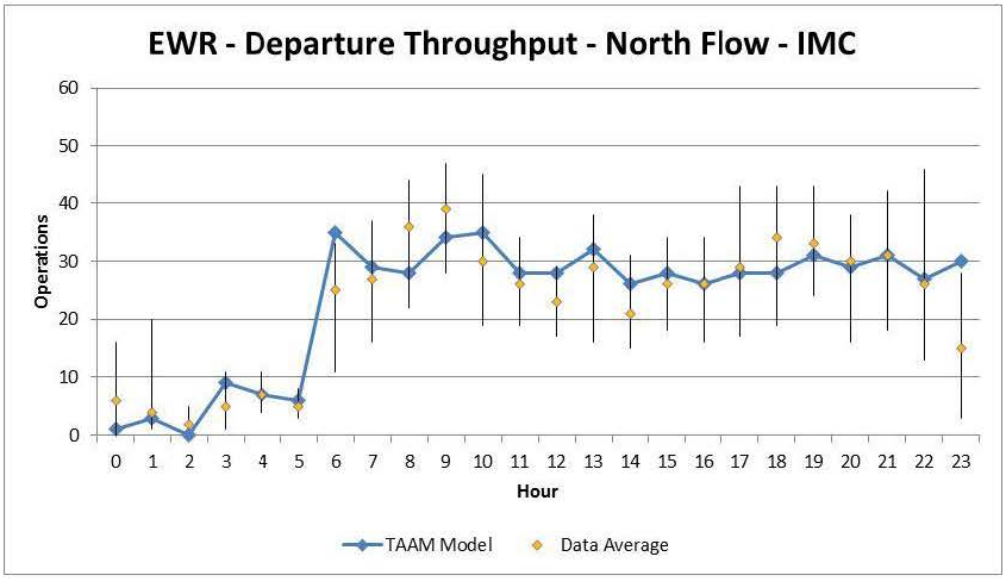

EWR - Arrival Throughput - South Flow - VMC
Operations
Hour
TAAM Model
Data Average


EWR - Departure Throughput - North Flow - VMC
Operations
Hour
TAAM Model
Data Average


EWR - Departure Throughput - South Flow - VMC
Operations
Hour
TAAM Model
Data Average

IMC Models


EWR - Arrival Throughput - North Flow - IMC
Operations
Hour
TAAM Model
Data Average


EWR - Departure Throughput - North Flow - IMC
Operations
Hour
TAAM Model
Data Average

Federal Aviation Administration
Terminal Area Forecast for Newark Liberty International Airport
Published January 2012

		Enplaned Passengers			Itinerant Aircraft Operations					Local Aircraft Operations			
Year	Actual v. Forecast	Air Carrier	Commuter	Total Enplaned	Air Carrier	Air Taxi	General Aviation	Military	Total Itinerant	Local GA	Local Military	Total Local	Total Operations
1990	Actual	10,509,439	501,546	11,010,985	271,862	88,388	23,270	683	384,203	0	0	0	384,203
1991	Actual	10,501,772	596,394	11,098,166	275,009	85,651	20,648	542	381,850	0	0	0	381,850
1992	Actual	11,184,128	736,139	11,920,267	283,651	99,125	20,730	472	403,978	0	0	0	403,978
1993	Actual	11,524,127	921,920	12,446,047	288,265	122,044	21,118	517	431,944	0	0	0	431,944
1994	Actual	12,971,036	939,507	13,910,543	304,782	116,249	20,544	422	441,997	0	0	0	441,997
1995	Actual	12,473,755	972,729	13,446,484	300,282	108,159	19,954	308	428,703	0	0	0	428,703
1996	Actual	13,178,018	1,044,020	14,222,038	312,547	111,421	19,245	218	443,431	0	0	0	443,431
1997	Actual	14,062,604	1,099,827	15,162,431	331,799	117,289	18,254	141	467,483	199	6	205	467,688
1998	Actual	14,944,860	1,167,686	16,112,546	340,421	101,249	19,433	134	461,237	0	0	0	461,237
1999	Actual	15,675,346	1,162,104	16,837,450	356,932	87,461	18,981	118	463,492	0	0	0	463,492
2000	Actual	16,261,223	1,030,249	17,291,472	356,510	83,773	18,285	109	458,677	0	0	0	458,677
2001	Actual	15,499,285	1,135,077	16,634,362	346,761	98,821	16,437	138	462,157	45	0	45	462,202
2002	Actual	12,802,840	1,339,730	14,142,570	282,849	112,176	12,612	86	407,723	7	0	7	407,730
2003	Actual	12,711,359	1,717,098	14,428,457	269,043	125,193	12,891	78	407,205	145	5	150	407,355
2004	Actual	13,415,550	2,214,618	15,630,168	272,753	147,444	13,404	176	433,777	320	0	320	434,097
2005	Actual	13,657,730	2,526,928	16,184,658	264,367	162,265	13,579	66	440,277	438	174	612	440,889
2006	Actual	15,016,524	2,638,757	17,655,281	273,693	160,534	12,984	96	447,307	1	0	1	447,308
2007	Actual	15,457,286	2,695,317	18,152,603	273,752	155,605	15,453	71	444,881	91	1	92	444,973
2008	Actual	15,132,473	2,794,271	17,926,744	286,550	141,979	16,574	35	445,138	122	1	123	445,261
2009	Actual	13,623,838	3,070,015	16,693,853	275,037	136,407	8,977	269	420,690	0	0	0	420,690
2010	Actual	13,262,080	3,236,039	16,498,119	264,706	133,871	9,827	357	408,761	0	0	0	408,761
2011	Forecast	13,614,071	3,083,945	16,698,016	282,442	116,748	12,629	528	412,347	0	0	0	412,347
2012	Forecast	14,503,117	3,253,562	17,756,679	300,518	117,682	14,471	528	433,199	0	0	0	433,199
2013	Forecast	14,872,922	3,364,183	18,237,105	308,331	120,624	14,509	528	443,992	0	0	0	443,992
2014	Forecast	15,278,751	3,481,929	18,760,680	315,423	123,760	14,547	528	454,258	0	0	0	454,258
2015	Forecast	15,677,417	3,596,833	19,274,250	321,416	126,730	14,585	528	463,259	0	0	0	463,259
2016	Forecast	16,071,730	3,711,932	19,783,662	327,522	129,645	14,623	528	472,318	0	0	0	472,318
2017	Forecast	16,441,173	3,786,171	20,227,344	333,417	131,201	14,661	528	479,807	0	0	0	479,807
2018	Forecast	16,820,344	3,861,894	20,682,238	339,419	132,775	14,699	528	487,421	0	0	0	487,421
2019	Forecast	17,209,531	3,939,132	21,148,663	345,529	134,368	14,737	528	495,162	0	0	0	495,162
2020	Forecast	17,609,027	4,017,915	21,626,942	351,749	135,981	14,775	528	503,033	0	0	0	503,033
2021	Forecast	18,019,135	4,098,273	22,117,408	358,081	137,613	14,813	528	511,035	0	0	0	511,035
2022	Forecast	18,440,169	4,180,238	22,620,407	364,527	139,264	14,851	528	519,170	0	0	0	519,170
2023	Forecast	18,872,453	4,263,843	23,136,296	371,089	140,935	14,889	528	527,441	0	0	0	527,441
2024	Forecast	19,316,320	4,349,120	23,665,440	377,769	142,626	14,927	528	535,850	0	0	0	535,850
2025	Forecast	19,772,114	4,436,102	24,208,216	384,569	144,338	14,965	528	544,400	0	0	0	544,400
2026	Forecast	20,240,189	4,524,824	24,765,013	391,492	146,070	15,004	528	553,094	0	0	0	553,094
2027	Forecast	20,720,912	4,615,320	25,336,232	398,539	147,823	15,043	528	561,933	0	0	0	561,933
2028	Forecast	21,214,660	4,707,626	25,922,286	405,713	149,597	15,082	528	570,920	0	0	0	570,920
2029	Forecast	21,721,823	4,801,779	26,523,602	413,016	151,392	15,121	528	580,057	0	0	0	580,057
2030	Forecast	22,242,804	4,897,815	27,140,619	420,450	153,209	15,160	528	589,347	0	0	0	589,347
2031	Forecast	22,778,017	4,995,771	27,773,788	428,018	155,048	15,199	528	598,793	0	0	0	598,793
2032	Forecast	23,327,891	5,095,686	28,423,577	435,722	156,908	15,238	528	608,396	0	0	0	608,396
2033	Forecast	23,892,867	5,197,600	29,090,467	443,565	158,791	15,277	528	618,161	0	0	0	618,161
2034	Forecast	24,473,402	5,301,552	29,774,954	451,549	160,696	15,316	528	628,089	0	0	0	628,089
2035	Forecast	25,069,965	5,407,583	30,477,548	459,677	162,625	15,355	528	638,185	0	0	0	638,185
2036	Forecast	25,683,043	5,515,735	31,198,778	467,951	164,576	15,394	528	648,449	0	0	0	648,449
2037	Forecast	26,313,136	5,626,050	31,939,186	476,374	166,551	15,433	528	658,886	0	0	0	658,886
2038	Forecast	26,960,763	5,738,571	32,699,334	484,948	168,550	15,472	528	669,498	0	0	0	669,498
2039	Forecast	27,626,456	5,853,342	33,479,798	493,677	170,572	15,511	528	680,288	0	0	0	680,288
2040	Forecast	28,310,769	5,970,409	34,281,178	502,564	172,619	15,550	528	691,261	0	0	0	691,261

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Appendix B
Hazardous Materials Evaluation

Hazardous Materials

B-1. Introduction

Hazardous waste is defined by FAA Order 1050.1F, as waste that is listed in, or meets the characteristics described by the Resource Conservation and Recovery Act of 1990 (RCRA), 40 C.F.R. § 261, or is flammable, corrosive, explosive in reaction, or toxic to humans and animal life. In addition, Order 1050.1F defines a hazardous substance as any element, compound, mixture, solution, or substance defined as a hazardous substance under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and listed in 40 C.F.R. § 302. If released into the environment, hazardous substances may pose substantial harm to human health or the environment.

Hazardous wastes include cleaning solvents, waste oil and Freon, contaminated oil booms and used tyvek suits, gasoline, gasoline-soaked rags, and polychlorinated biphenyls (PCBs). Other wastes of concern include paint-related waste, foreign object debris, antifreeze and urea, sand blast residue, household hazardous waste (small quantities of various hazardous materials that cannot be combined with other materials for disposal), and ethylene glycol.

Aircraft operations require the storage and use of fuel and other hazardous materials. Although hazardous wastes are not disposed of on the airport, the handling of hazardous materials is common. Hazardous materials are stored in aboveground storage tanks (ASTs), underground storage tanks (USTs), warehouses, and other buildings located on airport property. The ground support for aircraft operations can create the potential for accidental releases of these substances, resulting in the potential for adverse environmental impacts. This section presents a summary of the known use, storage, and distribution of hazardous materials and waste sites on the airport.

General categories of hazardous materials that can be encountered on the airport include fill materials; known releases of petroleum products; chemical waste generation; bulk storage; container storage; and buildings containing lead, asbestos, mercury and polychlorinated biphenyl (PCB)-containing materials.

B-2. Affected Environment

B.2.1 Fill Materials

Prior to airport development, the area consisted of an extensive tidal marsh. The marshland was comprised of peat and silty clay approximately 5 to 10 feet thick. The tidal marsh was progressively reclaimed by filling with sand, debris and refuse. Some parts of the airport property, particularly in the southern and central areas, were used for municipal waste disposal. Dredge spoils from the adjacent Newark Bay were also used as fill over large portions of the airport. This fill caused compression of the organic layer resulting in settlements of several feet. These activities originated in the mid-1920s and continued into the 1970's. The historic fill varies from absent to 53 feet in thickness across the area and is typically between 10 and 20 feet deep. Historic fill is widespread in New Jersey and often contains elevated concentrations of polycyclic aromatic hydrocarbons (PAHs), heavy metals, and petroleum constituents in excess of NJDEP reporting thresholds. Contamination associated with historic fill at the airport is

generally at low concentrations and is relatively uniform and not related to any identifiable release or spill.

B.2.2 Releases of Petroleum Products or Hazardous Materials

Newark Liberty International Airport is not currently under any Administrative Consent Order or regulatory compliance action pertaining to hazardous materials. A site assessment, consisting of a regulatory file review, a site inspection and interviews with facility personnel, was conducted on Buildings 342, 345 and 350. As a result of this assessment, no evidence of any subsurface contamination was found. There are, however, several confirmed or potential petroleum or hazardous material release areas located within or adjacent to the Project Area. These areas are summarized below.

Terminals A & B Hydrant Pits

In 1980 it was discovered that the subsurface area of the satellite's A1 and A2 at Terminal A had been impacted by discharges from historic jet fuel handling operations. Jet fuel was initially identified in the sumps located in the crawlspaces beneath Terminal A & B. These sumps are connected to the subdrainage systems used to lower the groundwater table in this area. In early 1980, a free phase jet fuel plume was identified in the subsurface at each of the six satellite gate locations, and the hydrant pits were determined to be the source. The hydrant pits were sealed and the source of the leaks eliminated by the mid-1980's.

Over 400 monitoring wells and hydropunches have been installed throughout the Terminals A & B area since 1984 and the free product thickness in all monitoring wells has been gauged on a regular basis. A subsurface remediation system was installed in December 2004 and operated through June 2008. This multiphase extraction system used vacuum trucks to remove total fluids from extraction wells and a treatment unit to separate and treat the liquid phases. The treated water was then discharged to the Peripheral Ditch. During system operation, an estimated 36,844 gallons of LNAPL (light non-aqueous phase liquid, e.g., jet fuel or other hydrocarbons) were recovered and 1.2 million gallons of groundwater were extracted and treated.

A review of the product thickness levels indicated a substantial percentage of recoverable product has been removed from the subsurface and the LNAPL plumes have shrunk significantly, although additional remedial work would be needed. Product depth and thickness levels are summarized in **Table B-1** below.

A March 2012 *Remedial Action Progress Report* has recommended a program of site monitoring, risk evaluation and management through the following continued remedial action activities:

- Gauge all wells on site to establish a new product thickness baseline
- Evaluate current monitoring well locations and determine an appropriate number of wells to remain and that can be maintained safely in an active air operations area
- Monitor all remaining wells annually for free product

The report also recommended that as construction of the Proposed Action progresses, the Port Authority should evaluate opportunities to remediate areas impacted by the construction and implement remediation measures as determined feasible.

Table B-1 Terminal A Petroleum Product Depths and Thicknesses

Satellite	Petroleum Product Location	Petroleum Product Depth (Feet Below Grade)	Petroleum Product Thickness (Feet)
A1	East of A1	10	0.5
A2	Immediately North of A2	9	0.3 to 0.8
	West of A2 by Hydrant Lines	5.5 to 6	1 to 2
A3	Between A2 and A3	7.5	0.5
	Immediately West of A3	8	0.2 to 0.5
	Between A3 and B1	7.5	1.3

Port Authority Engineering Department, January 2013.

Building 347 (Federal Express Metroplex)

Building 347, the Federal Express Metroplex Building, is located adjacent to the Project Area in the airport's South Cargo Area. The property is operated by Federal Express and is the site of a leaking UST. This leaking UST, which has caused groundwater contamination, has an assigned NJDEP case number of 96-11-15-1507-35. The site has a remediation level of C2 (remediation that requires a formal design). The site was transferred to NJDEP's Licensed Site Remediation Professional (LSRP) program on March 12, 2012 for further action.

Building 330 (Chelsea Flight Kitchen)

Building 330, Chelsea Flight Kitchen, is located in the Project Area. The property is the site of a leaking UST. A *Remedial Investigation Report* was submitted to NJDEP on December 3, 2009. The site has a remediation level of C2 and was transferred to the LSRP program on May 8, 2012.

Building 331 (Chelsea Flight Kitchen)

Building 331, Chelsea Flight Kitchen, is also located in the Project Area. Petroleum contaminated soil and groundwater are present on the eastern side of the building. The source of this contamination is a leaking waste oil UST that was removed in March 2007. Petroleum contaminated soil is present approximately 8 feet to the east of the building and has a maximum concentration of 25,180 mg/kg. The approximate extent of contaminated soil is 60 square feet and is present at a depth of 12.5 feet below grade. Groundwater is also contaminated with arsenic, benzene, lead, methyl tertiary butyl ether (MTBE), pentachlorophenol (a pesticide), and several polycyclic aromatic hydrocarbons (PAH).

Per a meeting with United Airlines in December 2016, United indicated they have remediated completely soil and groundwater contamination at Building 331 and is awaiting approval/concurrence from their LSRP. During the course of remediation, however, historic fill (i.e. non-native material that was used in the past to raise the elevation of the airport) was

identified at the site. NJDEP requires that the deed of the site be revised to reflect the presence of historic fill and United has proposed implementing this remedial action. Revision of the Deed, however, requires approval by the Authority. The Authority is currently in discussions with United Airlines to resolve this matter.

Finally, an inspection of the building's interior did not indicate any evidence of spills. Oil stains were not observed on floors or trench drains and storage areas containing waste oil and grease drums were in good condition.

Building 120 (Fuel Selection Station)

The Fuel Selection Station is located in the Project Area and is owned by the Port Authority. Investigation activities that occurred from 1997 to 2008 have determined that soil and groundwater contaminants in concentrations above NJDEP remediation standards are present on the site. The soil contamination consists of approximately 6,100 square feet (980 cubic yards) of field-observed contaminated soil (i.e. stained soil). The groundwater contamination, which is decreasing in concentration, is in the form of petroleum constituents and has an aerial extent of approximately 18,200 square feet.

A March 2012 *Supplemental Remedial Investigation/Remedial Action Work Plan* has proposed excavation of the contaminated soil for offsite disposal during the building's demolition as part of the Proposed Action. It was determined that a more rigorous remedial action is not warranted at this time due to the absence of a free-phase product plume, the significant decrease in concentration of contaminated groundwater in the last 10 years, the stability of measurable product and contaminated groundwater plumes present, and site conditions that support natural attenuation of dissolved-phase PAHs. The intent of removing stained soil is to eliminate the bulk source of 2-methylnaphthalene in the soil that is impacting groundwater and to concurrently remove PAH-contaminated groundwater and residual product (if still present) in this area. Following soil remedial actions, the site will be re-evaluated to determine appropriate remedial actions to address dissolved-phase 2-methylnaphthalene and PAHs, if present. Quarterly groundwater monitoring will continue at this site until levels are below regulatory criteria, however final remedial actions have not yet been determined.

As of October 2016, the Authority obtained approval from their LSRP to excavate all contaminated soil and to treat contaminated groundwater encountered during excavation activities at the Building 120 site. These remedial actions have been incorporated into the three bridges contract and will occur in the last quarter of 2018.

B.2.3 Chemical Waste Generation

USEPA classifies the airport as a Large Quantity Generator (LQG) of hazardous waste (EPA ID No. NJD 980648497), which indicates that it generates 1,000 kilograms or more of hazardous waste per month, or more than 1 kilogram per month of acutely hazardous waste. According to EPA's 2009 *Biennial Hazardous Waste Report* prepared for the airport (and its two largest tenants, FedEx and United), as required by federal regulation for LQG facilities, 30 total tons of non-acute hazardous waste were generated on-site in 2009. These wastes included organic fluids (paint, ink, lacquer or varnish, etc.), inorganic fluids (cleaners, solvents, etc.), and contaminated debris (waste rags, used tyvek suits, used absorbent pads and booms, etc.). These materials are stored in various locations throughout the airport and are disposed of at licensed facilities according to applicable regulations.

B.2.4 Bulk Storage Tanks

USTs, ASTs and oil/water separators (OWS) situated in the Project Area are documented in **Table B-2**.

Table B-2 Bulk Storage Summary

Location/Owner	UST	AST	OWS
Terminal A American Airlines		(2) 300-gallon Hydraulic Oil	
Terminal A United Airlines	550-gallon Diesel Fuel	5,500-gallon Type IV Anti-icing	
		15,000-gallon Type I De-icing	
		300-gallon Used Oil	
Terminal A Southwest Airlines		12,000-gallon Type I De-icing	
		6,000-gallon Type II De-icing	
Terminal A Worldwide Flight Services		(2) 5,000-gallon Propylene Glycol	
Building 331 United Airlines		2,000-gallon Diesel Fuel	1,000-gallon Sanitary Discharge
		250-gallon Hydraulic Oil	
		275-gallon Transmission Fluid	
Building 342 Federal Express		(2) 5,000-gallon Propylene Glycol	
Building 350 UPS	6,000-gallon Diesel Fuel	120-gallon Bulk Oil	15,000-gallon Stormwater Discharge
		240-gallon Bulk Oil	
		240-gallon Used Oil	
		5,000-galllon Ethylene Glycol	
	6,000-gallon Gasoline	6,100-gallon Ethylene Glycol	250-gallon Sanitary Discharge
		6,340-gallon Ethylene Glycol	
		6,604-gallon Ethylene Glycol	

Table B-2 Bulk Storage Summary

Location/Owner	UST	AST	OWS
		18,000-gallon Ethylene Glycol	

Source: PANY&NJ, February 2012.

B.2.5 Container Storage

Container storage in the Project Area is summarized in **Table B-3**.

Table B-3 Container Storage Summary

Owner	Location	Material	Container Type	Quantity Stored
United Airlines	Terminal A	Petroleum Oil	Steel Drums	1,000 lbs.
United Airlines	Terminal A	Propane	Cylinders	500 lbs.
Air Canada	Terminal A	Cleaning Degreaser	Bottles	1 gallon
Air Canada	Terminal A	Penetrating Lubricant	Pails	2 gallons
Federal Express	Building 342	Ethylene Glycol	Steel Drums	1,000 lbs.
Federal Express	Building 342	Lead	Batteries	1,000 lbs.
Federal Express	Building 342	Sulfuric Acid	Batteries	500 lbs.

Source: PANY&NJ, February 2012.

B.2.6 Hazardous Building Materials

Terminal A, as well as other buildings located in the Project Area, may contain regulated materials that would require removal prior to demolition. Based on the age of the buildings, regulated materials may include the following:

- Asbestos
- Lead-based paint
- Polychlorinated biphenyls (PCBs) contained in fluorescent light ballasts and electrical transformers
- Mercury-containing fluorescent light bulbs and thermostats
- Chlorofluorocarbons (CFCs) contained in refrigerants

Surveys are underway on several buildings in the Project Area. All buildings will be surveyed prior to their demolition.

Vinyl tiles on first floor of the Building 342 contain asbestos. The building is currently occupied, therefore destructive sampling of the roof and fire doors were not performed. The roof and fire doors are presumed to be comprised of asbestos containing materials (ACM) since ACMs were identified in other areas of the building. Paint on doors, structural steel columns, and valves contain lead. Additional wastes consist primarily of light ballasts, light bulbs, a vehicle lift, and a generator.

A Hazardous Materials Survey of the Terminal A satellites and Building 331 was undertaken in early 2013 to identify the presence/absence of asbestos-containing materials, lead-based paint, PCBs, and other miscellaneous hazmat materials that could potentially be disturbed during any alteration and/or demolition of the structures. The assessment found quantities of these materials, which will be removed prior to demolition following all applicable regulations.

The following are potential measures that could be undertaken with each of the above-mentioned hazardous materials. In all cases, applicable federal, state and local regulations would be complied with in the removal, handling and disposal of any hazardous material.

- **Asbestos-containing materials.** Any structure to be demolished will have all friable ACMs abated before demolition activities begin. ACMs would be managed according to regulations promulgated by NJDEP and the New Jersey Department of Labor.

- **Lead-based paint.** All painted surfaces are assumed to contain lead-based paint until proven otherwise, and will be disposed of according to applicable regulations. Materials with lead-based paint may not be blowtorched, sandblasted, chemically stripped, or otherwise handled except in a manner ensuring that the substrate material is disposed of by licensed lead-based paint workers.

- **PCBs.** PCB-containing ballasts could be incinerated, recycled, or disposed of in an approved landfill, subject to applicable regulations. Transformer oil containing PCBs could be incinerated or recycled at approved facilities, also subject to applicable regulations.

- **Mercury.** Mercury-containing lamps would be removed prior to demolition in accordance with federal and state requirements. Mercury and lead in elemental form, such as thermostats, thermometers, switches, and solders would be removed and disposed of or recycled at approved facilities.

- **CFCs.** CFC-containing appliances must be disposed of at an approved facility that employs refrigerant recovery equipment that has been certified for use by USEPA.

B.3. Environmental Consequences

B.3.1 Proposed Action

Section 2, *Affected Environment*, discusses the potential hazardous materials present in the Project Area that may be impacted by the Proposed Action. Hazardous substances and other contaminants, including asbestos, PCBs, CFCs, mercury, and petroleum hydrocarbons have been identified in and around the Project Area. Depending upon the material, certain handling and disposal restrictions would be in place during building demolition and construction.

With respect to Building 120, the remediation activity at this site will be completed prior to any project-related construction taking place. At Building 331, United Airlines is working to complete the on-site remediation activity, which is anticipated to occur prior to the site being turned over to the Port Authority in late 2017.

Health and Safety Plans (HASPs) approved by NJDEP would be developed for the various construction activities associated with the Proposed Action to reduce the potential for worker or public contact with any contamination found in either the soil or groundwater. These plans would address the potential exposure pathways and other safety concerns associated with a variety of construction activities. Each HASP would address both the known contamination issues (e.g., the need for air monitoring if excavating in known solvent contaminated soil) as well as contingency items (e.g., if unknown tanks or drums are encountered). Each HASP would be developed in accordance with U.S. Occupational Health and Safety Administration (OSHA) regulations and guidelines.

The HASP would be the primary measure used to safeguard construction workers during construction. This document would describe in detail all air, soil, and water sampling and monitoring that would take place during construction, planned response to monitoring data, personal protective equipment to be used by workers in various parts of the excavation, dust and vapor control measures and emergency procedures. These procedures would include requirements to notify appropriate regulatory agencies as well as procedures to quickly and safely address the various issues. The HASP would also generally include routine monitoring of both air and soil (in place and/or as spoils).

Because implementation of the Proposed Action would not increase the quantity of hazardous materials present in the environment, and would require the removal and remediation of some hazardous materials from buildings and subsurface areas, the existing levels of contamination would be reduced. These hazardous materials would be properly disposed of, reclaimed, or recycled as appropriate. Pollution prevention measures identified in Section 5.18, *Construction Impacts*, would limit the adverse environmental effects from these materials. In addition, the Port Authority's *Best Management Practices* requires facilities with petroleum and/or chemical bulk storage areas to comply with all applicable regulations including those involving releases, registration, handling, and storage. The Port Authority currently has a Spill Prevention, Control and Countermeasure (SPCC) Plan for the airport. Entitled *Spill Prevention Control and Countermeasures Plan for Facilities at Newark Liberty International Airport*, the plan contains appropriate spill prevention and clean up measures. Tenants at the airport that store chemicals must also comply with all applicable regulations and prepare and maintain their own SPCC plans.

Assuming that the removal and remediation of hazardous materials in the Project Area are conducted in accordance with all regulatory requirements, the Proposed Action would result in a beneficial impact with regard to hazardous materials by reducing the level of hazardous substances in the environment.

B.3.2 No-Build/No-Action Alternative

The No-Build/No-Action Alternative would not generate these beneficial impacts, but would result in hazardous materials remaining in place at existing levels in existing locations.

Appendix C
Air Quality Report

Terminal A Redevelopment Program
Newark Liberty International Airport

Air Quality Technical Report

Prepared for

U.S. Department of Transportation
Federal Aviation Administration

Sponsored by

The Port Authority of NY & NJ

September 2015

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1 Introduction

The air quality assessment was conducted in accordance with Federal Aviation Administration (FAA) Order 1050.1F, 1050.1F Desk Reference, and as supplemented by FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. The analysis includes discussion of the regulatory settings, baseline local air quality environment, assessment of carbon monoxide (CO) "hot spot" concentrations at roadway intersections, and a general conformity applicability analysis including an emissions analysis for proposed construction activities.

This report has been prepared in support of the Environmental Assessment (EA) being developed as part of the Terminal A Redevelopment Program at Newark Liberty International Airport, located in Elizabeth and Newark, New Jersey.

2 Pollutants of Concern and Regulatory Setting

2.1 Criteria Pollutants and National Ambient Air Quality Standards

The US Environmental Protection Agency (USEPA), under the authority of the 1970 Clean Air Act (CAA) as amended in 1977 and 1990, has established primary and secondary National Ambient Air Quality Standards (NAAQS) for six contaminants, referred to as criteria pollutants (40 C.F.R. § 50) to protect public health and welfare. Primary air quality standards are the levels established by the USEPA to protect public health. Secondary standards are levels that protect the welfare of the public (buildings, clothing, and vegetation). These criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter 10 and 2.5 microns in size (PM_{10} and $PM_{2.5}$), lead (Pb), and sulfur dioxide (SO_2). **Table 1** shows the primary and secondary standards. The NAAQS are expressed in either parts per million (ppm) or micrograms per cubic meter (µg/m3). These units are used to describe very small amounts of contaminants within the ambient air. Concentrations expressed in ppm indicate the number of samples (parts) of the applicable pollutant in one million samples (parts) of air and concentrations expressed in µg/m3 indicate the weight of a pollutant in a cubic meter (or volume) of air.

The following provides a brief summary of the potential health and welfare effects of each of the criteria air pollutants.

Ozone – When volatile organic compounds and nitrogen oxides accumulate in the atmosphere and are exposed to the ultraviolet component of sunlight, the pollutant ozone is formed. Ozone is a pulmonary irritant that affects the respiratory mucous membranes, other lung tissues, and respiratory functions. Exposure to ozone at certain concentrations can result in symptoms such as tightness in the chest, coughing, and wheezing, and can trigger an attack or exacerbate the symptoms of asthma, bronchitis, and emphysema. Elevated concentrations of ozone also interfere with the ability of a plant to produce and store food, damage the leaves of trees, and reduce crop and forest yields.

Nitrogen Dioxide - When combustion temperatures are extremely high, as in aircraft engines, boilers, furnaces, or automobile engines, nitrogen gas from the atmosphere and from fuel combines with oxygen gas to form various oxides of nitrogen. Of these oxides of nitrogen, nitrogen dioxide is the most significant air pollutant. Nitrogen dioxide is a lung irritant capable of producing pulmonary edema at high concentrations, and exposure to elevated concentrations

can lead to respiratory illnesses such as bronchitis and pneumonia. Nitrate particles and nitrogen dioxide can also block the transmission of light, reducing visibility in urban areas.

Table 1 National Ambient Air Quality Standards

Pollutant		Primary/Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)		Primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead (Pb)		primary and secondary	Rolling 3-month average	0.15 $\mu g/m^{3(1)}$	Not to be exceeded
Nitrogen Dioxide (NO_2)		primary	1-hour	100 ppb	98th percentile, averaged over 3 years
		primary and secondary	Annual	53 ppb(2)	Annual mean
Ozone (O_3)		primary and secondary	8-hour	0.075 ppm(3)	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution	$PM_{2.5}$	primary	Annual	12 $\mu g/m^3$	Annual mean, averaged over 3 years
		Secondary	Annual	15 $\mu g/m^3$	Annual mean, averaged over 3 years
		primary and secondary	24-hour	35 $\mu g/m^3$	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24-hour	150 $\mu g/m^3$	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)		Primary	1-hour	75 ppb(4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Notes:
(1) Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
(2) The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.
(3) Final rule signed March 12, 2008. The 1997 ozone standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, EPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.
(4) Final rule signed June 2, 2010. The 1971 annual and 24-hour SO2 standards were revoked in that same rulemaking. However, these standards remain in effect until one year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.
Source: http://www.epa.gov/air/criteria.html.

Carbon Monoxide – Carbon monoxide is a colorless and odorless gas that is a product of incomplete combustion. At elevated concentrations, this pollutant can have cardiovascular and central nervous system effects. Carbon monoxide is absorbed by the lungs and reacts with hemoglobin to reduce the oxygen-carrying capacity of the blood. At moderate concentrations, carbon monoxide has been shown to aggravate the symptoms of cardiovascular disease. It can

also cause headaches and nausea, and in extremely high concentrations, can lead to coma and death.

Particulate Matter - Typical sources of particulate matter are combustion of fossil fuels, industrial processes involving metals and fibers, fugitive dust from wind and mechanical erosion of soil, and photochemically produced particles (complex chain reactions between sunlight and gaseous pollutants). Particulate matter is made up of small solid particles and liquid droplets. Suspended particulates refer to particles of approximately 100 micrometers or less in diameter. Particulates larger than 10 micrometers remain in the nose and throat and are readily expelled. Particles 10 micrometers or smaller can reach the air ducts (bronchi) and the air sacs (alveoli) of the lung. Particles 2.5 micrometers or smaller have the best chance of reaching the lower respiratory tract. These particulates have been associated with increased respiratory diseases such as asthma, bronchitis, and emphysema; cardiopulmonary disease (heart attack); and cancer. Particulate matter is also a major cause of reduced visibility in parts of the United States.

Sulfur Dioxide – Sulfur dioxide is a colorless gas that is formed when fuels containing sulfur compounds are combusted. Sulfur dioxide can cause irritation and inflammation of tissues with which it comes in contact. Inhalation of elevated concentrations can cause irritation of the mucous membranes, bronchial damage, and can exacerbate pre-existing respiratory diseases such as asthma, bronchitis, and emphysema. Sulfate particles are the major cause of reduced visibility in many areas of the United States. When combined with other substances in the air, this pollutant can fall to the earth as rain, fog, snow, or dry particles (commonly referred to as “acid rain”). Sulfur dioxide can also accelerate the decay of building materials and certain types of paint.

Lead – People and animals can be exposed to lead by breathing or ingesting it in food, water, soil, or dust. Historically, the majority of lead came from the combustion of leaded fuels. However, the use of unleaded fuels since 1975 has reduced mobile source lead emissions by over 90 percent. Unlike unleaded automobile gasoline, aviation gasoline (commonly known as “AvGas” or 100 octane low-lead “100LL”) still contains lead as an antiknock agent. AvGas is generally only used by general aviation aircraft with piston engines. Currently, stationary sources such as lead smelters, battery manufacturers, and iron and steel producers emit the majority of ground-based lead emissions. Lead is a stable compound that accumulates in the environment and in living organisms where it can interfere with the maturation and development of red blood cells, affects liver and kidney functions, and disturbs enzyme activity. Lead exposure can also cause liver disease, affect the normal functions of the reproductive and cardiovascular systems, and cause mental retardation and brain damage in children. Near industrial facilities, concentrations of lead have been shown to slow down the rate of vegetative growth.

The sources of air pollution at most airports are categorized as follows: aircraft and auxiliary power units, motor vehicles, ground support equipment and vehicles, fuel storage and transfer facilities, space heating and incineration facilities, and construction activities. **Table 2** provides a summary of potential airport-related sources and the types of air emissions each emits.

Exhaust gases from aircraft engines are predominantly comprised of nitrogen, oxygen, and water vapor, which are compounds not normally considered air pollutants. To a lesser extent, aircraft also emit carbon monoxide, nitrogen oxides, volatile organic compounds, sulfur oxides, and particulate matter. The amount of pollutant emitted depends on many factors, such as engine type, aircraft type, and operational mode (taxi/idle, approach, climbout, and takeoff).

Onsite motor vehicle activity arises from passenger, employee, and cargo vehicles using airport roadways and parking lots. Offsite airport-related motor vehicle traffic is fundamentally indistinct from airport motor vehicle traffic, as this traffic enters the regional roadway network.

Ground support equipment and support vehicles are much like motor vehicles, as their emissions depend on fuel consumption and distance traveled. This type of equipment includes baggage tugs, tow tugs, and belt loaders.

There are various stationary and point sources found at airports. Fuel storage and transfer facilities are potential sources of volatile organic compound emissions. Usually, these emissions are low because of emission control devices on these types of facilities. Emissions from these sources vary with tank type, fuel type, fuel throughput volume, ambient temperature, and the presence or absence of a vapor recovery system. Indoor heating units and water reduction facilities are considered to be point sources. Such facilities typically operate according to regulatory permits, which limit the level of emissions.

Table 2 Airport-Related Sources of Air Pollutant/Precursor Emissions

Source(s)	Emissions	Characteristics
Aircraft and auxiliary power units	Carbon monoxide, nitrogen oxides, particulate matter, sulfur oxides, volatile organic compounds	Exhaust products of fuel combustion vary greatly depending on aircraft engine type, power setting, and period of operation. Aircraft altitude precludes measurable offsite ground-level effects from aircraft at altitudes above the atmospheric mixing zone (the height of the zone varies daily). Aircraft emissions are reflective of the aircraft landing and takeoff cycle that consists of approach, taxi/idle, takeoff, and climbout. Carbon monoxide and volatile organic compounds are typically greatest in the taxi/idle mode, while emissions of nitrogen oxides are greatest in the takeoff and climbout modes.
Motor vehicles	Carbon monoxide, nitrogen oxides, particulate matter, sulfur oxides, volatile organic compounds	Exhaust products of fuel combustion from patron traffic approaching, departing, and moving about the Airport site. Emissions fluctuate with vehicle type, distance traveled, operating speed, and ambient conditions. Onsite emissions are confined to access/egress roadways and parking facilities. Offsite emissions are often indistinguishable from those of background traffic.
Ground support equipment and vehicles	Carbon monoxide, nitrogen oxides, particulate matter, sulfur oxides, volatile organic compounds	Exhaust products of fuel combustion from service trucks, tow tugs, belt loaders, and other portable equipment.
Fuel storage and transfer facilities	Volatile organic compounds	Emissions formed from the evaporation and vapor displacement of fuel from storage tanks and fuel transfer facilities. Emissions vary with fuel use, storage tank type, refueling method, fuel type, vapor recovery, and meteorology.

Table 2 Airport-Related Sources of Air Pollutant/Precursor Emissions

Source(s)	Emissions	Characteristics
Space heating and incineration facilities	Carbon monoxide, nitrogen oxides, particulate matter, sulfur oxides, volatile organic compounds	Exhaust products of fossil fuel combustion from boilers dedicated to indoor heating requirements and emissions from incinerators used for waste reduction. These sources are often permitted through a regulatory agency.
Construction activities	Carbon monoxide, nitrogen oxides, particulate matter, sulfur oxides, volatile organic compounds	Exhaust products of fuel combustion from construction equipment and vehicles; dust (e.g., soil and concrete) generated during construction and land-clearing activities released into the air by wind and machinery.

Source: Environmental Science Associates, 2005.

Dust and particulate emissions may occur temporarily at airports during construction and land clearing activities. Erosion control measures are typically taken to minimize these fugitive dust and particulate emissions. Construction equipment and vehicles also emit carbon monoxide, nitrogen oxides, particulate matter, volatile organic compounds, and sulfur oxides.

Areas where ambient concentrations of a criteria pollutant are below the corresponding NAAQS are designated as being in "attainment" for this pollutant. Areas where a criteria pollutant level exceeds the NAAQS are designated as being in "nonattainment." O_3 nonattainment areas are categorized as marginal, moderate, serious, severe, or extreme. CO and PM_{10} nonattainment areas are categorized as moderate or serious. The Proposed Action would take place in Elizabeth and Newark, New Jersey, an area designated as:

- A moderate nonattainment area for O_3,
- A maintenance area for $PM_{2.5}$ and CO, and
- An attainment area for all other criteria pollutants.

2.2 Hazardous and Mobile Source Air Toxics

In addition to the criteria air pollutants for which NAAQS have been established, the USEPA regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes, auxiliary power units (APU), ground support equipment (GSE), etc.), and stationary sources (e.g., a power plant). Their effects and potential toxicity may have impacts on human health, including risks of cancer, respiratory conditions, etc. The CAAs identify 188 hazardous air pollutants (HAPs); the USEPA has identified 93 HAPs as mobile source air toxics (MSATs), of which seven are priority MSATs:

- Acrolein
- Benzene.
- 1,3-butadiene
- Diesel particulate matter plus diesel exhaust organic gases (diesel PM)
- Formaldehyde
- Naphthalene
- Polycyclic organic matter (POM)

MSATs are compounds emitted by highway-traveling vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted when the fuel evaporates or passes through the engine unburned. Other toxics are generated by the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

2.3 Clean Air Act and General Conformity

The CAA mandates that states with criteria pollutant nonattainment areas adopt State Implementation Plans (SIPs) that target the elimination or reduction of the severity and number of violations of the NAAQS. SIPs set forth policies to expeditiously achieve and maintain attainment of the NAAQS. The 1990 CAA Amendments (CAAA) expanded the scope of the statute's "conformity" provisions by clearly relating the concept of proposed federal actions. The CAAA requires that proposed federal actions be in conformity with the SIP's purpose and may not:

- Cause or contribute to any new violations of any standards in any area;
- Increase the frequency or severity of any existing violation of any standards in any area; or
- Delay timely attainment of any standard or any required interim emission reductions or other milestones in an area.

USEPA has developed two sets of conformity regulations; federal actions are differentiated into transportation projects and non-transportation-related projects:

- Transportation projects funded or requiring approval from the Federal Highway Administration or Federal Transit Administration, which are regulated under the "transportation conformity" regulations (40 C.F.R. §§ 51 and 93), effective on December 27, 1993 and revised on August 15, 1997.
- Non-transportation projects, including airport development projects, which are regulated under the "general conformity" regulations (40 C.F.R. §§ 6, 51 and 93) described in the final rule for *Determining Conformity of General Federal Actions to State or Federal Implementation Plans* published in the Federal Register on November 30, 1993. The general conformity rule became effective January 31, 1994 and was revised on March 24, 2010.

Since the Proposed Action is an airport developed project requiring an approval from the Federal Aviation Administration, the general conformity rule applies.

3 Existing Conditions

The New Jersey Department of Environmental Protection (NJDEP) collects air quality data in terms of ambient concentration levels at representative sites throughout the state. The most recent available data (for the year 2013) from nearby monitoring stations are used to describe the existing baseline ambient air quality at the airport (**Table 3**). All measurements are below the standards, with the exception of O_3 since the region (within which the airport is located) has been designated an 8-hour O_3 nonattainment area.

The New York-Northern New Jersey-Long Island metropolitan region where the airport is located has been recently re-designated as a maintenance area from a prior nonattainment area

for $PM_{2.5}$ since the ambient monitored $PM_{2.5}$ levels have shown compliance with the NAAQS. As indicated in **Table 3**, the $PM_{2.5}$ baseline concentration levels at the monitoring site that is closest to the airport are well below the corresponding NAAQS.

Table 3 Ambient Concentration Measurement

Pollutant and Averaging Time	NAAQS	Monitoring Level	Monitoring Site
Carbon Monoxide			
8-hour concentration (ppm)	9	2.1	360 Clinton Avenue, Newark, NJ
1-hour concentration (ppm)	35	5.2	
Nitrogen Dioxide			
1-hour 98 Percentile/3 years (ppm)	0.1	0.062	360 Clinton Avenue, Newark, NJ
Ozone			
8-hour concentration (ppm)	0.075	0.069	360 Clinton Avenue, Newark, NJ
Particulate Matter			
$PM_{2.5}$:			
Annual Arithmetic Mean(µg/m^3)	12	8.7	360 Clinton Avenue, Newark, NJ
24-hour Maximum (µg/m^3)	35	22	
PM_{10}:			
24-hour concentration (µg/m^3)	150	53	Consolidated Firehouse, 355 Newark Avenue, Jersey City, NJ
Sulfur Dioxide			
1-hour 99 Percentile/3 years (ppm)	0.075	0.08	360 Clinton Avenue, Newark, NJ

Source: USEPA Airdata (http://www.epa.gov/airdata/)

4 Environmental Consequences

This section describes the methodology for the various aspects of the air quality impact analysis, followed by a description of the No-Build/No-Action impacts and the Proposed Action impacts. The Proposed Action impacts are separated into direct (construction) and indirect (operations). A comparison of the total annual emissions to the applicable *de minimis* thresholds is presented to determine CAA General Conformity. Finally, a discussion of GHG emissions and impacts to climate change is presented.

4.1 Methodology and Modeling Assumptions

The air quality impact analysis included:

- A CO hot spot modeling analysis at the worst-case congested intersection

- A qualitative $PM_{2.5}$ hot spot screening
- A qualitative air toxics analysis
- A qualitative operational air quality impact analysis
- A construction emissions analysis for both criteria pollutant and greenhouse gases.
- A general conformity applicability analysis
- A greenhouse gas emissions and climate change impact discussion

CO Hot Spot Impact Analysis

The CO impact modeling analysis evaluated potential CO concentrations at the worst-case intersection in the study area, based on the traffic analysis performed for the future Build condition in 2022 and 2027 (see Appendix F). The traffic analysis considered the proposed roadway improvements and forecast passenger demand. The intersection, Earhart Drive and North Avenue, was identified by reviewing future Build traffic levels of service (LOS) at each study intersection as the worst-case LOS condition that warrants for CO dispersion modeling. The predicted CO concentration levels at this intersection were then compared with the CO NAAQS.

The CO modeling analysis was conducted according to the following guidelines and procedures established by the USEPA:

- *Guideline for Modeling Carbon Monoxide from Roadway Intersections* (USEPA, November 1992).
- *A Modeling Methodology for Predicting Pollutant Concentrations near Roadway Intersections* (USEPA, September 1995).
- *Motor Vehicle Emission Simulator (MOVES) User Guide* (USEPA, June 2012).

Emission Factors

The emission factors applicable to the project area were predicted using USEPA's MOVES 2010b model files based on the input parameters used by the New Jersey Metropolitan Planning Organization (MPO), New Jersey Transportation Planning Authority, for developing the SIP conforming Transportation Improvement Program (TIP). These modeling files were then used to predict the corresponding traffic-movement-associated vehicular CO emission factors along free-flowing links at the modeled intersection.

CO Concentration Modeling

The CO hot-spot analysis was performed using CAL3QHC (Version 2), the USEPA guideline dispersion model for estimating CO concentrations near intersections. The CAL3QHC model was used to calculate the worst–case period, when LOS of D or worse congestion was predicted under the Build and/or No-Build/No-Action conditions. CO concentrations for 2022 and 2027 No-Build/No-Action and Build conditions are based on the traffic data obtained from the Port Authority's VISSIM roadway model, a detailed airport-wide microscopic multi-modal traffic flow simulation model.

The CO modeling incorporated the emission factors/rates discussed above, the projected traffic volumes, intersection phasing data when applicable, and worst-case meteorological conditions. The dispersion parameters used in CAL3QHC include:

- Stability: D
- Surface Roughness Height: 175 cm
- Wind Speed: 1 m/s
- Wind Direction: 5-degree interval for 360 degree wind angles
- Source height: 0.0 m
- Mixing Height: 1,000 m

Modeled Intersections

Based on the traffic forecasts summarized in Appendix F, it was found that under Future Build conditions, all traffic movements at all study intersections are projected to operate at LOS C or better during the three weekday analysis peak hours in both 2022 and 2027, with the exception of the following movements at the Earhart Drive/North Avenue intersection:

- The northbound right-turn movement is projected to operate at LOS E during the PM peak hour in both 2022 and 2027.

- The eastbound left-turn movement is projected to operate at LOS E during the midday peak hour in 2027.

- The southbound through movement is projected to operate at LOS E during the AM and PM peak hours in 2027.

Since only the worst case intersections with LOS D or worse would warrant a CO hot spot analysis, the intersection of Earhart Drive/North Avenue was selected for a CO hot spot impact dispersion modeling.

Figure 1 shows the model configuration for the selected intersection.

Modeled Receptors

Receptor locations for CO concentration modeling were placed at the publically accessible places around the modeled intersection as shown in Figure 1. All receptors were placed 1.8 meters (5 feet) above ground.

CO Background Levels

The most recent monitored background CO concentration levels (**Table 3**) were used in the modeling analysis. They were: for the one-hour averaging level, 5.2 ppm; and for the eight-hour averaging level, 2.1 ppm.

Persistence Factor

Based on USEPA's guidance, a persistence factor of 0.7 was used to convert the one-hour CO concentration calculated by CAL3QHC to an eight-hour CO concentration. The persistence factor represents the variability in both traffic and meteorological conditions.

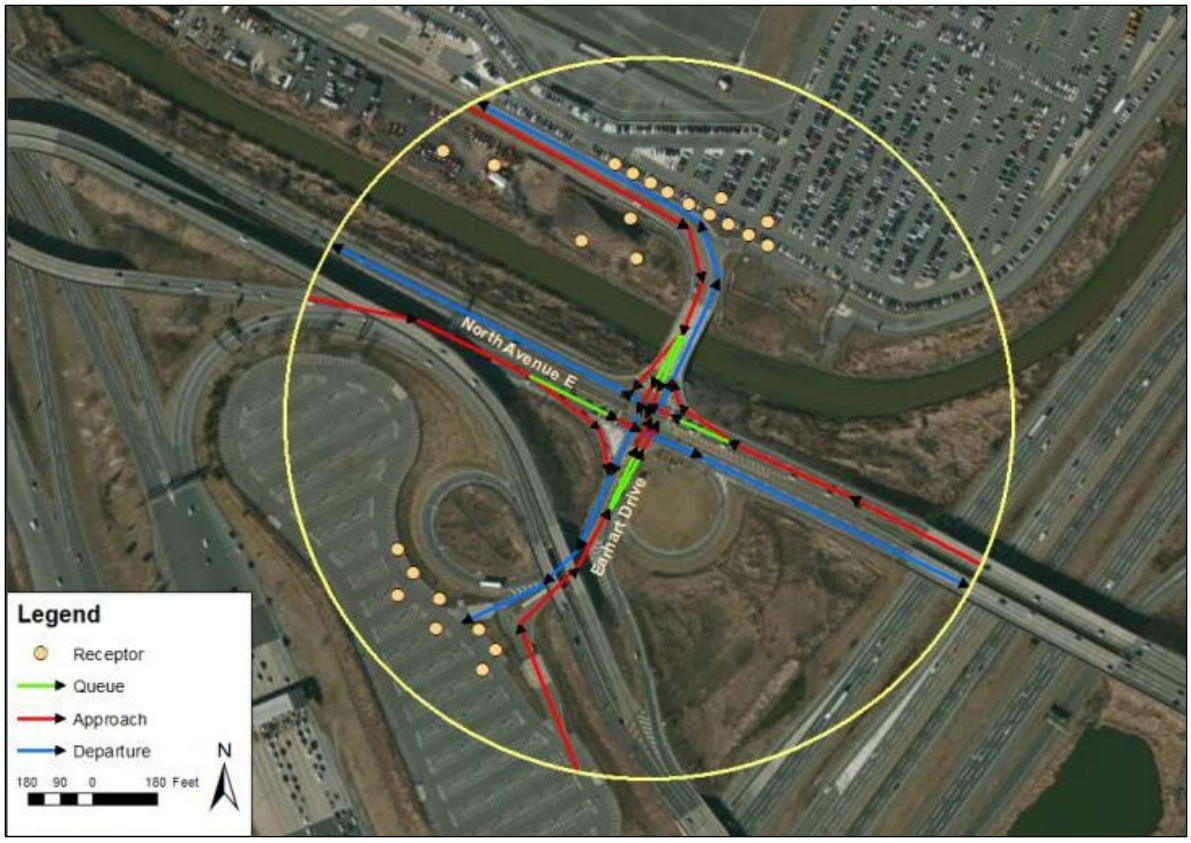


Figure 1: Earhart Drive/North Avenue Intersection

Impact Threshold

According to the USEPA guidelines, a project is defined as having an air quality impact if it causes a new violation of the CO NAAQS of 35 ppm for the one-hour average or 9 ppm for the eight-hour average.

$PM_{2.5}$ Hot Spot Impact Analysis

The $PM_{2.5}$ impact analysis was performed based on the guidelines and procedures outlined by the USEPA in the following document:

- *Transportation Conformity Guidance for Qualitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas* (USEPA, March 2006).

Consistent with the guideline, future traffic conditions (for the years 2022 and 2027) at the two worst-case intersections were first evaluated to determine whether the Proposed Action requires a hot-spot analysis for particulate matter. The guideline identifies five categories of such projects (40 C.F.R. § 93.123[b][1]):

- New or expanded highway projects that have a significant number of or significant increase in diesel vehicles.

- Projects affecting intersections that are at LOS D, E, or F with a significant number of diesel vehicles, or those that would change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project.
- New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location.
- Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location.
- Projects in or affecting locations, areas, or categories of sites that are identified in the applicable $PM_{2.5}$ implementation plan or implementation plan submission, as appropriate, as the sites of violation or possible violation.

Furthermore, typical sample projects of air quality concern defined by 40 C.F.R. § 93.123(b)(1)(i), (iii) and (iv) include:

- A project on a new highway or expressway that serves a significant volume of diesel truck traffic, such as facilities with greater than 125,000 annual average daily traffic (AADT) and 8 percent or more of such AADT is diesel truck traffic.
- New exit ramps and other highway facility improvements to connect a highway or expressway to a major freight, bus, or intermodal terminal.
- Expansion of an existing highway or other facility that affects a congested intersection (operated at LOS D, E, or F) that has a significant increase in the number of diesel trucks.
- Similar highway projects that involve a significant increase in the number of diesel transit busses and/or diesel trucks.
- A major new bus or intermodal terminal that is considered to be a "regionally significant project" under 40 CF.R. § 93.1019.
- An existing bus or intermodal terminal that has a large vehicle fleet where the number of diesel buses increases by 50% or more, as measured by bus arrivals.

The Proposed Action evaluated in this EA involves modifications to airport access roadway ramps to improve the airport terminal area ground traffic operation in the future. This would change traffic patterns around the terminal areas and intersections around the airport, including the intersections that would experience LOS of D or worse. However, the overall traffic mix and volume within the studied traffic network, particularly at the congested intersections, would not be substantially different between the future (2022/2027) No-Build/No-Action and the Build conditions. The number of diesel vehicles traveling through the airport area would not change because of the Proposed Action. While traffic conditions (volume and truck mix) may change between the present and 2022 and/or 2027, these changes are the result of natural background growth and would remain the same with or without the Proposed Action. Therefore, it can be concluded that the Proposed Action would not cause or contribute to a violation. Consequently, no further hot-spot analysis for $PM_{2.5}$ is required.

Air Toxic Pollutants Impact Analysis

For mobile source, and particularly for roadway traffic-related potential MSAT effects, FHWA's *Interim Guidance Update on MSATs in NEPA* (December 6, 2012) establishes a three-tiered approach to determine the level of MSAT analysis required by a project-level study. Each tier or level is reviewed below. Project requirements are assessed in relation to the *Guidance* following this review.

Exempt Projects or Projects with No Meaningful Potential MSAT Effects

The types of projects included in this category are:

- Projects qualifying as a Categorical Exclusion under 23 C.F.R. § 771.117(c);
- Projects exempt under the Clean Air Act conformity rule under 40 C.F.R. § 93.126; or
- Other projects with no meaningful impacts on traffic volumes or vehicle mix

Additionally, the guidance indicates that "for projects with negligible traffic impacts, regardless of the class of NEPA environmental document, no MSAT analysis is required." It is further noted in the guidance that "the types of projects categorically excluded under 23 C.F.R. § 771.117(d) or exempt from conformity rule under 40 C.F.R. § 93.127 do not warrant an automatic exemption from an MSAT analysis, but they usually will have no meaningful impact."

Projects in this category do not require either a qualitative or a quantitative analysis for MSAT, although documentation of the project category is required.

Projects with Low Potential MSAT Effects

The types of projects included in this category are those that serve to improve highway, transit, or freight operations without adding substantial new capacity or without creating a facility that is likely to meaningfully increase emissions. This category covers a broad range of projects. Examples are minor widening projects and new interchanges, such as those that replace a signalized intersection on a surface street or where the design-year traffic is not projected to meet the 140,000 to 150,000 AADT (average annual daily traffic) criterion.

Projects in this category are to be addressed with a qualitative analysis.

Projects with Higher Potential MSAT Effects

The types of projects in this category must:

- Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel particulate matter in a single location; or
- Create new or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT is projected to be in the range of 140,000 to 150,000, or greater, by the design year; or
- Be proposed to be located in proximity to populated areas or in rural areas, in proximity to concentrations of vulnerable populations (i.e., schools, nursing homes, hospitals).

Projects in this category would be more rigorously assessed for impacts.

Based on this description, the Proposed Action would only slightly affect airport access roadway network (see Section 5.15, *Traffic*, in the EA) with some limited ramp improvements. Roadway traffic related impacts on MSAT can be categorized as a *Project with No Meaningful Potential MSAT Effects*, requiring no MSAT analysis.

Although the FHWA MSAT guideline is applicable to motor vehicle air toxic impacts, the other airport source related air toxics emissions are anticipated to result in no meaningful air toxic pollutant impact since there would be no increase in aircraft operations, change in aircraft fleet

mix, change in APU and GSE usage and/or change in on-airport stationary source operations that are anticipated from the Proposed Action.

Operational Activity Emissions

As described in the EA, the Proposed Action would improve existing aircraft operational conditions through improving terminal operational efficiency and providing properly sized terminal gates without changing aircraft operational volume and mix. As a result, it is anticipated that airport-wide operational air quality conditions would be improved with less emissions generated by aircraft and their associated APU and GSE operations. Therefore, such a positive effect under the Proposed Action would not warrant a further quantitative airport-wide emissions inventory analysis.

Construction Emissions Analysis

The quantity and type of equipment necessary for the construction of the Proposed Action were determined based on the estimated activities necessary to implement the Proposed Action as described in the EA. All equipment was assumed to be diesel-powered unless otherwise noted. Each piece of equipment is assumed to be operated continuously during each working day over eight hours. Pieces of equipment to be used include, but are not limited to:

- Bulldozers
- Cranes
- Front-end loaders
- Pavers
- Excavators
- Concrete trucks
- Dump trucks
- Employee vehicles

Estimates of equipment emissions were based on the estimated hours of usage and emission factors for each motorized source during both demolition and construction activities. Given the stringent Port Authority emissions policy for the usage of construction equipment, it is assumed that the majority of the on-site construction equipment would use Tier II or above engines. For emissions estimate purposes, emission factors for NOx, VOC, $PM_{2.5}$, and SO_2 related to heavy-duty diesel equipment were obtained from USEPA's NONROAD model, which establishes Tier II standard engine emission factors.

The USEPA recommends the following formula to calculate hourly emissions from nonroad engine sources including cranes, backhoe, etc.:

$$\mathbf{M_i = N \times HP \times LF \times EF_i}$$

where:

M_i = mass of emissions of i^{th} pollutants during inventory period;
N = source population (units);
HP = average rated horsepower;
LF = typical load factor; and
EF_i = average emissions of i^{th} pollutant per unit of use (e.g., grams per horsepower-hour).

Typical load factor values were obtained from the *NONROAD Emission Factor Worksheet* (USEPA, 2008).

Various trucks (e.g., concrete and material delivery and haul trucks) and workers' commuting vehicle operations would result in indirect emissions. The travel miles for each type of vehicle are assumed to be:

- Each pickup, dump and other truck would travel at an average speed of 25 miles per hour (mph) on- and off-site, for a total estimated on-base run time of two hours per working day; and
- Each worker's commuter vehicle would take a 20-minute round trip to commute within the airport region at an average speed of 25 mph.

All trucks were assumed to be heavy duty diesel vehicles and commuter vehicles were modeled as light duty gasoline vehicles. In order to predict emissions from trucks and commuter vehicles, the NJDEP-established Mobile 6 model input parameters for the appropriate seasons applicable to each pollutant were used. These emission factors were then multiplied by the vehicle operational hours to determine motor vehicle emissions.

CAA General Conformity Rule Applicability Analysis

The General Conformity Rule (GCR) applies to federal actions occurring in air basins designated as nonattainment for the NAAQS or in attainment areas subject to maintenance plans (maintenance areas). Federal actions occurring in air basins that are in attainment with the NAAQS are not subject to the conformity rule.

Since the Proposed Action would occur in a nonattainment area for O_3 and a maintenance area for $PM_{2.5}$ and CO, the General Conformity Rule applies for these nonattainment or maintenance pollutants.

To focus general conformity requirements on those federal actions with the potential to have significant air quality impacts, threshold (*de minimis*) rates of emissions were established in the final rule. A formal conformity determination is required when the annual net total of direct and indirect emissions from a federal action occurring in a nonattainment or maintenance area for a criterion pollutant would equal or exceed the annual *de minimis* limits for that pollutant.

For O_3 nonattainment areas, USEPA's conformity rules establish *de minimis* emission limits for both O_3 precursors: VOC and NO_x, on the presumption that VOC and NO_x reductions will contribute to reductions in O_3 formation. For the same reason, SO_2 is considered a precursor for $PM_{2.5}$. The applicable *de minimis* limits applicable for the Proposed Action are:

- 100 tons per year (tpy) of NO_x and 50 tpy of VOC, since the project site is located in an O_3 *moderate* nonattainment area in an O_3 transport region.
- 100 tpy for CO, $PM_{2.5}$ and SO_2.

Pursuant to the GCR, all reasonably foreseeable net increases in emissions (both direct and indirect) associated with the implementation of the Proposed Action should be quantified and compared to the applicable annual *de minimis* limits to determine potential air quality impacts and whether a formal conformity determination is required.

The conformity applicability analysis for a federal action examines the impacts of the direct and indirect net emissions from mobile and stationary sources. Direct emissions are emissions of a criterion pollutant or its precursors that are caused or initiated by a federal action and occur at the same time and place as the action. Indirect emissions, occurring later in time and/or further removed in distance from the action itself, must be included in the determination if both of the following apply:

- The federal agency can practicably control the emissions and has continuing program responsibility to maintain control.
- The emissions caused by the federal action are reasonably foreseeable.

Increased direct and indirect NO_x, VOC, $PM_{2.5}$, and SO_2 emissions from the proposed construction activities would result from:

- Use of diesel and gas-powered demolition and construction equipment.
- Movement of trucks transporting construction materials and concrete.
- Construction worker commutes.

According to the GCR, a proposed action would not require a formal conformity determination and would have minimal air quality impacts if the predicted net increases in annual nonattainment and/or maintenance pollutants are below the corresponding *de minimis* limit.

Greenhouse Gas Emissions and Climate Change

Greenhouse gases (GHGs) are compounds that contribute to the greenhouse effect. The greenhouse effect is a natural phenomenon where gases trap heat within the surface-troposphere (lowest portion of the earth's atmosphere) system, causing heating at the surface of the earth. The primary long-lived GHGs directly emitted by human activities are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

The heating effect from these gases is considered the probable cause of the global warming observed over the last 50 years (USEPA, December 7, 2009). Global warming and climate change can affect many aspects of the environment. The USEPA Administrator has recognized potential risks to public health or welfare and signed an endangerment finding regarding GHGs under Section 202(a) of the CAA (USEPA December 15, 2009), which finds that the current and projected concentrations of the six key well-mixed GHGs – CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6 in the atmosphere threaten the public health and welfare of current and future generations. To estimate global warming potential (GWP), all GHGs are expressed relative to a reference gas, CO_2, which is assigned a GWP equal to 1. All six GHGs are multiplied by their GWP and the results are added to calculate the total equivalent emissions of CO_2 (CO_2e).

However, the dominant GHG gas emitted is CO_2, mostly from fossil fuel combustion (85.4%) (USEPA, April 15, 2009). Weighted by GWP, CH_4 is the second largest component of emissions, followed by N_2O. GWP-weighted emissions are presented in terms of equivalent emissions of CO_2 (i.e., CO_2e). Furthermore, among the primary long-lived GHGs directly emitted by human activities, only CH_4 and N_2O have potential to be produced from fossil fuel combustion sources (USEPA, April 15, 2009).

Although the USEPA final rule on *Mandatory Reporting of Greenhouse Gases* (October 30, 2009) provides various methodologies to estimate CO_2 equivalencies based on fuel test and consumption data, this rule is essentially designed for specific stationary facility reporting purposes and cannot be directly implemented in this report to address the emissions from Proposed Action-associated construction activities. Most of the USEPA tools that are widely used for NEPA study purposes (e.g., NONROAD emission factor model) do not provide emission factors for CO_2e other than for CO_2. Therefore, given the lack of regulatory tools to provide reasonable estimates of CO_2e, this report utilizes the inventory ratios among CO_2, CH_4 and N_2O summarized in the most recent USEPA inventory report (USEPA, April 15, 2009). In the inventory, it shows that the GHG contribution from CH_4 and N_2O is less than 1% of the total CO_2e for fossil fuel combustion sources. Given such small contributions from other GHG equivalents compared to the CO_2, this report predicts CO_2e levels in terms of CO_2 levels.

This report follows the Draft NEPA *Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas* issued by the Council of Environmental Quality (CEQ) (CEQ, February 2010). The potential effects of proposed GHG emissions are by nature global and cumulative impacts, as individual sources of GHG emissions are not large enough to have an appreciable effect on climate change. In keeping with CEQ guidance, the focus of the cumulative air quality GHG analysis is to disclose GHG emissions that are affected by the Proposed Action.

4.2 No-Build/No-Action Alternative

The No-Build/No-Action Alternative would have no effect on air quality and airport operations would remain the same as the baseline condition as described previously.

4.3 Proposed Action

Direct Impacts (Construction)

The construction activities associated with Proposed Action would result in emissions from the operation of construction equipment and on-road vehicles (e.g., trucks), including both combustion and fugitive dust from ground-disturbing activities. Fugitive emissions from construction activities are unavoidable but are also of short duration and temporary. However, fugitive dust can be minimized with best management practices such as the sweeping, wetting, or seeding of exposed soils (See Section 5.17 of the EA, *Construction Impacts*).

Although the construction campaign is expected to last approximately six years from 2016 to 2021, emission levels would vary and the annual emissions inventory associated with the equipment and vehicular operations is shown in **Table 4**. The peak period is expected to be from the fourth quarter of 2018 through the fourth quarter of 2019. In general, impacts would be typical of those from a medium-to-large scale construction project in Elizabeth or Newark and would be in compliance with regulations.

Indirect Impacts (Operations)

In general, emissions can be expected to increase as air traffic increases, however, cleaner fuels and improvements in aircraft engines may offset these increases. Exhaust gases from aircraft engines are predominantly comprised of nitrogen, oxygen, and water vapor, which are compounds not normally considered air pollutants. To a lesser extent, aircraft also emit carbon monoxide, nitrogen oxides, volatile organic compounds, sulfur oxides, and particulate matter.

The amount of pollutant emitted depends on many factors, such as engine type, aircraft type, and operational mode (taxi/idle, takeoff, climbout, and approach).

CO Impacts

Predicted worst-case CO levels under the Build Condition in 2022 and 2027 at the worst-case intersections are shown in **Table 5** and they are all well below the NAAQS with no hot spot CO adverse impacts.

$PM_{2.5}$ Impacts

As discussed in Section 4.1.2, based on the USEPA's guideline at 40 C.F.R. § 93.123(b)(1), the Proposed Action is not among the five categories of projects with potential air quality concern that require further consideration and a qualitative $PM_{2.5}$ analysis.

Consequently, the Proposed Action is not expected to result in significant emissions of $PM_{2.5}$. It would not cause or contribute to a violation of the $PM_{2.5}$ NAAQS.

Air Toxic Impacts

Based on the analysis presented in Section 4.1.3, the Proposed Action is not expected to result in significant impacts to air toxic emissions.

Conclusion

Based on the above, Proposed Action would have no significant adverse indirect impacts on air quality.

Table 4 Construction Emissions Inventory (tons per year)

Annual Emissions - Year 2016							
	VOC	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**CO_2**
Non-Road Construction Equipment Emission	0.1	2.4	0.5	0.1	0.1	0.1	308.4
On-Road Vehicle Emission	0.1	0.6	0.3	0.0	0.0	0.0	197.6
Total Emissions	0.2	3.0	0.9	0.1	0.1	0.1	506.0
Annual Emissions - Year 2017							
	VOC	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**CO_2**
Non-Road Construction Equipment Emission	0.4	6.7	2.2	0.3	0.3	0.3	899.4
On-Road Vehicle Emission	0.1	0.5	0.3	0.0	0.0	0.0	224.5
Total Emissions	0.5	7.2	2.4	0.3	0.3	0.3	1123.8
Annual Emissions - Year 2018							
	VOC	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**CO_2**
Non-Road Construction Equipment Emission	0.4	8.0	2.4	0.3	0.3	0.3	1059.6
On-Road Vehicle Emission	0.1	0.8	0.4	0.0	0.0	0.0	436.8
Total Emission	0.6	8.8	2.8	0.3	0.3	0.3	1496.4
Annual Emissions - Year 2019							
	VOC	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**CO_2**
Non-Road Construction Equipment Emission	0.3	3.9	1.4	0.2	0.2	0.1	521.0
On-Road Vehicle Emission	0.0	0.2	0.2	0.0	0.0	0.0	100.5
Total Emission	0.3	4.0	1.5	0.2	0.2	0.1	621.6
Annual Emissions - Year 2020							
	VOC	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**CO_2**
Non-Road Construction Equipment Emission	0.2	4.0	1.2	0.2	0.2	0.2	531.3
On-Road Vehicle Emission	0.1	0.4	0.3	0.0	0.0	0.0	312.7
Total Emission	0.3	4.5	1.5	0.2	0.2	0.2	844.0
Annual Emissions - Year 2021							
	VOC	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**CO_2**
Non-Road Construction Equipment Emission	0.1	0.8	0.3	0.0	0.0	0.0	106.5
On-Road Vehicle Emission	0.0	0.2	0.2	0.0	0.0	0.0	153.4
Total Emission	0.1	1.0	0.5	0.0	0.0	0.0	259.9
Total Emissions - Year 2016 – 2021							
	VOC	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**CO_2**
Non-Road Construction Equipment Emission	1.5	25.8	8.0	1.0	1.0	1.0	3426.3
On-Road Vehicle Emission	0.4	2.6	1.6	0.1	0.1	0.0	1425.5
Total Emission	2.0	28.4	9.6	1.1	1.0	1.0	4851.7

Notes:

1. *CO_2, emission rates are taken from EPA Non-Road data 2008 worksheet.*
2. *Vehicle average travel speed - 25 miles/hr.*
3. *Vehicle Type:*
   Buses - HDGB, Travel - 5 miles round trip a day.
   Dump and Debris removal trucks - HDDV8A, Travel - 40 miles round trip a day.
   Trailer Trucks - HDDV8B - Travel - 40 miles round trip a day.
4. *Buses -3 round trips to take workers on the site from parking lot and from site to parking lot.*

Table 5 Predicted Worst Case CO Concentration Levels under Build Condition

Intersection	One-Hour Concentration (ppm)	Eight-Hour Concentration (ppm)
Year 2022		
North Avenue E and Earhart Drive	5.5	2.3
Year 2027		
North Avenue E and Earhart Drive	5.5	2.2

Note: CO levels include background concentrations of 5.2 ppm (one-hour) and 2.1 ppm (eight-hour).

Clean Air Act General Conformity Applicability

Under the GCR, total annual emissions resulting from proposed federal actions must be compared to the applicable *de minimis* limits on an annual basis. As defined by the GCR, if the emissions of a nonattainment or maintenance criterion pollutant (or its precursors) do not exceed the *de minimis* limits, the federal action has minimal air quality impact and is determined to conform to the SIP for the pollutant under consideration. No further analysis is necessary. Conversely, if the total direct and indirect emissions of a pollutant are above the *de minimis* limits, a formal general conformity determination is required for that pollutant.

As shown in **Table 6**, the expected annual increases in construction emissions under the Proposed Action would be well below the applicable *de minimis* limits.

Therefore, a formal conformity determination is not required and air quality impacts under the Proposed Action would be negligible and non-significant.

Table 6 Total Annual Emission Levels

Construction Period Emissions (ton)					
Year	**VOC**	**NO_x**	**CO**	**$PM_{2.5}$**	**SO_2**
2016	0.2	3.0	0.9	0.1	0.1
2017	0.5	7.2	2.4	0.3	0.3
2018	0.6	8.8	2.8	0.3	0.3
2019	0.3	4.0	1.5	0.2	0.1
2020	0.3	4.5	1.5	0.2	0.2
2021	0.1	1.0	0.5	0.0	0.0
de minimis limits	*50*	*100*	*100*	*100*	*100*

Greenhouse Gas Emissions (GHG) and Climate Change

The change in climate conditions caused by GHG resulting from the burning of fossil fuels from construction activities associated with the Proposed Action is a global effect, and requires that

the emissions be assessed on a global scale. Therefore, the disclosure of localized increases in GHG emissions in terms of CO_2 as shown in **Table 4** has no weight in addressing climate change. Consequently, given the minimal increase predicted for the Proposed Action, overall global or US GHG emissions would remain near the current level under the proposed condition, resulting in an insignificant cumulative impact to global climate change. No mitigation measures specific to GHG emissions are warranted.

Appendix D
Agency Correspondence

Agency Correspondence

Correspondence has been received from the following agencies:

1. Federal Agencies

U.S. Department of Commerce

National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Habitat Conservation Division
James J. Howard Marine Sciences Laboratory
74 Magruder Road
Highlands, NJ 07732

U.S. Department of the Interior

Fish and Wildlife Service
New Jersey Ecological Services Field Office
927 North Main Street, Building D
Pleasantville, NJ 08232

2. State Agencies

New Jersey Department of Environmental Protection

Division of Parks and Forestry
Natural Heritage Program
Mail Code 501-04
P.O. Box 420
Trenton, NJ 08625

State Historic Preservation Office
Mail Code 501-04B
P.O. Box 420
Trenton, NJ 08625

Division of Land Use Regulation
Mail Code 501-02A
P.O. Box 420
Trenton, NJ 08625

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service

Habitat Conservation Division
James J. Howard Marine Sciences Laboratory
74 Magruder Road
Highlands, New Jersey 07732

February 16, 2012

TO: Joshua Gillespie
Port Authority of New York & New Jersey
Newark Liberty International Airport
1 Conrad Road, Building #1
Newark, New Jersey 07114

SUBJECT: Newark Liberty International Airport
Terminal - A Redevelopment
Essex and Union Counties, New Jersey

BM Brian May
(Reviewing Biologist)

We have reviewed the information provided to us regarding the above subject project and we offer the following preliminary comments pursuant to the Endangered Species Act, the Fish and Wildlife Coordination Act and the Magnuson-Stevens Fishery Conservation and Management Act:

Endangered Species Act

No federally threatened, endangered or candidate species under the jurisdiction of the NMFS are known to occur within the project area. As a result, further consultation by the federal action agency is not required. However, should project plans change that would alter the basis for our determination, or if new species or critical habitat is designated, consultation should be reinitiated.

Fish and Wildlife Coordination Act

The project area is located in an upstream portion of a tidally-influenced waterbody within the greater Newark Bay Complex which provides spawning, nursery, and forage habitat for a variety of resident, migratory and forage species of concern to the NMFS. Based upon the nature of the work proposed, impacts to species of concern and local habitat quality are expected to be minimal. As a result further consultation by the federal action agency is not required. In the event project plans change that would alter the basis for determination, consultation should be reinitiated.

Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat

The mixing zone of the Hudson-Raritan Estuary including Newark Bay has been designated as essential fish habitat for a variety of federally managed resident, migratory and forage fish species. Adverse effects to EFH are expected to be minimal therefore, further consultation with the federal action agency will not be required as part of the federal permit process. Should project plans change that would alter the basis for determination, or if new species or EFH is designated, consultation should be reinitiated. For a listing of EFH and further information, please go to our website at: http://www.nero.noaa.gov/hcd. If you wish to discuss this further, please call 732-872-3116.

Weymouth, Nicole

From: Karen Greene - NOAA Federal <karen.greene@noaa.gov>
Sent: Wednesday, May 25, 2016 4:21 PM
To: Weymouth, Nicole
Subject: Newark Liberty International Airport Terminal A Redevelopment Program, species information request

Dear Ms. Weymouth:

Reference is made to the Port Authority of NY and NJ's May 12, 2016, letter requesting information of special status species or essential fish habitat in the vicinity of Newark Liberty International Airport's Terminal A. No species with special status or essential fish habitat are present in the project area. However, there may be some areas of wetlands. If wetlands are proposed to be filled as part of the redevelopment of Terminal A, compensatory mitigation may be required.

If you have any questions. please feel free to contact me.

Karen Greene
Mid-Atlantic Field Offices Supervisor
NOAA/National Marine Fisheries Service
Greater Atlantic Regional Fisheries Office
Habitat Conservation Division
James J. Howard Marine Sciences Laboratory
74 Magruder Rd.
Highlands, NJ 07732
732 872-3023 (office)

1

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New Jersey Ecological Services Field Office
927 NORTH MAIN STREET, BUILDING D
PLEASANTVILLE, NJ 08232
PHONE: (609)646-9310 FAX: (609)646-0352
URL: www.fws.gov/northeast/njfieldoffice/Endangered/consultation.html

Consultation Code: 05E2NJ00-2016-SLI-0515 May 10, 2016
Event Code: 05E2NJ00-2016-E-00395
Project Name: newark Airport Terminal A Redevelopment Program

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species that may occur in your proposed action area and/or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under Section 7(c) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*)

If the enclosed list indicates that any listed species may be present in your action area, please visit the New Jersey Field Office consultation web page as the next step in evaluating potential project impacts: http://www.fws.gov/northeast/njfieldoffice/Endangered/consultation.html

On the New Jersey Field Office consultation web page you will find:

- habitat descriptions, survey protocols, and recommended best management practices for listed species;
- recommended procedures for submitting information to this office; and
- links to other Federal and State agencies, the Section 7 Consultation Handbook, the Service's wind energy guidelines, communication tower recommendations, the National Bald Eagle Management Guidelines, and other resources and recommendations for protecting wildlife resources.

The enclosed list may change as new information about listed species becomes available. As per Federal regulations at 50 CFR 402.12(e), the enclosed list is only valid for 90 days. Please return to the ECOS-IPaC website at regular intervals during project planning and implementation to obtain an updated species list. When using ECOS-IPaC, be careful about drawing the boundary of your Project Location. Remember that your action area under the ESA

is not limited to just the footprint of the project. The action area also includes all areas that may be indirectly affected through impacts such as noise, visual disturbance, erosion, sedimentation, hydrologic change, chemical exposure, reduced availability or access to food resources, barriers to movement, increased human intrusions or access, and all areas affected by reasonably forseeable future that would not occur without ("but for") the project that is currently being proposed.

We appreciate your concern for threatened and endangered species. The Service encourages Federal and non-Federal project proponents to consider listed, proposed, and candidate species early in the planning process. Feel free to contact this office if you would like more information or assistance evaluating potential project impacts to federally listed species or other wildlife resources. Please include the Consultation Tracking Number in the header of this letter with any correspondence about your project.

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: newark Airport Terminal A Redevelopment Program

Official Species List

Provided by:

New Jersey Ecological Services Field Office
927 NORTH MAIN STREET, BUILDING D
PLEASANTVILLE, NJ 08232
(609) 646-9310
http://www.fws.gov/northeast/njfieldoffice/Endangered/consultation.html

Consultation Code: 05E2NJ00-2016-SLI-0515
Event Code: 05E2NJ00-2016-E-00395

Project Type: TRANSPORTATION

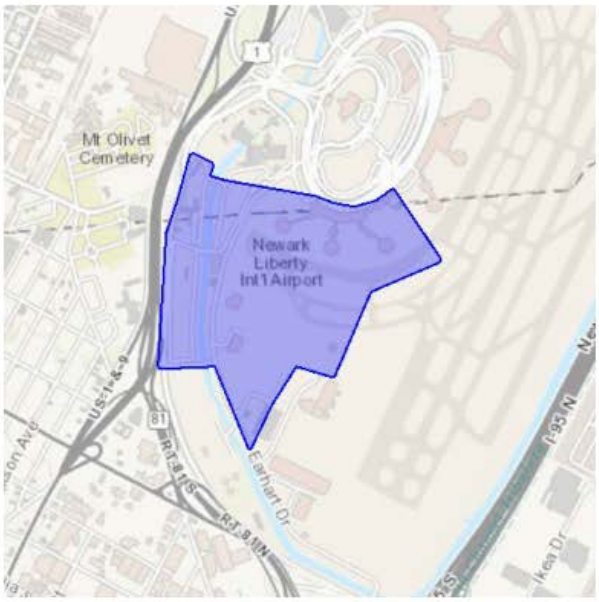
Project Name: newark Airport Terminal A Redevelopment Program
Project Description: Construction of a new terminal A at Newark Liberty International Airport.

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

United States Department of Interior
Fish and Wildlife Service

Project name: newark Airport Terminal A Redevelopment Program

Project Location Map:



Project Coordinates: The coordinates are too numerous to display here.

Project Counties: Essex, NJ | Union, NJ

United States Department of Interior
Fish and Wildlife Service

Project name: newark Airport Terminal A Redevelopment Program

Endangered Species Act Species List

There are a total of 0 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

There are no listed species identified for the vicinity of your project.

United States Department of Interior
Fish and Wildlife Service

Project name: newark Airport Terminal A Redevelopment Program

Critical habitats that lie within your project area

There are no critical habitats within your project area.

State of New Jersey

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Division of Parks & Forestry
State Forestry Service
Mail Code 501-04
Office of Natural Lands Management – Natural Heritage Program
P.O. Box 420
Trenton, NJ 08625-0420
Tel. (609) 984-1339 Fax. (609) 984-1427

BOB MARTIN
Commissioner

May 16, 2016

Donald E. Ehrenbeck
AECOM
125 Broad Street, 16th Floor
New York, NY 10004

Re: Newark Airport - Terminal A Redevelopment Program
Newark City, Essex County and Elizabeth City, Union County

Dear Mr. Ehrenbeck:

Thank you for your data request regarding rare species information for the above referenced project site.

Searches of the Natural Heritage Database and the Landscape Project (Version 3.1) are based on a representation of the boundaries of your project site in our Geographic Information System (GIS). We make every effort to accurately transfer your project bounds from the topographic map(s) submitted with the Natural Heritage Data Request Form into our Geographic Information System. We do not typically verify that your project bounds are accurate, or check them against other sources.

We have checked the Landscape Project habitat mapping and the Biotics Database for occurrences of any rare wildlife species or wildlife habitat on the referenced site. The Natural Heritage Database was searched for occurrences of rare plant species or ecological communities that may be on the project site. Please refer to Table 1 (attached) to determine if any rare plant species, ecological communities, or rare wildlife species or wildlife habitat are documented on site. A detailed report is provided for each category coded as 'Yes' in Table 1.

This report does not include information concerning known Northern Long-eared Bat hibernacula and maternity roost trees protected under the provisions of the U.S. Fish & Wildlife Service's 4(d) Rule. You must contact the U.S. Fish & Wildlife Service, New Jersey Field Office, for additional information concerning the location of these features, or visit their website at: http://www.fws.gov/northeast/njfieldoffice/endangered/consultation.html.

We have also checked the Landscape Project habitat mapping and Biotics Database for occurrences of rare wildlife species or wildlife habitat in the immediate vicinity (within ¼ mile) of the referenced site. Additionally, the Natural Heritage Database was checked for occurrences of rare plant species or ecological communities within ¼ mile of the site. Please refer to Table 2 (attached) to determine if any rare plant species, ecological communities, or rare wildlife species or wildlife habitat are documented within the immediate vicinity of the site. Detailed reports are provided for all categories coded as 'Yes' in Table 2. These reports may include species that have also been documented on the project site.

The Natural Heritage Program reviews its data periodically to identify priority sites for natural diversity in the State. Included as priority sites are some of the State's best habitats for rare and endangered species and ecological communities. Please refer to Tables 1 and 2 (attached) to determine if any priority sites are located on or in the immediate vicinity of the site.

NHP File No. 16-4007462-9904

A list of rare plant species and ecological communities that have been documented from the county (or counties), referenced above, can be downloaded from http://www.state.nj.us/dep/parksandforests/natural/heritage/countylist.html. If suitable habitat is present at the project site, the species in that list have potential to be present.

Status and rank codes used in the tables and lists are defined in EXPLANATION OF CODES USED IN NATURAL HERITAGE REPORTS, which can be downloaded from http://www.state.nj.us/dep/parksandforests/natural/heritage/nhpcodes_2010.pdf.

If you have questions concerning the wildlife records or wildlife species mentioned in this response, we recommend that you visit the interactive NJ-GeoWeb website at the following URL, http://www.state.nj.us/dep/gis/geowebsplash.htm or contact the Division of Fish and Wildlife, Endangered and Nongame Species Program at (609) 292-9400.

PLEASE SEE 'CAUTIONS AND RESTRICTIONS ON NHP DATA', which can be downloaded from http://www.state.nj.us/dep/parksandforests/natural/heritage/newcaution2008.pdf.

Thank you for consulting the Natural Heritage Program. The attached invoice details the payment due for processing this data request. Feel free to contact us again regarding any future data requests.

Sincerely,

Robert J. Cartica
Administrator

c: NHP File No. 16-4007462-9904

NHP File No. 16-4007462-9904

Table 1: On Site Data Request Search Results (6 Possible Reports)

Report Name	Included	Number of Pages
1. Possibly on Project Site Based on Search of Natural Heritage Database: Rare Plant Species and Ecological Communities Currently Recorded in the New Jersey Natural Heritage Database	No	0 pages included
2. Natural Heritage Priority Sites On Site	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.1 Species Based Patches	Yes	1 page(s) included
4. Vernal Pool Habitat on the Project Site Based on Search of Landscape Project 3.1	No	0 pages included
5. Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.1 Stream Habitat File	No	0 pages included
6. Other Animal Species On the Project Site Based on Additional Species Tracked by Endangered and Nongame Species Program	No	0 pages included

Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.1 Species Based Patches

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
Aves								
	Black-crowned Night-heron	Nycticorax nycticorax	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Cattle Egret	Bubulcus ibis	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Glossy Ibis	Plegadis falcinellus	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Least Tern	Sternula antillarum	Nesting Colony	4	NA	State Endangered	G4	S1B,S1N
	Little Blue Heron	Egretta caerulea	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Savannah Sparrow	Passerculus sandwichensis	Breeding Sighting	3	NA	State Threatened	G5	S2B,S4N
	Snowy Egret	Egretta thula	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Upland Sandpiper	Bartramia longicauda	Breeding Sighting	4	NA	State Endangered	G5	S1B,S1N
Insecta								
	Checkered White	Pontia protodice	Breeding/Courtship	3	NA	State Threatened	G4	S2

Table 2: Vicinity Data Request Search Results (6 possible reports)

Report Name	Included	Number of Pages
1. Immediate Vicinity of the Project Site Based on Search of Natural Heritage Database: Rare Plant Species and Ecological Communities Currently Recorded in the New Jersey Natural Heritage Database	No	0 pages included
2. Natural Heritage Priority Sites within the Immediate Vicinity	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat Within the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.1 Species Based Patches	Yes	1 page(s) included
4. Vernal Pool Habitat In the Immediate Vicinity of Project Site Based on Search of Landscape Project 3.1	No	0 pages included
5. Rare Wildlife Species or Wildlife Habitat In the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.1 Stream Habitat File	No	0 pages included
6. Other Animal Species In the Immediate Vicinity of the Project Site Based on Additional Species Tracked by Endangered and Nongame Species Program	No	0 pages included

Rare Wildlife Species or Wildlife Habitat Within the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.1 Species Based Patches

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
Aves								
	Black-crowned Night-heron	Nycticorax nycticorax	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Cattle Egret	Bubulcus ibis	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Glossy Ibis	Plegadis falcinellus	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Least Tern	Sternula antillarum	Nesting Colony	4	NA	State Endangered	G4	S1B,S1N
	Little Blue Heron	Egretta caerulea	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Savannah Sparrow	Passerculus sandwichensis	Breeding Sighting	3	NA	State Threatened	G5	S2B,S4N
	Snowy Egret	Egretta thula	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Upland Sandpiper	Bartramia longicauda	Breeding Sighting	4	NA	State Endangered	G5	S1B,S1N
Insecta								
	Checkered White	Pontia protodice	Breeding/Courtship	3	NA	State Threatened	G4	S2

Page 1 of 1

Monday, May 16, 2016

NHP File No.: 16-4007462-9904

THE PORT AUTHORITY OF NY & NJ

HPO-E2012-262
12-1213-1 VIII-

RECEIVED

HISTORIC PRESERVATION OFFICE

April 11, 2012

Katherine Marcopul
Supervising Historic Preservation Specialist
New Jersey State Historic Preservation Office
P.O Box 420
Mail Code 501-04B
Trenton, New Jersey 08625-0420

RE: Newark Liberty International Airport Terminal A Redevelopment Program

Dear Ms. Marcopul:

The Port Authority of New York and New Jersey (the Authority) is currently planning to build a new Terminal A at Newark Liberty International Airport (EWR) (**Figure 1.1**). The FAA is the lead federal agency and the Authority is the sponsor and lead state agency. An Environmental Assessment (EA) for the Proposed Action is currently being prepared in accordance with the National Environmental Policy Act (NEPA). The purpose of this letter is to initiate consultation with the New Jersey Historic Preservation office to determine what, if any, cultural resources investigations would be required under Section 106 of the National Historic Preservation Act (NHPA) and NEPA. We look forward to working with you and the New Jersey State Historic Preservation Office (SHPO) to assure that this Proposed Action conforms to both NHPA and NEPA requirements.

EWR is one of the New York-New Jersey metropolitan area's busiest airports based upon the number of flights. Over the last 15 years, significant efforts have been made to modernize and redevelop the passenger terminals to respond to the current needs of airlines and passengers. From 1998 to 2003, Terminal C was nearly replaced with a $1.2 billion renovation and expansion. Terminal B has been renovated to increase capacity by building a new departure level and building a new arrivals hall.

Terminal A, built in 1973, is the oldest terminal at EWR, and although it has gone through two minor upgrades (1995 and 2004), the facility is reaching the end of its useful service life. The previous attempts to upgrade Terminal A did not adequately address the deficiencies needed to meet modern airline requirements. In addition, the terminal does not offer passengers the amenities that are provided at other airports.

Description of the Proposed Action

The Authority has carefully developed the Proposed Action to handle the current and projected passenger demand at acceptable levels of service. The proposed Area of Potential Effects (APE) for the Terminal A Redevelopment Program Project is within the limits of EWR, located south of the existing Terminal A, west of runway 4L-22R, north and west of the FedEx air cargo facilities, and east of Routes 1 & 9 (**Figure 1.2**).

The Proposed Action is illustrated on **Figure 1.3** and includes the following elements:

- Replace existing 29 gate Terminal A with a new 33-gate terminal
- Reconfigure Terminal A airside features, including aircraft parking areas and taxilanes to improve aircraft movements
- Install new stormwater collection system with the capability of isolating deicing fluids for collection and disposal

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HPO-E2012-262

THE PORT AUTHORITY OF NY & NJ

- Construct a new 3,000-space public parking garage
- Construct a pedestrian walkway/bridge between the new parking garage and the new Terminal A
- Construct a new underground aviation fuel supply line to a new Fuel Selection Station
- Relocate ground service equipment fueling facility at Terminal A to a more efficient location
- Construct separate access roadways to Terminal A from the main airport access road, and install new dedicated frontage roadways to service the new Terminal A
- Demolish Building 350 to accommodate a new Terminal A and relocate the UPS air cargo facility to another on-airport location
- Demolish Buildings 330 and 331 to accommodate a new Terminal A and relocate the Chelsea Kitchens operations to an on-airport or an off-airport location
- Demolish Building 342 and reconfigure the area of the existing FedEx cargo facility to accommodate new taxilanes and aircraft parking areas
- Demolish the vacant Building 345, the former US Postal Service facility, to accommodate a new Terminal A
- Relocate passenger airline operations from the existing Terminal A to the new Terminal A. The existing Terminal A headhouse will remain, and Satellites A1, A2, and A3 would be demolished for new taxilanes
- Modify the tail tracks from the existing AirTrain P1 Station to provide a pedestrian connection to the new Terminal A

Previous Cultural Resources Surveys and Cultural Setting

A file search was conducted by AECOM cultural resources staff to determine if archaeological and historic architectural resources have been documented within the APE for the Proposed Action and if the potential for undocumented resources exists. This review included an online and paper records check at the SHPO in Trenton, New Jersey, a review of historic maps for evidence of historic architectural resources (farmsteads, bridges, culverts, etc.) and a review of the records at the New Jersey State Museum (NJSM) in Trenton, New Jersey to determine whether previously identified archaeological sites exist in, or near, the limits of the Proposed Action.

Archaeological Resources

A review of the NJ GeoWeb (NJDEP 2012) online database and NJSM site files found that no archaeological resources have been identified within one mile of the APE. The soil types present within the APE were also reviewed as to their suitability for prehistoric habitation. Soils in the project area consist of anthropogenic fill soils as the result of urban development. To assess prehistoric land use, deep machine trenching to below the overburden of compact fill would be necessary. However, the buried prehistoric surface was previously a wetland, which is unlikely to have been suitable for prehistoric habitation.

Background research conducted at the SHPO indicates that several previous cultural resource surveys were conducted within the APE and that there are no eligible archaeological resources. The most pertinent of those previous studies was a Phase I Cultural Resource Survey conducted in November 1989 as part of the Newark International Airport Redevelopment Program. The 1989 research identified the majority of the project area as a former wetland and reported that in 1928, about 68 acres of the marshland were raised to a height of almost 20 feet above sea level for the initial airfield. Land filling continued through the 1930s, as the airport expanded. The survey conducted subsurface testing in two small areas at the western limits of the APE that were areas of naturally higher ground, unaffected by the filling of the marshland. No prehistoric or historic sites were identified as a result of this labor and no further work was recommended.

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Historic Architectural Resources

Research conducted at the SHPO revealed that there are no previously identified NRHP-listed or eligible historic architectural resources located within the project area. Three buildings outside the project area, but still within the airport, were previously listed in the New Jersey State Register of Historic Places on 6/25/1980 and in National Register of Historic Places (NRHP) on 12/12/1980. These buildings include the 1935 Administration Building, the 1938 Brewster Hangar, and the Medical Building, which was built between 1934 and 1938. The Administrative Building was relocated 2,500 feet southwest of its original location in 2002, but is still located outside the project area. The Brewster Hanger was demolished in 1998. The Medical Building is the only one that remains in its original location at the north end of the airport proper.

A review of historic maps and aerial photographs from the late 19th and 20th centuries (ESRI 2011, 2009; Lake and Beers 1862; NETR 2009; Stewart 1876; USGS 1898) identified no evidence of historic architectural resources over 50 years of age within the project area (**Figure 1.4**).

Based on our review of currently available information, the proposed APE for the Proposed Action appears to have little to no potential to contain undocumented archaeological resources and is not likely to affect any National Register eligible or listed properties. We look forward to your review of the project and notification of what steps, if any, may be required to fulfill NHPA and NEPA.

If you require additional information in order to evaluate the potential effects of the Proposed Action, or if you have any questions about this application, you can contact Donald Ehrenbeck, at (973) 961-6049.

Sincerely,

Patricia Fox
Program Manager
Terminal A Redevelopment Program

Enclosures

I concur with your finding that there are no historic properties affected within the project's area of potential effects. Consequently, pursuant to 36 CFR 800.4(d)(1), no further Section 106 consultation is required unless additional resources are discovered during project implementation pursuant to 36 CFR 800.13.

3/23/12

DANIEL D. SAUNDERS
Deputy State Historic Preservation Officer

Date

NP

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Division of Land Use Regulation
Mail Code 501-02A, P. O. Box 420
Trenton, New Jersey 08625-0420
www.state.nj.us/dep/landuse

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

SEP 25 2012

Peter J. Zipf, Chief Engineer
Port Authority of NY and NJ
233 Park Ave. South 7th Floor
New York, NY 10003

Re: Letter of Interpretation: Line Verification
File No.: 0000-02-0043.4
Activity Number: FWW 120001
Applicant: Port Authority of New York and New Jersey
City of Newark, Essex County: Block 5090, Lots 100.01, 100.02 & 106; Block 5092 Lots 10 & 157; Block 5094, Lot 1
Elizabeth, Union County: Block 1, Lot 2104

Dear Mr. Zipf:

This letter is in response to your request for a Letter of Interpretation to verify the jurisdictional boundaries of the freshwater wetlands, transition areas and State open waters on the referenced property pursuant to the Freshwater Wetlands Protection Act Rules, N.J.A.C. 7:7A.

In accordance with agreements between the State of New Jersey Department of Environmental Protection (Department), the U.S. Army Corps of Engineers Philadelphia and New York Districts, and the U.S. Environmental Protection Agency, it has been determined that the Department's Division of Land Use Regulation (Division) is the lead agency for establishing the extent of State and Federally regulated wetlands and waters. The USEPA and/or USACOE retain the right to reevaluate and modify the jurisdictional determination at any time should the information prove to be incomplete or inaccurate.

Based upon the information submitted and upon a site inspection conducted by Division staff on May 23, 2012, the Division has determined that the wetlands and waters boundary lines are accurate as shown on the plan titled "Wetland Location Map, Newark International Airport, Terminal A, Essex County, New Jersey, Union County, New Jersey," consisting of 2 sheets, dated December 23, 2011, unrevised, and prepared by Kennon Surveying Services, Inc.

Wetlands Resource Value Classification ("RVC")

Ordinary: C-1 to C-8 is a stormwater basin. [No wetland buffer]

State Open Waters: Peripheral Ditch and its tributaries demarcated by flags A-1 to A-100 and B-1 to B-133 [No transition area]

No transition area is required adjacent to State open waters pursuant to the Freshwater Wetlands Protection Act Rules, N.J.A.C. 7:7A. However, a riparian zone may be required adjacent to regulated waters pursuant to the Flood Hazard Area Control Act Rules, N.J.A.C. 7:13. The above designated wetlands RVC may affect requirements for wetland and/or transition area permitting. This classification may affect the requirements for an Individual Wetlands Permit (see N.J.A.C. 7:7A-7), the types of Statewide General Permits available for the property (see N.J.A.C. 7:7A-4) and any modification available through a transition area waiver (see N.J.A.C. 7:7A-6). Please refer to the Freshwater Wetlands Protection Act (N.J.S.A. 13:9B-1 et seq.) and implementing rules for additional information.

Wetlands resource value classification is based on the best information available to the Department. The classification is subject to reevaluation at any time if additional or updated information is made available, including, but not limited to, information supplied by the applicant.

Under N.J.S.A. 13:9B-7a(2), if the Division has classified a wetland as exceptional resource value, based on a finding that the wetland is documented habitat for threatened and endangered species that remains suitable for use for breeding, resting or feeding by such species, an applicant may request a change in this classification. Such requests for a classification change must demonstrate that the habitat is no longer suitable for the documented species because there has been a change in the suitability of this habitat. Requests for resource value classification changes and associated documentation should be submitted to the Division at the address at the top of this letter.

General Information

Pursuant to the Freshwater Wetlands Protection Act Rules, you are entitled to rely upon this jurisdictional determination for a period of five years from the date of this letter unless it is determined that the letter is based on inaccurate or incomplete information. Should additional information be disclosed or discovered, the Division reserves the right to void the original letter of interpretation and issue a revised letter of interpretation.

Regulated activities proposed within a wetland, wetland transition area or water area, as defined by N.J.A.C. 7:7A-2.2 and 2.6 of the Freshwater Wetlands Protection Act rules, require a permit from this office unless specifically exempted at N.J.A.C. 7:7A-2.8. The approved plan and supporting jurisdictional limit information are now part of the Division's public records.

This letter in no way legalizes any fill which may have been placed, or other regulated activities which may have occurred on-site. This determination of jurisdiction extent or presence does not make a finding that wetlands or water areas are "isolated" or part of a surface water tributary system unless specifically called out in this letter as such. Furthermore, obtaining this

determination does not affect your responsibility to obtain any local, State, or Federal permits which may be required.

Appeal Process

In accordance with N.J.A.C. 7:7A-1.7, any person who is aggrieved by this decision may request a hearing within 30 days of the date the decision is published in the DEP Bulletin by writing to: New Jersey Department of Environmental Protection, Office of Legal Affairs, Attention: Adjudicatory Hearing Requests, P.O. Box 402, Trenton, NJ 08625-0402. This request must include a completed copy of the Administrative Hearing Request Checklist found at www.state.nj.us/dep/landuse/forms. Hearing requests received after 30 days of publication notice may be denied. The DEP Bulletin is available on the Department's website at www.state.nj.us/dep/bulletin. In addition to your hearing request, you may file a request with the Office of Dispute Resolution to engage in alternative dispute resolution. Please see the website www.nj.gov/dep/odr for more information on this process.

Please contact Linda Fisher of our staff by e-mail at linda.fisher@dep.state.nj.us or (609) 633-6466 should you have any questions regarding this letter. Be sure to indicate the Department's file number in all communication.

Sincerely,

John F. King, Supervisor
Division of Land Use Regulation

c: City of Newark Construction Official
City of Elizabeth Construction Official
Don Ehrenbeck, AECOM, Agent (original document)

EWR Terminal Redevelopment Program
Airline Workshops

December 7th, 2015 Airlines Workshop - Airline Attendees

Lorraine Murray/Air Canada	(Call-in)
Mark Fleetham/Air Canada	(Call-in)
Palmina Whelan/American	(Call-in)
Royce Rufila/ American	
Michael Stine/JetBlue	(Call-in)
Jay Fretwell/Southwest	(Call-in)
Jeff Spoor/United	
Katelyn Yi/United	(Call-in)
Kenneth Gwyn/FedEx	(Call-in)
Trey Hettinger/UPS	(Call-in)

January 14th, 2015 Airlines Workshop - Airline Attendees

Lorraine Murray/Air Canada	(Call-in)
Palmina Whelan/American	(Call-in)
Kendra Kennedy/American	(Call-in)
Andrea Goodpasture/Southwest	
Jeff Spoor/United	
Katelyn Yi/United	(Call-in)
Kenneth Gwyn/FedEx	(Call-in)
Trey Hettinger/UPS	(Call-in)

April 3, 2014 Airlines Workshop - Airline Attendees

Lorraine Murray/Air Canada	(Call-in)
Mark Fleetham/Air Canada	(Call-in)
Palmina Whelan/American	(Call-in)
Kendra Kennedy/American	(Call-in)
Neil Titus/American	
Felix Olmo/American	
Duane Siguenza/Delta	(Call-in)
George Guillaume/Delta	(Call-in)
Hipolito Vazquez/JetBlue	
Chris Rupprecht/Southwest	
John Scala/Southwest	
Andrea Goodpasture/Southwest	(Call-in)
Jeff Spoor/United	
Katelyn Yi/United	
Robert Sawyer/US Airways	(Call-in)
Greg Demaline/US Airways	(Call-in)
Kenneth Gwyn/FedEx	(Call-in)
Trey Hettinger/UPS	(Call-in)
Michael S.	

Appendix E
Vegetation Observed Within the Project Area

Vegetation Observed within the Project Area

Mowed lawn, paved surfaces, and buildings occupy most of the Project Area. The major exception to these land uses is the Peripheral Ditch. The airport property has been disturbed to varying extents and contains little intact native vegetation.

Most of the upland vegetative communities in the Project Area consist of landscaped mowed turf; regularly mowed grasslands in between runways and taxiways. There are some areas of upland species paralleling the Peripheral Ditch, consisting of sporadic upland trees and shrubs. A small forested area on the far eastern side of the property is located outside of the Project Area. Vegetation observed within the Project Area, along with the species' wetland indicator status (USFWS, 1999), is listed on the following pages.

Composite Species List - Vegetation Observed within the Project Area

Common Name	Scientific Name	Region 1 Status	National Status
TREES			
Box-elder	*Acer negundo*	FAC+	FAC, FACW
Norway maple	*Acer platanoides*	N/A	N/A
Red maple	*Acer rubrum*	FAC	FAC
Silver maple	*Acer saccarinum*	FACW	FAC, FACW
Tree-of-heaven	*Ailanthus altissima*	NI	FACU
Northern catalpa	*Catalpa speciosa*	FAC	FACU, FAC
American holly	*Ilex opaca*	FACU+	FACU, FAC-
Eastern red cedar	*Juniperus virginiana*	FACU	FACU-, FACU
Sweet gum	*Liquidambar styraciflua*	FAC	FAC, FACW
White mulberry	*Morus alba*	UPL	N/A
Princess Tree	*Paulownia tomentosa*	N/A	N/A
London plane	*Platanus acerifolia*	N/A	N/A
Quaking aspen	*Populus tremula*	FACU	FACU, FAC+
Black cherry	*Prunus serotina*	FACU	FACU
Bradford pear	*Pyrus calleryana*	N/A	N/A
Pin oak	*Quercus palustris*	FACW	FAC, FACW
Northern red oak	*Quercus rubra*	FACU-	FACU-, FACU+
Black willow	*Salix nigra*	FACW+	UPL, OBL
American elm	*Ulmus americana*	FACW-	FAC, FACW
Chinese elm	*Ulmus parvifolia*	N/A	N/A
Black pine	*Pinus thunbergii*	UPL	UPL
Black locust	*Robinia pseudoacacia*	FACU-	FACU-
SHRUBS / WOODY VINES			
Groundsel-bush	*Baccharis halmifolia*	FACW	FACW
Northern bayberry	*Myrica pennsylvanica*	FAC	FAC

Composite Species List - Vegetation Observed within the Project Area

Common Name	Scientific Name	Region 1 Status	National Status
Common elderberry	*Sambucus canadensis*	FACW-	FACW-
Downy serviceberry	*Amelanchier arborea*	FAC-	FACU, FAC
Eastern false willow	*Baccharis halimifolia*	FACW	FAC, FACW
Gray dogwood	*Cornus foemina*	FAC	FAC, FACW
Winged euonymus	*Euonymus alatus*	N/A	N/A
Japanese honeysuckle	*Lonicera japonica*	FAC-	FACU, FAC+
Smooth sumac	*Rhus glabra*	N/A	N/A
Staghorn sumac	*Rhus typhina*	N/A	N/A
Multiflora rose	*Rosa multiflora*	FACU	UPL, FACU
Raspberry species	*Rubus sp.*	N/A	N/A
Lilac	*Syringa vulgaris*	N/A	N/A
Grape	*Vitis sp.*	N/A	N/A
Asiatic bittersweet	*Celastrus orbiculatus*	UPL	UPL
Virginia creeper	*Parthenocissus quiquefolia*	FACU	FACU
Common greenbrier	*Smilax rotundifolia*	FAC	FAC
Poison Ivy	*Toxicodendrun radicans*	FAC	FAC
HERBACEOUS SPECIES			
Annual ragweed	*Ambrosia artemisiifolia*	FACU	FACU-, FACU+
Spreading dogbane	*Andros aemifolium*	N/A	N/A
Umbrella sedge	*Cyperus strigosus*	FACW	FACW
Common reed	*Phragmites australis*	FACW	FACW, FACW+
Common pokeweed	*Phytolacca americana*	FACU+	FACU+, FAC
English plantain	*Plantago lanceolata*	UPL	N/A
Japanese knotweed	*Polygonum cuspidatum*	FACU-	UPL, FACU
Pennsylvania smartweed	*Polygonum pensylvanicum*	FACW	FACW-, OBL
Nightshade	*Solanum sp.*	N/A	N/A

Composite Species List - Vegetation Observed within the Project Area

Common Name	Scientific Name	Region 1 Status	National Status
Goldenrod species	*Solidago sp.*	N/A	N/A
Common mullein	*Verbascum thapsus*	N/A	N/A
Vetch	*Vicia sp.*	N/A	N/A
Yarrow	*Achillia millefolium*	FACU	FACU
Garlic mustard	*Alliaria petiolata*	FACU-	FACU-
Common milkweed	Asclepias syriaca	N/A	N/A
Sedge	Carex spp.	FACW	FACW
Bull thistle	*Cirsium vulgare*	FACU-	FACU-
White snakeroot	*Eupatorium rugosum*	UPL	UPL
Late flowering thoroughwort	*Eupatorium serotinum*	FAC-	FAC-
Bedstraw	*Galium sp*.	N/A	N/A
Jewelweed	*Impatiens capensis*	FACW	FACW
Rush	*Juncus sp.*	FACW	FACW
Purple loosestrife	*Lythrum salicaria*	FACW+	FACW+
Kentucky bluegrass	*Poa pratensis*	FACU	FACU
Swamp smartweed	*Polyganum hydropiperoides*	OBL	OBL
Bur-cucumber	*Sicyos angulatus*	FACU	FACU
Horse nettle	*Solanum carolinense*	UPL	UPL
Climbing nightshade	*Solanum dulcamara*	FAC-	FAC-
Wrinkled goldenrod	*Solidago rugosa*	FAC	FAC

Notes: Site visits conducted on November 14, 15, and December 8, 2011.

OBL: Obligate Wetland, occur usually (estimated probability >99%) under natural conditions in wetlands.
FACW: Facultative Wetland, usually occurs in wetlands (estimated probability 67%-99%), but occasionally found in non-wetlands.
FAC: Facultative, equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).
FACU: Facultative Upland, usually occurs in uplands (estimated probability 67%-99%), but occasionally found in wetlands (estimated probability 1%-33%).
UPL: Obligate Upland, occurs almost always (estimated probability >99%) under natural conditions in uplands.

N/A: Not found on national listings of plants occurring in wetlands.
Pluses or minuses given with these classifications indicate a tendency toward the wetter (+) or drier (-) end of the scale.

Sources:

1995 Supplement to the List of Plant Species that Occur in Wetlands: Northeast Region (Region 1). U.S. Fish and Wildlife Service, August 1995.

National List of Plant Species that Occur in Wetlands: Northeast Region (Region I). U.S. Fish and Wildlife Service, 1988.

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Appendix F
Traffic Analysis

Traffic Analysis

A detailed, airport-wide traffic simulation model (VISSIM) was prepared by Ove Arup & Partners, P.C. (Arup) under the Port Authority's direction and used to compare traffic conditions for the Existing, Future No-Build/No-Action, and Future Build (Proposed Action) conditions. Traffic conditions at various airport roadway facilities (i.e., ramps and multi-lane frontage roads, weaving sections, frontages, and intersections) were analyzed using the VISSIM model during typical weekday morning (AM), midday, and afternoon (PM) peak hours. This appendix presents the results of those traffic analyses.

For curb fronts and terminal frontage roads, the operational performance measure used is Capacity Utilization (CU), which indicates the percentage of the available frontage that would be utilized by vehicles. A CU percentage greater than 100 percent indicates that demand on the frontage exceeds the curbside capacity. CU values below 100 percent indicate that curbside capacity is available on the facility.

The capacity and operation of a surface transportation network are constrained by the performance of its signalized intersections and the roadway links that comprise the network. The operational performance measure used for ramps, multi-lane roadways, weaving sections, and intersections is Level-of-Service (LOS). LOS is a letter-grade rating assigned to each facility based on its operational performance, with LOS A generally characterized by freely-flowing traffic, low delays, and little congestion, and LOS F characterized by long delays, building queues, over-capacity conditions, and considerable congestion. LOS for ramps, multi-lane roadways, and weaving sections is based on the density of traffic on each facility (in units of "vehicles per mile per lane"), whereas the LOS for intersections is based on the average delay (in units of "seconds per vehicle") experienced by motorists traveling through the intersection. Levels-of-service of A through D are considered acceptable for peak period traffic operations. LOS values E and F are considered unacceptable because of the associated severe congestion and long delays.

It should be noted that the Future Build condition reflects the existing configuration at McClellan Street, referred to as "Future Build 2 model" in Arup's December 1, 2014 memorandum titled *EWR VISSIM Phase 2, Revised Forecast Analysis*. Furthermore, as noted in the memorandum, on-airport growth for the No-Build condition in 2022 and 2027 was assumed to remain unchanged from the original 2018 and 2023 forecasts.

F.1 Existing Conditions

The existing conditions traffic analysis identifies how the airport's roadway system operates under current conditions. The three existing terminals are accessed by internal roadways and each has separate curbfronts to provide passenger loading and unloading locations. The following describes. The traffic operations for ramps, multi-lane roadways, weaving sections, intersections and terminal frontage roads under the existing conditions are presented in **Tables F-1, F-2** and **F-3**, respectively.

Ramps, Multi-Lane Roadways, and Weaving Sections

As shown in **Table F-1**, all ramps, multi-lane roadways, and weaving sections currently operate at level of service (LOS) D or better during all three weekday peak hours analyzed under existing conditions with the exception of the following:

- Ramp to Terminal C Arrivals which currently operates at LOS E during the midday and PM peak hours.

- Express Roadway – Merge to Recirculation Road (near Terminal B frontages) which currently operates at LOS E during the midday peak hour.

Intersections

As shown in **Table F-2**, each of nine study intersections analyzed under existing conditions currently operates at LOS D or better during all three weekday peak hours.

Terminal Frontage Roads

As noted in *ACRP Report 40: Airport Curbside and Terminal Area Roadway Operations*[46], curbside utilization is the recommended performance measure for airport curbside roadways. Curbside utilization indicates the ability of a roadway to accommodate existing or projected requirements for vehicles loading or unloading at the curbside. It also indicates if spare capacity is available to serve additional demand and surges in demand. Typically, a utilization factor of 130 percent or less (i.e., 65 percent of the combined capacity of the inner and second curbside loading/unloading lanes) is a desirable planning target for new curbside roadways. A utilization factor of 170 percent (i.e., 85 percent of the combined capacity of the inner and second curbside lanes) is acceptable for existing facilities, recognizing that during peak hours and days of the year, demand will exceed capacity. Individual airport operator policies regarding parking in multiple lanes may dictate different utilization factor planning targets.

As shown in **Table F-3**, all 12 of the terminal frontage roads analyzed under existing conditions currently operate under 170 percent utilization, which is the acceptable threshold for existing facilities.

[46] *Airport Cooperative Research Program Report (ACRP) 40: Airport Curbside and Terminal Area Roadway Operations*, Transportation Research Board, Washington D.C., 2010, page 41.

Table F-1 Existing Conditions Level-of-Service Summary – Ramps, Multi-Lane Roads and Weaving Sections

Location	Weekday AM Peak Hour LOS	Weekday Midday Peak Hour LOS	Weekday PM Peak Hour Existing
Ramps and Multi-Lane Roads			
Exit from Routes 1&9 NB Local to South Directory Road	A	A	A
South Directory Road near AirTrain Station P2	A	A	A
South Directory Road Ramp to Terminals	A	B	B
Airport Entrance Ramp from Routes 1&9 Southbound Local	B	C	B
Airport Entrance Ramp from Routes 1&9 Southbound Express	A	A	A
Routes 1&9 SB Local & Express Merge at Airport Entrance	B	B	B
Outbound Roadway from Terminal C to Routes 1&9 NB	B	B	B
Outbound Roadway from Terminal C to Routes 1&9 SB	B	C	C
Ramp to Brewster Road from Route I-78 Connector	A	A	A
Ramp from NB Brewster Road from Route I-78 Connector	A	A	A
Ramp from Hotel Road to CTA Recirculation Road	A	B	A
Ramp from Hotel Road to Airport Exit	A	A	B
Ramp to Terminal C Arrivals	C	**E**	**E**
South Directory Road to Parking Road	A	A	A
Weaving Sections			
Weaving Section Close to the Control Tower	A	C	B
Recirculation Road	A	B	A
Outbound Roadway from Hotel Road to Airport Exits	A	B	B
Outbound Roadway from CTA Blvd. to Airport Exits	C	C	C
Inbound Roadway from South Directory Road to Terminal A split	B	B	B
Outbound Roadway to Routes 1&9 NB or SB	A	B	B
Express Roadway - Merge to Recirculation Road (near Terminal B frontages)	C	**E**	D
Routes 1&9 NB from Route 81 to Airport Entrance	A	A	A
CTA Blvd. from Terminal C Arrivals to Outbound Roadway Split	A	C	B
Express Roadway from Terminal C Departures to Outbound Roadway Split	A	B	A
Express Roadway from Terminal A Frontages to Terminal C Split	B	B	B

Notes:

LOS = Level of Service; NB = Northbound; SB = Southbound

Bold, outlined text indicates exceedance of LOS D.

Table F-2 Existing Conditions Level-of-Service Summary – Intersections

Location	Movement	Weekday AM Peak Hour LOS	Weekday Midday Peak Hour LOS	Weekday PM Peak Hour LOS
Brewster Road/Carson Road	NbT	A	A	A
	NbR	A	A	A
	WbR	A	A	A
	SbL	A	A	A
Brewster Road/Pitcairn Road	WbL	C	B	B
	WbR	A	A	A
	NbR	A	A	A
	NbT	A	A	A
	EbT	B	B	B
	SbT	A	A	A
	EbL	A	A	A
Brewster Road/Lindbergh Road	NbL	B	B	B
	NbT	A	A	A
	EbR	A	A	A
	EbL	B	B	B
	SbL	A	A	A
Lindbergh Road/Airport Entrance Ramp	SbR	A	A	A
	SbL	B	B	B
	SbT	A	A	A
	NbL	A	A	A
	NbR	A	A	A
	NbT	A	A	A
	EbT	A	C	B
	EbR	B	B	B
	EbL	A	B	B
CTA Boulevard/Hotel Road	NbT	B	B	B
	EbT	A	A	A
	EbR	A	A	A
	EbL	A	A	A
Pitcairn Road/GS Exit Ramp	EbT	A	A	A
	NbL	A	A	A
	NbR	A	A	A
	WbT	A	A	A
Pitcairn Road/Recirculation Road	NbR	A	A	A
	NbT	A	A	A
	SbT	A	A	A
	SbL	A	A	A
Pitcairn Road/Martin Road	Sb1L	A	A	A
	Sb1T	B	B	B
	Sb1R	B	A	A
	WbL	B	B	A
	WbT	B	B	B
	EbT	C	C	C
Brewster Road/Route I-78 Connector Ramp	NbT	B	B	B
	SbT	A	A	A

Notes:

LOS = Level of Service; Nb = Northbound; Sb = Southbound; Eb = Eastbound; Wb = Westbound; T = Through; R = Right-turn; L = Left-turn

Table F-3 Existing Conditions Frontage Capacity Utilization Summary

Frontage Location	Weekday AM Peak Hour Utilization	Weekday Midday Peak Hour Utilization	Weekday PM Peak Hour Utilization
Terminal A Departure Frontage	76%	101%	77%
Terminal A Arrival Frontage	61%	79%	73%
Terminal A High-Occupancy Vehicle (HOV) Frontage	20%	8%	16%
Terminal B Departure Frontage	33%	46%	64%
Terminal B Inner Departure Frontage	0%	11%	11%
Terminal B Arrival Frontage	10%	65%	63%
Terminal B Bus Frontage	N/A	N/A	N/A
Terminal B Bus and Taxi Frontage	23%	73%	59%
Terminal C Upper Departure Frontage	42%	36%	27%
Terminal C Lower Departure Frontage	108%	112%	106%
Terminal C Arrival Frontage	123%	121%	117%
Terminal C High-Occupancy Vehicle (HOV) Frontage	60%	78%	29%

Notes:

N/A = Not Applicable

F.2 Proposed Action

The Future Build conditions traffic analysis identifies how the airport's roadway system would operate in both of the future horizon years – construction completion (2022) and construction + 5 years (2027) – with the implementation of the Proposed Action and its associated road and intersection improvements. As such, the network analyzed in the VISSIM traffic analysis for Future Build conditions includes anticipated future increases in background traffic volumes and projected growth in passenger traffic as well as changes and improvements to the roadway network. The following describes roadway operations under the Future Build condition. The year 2022 and 2027 Future Build conditions analysis results are presented in **Tables F-4 through F-9** (the results of the associated Future No-Build analyses are also presented for purposes of comparison).

Ramps, Multi-Lane Roadways, and Weaving Sections

As shown in **Tables F-4** and **F-5**, under Future Build conditions, all ramps, multi-lane roadways, and weaving sections are projected to operate at LOS D or better in both 2022 and 2027, with the exception of the following:

- Central Terminal Area (CTA) Exit to Route 1 & 9 Southbound which is projected to operate at LOS E during the PM peak hour in both 2022 and 2027.

- Express Roadway to Terminal C Arrivals which is projected to operate at LOS E during the midday peak hour in both 2022 and 2027.

Intersections

As shown in **Tables F-6** and **F-7**, all traffic movements at the 13 study intersections analyzed under Future Build conditions are projected to operate at LOS D or better during the three weekday analysis peak hours in both 2022 and 2027, with the exception of the following movements at the Earhart Drive/North Avenue intersection:

- The northbound right-turn movement is projected to operate at LOS E during the PM peak hour in both 2022 and 2027.

- The eastbound left-turn movement is projected to operate at LOS E during the midday peak hour in 2027.

- The southbound through movement is projected to operate at LOS E during the AM and PM peak hours in 2027.

Terminal Frontage Roads

As shown in **Tables F-8 and F-9**, under Future Build conditions, all terminal frontage roads are projected to operate below 130 percent utilization (i.e., the desirable planning target for new curbside roadways, as identified in *ACRP Report 40*) during all three weekday peak hours in both 2022 and 2027.

Table F-4 Comparison of Year 2022 Levels-of-Service – Ramps, Multi-Lane Roads and Weaving Sections: No-Build vs. Build

Location	Segment	Weekday AM Peak Hour		Weekday Midday Peak Hour		Weekday PM Peak Hour	
		2022 No-Build	2022 Build	2022 No-Build	2022 Build	2022 No-Build	2022 Build
		LOS	LOS	LOS	LOS	LOS	LOS
Ramps and Multi-Lane Roads							
Route 1 & 9 Southbound Local to Airport CTA Entrance	1-lane ramp	C	B	C	B	B	B
Route 1 & 9 Southbound Express to Airport CTA Entrance	1-lane ramp	A	A	A	B	A	A
Route 1 & 9 Southbound Local & Express merge at airport entrance	2-lane ramp prior to merge	B	B	C	C	B	B
Route 1 & 9 Northbound Local to South Directory Road/McClellan Street	1-lane ramp	A	A	A	A	A	A
Route 1 & 9 Northbound Local to CTA Parking Roadway Entrance	1-lane ramp	A	A	A	A	A	A
Ramp from I-78 Connector to Brewster/Pitcairn Road	1-lane ramp	A	A	A	A	A	A
CTA Exit to Route 1 & 9 Northbound	2-lane ramp	C	B	C	B	C	C
CTA Exit to Route 1 & 9 Southbound	1-lane ramp	C	D	D	D	D	**E**
South Directory Road between Basilore Road EB ramp & Basilone WB ramp	2-lane roadway	-	C	-	C	-	D
South Directory Road near AirTrain Station P2	1-lane ramp	B	B	B	B	B	B
South Directory Road NB between McClellan Street & Carson Road	2-lane weave	-	A	-	A	-	A
Carson Road to South Directory Road NB	1-lane ramp	-	A	-	A	-	A
South Directory Road NB from Carson Road to Brewster Road	2-lane roadway with driveways	-	A	-	B	-	B
South Directory Road to Terminal Roadway Entrance	1-lane ramp	B	B	C	B	B	B
South Directory Road to Parking Roadway Entrance	1-lane ramp	A	A	A	A	A	A
Express Roadway to Terminal C Arrivals	2-lane roadway	D	D	**E**	**E**	**E**	D
Hotel Road between CTA Entrance/Recirculation merge and CTA Parking Exits	merge/2 lane roadway	-	B	-	C	-	B
Ramp from Hotel Road to CTA Recirculation Road	1-lane ramp	A	A	A	A	A	A
Between Parking/Hotel merge & Terminal merge at Recirculation Road	2-lane ramp	A	A	A	B	A	A
Ramp from Hotel Road to Airport Exit	diverge/merge/2 lane roadway	A	B	B	C	D	D
Ramp fron Parking roadway to Airport Exit	1-lane ramp	-	A	-	B	-	C
Ramp from Northbound Brewster Road to I-78 Connector	1-lane ramp	A	A	A	A	A	A
Ramp from CTA Entrance to new AT Inbound Roadway	1-lane ramp	-	C	-	D	-	C
Ramp from Lindbergh Road to new TA Inbound Roadway	1-lane ramp	-	A	-	A	-	A
New TA Inbound Roadway from existing TA Frontage diverge to new TA circulation merge	2-lane roadway	-	B	-	D	-	C
New TA Recirculation Ramp	2-lane ramp	-	A	-	A	-	A
New TA Roadway between Carson Road access ramp & Parking Roadway/Soth Directory Road diverge	2-lane roadway	-	A	-	B	-	A
Carson Road Frontage Roadway from new TA Roadway Inbound Roadway to new TA Parking Roadway merge	2-lane roadway	-	B	-	C	-	B
New TA Inbound to new TA Parking roadway	1-lane ramp	-	A	-	B	-	A
From Carson to new TA Parking Road	1-lane ramp	-	B	-	B	-	B
New TA Parking Roadway from new TA Roadway/South Directory Road merge to P1/P3/Short Term Parking Entry	1 lane roadway with exit ramp	-	B	-	C	-	B
Earhart Drive NB from new TA Taxi/HOV/Frontage ramp to MCF Parking	1-lane ramp	-	A	-	A	-	A
Earhart Drive SB from MCF Parking to Basilone Road	1 lane roadway with exit ramp	-	A	-	A	-	A
New TA Arrivals Frontage Exit Ramp	2-lane roadway	-	A	-	B	-	A
New TA Departures Frontage Exit Ramp	2-lane roadway	-	B	-	B	-	B
Hotel Road from new TA Outbound Roadway to CTA Recirculation	2-lane roadway	-	B	-	B	-	B
Weaving Sections							
CTA Entrance between Route 1 & 9 SB/I-78 merge & Terminal Rd/Parking Rd Diverge	3-lane weaving section	-	C	-	D	-	C
CTA Exit between Terminal/Parking merge & US 1 & 9 NB/SB diverge	3-lane weaving section	B	B	C	B	C	C
CTA Frontage entry between Route 1 & 9 SB/ND (South Directory) merge & CTA/new TA diverge	3-lane weaving section	B	B	C	C	B	B
Express Roadway between Recircualtion Road merge & TB Frontages diverge (in front of TA)	3-lane weaving section	A	A	B	B	A	A
Express Roadway between TA frontage merge & TC frontage diverge (in front of TB)	3-lane weaving section	D	C	**E**	B	D	B
Between TC Departures & Pitcairn Road/P4 Exit merge & Terminal Exit/Pitcairn Road diverge	3-lane weaving section	A	A	A	A	A	A
CTA Boulevard between TC Arrivals/Express Road merge & Terminals Exit/Recirculation Road diverge	4-lane weaving section	A	A	B	A	B	A
Hotel Road between TB Parking Exit merge & TC Parking Exit/Recircualtion diverge	3-lane weaving section	-	A	-	B	-	B
Recircualtion Road between Terminal/Parking/Hotel merge & diverge	3-lane weaving section	A	A	B	A	A	A
CTA Parking/Hotel Exit between Parking/Hotel merge & US 1 & 9/I-78 diverge (link 1) merge section	2-lane ramp/weave	-	A	-	B	-	C
CTA Parking/Hotel Exit between Parking/Hotel merge & US 1 & 9/I-78 diverge (link 2) weave section	3-lane weaving section	A	B	B	C	B	D
CTA Terminal exit between Terminal Road/CTA Boulevard merge & US 1 & 9/I-78 diverge	3-lane weaving section	C	C	D	B	C	B
Between CTA Entrance/Lindbergh Rd merge & Existing TA and new TA roadway diverge	2-lane weaving section	-	A	-	C	**E**	B
New TA Roadway between CTA Entrance/TA Recirculation merge & TA Parking Frontage diverge	3-lane weaving section	-	A	-	B	**E**	A
Carson Road between Frontage/Parking merge & Frontage/Carson to Basilone Road diverge	3-lane weaving section	-	A	-	B	**E**	B
New TA Outbound Roadway between TA Frontage merge & Hotel Road (Exit)/TA Recirculation diverge	3-lane weaving section	-	B	-	C	**E**	B

Notes:
LOS = Level of Service; NB = Northbound; SB = Southbound
Bold, outlined text indicates exceedance of LOS D.

Table F-5 Comparison of Year 2027 Levels-of-Service – Ramps, Multi-Lane Roads and Weaving Sections: No-Build vs. Build

Location	Segment	Weekday AM Peak Hour		Weekday Midday Peak Hour		Weekday PM Peak Hour	
		2027 No-Build	2027 Build	2027 No-Build	2027 Build	2027 No-Build	2027 Build
		LOS	LOS	LOS	LOS	LOS	LOS
Ramps and Multi-Lane Roads							
Route 1 & 9 Southbound Local to Airport CTA Entrance	1-lane ramp	C	B	C	B	B	B
Route 1 & 9 Southbound Express to Airport CTA Entrance	1-lane ramp	A	A	A	B	A	A
Route 1 & 9 Southbound Local & Express merge at airport entrance	2-lane ramp prior to merge	B	B	C	C	B	B
Route 1 & 9 Northbound Local to South Directory Road/McClellan Street	1-lane ramp	A	A	A	A	A	A
Route 1 & 9 Northbound Local to CTA Parking Roadway Entrance	1-lane ramp	A	A	A	A	A	A
Ramp from I-78 Connector to Brewster/Pitcairn Road	1-lane ramp	A	A	A	A	A	A
CTA Exit to Route 1 & 9 Northbound	2-lane ramp	C	B	C	B	C	C
CTA Exit to Route 1 & 9 Southbound	1-lane ramp	C	D	D	D	D	**E**
South Directory Road between Basilore Road EB ramp & Basilone WB ramp	2-lane roadway	-	C	-	D	-	D
South Directory Road near AirTrain Station P2	1-lane ramp	B	B	B	B	B	B
South Directory Road NB between McClellan Street & Carson Road	2-lane weave	-	A	-	A	-	A
Carson Road to South Directory Road NB	1-lane ramp	-	A	-	A	-	A
South Directory Road NB from Carson Road to Brewster Road	2-lane roadway with driveways	-	A	-	B	-	A
South Directory Road to Terminal Roadway Entrance	1-lane ramp	B	B	C	B	B	A
South Directory Road to Parking Roadway Entrance	1-lane ramp	A	A	A	A	A	A
Express Roadway to Terminal C Arrivals	2-lane roadway	D	D	**E**	**E**	**E**	D
Hotel Road between CTA Entrance/Recirculation merge and CTA Parking Exits	merge/2 lane roadway	-	B	-	C	-	C
Ramp from Hotel Road to CTA Recirculation Road	1-lane ramp	A	A	A	A	A	A
Between Parking/Hotel merge & Terminal merge at Recirculation Road	2-lane ramp	A	A	A	B	A	A
Ramp from Hotel Road to Airport Exit	diverge/merge/2 lane roadway	A	B	B	C	D	D
Ramp fron Parking roadway to Airport Exit	1-lane ramp	-	A	-	B	-	C
Ramp from Northbound Brewster Road to I-78 Connector	1-lane ramp	A	A	A	A	A	A
Ramp from CTA Entrance to new AT Inbound Roadway	1-lane ramp	-	C	-	D	-	C
Ramp from Lindbergh Road to new TA Inbound Roadway	1-lane ramp	-	A	-	A	-	A
New TA Inbound Roadway from existing TA Frontage diverge to new TA circulation merge	2-lane roadway	-	B	-	D	-	C
New TA Recirculation Ramp	2-lane ramp	-	A	-	A	-	A
New TA Roadway between Carson Road access ramp & Parking Roadway/Soth Directory Road diverge	2-lane roadway	-	A	-	A	-	A
Carson Road Frontage Roadway from new TA Roadway Inbound Roadway to new TA Parking Roadway merge	2-lane roadway	-	B	-	C	-	B
New TA Inbound to new TA Parking roadway	1-lane ramp	-	A	-	A	-	A
From Carson to new TA Parking Road	1-lane ramp	-	B	-	B	-	B
New TA Parking Roadway from new TA Roadway/South Directory Road merge to P1/P3/Short Term Parking Entry	1 lane roadway with exit ramp	-	B	-	C	-	B
Earhart Drive NB from new TA Taxi/HOV/Frontage ramp to MCF Parking	1-lane ramp	-	A	-	A	-	A
Earhart Drive SB from MCF Parking to Basilone Road	1 lane roadway with exit ramp	-	A	-	A	-	A
New TA Arrivals Frontage Exit Ramp	2-lane roadway	-	A	-	B	-	A
New TA Departures Frontage Exit Ramp	2-lane roadway	-	B	-	B	-	B
Hotel Road from new TA Outbound Roadway to CTA Recirculation	2-lane roadway	-	B	-	C	-	B
Weaving Sections							
CTA Entrance between Route 1 & 9 SB/I-78 merge & Terminal Rd/Parking Rd Diverge	3-lane weaving section	-	C	-	D	-	C
CTA Exit between Terminal/Parking merge & US 1 & 9 NB/SB diverge	3-lane weaving section	B	B	C	B	C	C
CTA Frontage entry between Route 1 & 9 SB/ND (South Directory) merge & CTA/new TA diverge	3-lane weaving section	B	B	C	C	B	B
Express Roadway between Recircualtion Road merge & TB Frontages diverge (in front of TA)	3-lane weaving section	A	A	B	B	A	A
Express Roadway between TA frontage merge & TC frontage diverge (in front of TB)	3-lane weaving section	D	C	**E**	B	D	B
Between TC Departures & Pitcairn Road/P4 Exit merge & Terminal Exit/Pitcairn Road diverge	3-lane weaving section	A	A	A	A	A	A
CTA Boulevard between TC Arrivals/Express Road merge & Terminals Exit/Recirculation Road diverge	4-lane weaving section	A	A	B	A	B	A
Hotel Road between TB Parking Exit merge & TC Parking Exit/Recircualtion diverge	3-lane weaving section	-	A	-	B	-	B
Recircualtion Road between Terminal/Parking/Hotel merge & diverge	3-lane weaving section	A	A	B	A	A	A
CTA Parking/Hotel Exit between Parking/Hotel merge & US 1 & 9/I-78 diverge (link 1) merge section	2-lane ramp/weave	-	A	-	B	-	C
CTA Parking/Hotel Exit between Parking/Hotel merge & US 1 & 9/I-78 diverge (link 2) weave section	3-lane weaving section	A	B	B	C	B	D
CTA Terminal exit between Terminal Road/CTA Boulevard merge & US 1 & 9/I-78 diverge	3-lane weaving section	C	C	D	B	C	B
Between CTA Entrance/Lindbergh Rd merge & Existing TA and new TA roadway diverge	2-lane weaving section	-	A	-	C	-	B
New TA Roadway between CTA Entrance/TA Recirculation merge & TA Parking Frontage diverge	3-lane weaving section	-	A	-	B	-	B
Carson Road between Frontage/Parking merge & Frontage/Carson to Basilone Road diverge	3-lane weaving section	-	A	-	B	-	B
New TA Outbound Roadway between TA Frontage merge & Hotel Road (Exit)/TA Recirculation diverge	3-lane weaving section	-	B	-	C	-	B

Notes:
LOS = Level of Service; NB = Northbound; SB = Southbound
Bold, outlined text indicates exceedance of LOS D.

Table F-6 Comparison of Year 2022 Intersection Levels-of-Service: No-Build vs. Build

TMC	Intersection Location	Movement	Weekday AM Peak Hour		Weekday Midday Peak Hour		Weekday PM Peak Hour	
			2022 No-Build	2022 Build	2022 No-Build	2022 Build	2022 No-Build	2022 Build
			LOS	LOS	LOS	LOS	LOS	LOS
Intersection Evaluation - Delay and LOS								
I-27	Brewster Road and Carson Road	NbT	A	A	A	A	A	A
		NbR	A	A	A	A	A	A
		WbR	A	A	A	A	A	A
		SbL	A	A	A	A	A	A
I-1	Brewster Road and Pitcairn Road	WbL	C	B	C	B	C	B
		WbR	A	A	A	A	A	A
		NbR	A	A	A	A	A	A
		NbT	A	A	A	A	A	A
		EbT	B	B	C	C	C	B
		SbT	A	A	A	A	A	A
		EbL	A	A	A	A	A	A
I-2	Brewster Road and Lindbergh Road	NbL	B	B	B	C	B	C
		NbT	A	A	A	A	A	A
		EbR	A	A	A	A	A	A
		EbL	B	B	B	B	B	B
		SbL	A	A	A	A	A	A
I-3	Lindbergh Road and Airport Entrance	SbR	A	A	A	A	A	A
		SbL	B	A	B	A	B	A
		SbT	A	A	A	A	A	A
		NbL	A	A	A	A	B	A
		NbR	A	A	C	A	A	A
		NbT	A	A	A	A	A	A
		EbT	A	A	B	A	B	B
		EbR	B	A	B	A	B	B
		EbL	B	A	C	A	B	A
I-25	CTA Boulevard and Hotel Road	NbT	B	A	B	A	B	A
		EbT	A	A	A	A	A	A
		EbR	A	A	A	A	A	A
		EbL	A	A	A	A	A	A
I-12	Pitcairn Road and GS Exit Ramp	EbT	A	A	A	A	A	A
		NbL	A	A	B	A	A	A
		NbR	A	A	A	A	A	A
		WbT	A	A	A	A	A	A
I-12A	Pitcairn Road and Recirculation Road	NbR	A	A	A	A	A	A
		NbT	A	A	A	A	A	A
		SbT	A	A	A	A	A	A
		SbL	A	A	A	A	A	A
I-5	Pitcairn Road and Martin Road	SbL	B	B	A	A	A	B
		Sb1T	B	B	B	B	B	B
		Sb1R	A	B	B	C	C	C
		WbL	C	B	C	B	C	B
		WbT	C	B	C	B	C	B
		EbT	C	C	C	C	C	C
I-11	Brewster Road and Route I-78 Connector Ramp	NbT	A	B	A	B	A	B
		SbT	A	A	A	A	A	A
N/A	Pitcairn Road and GS Exit Ramp	EbT	-	A	-	B	-	A
		WbT	-	A	-	B	-	A
		SbL	-	C	-	C	-	C
		SbR	-	A	-	A	-	A
I-24	Pitcairn Road and GS Exit Ramp	EbL	-	A	-	A	-	A
		EbT	-	A	-	A	-	A
		EbR	-	A	-	A	-	A
		NbL	-	B	-	B	-	B
		NbT	-	B	-	B	-	B
		NbR	-	A	-	A	-	A
		WbL	-	A	-	A	-	A
		WbT	-	A	-	A	-	A
		WbR	-	A	-	A	-	A
		SbL	-	A	-	A	-	A
		SbT	-	C	-	C	-	C
		SbR	-	A	-	A	-	A
I-7	Earhart Drive and Wiley Post Road	EbL	-	A	-	B	-	B
		EbT	-	B	-	B	-	C
		EbR	-	A	-	A	-	A
		NbL	-	A	-	B	-	A
		NbT	-	A	-	B	-	B
		NbR	-	B	-	B	-	C
		WbL	-	B	-	B	-	A
		WbT	-	B	-	C	-	C
		WbR	-	B	-	B	-	C
		SbL	-	A	-	A	-	A
		SbT	-	A	-	A	-	A
		SbR	-	A	-	A	-	A
I-10	Earhart Drive and North Avenue	EbL	-	B	-	D	-	B
		EbR	-	B	-	C	-	C
		NbL	-	D	-	C	-	D
		NbR	-	D	-	C	-	E
		WbL	-	C	-	B	-	C
		WbT	-	B	-	C	-	B
		WbR	-	A	-	B	-	B
		SbL	-	C	-	D	-	D
		SbT	-	D	-	D	-	D
		SbR	-	A	-	B	-	B

Notes:
LOS = Level of Service; Nb = Northbound; Sb = Southbound; Eb = Eastbound; Wb = Westbound; T = Through; R = Right-turn; L = Left-turn

Table F-7 Comparison of Year 2027 Intersection Levels-of-Service: No-Build vs. Build

TMC	Intersection Location	Movement	Weekday AM Peak Hour		Weekday Midday Peak Hour		Weekday PM Peak Hour	
			2027 No-Build	2027 Build	2027 No-Build	2027 Build	2027 No-Build	2027 Build
			LOS	LOS	LOS	LOS	LOS	LOS
Intersection Evaluation - Delay and LOS								
I-27	Brewster Road and Carson Road	NbT	A	A	A	A	A	A
		NbR	A	A	A	A	A	A
		WbR	A	A	A	A	A	A
		SbL	A	A	A	A	A	A
I-1	Brewster Road and Pitcairn Road	WbL	C	B	C	B	C	B
		WbR	A	A	A	A	A	A
		NbR	A	A	A	A	A	A
		NbT	A	A	A	A	A	A
		EbT	B	B	C	C	C	B
		SbT	A	A	A	A	A	A
		EbL	A	A	A	A	A	A
I-2	Brewster Road and Lindbergh Road	NbL	B	B	B	B	B	C
		NbT	A	A	A	A	A	A
		EbR	A	A	A	A	A	A
		EbL	B	B	B	B	B	B
		SbL	A	A	A	A	A	A
I-3	Lindbergh Road and Airport Entrance	SbR	A	A	A	A	A	A
		SbL	B	A	B	A	B	A
		SbT	A	A	A	A	A	A
		NbL	A	A	A	A	B	A
		NbR	A	A	C	A	A	A
		NbT	A	A	A	A	A	A
		EbT	A	A	B	A	B	B
		EbR	B	A	B	A	B	B
		EbL	B	A	C	A	B	A
I-25	CTA Boulevard and Hotel Road	NbT	B	A	B	A	B	A
		EbT	A	A	A	A	A	A
		EbR	A	A	A	A	A	A
		EbL	A	A	A	A	A	A
I-12	Pitcairn Road and GS Exit Ramp	EbT	A	A	A	A	A	A
		NbL	A	A	B	A	A	A
		NbR	A	A	A	A	A	A
		WbT	A	A	A	A	A	A
I-12A	Pitcairn Road and Recirculation Road	NbR	A	A	A	A	A	A
		NbT	A	A	A	A	A	A
		SbT	A	A	A	A	A	A
		SbL	A	A	A	A	A	A
I-5	Pitcairn Road and Martin Road	SbL	B	B	A	B	A	B
		Sb1T	B	B	B	B	B	B
		Sb1R	A	B	B	B	C	B
		WbL	C	B	C	B	C	B
		WbT	C	B	C	B	C	B
		EbT	C	C	C	C	C	C
I-11	Brewster Road and Route I-78 Connector Ramp	NbT	A	B	A	B	A	B
		SbT	A	A	A	A	A	A
N/A	Pitcairn Road and GS Exit Ramp	EbT	-	A	-	B	-	A
		WbT	-	A	-	B	-	A
		SbL	-	C	-	C	-	C
		SbR	-	A	-	A	-	A
I-24	Pitcairn Road and GS Exit Ramp	EbL	-	A	-	A	-	A
		EbT	-	A	-	A	-	A
		EbR	-	A	-	A	-	A
		NbL	-	B	-	B	-	B
		NbT	-	B	-	B	-	B
		NbR	-	A	-	A	-	A
		WbL	-	A	-	A	-	A
		WbT	-	A	-	A	-	A
		WbR	-	A	-	A	-	A
		SbL	-	A	-	A	-	A
		SbT	-	C	-	C	-	C
		SbR	-	A	-	A	-	A
I-7	Earhart Drive and Wiley Post Road	EbL	-	A	-	B	-	C
		EbT	-	B	-	B	-	C
		EbR	-	A	-	A	-	A
		NbL	-	B	-	C	-	A
		NbT	-	A	-	B	-	B
		NbR	-	B	-	B	-	C
		WbL	-	B	-	B	-	A
		WbT	-	B	-	C	-	B
		WbR	-	B	-	B	-	C
		SbL	-	A	-	A	-	A
		SbT	-	A	-	A	-	A
		SbR	-	A	-	A	-	A
I-10	Earhart Drive and North Avenue	EbL	-	B	-	E	-	C
		EbR	-	B	-	D	-	D
		NbL	-	C	-	C	-	D
		NbR	-	D	-	C	-	E
		WbL	-	C	-	C	-	D
		WbT	-	B	-	D	-	C
		WbR	-	A	-	C	-	B
		SbL	-	D	-	D	-	D
		SbT	-	E	-	D	-	E
		SbR	-	A	-	B	-	B

Notes:
LOS = Level of Service; Nb = Northbound; Sb = Southbound; Eb = Eastbound; Wb = Westbound; T = Through; R = Right-turn; L = Left-turn

Table F-8 Comparison of Year 2022 Terminal Frontage Utilization Summary: No-Build vs. Build

Frontage Location	Weekday AM Peak Hour		Weekday Midday Peak Hour		Weekday PM Peak Hour	
	2022 No-Build	2022 Build	2022 No-Build	2022 Build	2022 No-Build	2022 Build
	Utilization	Utilization	Utilization	Utilization	Utilization	Utilization
Terminal A Departure Frontage Total Curb Utilization	96%	102%	106%	115%	109%	116%
New Terminal A Arrival Frontage Total Curb Utilization	71%	22%	95%	99%	88%	66%
New Terminal A HOV Frontage Total Curb Utilization	20%	4%	12%	4%	19%	5%
Terminal B Departure Frontage Total Curb Utilization	42%	31%	107%	92%	58%	39%
Terminal B Departure Frontage Total Curb Utilization	18%	2%	16%	9%	14%	9%
Terminal B Arrival Frontage Total Curb Utilization	5%	17%	33%	36%	26%	21%
Terminal B Bus and Taxi Frontage Total Curb Utilization	24%	9%	83%	56%	67%	24%
Terminal C Upper Departure Frontage Total Curb Utilization	114%	112%	112%	113%	105%	99%
Terminal C Lower Departure Frontage Total Curb Utilization	118%	112%	115%	107%	103%	81%
Terminal C Arrival Frontage Total Curb Utilization	129%	123%	**133%**	124%	123%	89%
Terminal C HOV Frontage Total Curb Utilization	38%	13%	87%	26%	29%	5%

Notes:

Bold, outlined text indicates frontage utilization exceeding 130%.

Table F-9 Comparison of Year 2027 Terminal Frontage Utilization Summary: No-Build vs Build

Frontage Location	Weekday AM Peak Hour		Weekday Midday Peak Hour		Weekday PM Peak Hour	
	2027 No-Build	2027 Build	2027 No-Build	2027 Build	2027 No-Build	2027 Build
	Utilization	Utilization	Utilization	Utilization	Utilization	Utilization
Terminal A Departure Frontage Total Curb Utilization	96%	99%	106%	118%	109%	122%
New Terminal A Arrival Frontage Total Curb Utilization	71%	20%	95%	102%	88%	71%
New Terminal A HOV Frontage Total Curb Utilization	20%	3%	12%	4%	19%	5%
Terminal B Departure Frontage Total Curb Utilization	42%	37%	107%	96%	58%	39%
Terminal B Departure Frontage Total Curb Utilization	18%	1%	16%	9%	14%	6%
Terminal B Arrival Frontage Total Curb Utilization	5%	11%	33%	37%	26%	15%
Terminal B Bus and Taxi Frontage Total Curb Utilization	24%	9%	83%	52%	67%	27%
Terminal C Upper Departure Frontage Total Curb Utilization	114%	111%	112%	109%	105%	104%
Terminal C Lower Departure Frontage Total Curb Utilization	118%	111%	115%	102%	103%	85%
Terminal C Arrival Frontage Total Curb Utilization	129%	125%	**133%**	126%	123%	91%
Terminal C HOV Frontage Total Curb Utilization	38%	13%	87%	27%	29%	6%

Notes:

Bold, outlined text indicates frontage utilization exceeding 130%.

Parking

The Proposed Action would result in the loss of parking lots P1 and P3, with total capacity of 2,199 spaces. The average daily utilization of Lots P1 and P3 is 68%, or approximately 1,495 spaces. As part of the Proposed Action, a new garage and surface lot would be constructed that would provide a total of 2,621 spaces, resulting in an increase of 422 spaces. Therefore, parking demand would continue to be met under the Proposed Action.

F.3 No-Build/No-Action Alternative

The Future No-Build/No-Action analysis identifies how the roadway system is projected to operate in the future horizon years (2022 and 2027) *without* the Proposed Action. As such, the No-Build/No-Action Alternative traffic analysis includes anticipated future increases in background traffic volumes and projected passenger growth, but does not include roadway changes and improvements that are part of the Proposed Action. It is assumed that the current roadway configuration and access to/from the airport is retained. With or without the Proposed Action, passenger travel at the airport is projected to continue to increase over time. The year 2022 and 2027 No-Build/No-Action conditions analysis results are presented in **Tables F-4 through F-9** and shown adjacent to the corresponding Future Build conditions analysis results.

Ramps, Multi-Lane Roadways, and Weaving Sections

As shown in **Tables F-4 and F-5**, under Future No-Build/No-Action conditions, all ramps, multi-lane roadways, and weaving sections are projected to operate at LOS D or better during all three weekday peak hours in both 2022 and 2027, with the exception of the following:

- The express roadway to Terminal C Arrivals is projected to operate at LOS E during the midday and PM peak hours in both 2022 and 2027.

- The express roadway between the Terminal A Frontage merge and the Terminal C Frontage diverge (in front of Terminal B) is projected to operate at LOS E during the midday peak hour in both 2022 and 2027.

- The weaving section between the CTA Entrance/Lindbergh Road merge and Existing Terminal A and the new Terminal A roadway diverge is projected to operate at LOS E during the PM peak hour in 2022.

- The weaving section between the new Terminal A roadway between the CTA Entrance/Terminal A recirculation merge and the Terminal A Parking Frontage diverge is projected to operate at LOS E during the PM peak hour in 2022.

- The weaving section on Carson Road between the Frontage/Parking merge and the Frontage/Carson to Basilone Road diverge is projected to operate at LOS E during the PM peak hour in 2022.

- The weaving section of the new Terminal A outbound roadway between the Terminal A Frontage merge and the Hotel Road(Exit)/Terminal A recirculation diverge is projected to operate at LOS E during the PM peak hour in 2022.

Intersections

As shown in **Tables F-6 and F-7**, all 13 of the study intersections analyzed under Future No-Build/No-Action conditions are projected to operate at LOS D or better during all three weekday peak hours in both 2022 and 2027.

Terminal Frontage Roads

As shown in **Tables F-8 and F-9**, under Future No-Build/No-Action conditions, all terminal frontage roads are projected to operate under 130 percent utilization (i.e., the desirable planning target for new curbside roadways, as identified in *ACRP Report 40*) during all three weekday peak hours in both 2022 and 2027, with the exception of the Terminal C Arrival frontage which is projected to operate with a utilization rate of 133 percent during the weekday midday peak hour in both 2022 and 2027.

Parking

Under the No-Build/No-Action Alternative, parking lots P1 and P3 would remain in place, maintaining a total capacity of 2,199 spaces. The average daily utilization of Lots P1 and P3 is 68%, or approximately 1,495 spaces. With or without the Proposed Action, passenger travel at the airport is projected to continue to increase over time. As a result, usage of the airport's parking facilities would increase as well. However, it is not expected that parking demand would be exceeded by the available spaces.

Appendix G
Public Involvement

STATEWIDE

'Day Without Immigrants' protests planned in N.J.

S.P. Sullivan
For The Star-Ledger

Immigrant workers across New Jersey are expected to join those in major cities around the U.S. today in skipping work and forgoing shopping to demonstrate their importance to the American economy.

National "Day Without Immigrants" demonstrations are planned in New York, Philadelphia and Washington, D.C., as well as cities across New Jersey.

While such protests have been held in years past, the event will focus on President Donald Trump's immigration policies, including his efforts to ramp up deportation of those in the U.S. illegally, his pledge to build a wall along the Mexican border and his controversial executive order enacting a travel ban affecting several majority-Muslim countries.

It's unclear how prevalent the protest will be in the Garden State, but New Labor, a New Jersey immigrants' rights group, said it has three protests planned.

At 9 a.m., New Labor organizers will demonstrate in Lakewood, followed by another in New Brunswick at 1 p.m. and a third in Newark at 3 p.m., the group said.

Marilou Halvorsen, president of the New Jersey Restaurant & Hospitality Association, told NJ Advance Media that trade associations around the U.S. have told their members to prepare for the strike.

"Our members support their employees and their freedom of speech," she said. "(They understand) it's not a protest against restaurants. It's a protest against the executive order."

In Perth Amboy, officials also urged residents in a citywide alert Wednesday evening to plan for several local restaurants, bodegas and city cab companies to be closed as part of the protest.

NJ Advance Media staff writer Craig McCarthy and the Associated Press contributed to this report.

HEALTH

Christie spurs Medicaid concerns

Advocates fear loss of coverage

Susan K. Livio
For The Star-Ledger

Six months ago, Republican Gov. Chris Christie called a news conference to tout the benefits of his decision to expand the Medicaid program when Obamacare went live in 2014.

With an additional 566,000 people insured, paid for by the federal government, Christie said he had "proven wrong the naysayers" and did that what was best for New Jersey.

But with President Donald Trump and congressional Republicans promising to repeal the Affordable Care Act, Christie on Monday made his commitment to Medicaid sound negotiable.

That's making a growing number of New Jersey medical professionals, lawmakers and family advocacy groups nervous for the people who could be squeezed out of coverage.

"I don't necessarily think they need to have Medicaid, but they need to have coverage," Christie said during his monthly 101.5 FM radio call-in show Monday night.

"I don't know what the president and Congress are going to come up with to deal with at all that," Christie said, adding he would "take the president at his word" that people would not be stranded without coverage.

The governor, a Trump confidant, reiterated his support of an idea floated by congressional Republicans that would allot each state a set amount of money, known as a block grant, but give state lawmakers more freedom to decide how it is spent.

Shannon Monahan participates Wednesday in a protest organized by New Jersey Citizen Action to help save the Affordable Care Act, outside the office of Rep. Leonard Lance (R-Somerset). *Ed Murray/For The Star-Ledger*

Medicaid is an open-ended entitlement program, which pays for at least half of all billable care if states follow strict federal regulations.

Christie said his chief concern is that Trump and Congress set the dollar amount of the block grant based on what New Jersey receives now with $66,000 more people on Medicaid, and not the pre-Obamacare amount.

New Jersey receives a $4.4 billion boost under the landmark health care law to expand the Medicaid program to poor people with slightly higher incomes.

"For New Jersey, you want a block grant based on the expanded Medicaid so we could manage it the right way. I bet you we could get some savings, and that savings could be shared with the federal government," Christie said.

Reactions to Christie's remarks range from disappointment to surprise.

"It is very disappointing that the governor has made it clear that unlike other governors he will not support maintaining the Medicaid expansion," said Raymond Castro, senior analyst at New Jersey Policy Perspective, a left-leaning research organization.

"It's surprising he made that statement given that he also said he did not know what they are going to replace the Medicaid expansion with," Castro added. "All indications are that they will replace it with something much worse, such as a Medicaid block grant, that not only will not help working New Jerseyans but will threaten the health care of seniors, the disabled and children as well."

Some of Christie's key legacy-building items rely on a robust Medicaid program. He announced last month he would fund 900 drug-treatment beds to halt the heroin and opioid addiction crisis.

Early in his first term, the governor also received permission from the Obama administration to spend more federal money to add community housing and other programs for people with developmental disabilities.

"Most proponents of block grants see them as a way to reduce federal spending on Medicaid over time," said Joel Cantor, director of the Rutgers Center for State Health Policy. "The grants almost certainly would not go up as fast as the cost of medical care.

"During recessions, block grants won't automatically increase, but people will lose their jobs and employer health insurance and many will seek Medicaid coverage," Cantor added.

Thomas Baffuto, executive director of the Arc of New Jersey, an advocacy organization for people with developmental disabilities and their families, said he is marshaling the energy of the Arc's members to fight the Obamacare "repeal without a reasonable replacement."

The Christie administration's Medicaid waiver program brings $800 million from Medicaid into New Jersey, which pays for group homes, job and recreational programs for roughly 25,000 people.

Block grants are not a reasonable solution, Baffuto said."Ultimately they will lead to cuts, and the best-case scenario is long waiting lists. Worst: People lose services, and we are deeply concerned about all of that."

The New Jersey Hospital Association has also appealed to state and federal lawmakers to protect Medicaid. New Jersey hospitals and outpatient medical facilities forfeited $1.5 billion in federal aid with the promise the Affordable Care Act would bring in more patients.

PUZDER

FROM 1

nominated him to the Cabinet post Dec. 9 — five years after he had fired the worker.

Thompson said in an e-mail that Puzder informed the White House of the housekeeper matter "after the nomination."

People interviewed during the transition period said they were not asked by Trump's team to provide vetting information, raising questions about the level of scrutiny.

Ultimately, Republicans made it clear that Puzder did not have the votes for confirmation.

Democrats and their allies welcomed Puzder's withdrawal, saying his corporate background and opposition to such proposals as a big hike in the minimum wage made him an unfit advocate for American workers at the top of an agency charged with enforcing protections.

They had already made it clear that Puzder's statements about women and his own workers would be major issues at his confirmation hearing.

Puzder was quoted in Entrepreneur magazine in 2015 as saying, "I like beautiful women eating burgers in bikinis." He said the racy commercials for Carl's Jr., one of his companies, were "very American."

Democrats also said Puzder had disparaged workers at his restaurants by calling them "the best of the worst."

He was quoted by Business Insider as saying he wanted to try robots at his restaurants, because "They're always polite, they always upsell, they never take a vacation, they never show up late, there's never a slip-and-fall, or an age, sex or race discrimination case."

The Record

Publication Date: 02/16/2017

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Prices

Continued from Page 12A

of the increase in the January CPI. The median forecast in a Bloomberg survey called for a 0.3 percent month-over-month advance in the CPI.

Clothing, cars

But costs of some other goods and services also moved up. Clothing prices jumped 1.4 percent, the most since February 2009. Men's apparel surged by the most on record. New vehicle prices climbed 0.9 percent in January, the biggest advance since November 2009.

The core CPI measure, which excludes volatile food and fuel costs, rose 0.3 percent, the most in five months. Core inflation increased 2.3 percent from January 2016.

The Bloomberg survey median called for the core index to rise 0.2 percent from the previous month, and 2.1 percent from the prior year.

"At our upcoming meetings, the committee will evaluate whether employment and inflation are continuing to evolve in line with these expectations, in which case a further adjustment of the federal funds rate would likely be appropriate," Yellen told the Senate Banking Committee in prepared remarks Tuesday.

The Fed chairwoman reiterated that falling behind on inflation could do more harm to the economy and possibly cut short the expansion.

The Fed's preferred inflation gauge, the Commerce Department's personal consumption expenditures price index, has been below the central bank's 2 percent target since April 2012. It finished with a gain of 1.6 percent last year.

"Waiting too long to remove accommodation would be unwise, potentially requiring the FOMC to eventually raise rates rapidly, which could risk disrupting financial markets and pushing the economy into recession," she added.

Wednesday's report from the Labor Department showed energy costs increased 4 percent from a month earlier. Food prices rose 0.1 percent.

The CPI is the broadest of three price gauges from the Labor Department because it includes all goods and services. About 60 percent of the index covers prices consumers pay for services from medical visits to airline fares, movie tickets and rents.

The higher cost of living put a dent in Americans' paychecks in January, a separate report from the Labor Department showed Wednesday. Hourly earnings adjusted for inflation fell 0.5 percent from the prior month and were unchanged over the past 12 months.

"At our upcoming meetings, the committee will evaluate whether employment and inflation are continuing to evolve in line with these expectations, in which case a further adjustment of the federal funds rate would likely be appropriate."

JANET YELLEN
FEDERAL RESERVE CHAIRWOMAN, TO THE SENATE BANKING COMMITTEE IN PREPARED REMARKS TUESDAY

Defense

Continued from Page 12A

clear how many employees it has.

The buyer plans to move into about 32,500 square feet of the space, with the possibility of expanding as other leases expire, Lundberg said. Other tenants include Ramsey Subaru, which occupies about 55,000 square feet.

Lundberg said that buyers' demand is high for industrial buildings. Companies that are tired of rising rents want to own their own space, and investors like the buildings for their rental income. Selling this building was a challenge, he said, because "traditionally, buyers would want a completely vacant building, to use themselves, or completely occupied, for investment purposes."

The 108,000-square-foot building, at 211 Island Road, was sold by Ivy Equities of Montvale for $9.75 million, according to the listing brokers on the deal, Kenneth Lundberg and Patrick Lennon of NAI James E. Hanson in Hackensack.

Yahoo

Continued from Page 12A

A message sent to a reporter for The Associated Press earlier on Wednesday said that "based on the ongoing investigation, we believe a forged cookie may have been used in 2015 or 2016 to access your account."

Other Yahoo users also posted messages to Twitter to report receiving similar messages.

In other news involving Yahoo, Verizon Communications is getting close to a renegotiated deal for Yahoo's Internet properties that would reduce the price of the original $4.8 billion deal by about $250 million, according to people familiar with the matter.

In addition to the discount, both Verizon and Yahoo are expected to share any continuing legal responsibilities related to the breaches, said the people, who asked not to be identified discussing private information.

An announcement of the new agreement could come in a matter of days or weeks, said the people. The revised agreement isn't final and could still change, they said.

PUBLIC NOTICES

THE PORT AUTHORITY OF NY & NJ

NOTICE OF AVAILABILITY and REQUEST FOR COMMENT

Draft Environmental Assessment Terminal A Redevelopment Program Newark Liberty International Airport, Newark, New Jersey

In accordance with the National Environmental Policy Act (NEPA), notice is hereby given that copies of a Draft Environmental Assessment (EA) for the Terminal A Redevelopment Program at Newark Liberty International Airport are available for public review and comment at the following locations:

The Port Authority of NY & NJ
Newark Liberty International Airport
Terminal A General Managers Office
Administration Building
1 Conrad Road
Newark, NJ 07114
Attn: Dianne Papaianni
Hours: 8:00 am to 5:00 pm

The Port Authority of NY & NJ
Aviation Department
Aviation Technical Services
4 World Trade Center, 18th Floor
New York, NY 10007
Attn: Kathryn Lamond
Hours: 9:00 am to 5:00 pm

Elizabeth Public Library
11 South Broad Street
Elizabeth, NJ 07202
Hours: Check with library branch

Newark Public Library
5 Washington Street
Newark, NJ 07102
Hours: Check with library branch

The Draft EA document for this project will be available at these locations until the close of the comment period, which is 5:00 PM on March 17, 2017. In addition, a copy of this document may be viewed online at http://www.panynj.gov/about/studies-reports.html

The Port Authority is inviting the Public to submit, in writing, comments on the Draft EA prepared for the Terminal A Redevelopment project. The Port Authority is accepting comments on this Draft EA document until the official comment period closes on March 17, 2017. Comments must be received 5:00 PM on March 17, 2017 in order to be considered.

Comments on this draft EA should be sent to: The Port Authority of NY & NJ, 4 World Trade Center, 18th Floor, New York, NY 10003, Attn: Kathryn Lamond.

Additionally, comments may be emailed to EWRTERMA@panynj.gov with the subject heading "EWR TERMINAL A DRAFT EA COMMENT." If you have any questions on this notice, please contact Kathryn Lamond at the email address above.

February 16, 2017-Fee:[illegible] 4134570