Trenton-Mercer Airport

TERMINAL AREA IMPROVEMENTS
DRAFT ENVIRONMENTAL ASSESSMENT

Prepared for:

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

Responsible FAA Official ***Date***

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1. INTRODUCTION

The Environmental Assessment (EA) addresses the potential social, economic, and environmental consequences associated with the replacement of the existing terminal with a proposed new terminal building at the Trenton-Mercer Airport (TTN or the Airport). The Airport is located near the New Jersey-Pennsylvania border in the Ewing Township, Mercer County, New Jersey (see **Figure 1-1**, **Location Map** and **Figure 1-2**, **Aerial Map**). Mercer County, the Airport owner and operator, completed an Airport Master Plan Update (AMPU) for the Airport in June 2018. The complete AMPU can be found at https://www.ttnterminal.com/airport-master-plan. The AMPU made several recommendations for the 20-year planning horizon to assist the Airport in meeting immediate and short-term functional needs of TTN users and tenants. The AMPU identified the need to provide a functional terminal that meets current terminal sizing standards for ticketing, baggage operations, security screening, hold rooms, and concessions; provides current passenger amenities and levels of service; and is adequately sized to address core deficiencies, including the lack of space in the existing, approximately 33,000 square foot terminal facility. The AMPU involved extensive stakeholder and public review and input. The existing terminal and other Airport facilities are shown on the Airport Layout Plan (ALP) and Terminal Area Plan (TAP) (see **Appendix B**).

The existing terminal, built in 1975, was designed with four hard stand parking positions to accommodate smaller Group III (less than 120 passengers) or larger Group II (up to 80 passengers) aircraft. The terminal was designed with pre-9/11 security checkpoint standards and was reconfigured to accommodate two short and undersized security checkpoint lanes. The hold room is sized to accommodate a maximum of 175 passengers which may have accommodated two partially full aircraft in the 1970s and 1980s, however, is not able to accommodate a single current full aircraft of passengers on the larger Group III aircraft currently operating daily at TTN at an adequate level of service. The size of the terminal limits public amenities such as restrooms and concessions - both pre security and post security, limits the ability of throughput of the security checkpoint, and requires significant management of passengers during flight delays due to the additional load of passengers waiting in the terminal. The baggage screening and baggage claim areas require more manpower and management of space and access due to the limited available footprint of these functions. The current terminal is outdated, significantly undersized, and provides a very poor level of service to the passengers and traveling public.

As part of the AMPU, the Federal Aviation Administration (FAA) conditionally approved the ALP and passenger forecast which is shown in **Table 1-1**. FAA forecast approval letters are included in **Appendix B**. According to the FAA approved forecasts, annual passenger enplanements are expected to grow from 314,665 in 2016 to 476,507 in 2035. Annual passenger enplanements are the number of people boarding aircraft at TTN each year. As discussed in the AMPU:

> *The enplanements forecast focuses on the total annual enplanements as well as the peak hour characteristics based on busier traffic periods. The results of these forecasts are particularly useful in the assessment of the passenger terminal building and associated facilities such as auto parking lots.*

Figure 1-1: Location Map

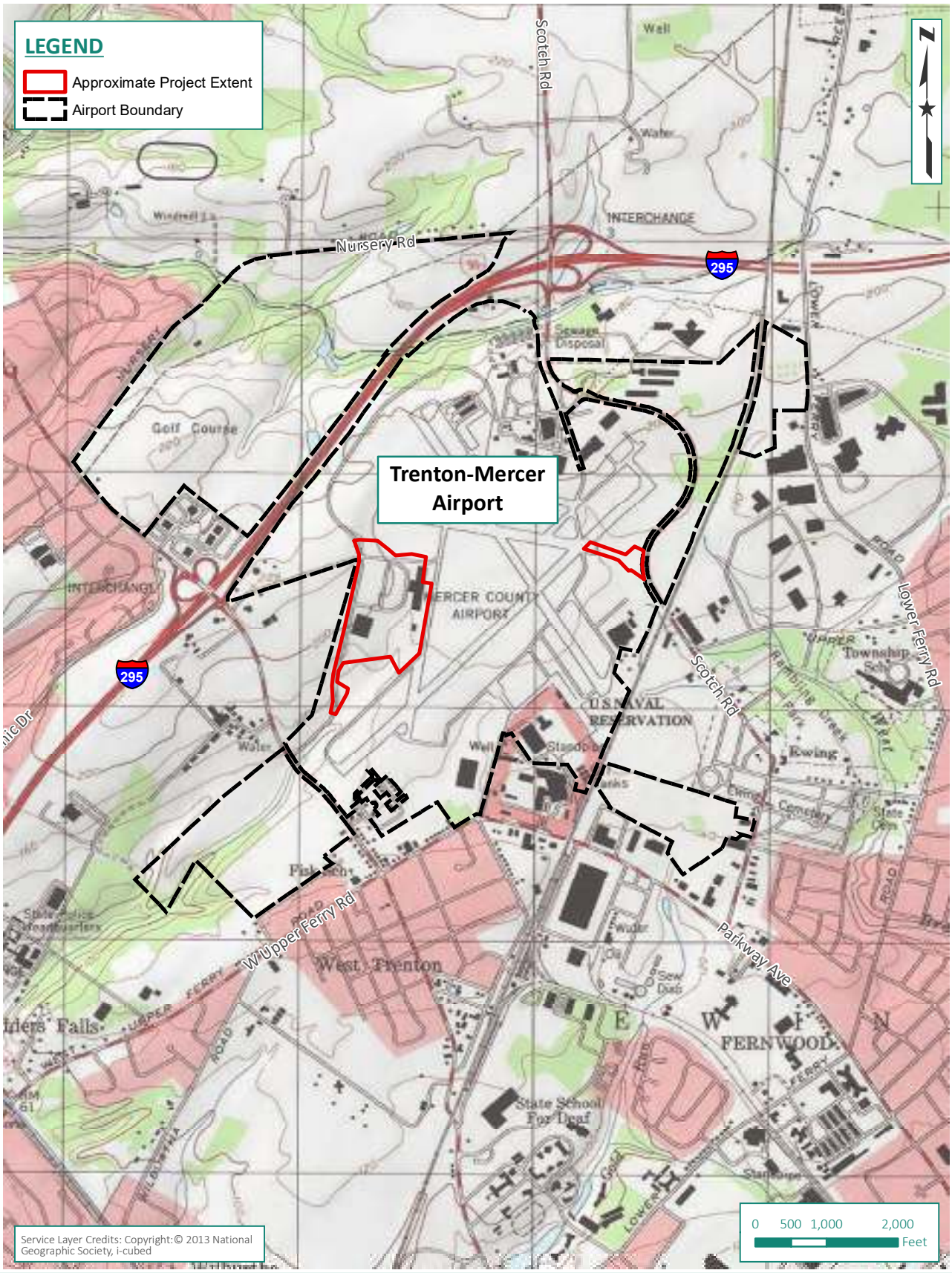

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Figure 1-2: Aerial Map

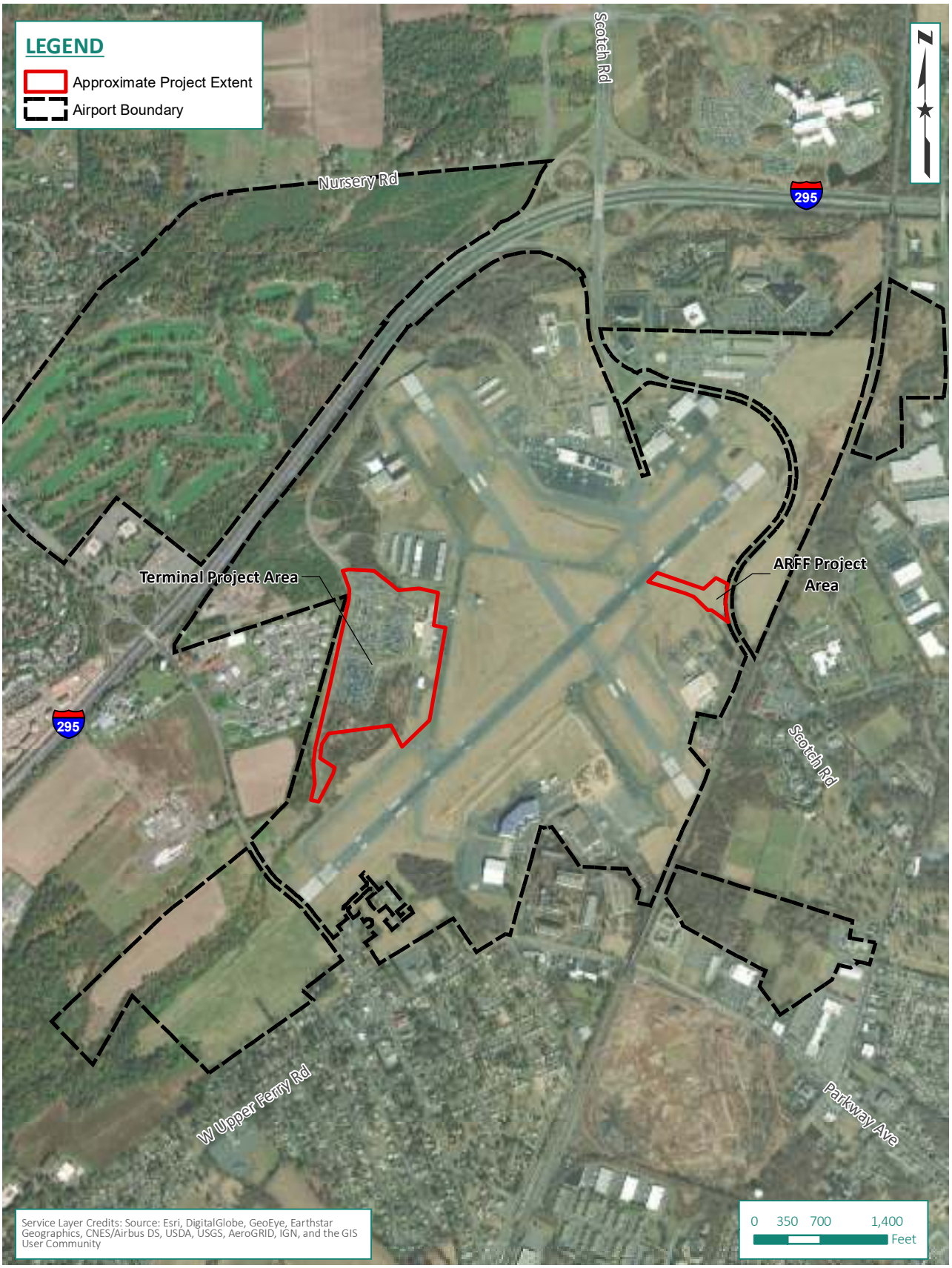

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Table 1-1: FAA Approved Forecast

Year	Enplanements
2016	314,665
2020	358,728
2025	396,358
2035	476,507

Source: FAA TAF, 2014, Trenton-Mercer Airport Master Plan Update, McFarland-Johnson, Inc. & Urban Engineers, June 2018.

The AMPU involved the review of various forecast scenarios to predict future enplanements. An average of the scenarios was used to develop the forecast numbers shown in **Table 1-1**.

Since the completion of the AMPU, enplanements have increased at a rate above what was anticipated in the AMPU, with the Airport reporting a total of 404,349 enplanements in 2018[1]. It should be noted that actual enplanements tend to fluctuate based on multiple factors, including but not limited to, economics, changes to airline service and fleet mix, and market demand. Specifically, at TTN, Frontier recently substituted the larger A-320 aircraft for the A-319 aircraft that historically had served TTN. The operational characteristics of the A-319 and A-320 are very similar however, depending on seating configuration, the A-320 provides 18-30 additional seats per flight. According to the AMPU, *smaller commercial service airports with less than one million annual passengers tend to experience fluctuations in activity and demand when service patterns change*. Despite these year over year variations, the long-term activity levels are expected to resemble forecast enplanements. AMPU recommended a terminal replacement of approximately 125,000 square feet (SF) in order to accommodate existing and future passenger enplanements. The proposed terminal is sited so as not to impact navigational aids, line of sight, or utilities currently serving the Airport. The proposed terminal design is based on the approved forecast that could include simultaneous operations requiring multiple aircraft to enplane or deplane during peak hours. It is not common for more than two aircraft to simultaneously load/unload in the existing condition. While scheduling of aircraft arrivals/departures is subject to the individual airlines ability to process the passengers on those aircraft, the number of air carrier operations in the approved forecast does not increase by a level where the anticipated usage differs significantly from the existing. Multiple simultaneous operations are not typically scheduled at this Airport. They periodically occur due to circumstances beyond the control of the Airport, such as weather delays, and when that happens, there will be the ability for the facility to safely process the passengers using the four proposed parking positions on the apron that correspond with four hold rooms in the terminal building.

Starting in March 2020, a global COVID-19 pandemic caused a very significant reduction in demand for air travel around the globe, including at TTN. As of January 2021, the COVID-19 pandemic is ongoing and the impact on the air travel demand and the airlines remains substantial.

[1] FAA Air Carrier Activity Information System (ACAIS). https://soar.airports.faa.gov/reports/mail_em_rpt.cfm?link=14

The global COVID-19 pandemic of 2020 began impacting TTN enplanements significantly in March 2020. As shown in the Table 1-2 below, monthly enplanements dropped from 35-36,000 in January and February to approximately 19,000 in March, then just 124 in April.

Table 1-2: 2020 Enplanements

Month	2020 Enplanements
January	35,027
February	36,448
March	19,039
April	124
May	2,434
June	4,262
July	3,167
August	2,138
September	4,364
October	6,083
November	5,046
December	9,791

Source: Mercer County

Monthly enplanements began to recover in May 2020, increasing to 9791 enplanements in December. While still well below the January and February peaks, the trends point to a sustained increase in enplanements as the recovery continues. A review of Frontier's planned schedule for late January through March 2021 demonstrates the confidence of the airline in the TTN market. Planned weekly departures are shown in the table below.

Table 1-3: 2021 Frontier Schedule

Period	Weekly Departures	Seats (174 each)*
1/24-1/31/21	19	3,306
January Total		**3,306**
2/1-2/7/21	17	2,958
2/8-2/14/21	16	2,784
2/15-2/21/21	17	2,958
2/22-2/28/21	17	2,958
February Total		**11,658**
3/1-3/7/21	18	3,132
3/8-3/14/21	26	4,524
3/15-3/21/21	26	4,524
3/22-3/28/21	26	4,524
3/29-3/31/21	8	1,392
March Total		**18,096**

Source: Frontier

**Frontier operates 168 seat and 180 seat variants of the A-320. For purposes of this analysis, it was assumed that the two A-320 variants would be used equally resulting in 174 seat average.*

As shown, the planned February and March schedules show 11,658 seats available in February, increasing to 18,096 seats in March. If the aircraft operate with 80% load factors, enplanements would be approximately 9,300 in February and 14,476 in March, continuing the recovery trend that developed in second half of 2020. This is a conservative estimate. Load factors during the November 2020 to January 2021 holiday season were 90-95%. These high load factors further support that the recovery is underway.

Industry experts and organizations widely believe that recovery is closely tied to the success of the COVID-19 vaccine rollout and consumer confidence. Internet searches regarding predictions of recovery in the air travel industry identify ranges of 4-7 years for recovery to 2019 levels. Airlines for America data accessed on January 26, 2021 https://www.airlines.org/dataset/impact-of-covid19-data-updates/# projected an optimistic case scenario of U.S. Airline passenger traffic exceeding 2019 levels in 2024 and a pessimistic scenario of traffic levels approximately 15% below 2019 levels in 2024. The optimistic scenario assumed better than expected vaccine efficacy, standardized testing, and a strong resurgence of business and leisure travel. The pessimistic scenario assumed that the vaccine is less effective than hoped and the rollout of the vaccine is troubled. It further assumed that the economy falters and travel generally lags. TTN's enplanements in 2019 were approximately 461,000. Using Airlines for America's pessimistic scenario would result in enplanements of nearly 392,000 in 2024, which is just below the TTN FAA approved forecast for 2025 of 396,358.

United Airlines noted in their January 2021 earnings[2] call that they are projecting that leisure travel will recover quickly in 2021, with business travel taking 18-24 months to recover. Similarly, Delta Airlines stated in their January 2021 earnings[3] call that they are projecting sustained recovery beginning in Summer 2021 and that their customer surveys show that 42% of respondents expect full recovery in 2022. While neither Delta nor United Airlines serve TTN, their publicly stated positions regarding the air travel recover project optimism that the industry will recover quickly.

TTN travelers are predominantly leisure-oriented traveling to domestic destinations. As noted above, leisure travel is expected to recover quickly in 2021. As such, TTN is well positioned to benefit from pent up travel demand for those seeking to take deferred vacations and visit family and friends in other parts of the country. In January 2021, Reuters[4] reported that Frontier plans to resume pilot hiring in July. Resumption of hiring suggests that Frontier is confident in the

[2] https://news.alphastreet.com/united-airlines-holdings-inc-ual-q4-2020-earnings-call-transcript/

[3] https://s2.q4cdn.com/181345880/files/doc_financials/2020/q4/CORRECTED-TRANSCRIPT_-Delta-Air-Lines,-Inc.(DAL-US),-Q4-2020-Earnings-Call,-14-January-2021-10_00-AM-ET.pdf

[4] https://www.reuters.com/article/us-american-airline-jobs-idUSKBN29O224

recovery in 2021. Further, the Frontier's increase in flights at TTN demonstrates their confidence in the recovery of the TTN market.

The existing terminal is undersized for current enplanements and level of service and will remain undersized to accommodate even a modest recovery in enplanements. Given the role of social distancing and wearing of masks to prevent transmission of this disease, if social distancing continues to be utilized by users of the Airport moving forward, the terminal is significantly undersized to accommodate a post-COVID-19 pandemic socially distanced Airport experience. The photograph shown in Exhibit 1-1 was taken during Thanksgiving weekend in 2020 and demonstrates the undersized TTN terminal hold room at 30% of the normal schedule. Given the high level of confidence that enplanements will eventually resume the long-term growth trends, albeit delayed, that were identified in the MPU, it is prudent to continue advancing the terminal project in anticipation of recovery.

Exhibit 1-1: TTN Hold Room

The existing terminal is undersized with inadequate space for hold rooms, restrooms, concessions, airline offices and operations, TSA screening, baggage drop/screening, and baggage claim. The Airport administration and law enforcement functions are not located within the building due to existing space constraints. The existing terminal operates at a very poor level of service and does not accommodate the current demand during peak times, irregular operations and unusual circumstances, such as inclement weather, or the forecasted future demand. During peak times at the airport, when multiple aircraft are scheduled for departure during a short period of time, there may be more than 350 people waiting to board aircraft for their flights. The existing terminal does not have the space or capacity to function with the number of passengers identified. This situation is exacerbated during times when weather delays departures at TTN or arrivals from other cities are delayed in arrival and passengers are waiting on those aircraft arrivals for their departures from TTN.

Based on the New Jersey Statewide Airport Economic Impact Study dated September 2016 (see **Appendix B**), total employment at the Airport was estimated at 1,258 and the third largest employer within the New Jersey airport system. Both general aviation direct and secondary on-airport businesses (e.g. Fixed Based Operator, corporate/charter aviation, flight schools, aircraft sales and maintenance) and visitor employment (e.g. visitors who spend money to support jobs in the area such as at restaurants, hotels, retail, entertainment) account for total employment numbers. For those 1,258 jobs created by TTN, total payroll was estimated at $83,386,500. GA output was estimated at $266,416,700, which represents total annual sales and capital improvements for airport tenants. Along with Teterboro and Morristown, these three airports account for 62 percent of the total GA employment for the State. Commercial service impacts are a direct result of airline and airline-related activities. Total commercial employment was estimated at 311, commercial service payroll total was estimated at $24,226,500, and total output was

estimated at $80,348,200. In summary, TTN is a critical part of not only the local economy by providing jobs and bringing revenue into the area, but also part of New Jersey's overall economy.

The EA has been prepared in accordance with FAA guidelines and is in conformance with the National Environmental Policy Act (NEPA) of 1969; the Council on Environmental Quality (CEQ) regulations set forth in 40 Code of Federal Regulations (CFR) Parts 1500-1508, the FAA 1050.1F Environmental Desk Reference dated June 2015, and FAA Orders 1050.1F, *Policies and Procedures for Considering Environmental Impacts,* and 5050.4B, *National Environmental Policy Act Implementing Instructions for Airport Actions*. Upon reviewing this document, the FAA will determine if any of the environmental or socioeconomic impacts identified herein are significant under NEPA and, therefore require further study.

The general public, local communities, and authorities with environmental responsibility will be given an early, effective opportunity to express their opinion on the Draft EA before there is a finding on the EA. Broad-based stakeholder involvement is vital for a valid EA, as it is for project planning and development. Public participation has a benefit of improving project design and the quality of the EA.

PROPOSED ACTION

The Proposed Action, further detailed in Chapter 3, *Alternatives Analysis*, includes all the improvements required with the construction of the proposed adequately sized terminal building, while complying with current FAA and New Jersey State Department of Transportation (NJSDOT) standards. The EA is necessary for the Proposed Action for ALP approval of certain project components and to develop an environmental determination to support the forthcoming Passenger Facility Charges (PFC) application both of which are federal actions subject to review under the National Environmental Policy Act. The Proposed Action is expected to be funded through a combination of PFCs and Mercer County funds.

The Proposed Action consists of the following major elements to meet the overall purpose as detailed in the AMPU in order to meet existing and forecasted terminal needs:

- Provide approximately 125,000 square foot new terminal building and associated Airport improvements to replace the existing terminal and infrastructure, which will enable:
    - Four passenger aircraft parking positions (same as existing) with commensurate boarding and hold room facilities. The proposed apron parking would include design and construction of concrete apron for three A-320 or Group III aircraft. The fourth parking position is reusing the location of the existing southern parking position on the existing apron. The configuration would eliminate the second parking position on the existing apron due to separations between aircraft and safety operations envelopes around the aircraft. The parking position impacted by the safety envelope and the two northernmost existing aircraft parking positions would be repurposed for the storage of ground service equipment, use by airfield operations, and as an area to provide flexibility in staging or moving of aircraft during peak hours or weather delays that may cause late arrivals or early departures. There is no intent to provide separate formal remote overnight (RON) aircraft parking facilities as the approved forecast does not anticipate the need to

accommodate additional aircraft operations. There is also no intent to enplane/deplane aircraft in this area during the peak hours; maintaining the area as paved apron would allow a loaded aircraft to temporarily hold in a nearby location while awaiting availability of an occupied gate area during the infrequent (usually storm related) times that delayed flights wreak havoc on airport operations. The terminal design does not include provisions for, nor does the forecast anticipate, the use of apron parking north of the proposed aircraft parking for the replacement terminal for the loading or unloading of passengers.

- Terminal apron improvements as needed to facilitate boarding/deboarding of aircraft.
- 10 ticket counters
- 3 Transportation Security Administration (TSA) screening lanes
- Expand baggage make-up and claim facilities, passenger waiting areas, concession areas, passenger circulation, and building support spaces
- Reconfiguration of vehicular circulation to improve wayfinding and provide access to the terminal area
- Landside Improvements
  - Reconfiguration of parking areas to improve access and circulation within the parking lots and along the adjacent roadways. The reconfiguration will allow for the addition of spaces lost as a result of the new terminal facility
  - Addition of a terminal parking garage to provide covered parking within walking distance of the new terminal building to meet the forecast demand for vehicle parking based on enplaned passengers while providing an improved level of service for travelers parking in the vicinity of the new terminal building
  - Demolition of existing terminal facility
- Other Facility Improvements
  - Demolition and relocation of existing Aircraft Rescue and Firefighting (ARFF) facility to accommodate proposed terminal facility
  - Relocation of existing vehicle impound lot and working canine kennels and canine holding areas adjacent to the ARFF building to available off-airport sites to accommodate proposed terminal facility and address existing deficiencies

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2. Purpose and Need

The Purpose and Need statement in this NEPA document describes the deficiencies being addressed and provides solutions to the terminal needs under the Proposed Action. The statement documents the justification for the project and provides the basis for evaluating the effectiveness of alternatives.

2.1. PURPOSE

The purpose of the Proposed Action is to facilitate the accommodation of existing and 2035 forecast passenger demands into a new terminal building, including baggage handling, security, passenger comfort, and terminal administrative needs, while meeting the needs of the TSA, airlines, concessionaires, and passengers, all while providing a modern gateway for the surrounding Mercer County region. The Proposed Action will aim to address existing chronic and severe passenger terminal area congestion and lack of services due to significantly undersized facilities.

2.2. NEED

The existing main terminal building was constructed in 1975. An additional, modular inbound baggage claim facility was opened in two phases in 2013 and 2017. The physical condition of the older, main structure (heating, ventilation and air conditioning (HVAC), plumbing, roofing, windows, finishes, etc.) is in various stages of aging and disrepair. The existing terminal building and other Airport facilities can be seen on the ALP, **Figure 1-3**. The existing terminal area, including the terminal buildings, access road, and parking areas, do not provide many of the basic passenger amenities and comforts expected by modern travelers. The existing terminal has numerous deficiencies, which have resulted in safety, security, efficiency, and comfort concerns. Terminal deficiencies include:

General Building Structure

- The existing terminal was constructed in 1975 and exceeds the FAA recommended minimum useful lifespan of 40 years (FAA Order 5100.38D, Change 1, February 26, 2019).
- The existing terminal building and baggage facility comprises approximately 28,000 SF, and an analysis of required space indicates a need of approximately 125,000 SF. (Note approximately 5,000 SF of Airport administrative and law enforcement space is located off Airport property due to undersized facility. Administrative functions housed in the off-site leased space include Airport administrative offices, security, and operations functions. These functions would normally be located in the terminal. For purposes of this EA, the 5,000 SF of leased off-site space is included in the existing 33,000 SF Terminal referenced throughout this document. The existing terminal was constructed in the 1970s to accommodate approximately 170 peak hour enplaned passengers (based on seating capacity) and currently services a minimum of 276 peak hour passengers based on schedule, as well as number and type of operations that have changed over the years due

to industry changes and passenger demands, therefore exceeding capacity and causing passenger congestion.

- The existing terminal does not comply to American Disabilities Act (ADA) standards.
- The existing terminal consists of two separate buildings, resulting in passenger confusion. The main terminal building accommodates departing passengers with ticketing, security, and a hold room. When a passenger enters the terminal, there are two sets of stairs going up to the restaurant/non-secure seating area. There is ticketing on the right, then bag drop at the rear of the lobby/foyer to the left (north). Passengers then return south to downstairs where they are screened by the TSA. The paths of travel for passengers can be difficult due to grade changes within the building and the site. There is no clean line of travel and no visuals to where the passenger would end up, be that the hold room or apron/plane.
- The baggage claim building to the north of the terminal building accommodates incoming baggage for passengers.

Items in Need of Replacement

- The existing terminal building HVAC is outdated and needs replacement, as it is unable to accommodate the dynamic nature of heating and cooling loads in the facility. It is unable to sense the changing conditions and thereby modify the operation of the HVAC equipment accordingly. Modern HVAC systems are designed to meet or exceed the requirements of the latest version of ASHRAE Standard 90.1 – *Energy Efficient Design of New Buildings except Low-Rise Residential Buildings*. The existing terminal was not designed to the current standards such as the 2015 State of New Jersey Building Code with 2015 addendums as well as the other relevant standards related to modern HVAC system design and installation.

Layout

- The existing terminal consists of additions that were added over time, resulting in an inefficient layout, flow of passengers, and passenger congestion. When Frontier began operations at the Airport in late 2012, hold room modifications moved baggage claim from the terminal to an outbuilding and expanded it later.
- The current hold room does not provide the necessary space required for the existing operations.

Passenger Traffic and Convenience

- The existing single terminal hold room seating capacity is inadequate for current passenger enplanements and causes repeated congestion issues during peak passenger usage. Undersized hold rooms create congestion at the TSA checkpoint and reconciliation area; provide an inability to move comfortably between the seating, concessions, or restrooms, and prevent the plane from loading efficiently.
- The recommended number of enplaned passengers to restroom square foot ratio is approximately 3.7 passengers to one square foot vs the current ratio of 8.6 passengers to one square foot. This is 2.3 times below the recommended ratio.
- The existing terminal building does not have sufficient space to house concessions for passenger convenience.

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- The Airport currently uses four aircraft parking positions. Passengers are required to leave the terminal through one of two doors and walk outside to aircraft via the apron hardstand. The recommended configuration is for a passenger boarding bridge to serve each aircraft parking position to minimize air conditioning/heating in the aircraft during boarding and provide passengers with protection from the weather (FAA AC 150/5360-13, July 13, 2018). Passenger boarding bridges also increase passenger safety, especially during winter operations when icy conditions can increase the potential for accidental falls during ground boarding under existing conditions.
- Four passenger boarding bridges (PBBs) would provide improved passenger convenience and safety and replace the existing outdoor boarding hardstands.
- Ground service equipment storage would be provided on the remaining apron area.

TSA

- The existing terminal was constructed prior to implementation of current TSA requirements, and as such, the TSA checkpoint does not meet standards.
- New security requirements recommend approximately 3,460 square feet for two screening lanes (Airport Cooperative Research Program (ACRP)Report 25, *Airport Passenger Terminal Planning and Design,* 2010*)*
- The current configuration has 1,720 square feet for two screening lanes.
- The existing terminal security measures, including surveillance systems, are inadequate.
- The existing TSA office space within the terminal only accommodates a fraction of the required TSA office space and does not accommodate a break room or full and separate secondary passenger screening room. Currently, screening operations occur at the bottom of the terminal stairs next to the secure holdroom. Offices, a break room, and secondary screening rooms would be included in the design for the new terminal.

Access Road and Parking

- Existing terminal access roadway and parking has inefficient wayfinding and existing passenger parking capacity is inadequate for passenger forecast demand. Analysis conducted in the Master Plan Update identified a need for a total of approximately 2900 parking spaces to meet future demand. See Chapter 3 for a detailed discussion of parking demand.

Additional supporting information of the existing terminal and deficiencies noted above can be found in Appendix B. Photographs of the existing terminal follow:

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Photo 1: Baggage claim facility airside entrance line (Date: April 2016)

Photo 2: Baggage claim facility (Date: April 2016)

Photo 3: Terminal passenger security area (Date: April 2016)

Photo 4: Terminal apron with aircraft boarding ramp (Date: April 2016)

Photo 5: View of terminal building from apron (Date: April 2015)

Photo 6: View of terminal building from parking area (Date: April 2015)

The recent increases in passenger enplanements at TTN are the result of demand within TTN's service area for low-cost airline fares as explained in the AMPU. In 2017, Frontier Airlines, a low-cost carrier (LCC) servicing TTN, moved from the smaller Airbus A319 aircraft, which seats 156-162 passengers, to a larger and more cost efficient, Airbus A320 aircraft, which seats up to 180 passengers, depending on configuration. The increase in passenger capacity contributed to the increase in enplanements without adding operations. The 2018 actual enplanements of 404,349 surpassed the 2025 approved forecasts from the 2018 AMPU. As stated in the Introduction of this EA, it is normal for enplanement fluctuations to occur for various reasons. Actual enplanements may experience ups and downs over the years. Whereas, forecast enplanements typically show a consistent increase over the forecast period.

The need to right-size the terminal is not related to the Airport operations[1] which are different than enplanements. The itinerant and local operations, including the Airport's flight school, have been largely responsible for the increase in operations at the Airport and not the LCCs.

The actual increases in enplaned passengers have occurred despite the congestion of the existing terminal building. The growth in enplanements despite the existing terminal conditions demonstrates the strength of the market and the value proposition offered by TTN. Addressing the terminal deficiencies would not increase passenger enplanements, but rather would enhance the experience of passengers already utilizing TTN and those that would do so in the future. Left unaddressed, the terminal area would continue to experience chronic and worsening congestion and operational difficulties associated with passenger overcrowding.

The existing functional areas and future needs of the terminal, including the deficiencies for each area are provided in Chapter 3 and **Appendix B**. The AMPU included a preliminary programming level analysis of the terminal size requirements utilizing the following guides:

- FAA Advisory Curricular (AC) 150/5360-13, *Planning and Design Guidelines for Airport Terminal Facilities*
- FAA AC 150/5360-9, *Planning and Design of Airport Terminal Facilities at Non-Hub Locations*
- TSA *Checkpoint Design Guide (CDG)*
- ACRP Report 25, *Airport Passenger Terminal Planning and Design*

That analysis determined that an approximately 115,000-125,000 SF terminal was needed. Since the AMPU, Mercer County has undertaken a more detailed analysis to determine the terminal needs. The analysis resulted in a required terminal size of 125,070 SF, with most of the increase attributable to providing additional space for baggage handling, concessions, and general circulation. There is an overall existing deficiency of approximately 92,000 SF. This would provide Level of Service (LOS) C, which is intended to strike a balance between competing constraints of the adjacent areas, peak hour use, passenger experience, and cost. Supporting documentation for the proposed terminal sizing is provided in **Table 2-1** below and **Appendix B**.

[1] Aircraft operations are the landing, takeoff or touch-and-go procedure by an aircraft on a runway at an airport.

2.2.1. Terminal Programming and Facility Sizing

General

ACRP Report 25: *Airport Passenger Terminal Planning and Design* produced by the serves as one of the principal means by which the Airport industry can develop innovative near-term solutions to meet demands placed on it. The ACRP is part of the Transportation Research Board (TRB) and is funded by the National Academies of Sciences, Engineering, and Medicine and the FAA. ACRP Report 25, published in 2010 provides guidance in planning and developing airport passenger terminals and assists users in analyzing common issues related to airport terminal planning and design.

In addition to ACRP Report 25, publications and concepts developed by Airport Authorities Coordinating Council (AACC), now Airports Council International (ACI), and International Air Transport Association (IATA) have been published as part of AACC/IATA's *Guidelines for Airport Capacity/Demand Management*, second edition 1990, and third edition 1996.

As part of the evaluation of the existing terminal at TTN, the function of the spaces with the terminal were evaluated relative to the ACRP Report 25, the AACC/IATA's *Guidelines for Airport Capacity/Demand Management*, and the FAA's Advisory Circular AC 150/5360-13A, *Airport Terminal Planning*, 7/13/18.

The existing terminal operates at a LOS F, which is based upon both quantitative and qualitative analysis of the functions and operations within the building, comparisons with other airport terminals, and standards/recommendations for terminal programming and space planning.

Preliminary meetings were held with TSA for programming of space and determination of equipment requirements. When the terminal design proceeds, further meetings will be held to confirm those elements.

Level of Service Definition and Standard

The definitions for LOS were modified as follows and have remained the IATA LOS definitions that most people use:

A Excellent LOS; condition of free flow; no delays; excellent level of comfort.

B High LOS; condition of stable flow; very few delays; high level of comfort.

C Good LOS; condition of stable flow; acceptable brief delays; good level of comfort.

D Adequate LOS; condition of unstable flow; acceptable delays for short periods of time; adequate level of comfort.

E Inadequate LOS; condition of unstable flow; unacceptable delays; inadequate level of comfort.

F Unacceptable LOS; condition of cross flows; system breakdown and unacceptable delays; unacceptable level of comfort.

For the various areas within the Terminal, the following table identifies the LOS standards.

Table 2-1: Level of Service Standards

	Level of Service									
TERMINAL AREA	A		B		C		D		E	
Check-in Queue Area	19.4FT²	1.8M²	17.2FT²	1.6M²	15.1FT²	1.4M²	12.9FT²	1.2M²	10.8FT²	1.0M²
Wait/Circulate	29.0FT²	2.7M²	24.8F²	2.3M²	20.5FT²	1.9M²	16.1FT²	1.5M²	10.8FT²	1.0M²
Hold Room	15.0FT²	1.4M²	12.9FT²	1.2M²	10.8FT²	1.0M²	8.6FT²	0.8M²	6.5FT²	0.6M²
Baggage Claim	21.5FT²	2.0M²	19.4FT²	1.8M²	17.2FT²	1.6M²	15.1FT²	1.4M²	12.9FT²	1.2M²
Government Inspection Services	15.1FT²	1.4M²	12.9FT²	1.2M²	10.8FT²	1.0M²	8.6FT²	0.8M²	6.5FT²	0.6M²

Source: *Guidelines for Air Capacity/Demand Management*, Third Edition, ACI/IATA, 1996

LOS F is interpreted as Terminal Area less than LOS E.

Guidelines for Airport Capacity/Demand Management identifies that LOS C is typically recommended as a design objective for the design hour. The design hour is the number of passengers in the peak hour of an average day in the peak month and are also referred to as peak hour passengers as noted in ACRP Report 25 – Airport Passenger Terminal Planning and Design. The design hour is used because it denotes good service at a reasonable cost. For the planning of this terminal, LOS C was the basis of design for sizing the terminal appropriately for passenger peaks and acceptable waiting times for processors. The processors for a terminal building are anywhere a process takes place involving passenger movement or queuing and these include the airline check-in counter and baggage drop, TSA security checkpoint, hold rooms and passenger boarding bridge processing, and baggage claim. Flexibility while using the LOS guidelines in planning and design allows for the optimization of terminal sizing for the forecasted enplanements and passenger use. The added benefit of flexibility in sizing of queuing for the airline ticket counters and baggage drop, TSA security checkpoint, hold rooms and passenger boarding bridge processing, and baggage claim is that they allow for extensions of waiting and queuing lines during times of heavy demand and peaks during the day. The flexibility in sizing of queuing for these functions also provides additional area for the spreading out of passengers over a longer distance to provide social distancing during, and after, the COVID-19 pandemic, and in anticipation that social distancing will become more acceptable and common practice moving forward, or for social distancing for a future global pandemic.

As noted previously, the basis for design for the Replacement Terminal and of all of the separate sections of the building is LOS C. The major areas include the processors and connecting or adjacent spaces which are the ticketing lobby, TSA checkpoint and queuing, passenger gates and hold rooms, concessions and restrooms, baggage claim, and circulation spaces. As the design for the building progressed from planning into Concept Design and Schematic Design, the building limits (footprint/exterior walls) and each of the various major components of the building are designed. As the shape of the building is then sized to meet both the function for the various spaces, and any budgetary constraints, the interior spaces continue to be coordinated with stakeholders. As the coordination of the interior spaces within the building continues to be

progressed in design, the major areas noted above each push and pull the interior limits they share with other adjacent areas, whether they are walls, separations, changes in architectural finishes, or changes in use between those areas. During this part of the design, the exterior building limits and shape are final however the interior configuration may change somewhat. The design progression may result in changes to the interior space layout and areas that may result in a LOS higher than LOS C, however, no spaces are intentionally designed for a LOS better than C. Note that when referenced as LOS C based on the ACRP 25 Report, LOS C values are minimums and the place to begin the design. The consequence to the design is that the terminal would always be larger than the minimum standards due to the inclusion of circulation space, structural and mechanical space, and the space that is developed and added based on the habits of travelers within modern terminals.

Trenton Mercer Airport Replacement Terminal Facility Requirements

The facility requirements, including space planning and programming for the replacement terminal, were identified during the Master Plan for TTN. The standards within ACRP Report 25: *Airport Passenger Terminal Planning and Design* are the basis for the minimum sizes of spaces within the terminal. Terminal layouts were modified as the design progressed to facilitate circulation of passengers, separation and/or distinction between processors or movements within the building, and to maintain LOS C in the areas of the TSA checkpoint, circulation spaces, concessions, gate holdrooms, baggage claim, and meeter/greeter areas in the public lobby. The space allocations are further refined to reflect the needs of the passengers typically using the Airport. For example, airports with more leisure travelers tend to have larger baggage handling space requirements due to larger volume of checked bags and bulky recreational equipment when compared to typical business travelers. Those airports also tend have more families and require more space during queuing, more access and use of concessions and amenities including restrooms. TTN is an airport that has more leisure travelers than business travelers, more families traveling together, and thus the space is optimized for the needs of those users. It is common knowledge that Frontier, as the only carrier at TTN, is an LCC carrier that targets leisure and family travel.

The existing terminal and replacement terminal planning are identified in Table 2-2 below. A column is also added for areas where the Terminal Planning Spreadsheet from the ACRP Report 25, where values were able to be calculated. Additionally, notations are added in the "Proposed Terminal Program Notes" column referencing appropriate space programming at similar sized/function/classification airports designed in the last 10 years by the architect of the proposed terminal. Similar airports include the following; Roanoke-Blacksburg Regional Airport (Virginia), Newport News/Williamsburg International Airport (Virginia), Meadows Field Airport (Bakersfield, California), Helena Regional Airport (Montana), Missoula International Airport (Montana), and Billings Logan International Airport (Montana).

Annual Enplanements – 476,507 (Forecast Year 2035)

Peak Hour Enplaned – 490

Table 2-2: Terminal Planning

Program Area	Existing Terminal	ACRP 25 Program	ACRP 25 Calculation	Proposed Terminal Program	Proposed Terminal Program Notes
Ticketing					
Counter Positions (#)	6	14	40% of use by pax for counter and kiosks	14	
Counter Length (lf)	32	45	Existing counter lf	70	5 lf/position – counter and half shared scale
Counter Area (sf)	500	675	Based on 15 ft counter depth	700	10 sf/position – counter depth and standing depth to baggage belt
Check In/Queuing Area (sf)	700	345	sf based on positions and existing counter length	2,450	35 sf/counter length
Airline Offices (sf)	2,750	2,250	50 sf/counter length	2,950	30 sf/counter length
Baggage Makeup (sf)	100	-	Baggage Makeup is for back of house/cart circulation	6,900	100 sf/counter length
Airline Operations (sf)	0	-	-	2,010	30 sf/counter length
Hold Rooms					
Gates (#)	4	4		4	
Hold Room Waiting (sf)	3,420	4,300 sf per gate / 17,200 sf - 4 gates	Calculation based upon input for 180 seat aircraft with high utilization, high seating percentage, large number of families/ children. Corresponding Narrowbody standard (145 seats) is 4,180 sf/gate and 757 standard (185 seats) is 5,460 sf/gate	2,825 sf per gate / 11,300 sf – 4 gates	2 – A320 180 seat Aircraft = 6,320 sf 2 – RJ 70-90 seat Aircraft = 2,720 sf Increase by factor of 1.25 to add space for high number of families/children
Baggage Claim					

Claim Lobby Frontage (lf)	85	244 (Demand) 130 (Aircraft)	Based on peak hour arrivals and percentage of passengers checking bags	340	2 – 170 lf bag claims
Claim Lobby Area (sf)	2,895			8,500	25 sf per claim lf
Baggage Drop Off (sf)	2,400			10,125	20% above 25 sf per claim lf
Rental Cars					
Agencies (number)	1	-	-	3	3 families of rental car companies (6 individual rental car companies)
Counter Frontage (lf)	18	-	-	60	20 lf per family
Counter Area (sf)	180	-	-	600	10 sf per lf
Queuing Area (sf)	80	-	-	600	Same area as counter
Office/Storage (sf)	0	-	-	720	12 lf depth per family
Concessions					
Food/Gifts (sf)	2,950	-	-	7,475	15 sf per passenger based on airport experience/similar airports*
Public Restrooms					
Public Restrooms (sf)	1,300	-	-	3,900	8 sf per passenger based on airport experience/similar airports*
Public Lobby Seating					
Meeter/Greeter Waiting (sf)	1,550	-	-	8,650	15 sf per passenger for seating and 3 sf per passenger for waiting based on airport experience/similar airports *

Security					
Screening Lanes	2	-	-	3	Based on TSA Standards
Passenger Screening (sf)	1,720	4,200	Based on lanes and typical screening lane spacing	5,175	Based on TSA Standards
Security Queuing (sf)	630	1,200	Based on lanes and typical screening lane spacing	900	Based on TSA Standards
TSA Office Support (sf)	300	-	-	2,000	Based on TSA Standards
Baggage Screening (sf)	600	3,380	Based on design hour bag load at 1.5 bags and 60% passenger checking baggage	3,450	Based on TSA Standards
Administration					
Office/Operations (sf)	4,000 (offsite)	-	-	5,425	Need based
Law Enforcement (Sheriff) (sf)	960 (offsite)	-	-	890	Need based
Emergency Medical Svcs. (sf)	0	-	-	150	Need based
Circulation/Structural/Support					
Circulation/Structural/ Support (sf)	6,645	9,900	Concourse circulation only based on length of concourse and wingspan	40,130	Circulation for comfort level. Structural Columns/Walls. Mechanical and support equipment based on sizes of spaces and mechanical load of the terminal

* Similar airports include small or non-hub commercial service airports with less than 6 gates and constructed in the last 15 years.

Source: Urban Engineers

The resulting terminal design shown in **Table 2-2** identifies areas that have square footages above or below the ACRP Report 25 LOS C minimums. Design throughout the planning and programming of the terminal, started with the ACRP LOS C minimums and was increased or decreased based on numerous competing factors evaluated and adjusted as the design progressed. These include the layout of the spaces and passenger path of travel and wayfinding; back of house hallways and passages; building code and egress requirements; adjacencies of areas within the terminal by function and use; the sizes and method of heating and cooling the terminal and associated equipment rooms for mechanical equipment and ducts; sizes and layouts of electrical systems to serve the terminal, baggage, and mechanical systems; layout of efficiency of the structural framing and structural systems within the building and the sizes of columns, floors, spans between columns, etc.; exterior cladding and exterior finish systems; functional baggage system layouts for delivering baggage to a standard TSA baggage check system, outbound baggage systems for delivery of bags to the aircraft by tug/cart, inbound baggage systems for delivery of incoming baggage from aircraft to the terminal by tug/cart, baggage claim devices, and associated baggage conveyors to connect all of the functions noted; functional and required TSA security checkpoint standards; and other reasons.

- Ticketing Counter Length - 45 ft ACRP vs 70 ft Planning
  The counter length was increased above minimums to account for the sizes of weight scales, and the size of the work station layout - computer, cabinet, monitor, case work, etc.
- Ticketing Counter Area – 675 sf ACRP vs 700 sf Planning
  The area between the ticketing position and the baggage drop belt behind the ticketing counter is increased from minimums to align with the adjacent wall locations for the exterior wall and stair/elevator/restroom core on either end of the ticketing counter and the structure/columns along the wall behind the baggage belt.
- Check-in/Queueing Area – 345 sf ACRP vs 2,450 sf Planning
  The area for queueing at the ticketing counter is directly related to the length and therefore has been increased based on that length. While airports move more toward automated ticketing kiosks or mobile options, the area for ticketing is needed based on design hour/peak hour passenger traffic.
- Airline Offices – 2,250 sf ACRP vs 2,950 sf Planning
  The area of airline offices is directly related to the length of the counter. The length is determined by equipment size and structural framing for the terminal. Since the office space is needed adjacent to the counter, the space occupies the same width of area behind the counters based on the adjacent wall locations for the exterior wall and stair/elevator core on either end of the office space and the structure/columns along the wall behind the baggage belt and behind the offices.
- Baggage Makeup – Undefined in ACRP vs 6,900 sf Planning
  The area of baggage makeup is for tug/cart circulation, outbound baggage displays for tug/cart pickup and transfer to aircraft. ACRP does not identify this function as it is unique to each airport and impacted by availability of space, automation and systems, baggage conveyors and security screening equipment, electrical and mechanical needs of the

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baggage equipment and makeup areas, TSA requirements, types of operations, aircraft sizes, etc.

- Airline Operations – Undefined in ACRP vs 2,010 sf Planning
  The area of airline operations is used for coordinating ground operations while aircraft are at the terminal. This includes coordinating baggage transfers, cleaning, septic, catering, fueling, and ground power/air. Space is for offices, equipment, and supplies. ACRP does not identify this function as it is unique to each airport and impacted by availability of space, requirements, types of operations, aircraft sizes, etc.
- Hold Room Waiting – 17,200 sf ACRP vs 11,300 sf Planning
  Hold room was not sized for 4 full A-320 aircraft which are the typical aircraft used at TTN. While high utilization is likely on the flights at TTN (based on current utilization and ultra low cost model by current air carrier), two full A-320 and two full large Regional jets were modelled with a factor to increase sizes to account for delays, multiple design hour/peak hour operations that are on previous and current schedules (and anticipated for future schedules).
- Baggage Claim Lobby Frontage – 244 lf ACRP vs 340 lf Planning
  The sizes of the claim devices in ACRP are based on the demand or aircraft size. The size of the display devices is based on structural framing, available equipment sizes for the display devices (sloped plate, power conveyor, etc.).
- Claim Lobby Area – Undefined in ACRP vs 8,500 sf Planning
  The area of baggage claim waiting area is based upon a comfort level around claim devices that account for waiting at claim devices, baggage, and ability to move within the space after passengers retrieve baggage. The open area of the public lobby and the structural framing/size of the building including the mechanical and electrical equipment/rooms impact the availability of space for the claim lobby. This function is unique to each airport and impacted by availability of space, requirements, types of operations, aircraft sizes, location of claim devices, structure, etc.
- Baggage Drop Off – Undefined in ACRP vs 8,500 sf Planning
  Similar to baggage makeup, this area includes space for tug/cart circulation, inbound baggage displays for tug/cart transfer of baggage from aircraft to conveyors that lead to the claim devices. ACRP does not identify this function as it is unique to each airport and impacted by availability of space, automation and systems, baggage conveyors and security screening equipment, electrical and mechanical needs of the baggage equipment and makeup areas, types of operations, aircraft sizes, etc.
- Rental Cars – Undefined in ACRP vs 1,920 sf Planning (combined)
  Rental car operations are an amenity provided within the terminal for passengers. Sizes are based upon experience with typical layouts at small hub/non-hub airports. Similar to other spaces within the terminal, ACRP does not identify this function as it is unique to each airport and impacted by the number of operators, space availability within the terminal, and if the airport sees the need to provide this amenity to its passengers.
- Concessions – Undefined in ACRP vs 7,475 sf Planning
  Concessions for food and gifts are provided as an amenity both pre-security and post security within the terminal for passengers. Sizes are based upon experience with typical

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layouts at small hub/non-hub airports. Similar to other spaces within the terminal, ACRP does not identify this function as it is unique to each airport and impacted by the design hour/peak hour passengers, availability of space, traveler profile, and passenger comfort.

- Meeter/Greeter Waiting – Undefined in ACRP vs 8,650 sf Planning
  Meeter/greeter waiting areas is a generalized area within the public space of a terminal where arriving passengers pass from the secure side of the terminal back toward the baggage claim and landside transportation. Size is based upon availability and flexibility, structural layout, and adjacent uses. ACRP does not identify this function as it is unique to each airport and impacted by the number of passengers, parking availability adjacent to the terminal, passenger profile, and if the airport sees the need to provide this amenity to its passengers.
- Security – 8,780 sf ACRP vs 11,525 sf Planning (combined)
  The difference between the ACRP areas and the planning/design area is due to the TSA standards for security checkpoints. The standards are updated regularly and are based upon TSA equipment, staffing, operations, and functions at the airport.
- Administration – Undefined in ACRP vs 6,465 sf Planning (combined)
  The location of Airport operations and administration staff, law enforcement, and emergency medical services within the terminal is standard for most small and non-hub airports. This places the administration and operations staff at the location where they are needed in lieu of remote operations. ACRP does not identify this function as it is unique to each airport and impacted by the availability of space and the priority of these functions being located within the terminal.
- Circulation/Structural/Support – 9,900 sf ACRP vs 40,130 sf Planning
  The ACRP is based on the length of the gate areas. The planning for the terminal is based upon the layout of the structural framing/size of the building including the mechanical and electrical equipment/rooms and ducts between those mechanical spaces and the occupied spaces within a building. This function is unique to each airport and impacted by availability of space, adjacent functions, passenger comfort, passenger circulation, aircraft sizes, and other factors.

As the current Schematic Design progresses into Design Development and Construction Document Design, refinement of the areas would occur as part of the design process. The LOS C minimum is used as the starting point and is based upon the design hour/peak hour passenger operations. During other times of the day, the experienced LOS may be significantly higher as there would be less passengers using the terminal. The LOS is only reviewed if significant changes to the functions, operations, or spaces such as a new TSA standard for security checkpoints is issued and require review to identify what impacts any changes have on adjacent spaces.

2.3. SUMMARY

As described in Chapter 1, TTN has been an important economic engine for the region prior to the COVID-19 pandemic and is anticipated to continue to be economically important following the pandemic based on the recovery discussed in Chapter 1. Enplanements have increased by nearly 200 percent due to LCC airline service, which started in 2012. The existing terminal operates at a LOS F and experiences chronic congestion, provides poor circulation, has poor passenger amenities, and is significantly undersized for the current level of enplanements. The main terminal building is 45 years old and systems are old, outdated, and do not meet the current standards. Additionally, the building was constructed when TTN had less than 55,000 annual enplanements compared to the existing demand of over 350,000 annual enplanements and before additional security requirements as a result of 9/11. Without the critical infrastructure in place, it is difficult for TTN to accommodate existing or forecast demand while providing an acceptable level of service.

The purpose of the Proposed Action is to address the needs identified at TTN, which include: accommodating existing and most current FAA approved forecast demand at the desired LOS C; addressing identified deficiencies, improving passenger flow and alleviating passenger congestion. Upon completion, the Proposed Action would achieve the stated goals and serve to position TTN to meet the existing and forecast needs of the Trenton region. By following the process outlined in FAA Order 5050.4B and Order 1050.1F, it is anticipated that the facility would continue to develop without compromising the integrity of the surrounding environment.

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3. Alternatives Analysis

3.1. INTRODUCTION

As discussed in the Purpose and Need chapter, the purpose of the Proposed Action is to address the needs identified at TTN, which include: accommodating existing and most current FAA approved forecast demand at the desired LOS C, addressing identified deficiencies, improving passenger flow and alleviating passenger congestion.

This chapter details the alternatives considered and the evaluation process to identify alternatives that meet the Purpose and Need of the Airport, according to FAA Order 1050.F, Section 6-2.1(d) The alternatives discussed must be options that FAA will consider. The number of alternatives considered relates directly to the magnitude of the proposed project and the agency experience with the environmental issues involved. Usually, the greater the degree of impacts, more alternative options are considered. Alternatives are evaluated and an explanation must be provided if the alternative is eliminated from further study. The alternatives will be evaluated based upon the criteria as described below. The evaluation criteria were used to help the sponsor identify its Proposed Action.

This section presents a comparative analysis of the no action alternative, the Proposed Action, and other alternatives to fulfill the Purpose and Need for the action. While there is no requirement for a specific number of alternatives or a specific range of alternatives to be included in the EA, a total of four terminal alternatives have been considered to meet the Purpose and Need. The alternative for a terminal replacement is further broken down into three alternatives Also, alternatives to other project elements are considered below. The alternatives include the following:

- Terminal Building Alternative 1 – No Action
- Terminal Building Alternative 2 – Alternate Locations
- Terminal Building Alternative 3 –Terminal Reconstruction
- Terminal Building Alternative 4 –Terminal Replacement
    - Alternative 4A – Replacement Design A
    - Alternative 4B – Replacement Design B
    - Alternative 4C – Replacement Design C (Preferred Alternative)

Each of the alternatives were evaluated in accordance with the criteria described below.

3.2. SCREENING AND EVALUATION CRITERIA

This section outlines the screening process used to identify the preferred alternative for detailed environmental analysis in this EA. Screening steps and associated evaluation criteria were defined to assess the ability of each alternative to meet the Purpose and Need defined in Chapter 2 for the Proposed Action, as well as to be practicable from operations, cost, and constructability perspectives. The alternatives screening process is shown in Exhibit 3-1.

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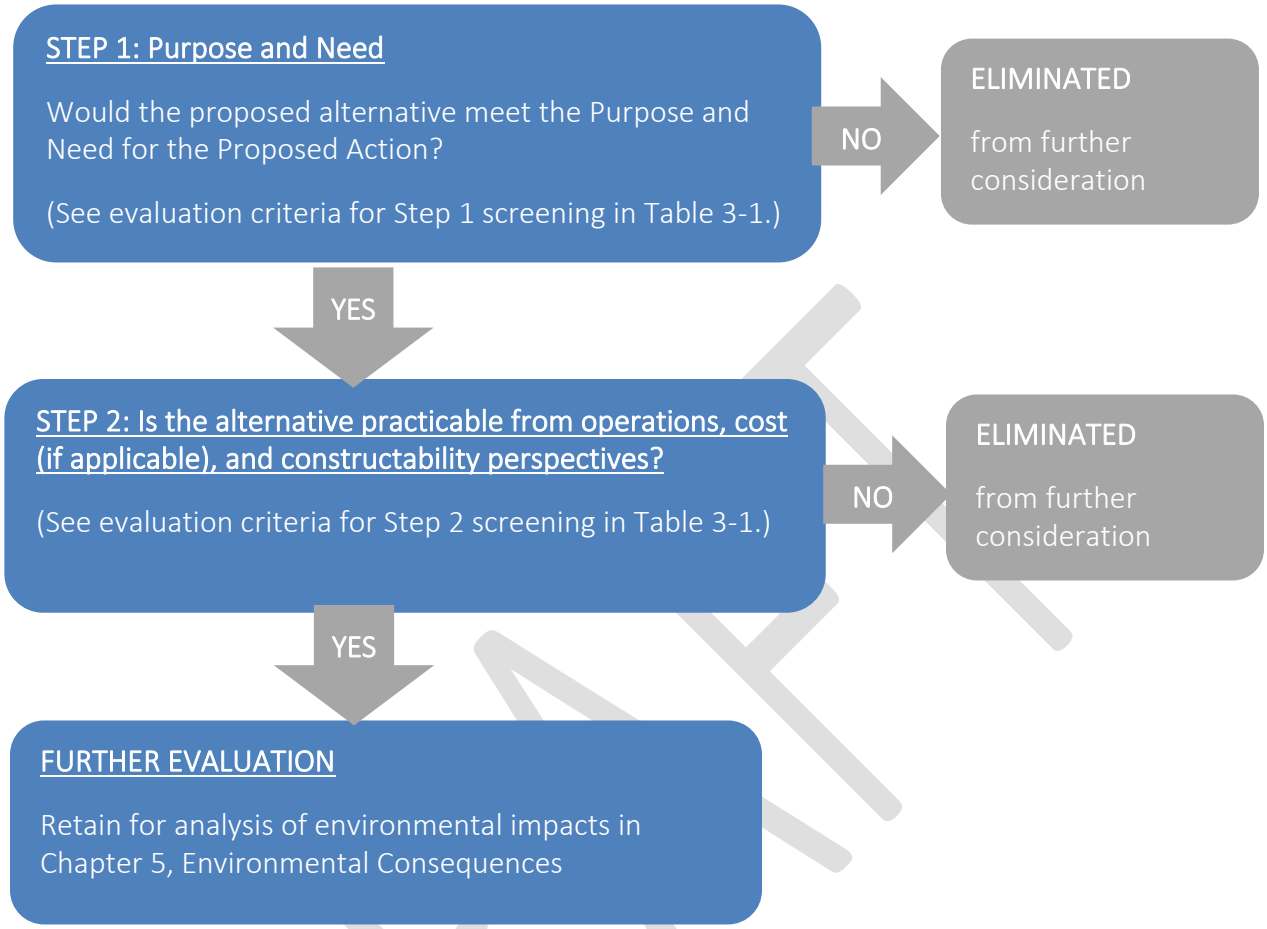
Exhibit 3-1: Alternatives Screening Process



Source: McFarland-Johnson, Inc.

The Step 1 screening process considered the ability of each alternative to meet the Purpose and Need for the Proposed Action. Three evaluation criteria were identified to screen alternatives against the reasonableness of the alternatives. These evaluation criteria, along with the evaluation metrics are shown in **Table 3-1.**

Evaluation criteria may differ slightly depending on the project element being evaluated. For example, ARFF facility siting considerations are not necessarily the same as terminal facility siting considerations. Siting considerations and/or evaluation metrics will be further detailed in the appropriate sections. While there were an extensive number of siting factors taken into consideration for the ARFF and terminal alternate locations, it was important to limit the number to those factors that are generally considered the most significant, such as, available infrastructure site readiness, taxiway access, and access to roadway network. The goal was to consider multiple factors but focus on the most important with respect to the decision-making process.

Table 3-1: Evaluation Criteria

STEP 1: Purpose and Need	
Does the alternative fulfill the Purpose and Needs of the Proposed Action? Would the alternative address existing chronic and severe passenger terminal area congestion and lack of services due to significantly undersized facilities? Does the alternative allow for the use of existing landside and airside facilities? Does the alternative improve access and parking wayfinding and existing passenger parking capacity?	
STEP 2: Is the alternative practicable from operations, cost, and constructability perspectives?	
Operational Flexibility and Efficiency:	Does the alternative expedite movement of aircraft and/or passengers? Is passenger safety and convenience improved upon? Does the alternative allow for the use of jet bridge loading versus apron loading?
Phasing/Constructability:	How will construction of the alternative impact airport operations during the construction period? Can construction of the alternative be phased efficiently so disruptions to airport operations, services, and profits are minimized to the extent possible?
Development Cost:	How does the development cost of the alternative compare to other alternatives that achieve the same goal? Mercer County's construction budget for the total project is $130 million. A lower cost is preferred and will therefore, receive the highest score. The County would award the project to the lowest bidder.

Source: McFarland-Johnson, Inc.

A scoring system of poor, fair, and good are used to evaluate the alternatives against the evaluation criteria, are shown in Table 3-2.

Table 3-2: Evaluation Scoring

+ Good	o Fair	- Poor
Alternative greatly satisfies screening criteria	Alternative moderately satisfies screening criteria	Alternative poorly satisfies screening criteria

Source: McFarland-Johnson, Inc.

An alternative must pass the Step 1 screening to be carried forward for evaluation in Step 2. The Step 2 screening process considered the reasonableness of each of the alternatives that passed Step 1. Reasonable alternatives are those that are practicable and feasible from a technical and economic standpoint, using common sense. The goal of the evaluation scoring will be to choose the preferred alternative based on the alternative with the highest score. . The chosen (preferred) alternative will need to pass Step 1, fulfill Purpose and Need, and have the highest score for the Step 2 evaluation criteria, in order to proceed to evaluation of environmental consequences in Chapter 5.

3.3. TERMINAL BUILDING ALTERNATIVE 1 – NO ACTION

The existing terminal building is approximately 33,000 SF. There are currently four aircraft parking positions. Passengers must exit the terminal building through one of two doors onto the airfield and walk outside to board the aircraft through the use of ground ramps and air stairs. The aircraft apron has been assessed as being in Fair condition and is often cluttered with ground service equipment due to the lack of a dedicated Airport operations ramp. In addition, the terminal building does not meet design standards and has inadequate passenger hold room seating (ACRP Report 25, 2010). The existing building is configured as a split level with the ticketing on the roadway level, non-secure concessions and non-secure hold room space on a level above the ticketing lobby, and the secure checkpoint and hold room on the lower level, which is at apron level. The existing terminal and the interior layout are illustrated in **Figure 3-1** and **Figure 3-2**, respectively.

The no action alternative proposes no changes to the existing terminal building and separate baggage claim facility. The existing terminal building does not provide many of the basic passenger amenities and comforts expected by modern travelers. These include adequate seating, adequately sized pre- and post-security restroom facilities, and suitable concessions (e.g. retail space, food, etc.). Also, the existing overcrowded condition raises a safety concern in the event of an emergency evacuation and flight delays.

The existing terminal is currently operating above maximum capacity and cannot accommodate either the existing level of enplanements or the forecasted growth with a reasonable level of passenger comfort and convenience. Every effort has been made to make the best use of the current space including relocating the sheriff and airport administrative offices off site, installing modular trailers for baggage claim, and limiting the growth of concessions. The no action alternative would not address the existing overcrowding and congestion issues that occur whenever two or more planes arrive or depart simultaneously. Currently, airlines are forced to set schedules to ensure only one plane is arriving/departing at a time, however, this cannot be avoided whenever schedules are impacted due to inclement weather, etc. This alternative does not address any of the Purpose and Need requirements. However, in accordance with FAA Order 1050.1F 6-2.1(d), the No Action alternative is carried forward for analysis of environmental consequences.

3.4. TERMINAL BUILDING ALTERNATIVE 2 – ALTERNATE LOCATIONS

Alternate locations not in close proximity to the existing terminal building were evaluated. Terminal siting considerations included adequate space for the terminal building, terminal apron, terminal access road, and passenger vehicle parking, access to the terminal from the highway and other major roads, and aircraft access to runways utilizing efficient taxiing patterns.

Siting considerations for a new terminal building include:

- Readiness and availability of potential sites,
- Accessibility to existing roadway network,

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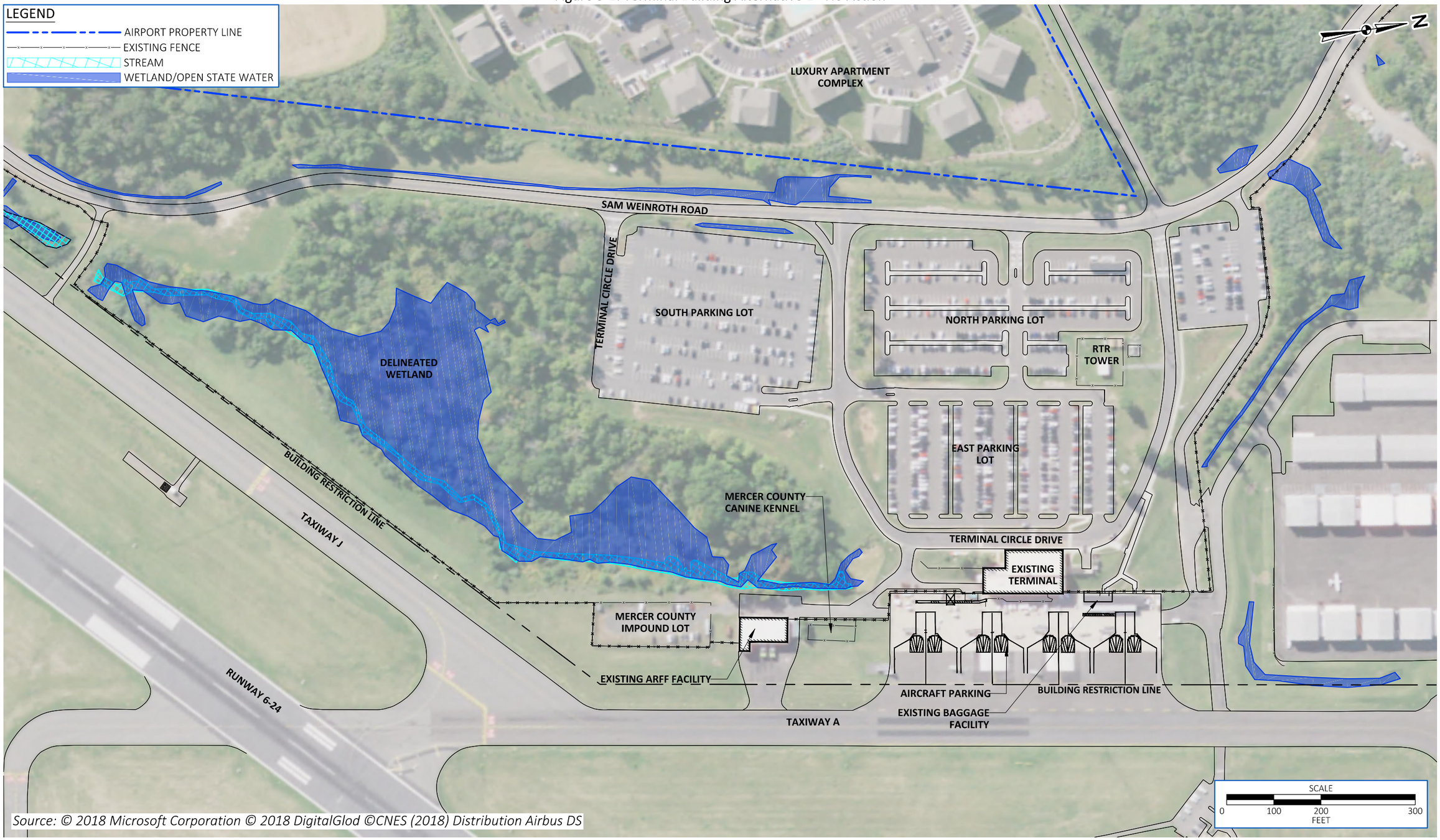
Figure 3-1: Terminal Building Alternative 1 - No Action



Source: © 2018 Microsoft Corporation © 2018 DigitalGlod ©CNES (2018) Distribution Airbus DS

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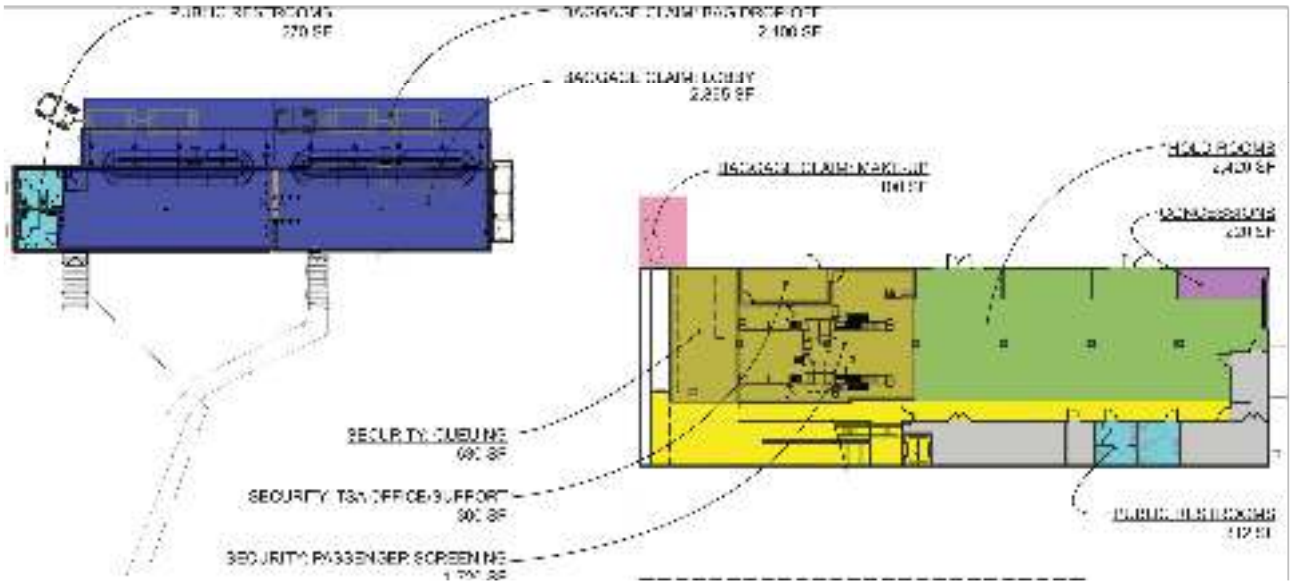
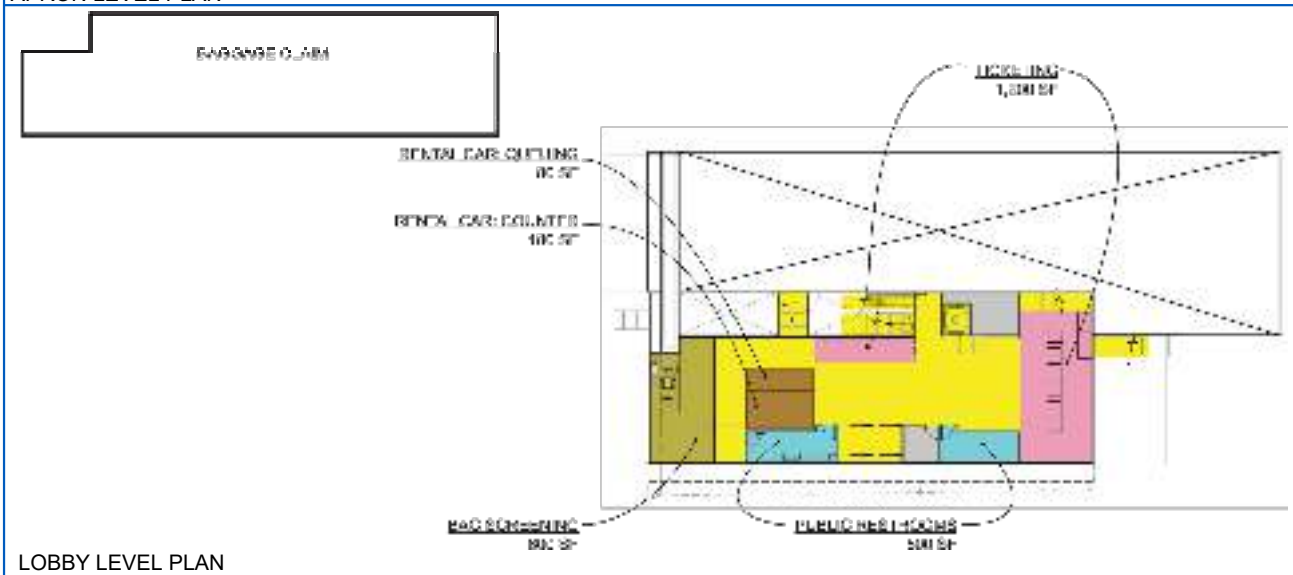
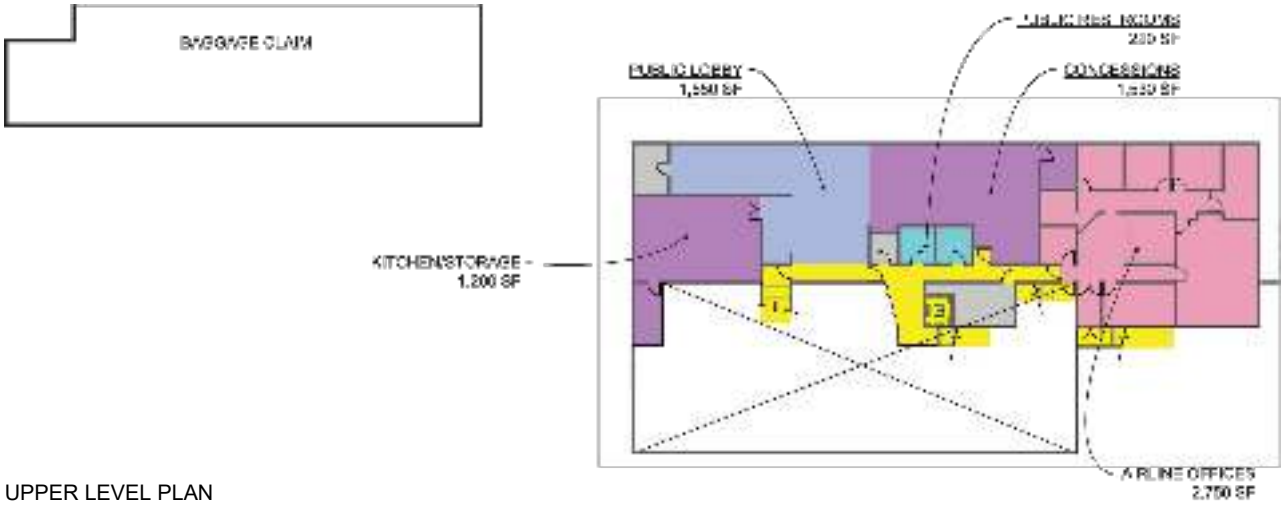
Figure 3-2: Terminal Building Alternative 1 - Current Terminal Interior Layout



APRON LEVEL PLAN



LOBBY LEVEL PLAN



UPPER LEVEL PLAN

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- Operational efficiency, including access to landside and airside areas (taxiways and runways),
- Conformance to FAA standards with respect to safety areas and imaginary surfaces (FAA AC 150/5360-13); and
- Available infrastructure considerations, such as access roads, parking, and utilities.

Alternate locations considered include the north, east, and south quadrants of the Airport property. In general, the north, east, and south quadrants are mostly built out with Airport facilities, including leased hangars and buildings. Siting considerations and constraints for each quadrant are discussed below. The north, east, and south alternate location quadrants are highlighted on an aerial below, **Figure 3-3a**, and the ALP, **Figure 3-3.**

North Quadrant

The north quadrant has insufficient space for the terminal building and necessary terminal elements, such as, vehicle parking, roadways, structures and aprons due to the presence of existing hangars, the Fixed Based Operator (FBO) and other general aviation and airport facilities. Relocation of the terminal to the north quadrant would require relocation of most or all these facilities to other portions of the airport and would require significant reconfiguration of the access to match ease of access to the existing terminal. Relocation of the terminal the North Quadrant was deemed unreasonable due the additional cost, time, and complexity of relocating the general aviation and airport facilities to make room for the new terminal.

East Quadrant

The east quadrant is limited in size and would not accommodate the terminal building and associated passenger parking. The east quadrant is also constrained by Scotch Road and an existing railroad line. As in the north quadrant, utilizing the east quadrant would conflict with existing leases that are in place. In addition, a full-parallel taxiway would need to be constructed on the east side of Runway 6-24 to mitigate for the multiple runway crossings that would be required for aircraft to access the terminal area from the airfield. Minimization of runway crossings is very desirable from a safety perspective. Relocation of the terminal to the East Quadrant was deemed unreasonable due to the size constraints, accessibility, and airfield improvements required to make this a viable location.

South Quadrant

The south quadrant is mostly built out and remaining space would be insufficient for terminal needs. Access to any terminal facilities would have to be through existing leaseholds, which would not be feasible. A terminal in this quadrant would exacerbate existing traffic concerns on Bear Tavern Road. Buildings (identified as 33 and 34 on the ALP) and associated apron are currently being redeveloped by an Airport FBO. In addition, a residential neighborhood is located immediately south of this quadrant. A taxiway extension would need to be constructed to provide efficient access to the runway. The east quadrant may also introduce additional environmental concerns to be mitigated as it contains the former Naval Air Warfare Center facility (associated with multiple releases and hazardous building materials). Relocation to the South Quadrant was

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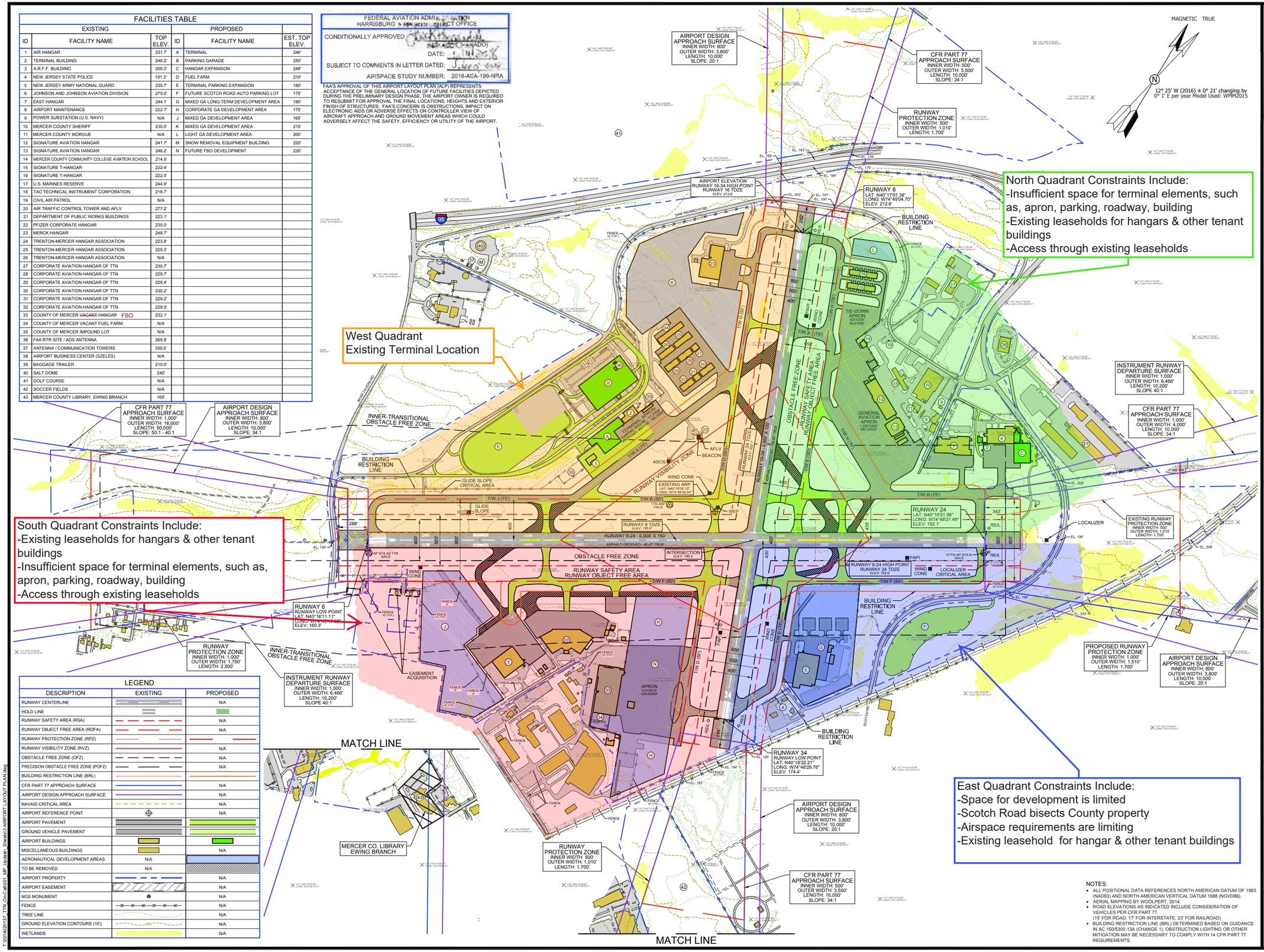
FACILITIES TABLE

EXISTING ID	EXISTING FACILITY NAME	EXISTING TOP ELEV.	PROPOSED ID	PROPOSED FACILITY NAME	PROPOSED EST. TOP ELEV.
1	AIR HANGAR	231.7'	A	TERMINAL	246'
2	TERMINAL BUILDING	246.2'	B	PARKING GARAGE	250'
3	A.R.F.F. BUILDING	209.3'	C	HANGAR EXPANSION	248'
4	NEW JERSEY STATE POLICE	191.3'	D	FUEL FARM	210'
5	NEW JERSEY ARMY NATIONAL GUARD	235.7'	E	TERMINAL PARKING EXPANSION	180'
6	JOHNSON AND JOHNSON AVIATION DIVISION	275.0'	F	FUTURE SCOTCH ROAD AUTO PARKING LOT	175'
7	EAST HANGAR	244.1'	G	MIXED GA LONG-TERM DEVELOPMENT AREA	180'
8	AIRPORT MAINTENANCE	222.7'	H	CORPORATE GA DEVELOPMENT AREA	170'
9	POWER SUBSTATION (U.S. NAVY)	N/A	J	MIXED GA DEVELOPMENT AREA	165'
10	MERCER COUNTY SHERIFF	230.0'	K	MIXED GA DEVELOPMENT AREA	215'
11	MERCER COUNTY MORGUE	N/A	L	LIGHT GA DEVELOPMENT AREA	200'
12	SIGNATURE AVIATION HANGAR	241.7'	M	SNOW REMOVAL EQUIPMENT BUILDING	225'
13	SIGNATURE AVIATION HANGAR	246.2'	N	FUTURE FBO DEVELOPMENT	230'
14	MERCER COUNTY COMMUNITY COLLEGE AVIATION SCHOOL	214.0'			
15	SIGNATURE T-HANGAR	222.4'			
16	SIGNATURE T-HANGAR	222.0'			
17	U.S. MARINES RESERVE	244.9'			
18	TAC TECHNICAL INSTRUMENT CORPORATION	218.7'			
19	CIVIL AIR PATROL	N/A			
20	AIR TRAFFIC CONTROL TOWER AND AFLV	277.2'			
21	DEPARTMENT OF PUBLIC WORKS BUILDINGS	223.1'			
22	PFIZER CORPORATE HANGAR	235.0'			
23	MERCK HANGAR	248.7'			
24	TRENTON-MERCER HANGAR ASSOCIATION	223.8'			
25	TRENTON-MERCER HANGAR ASSOCIATION	225.0'			
26	TRENTON-MERCER HANGAR ASSOCIATION	N/A			
27	CORPORATE AVIATION HANGAR OF TTN	230.7'			
28	CORPORATE AVIATION HANGAR OF TTN	229.7'			
29	CORPORATE AVIATION HANGAR OF TTN	229.4'			
30	CORPORATE AVIATION HANGAR OF TTN	230.2'			
31	CORPORATE AVIATION HANGAR OF TTN	229.2'			
32	CORPORATE AVIATION HANGAR OF TTN	229.0'			
33	COUNTY OF MERCER ~~VACANT~~ HANGAR FBO	232.1'			
34	COUNTY OF MERCER VACANT FUEL FARM	N/A			
35	COUNTY OF MERCER IMPOUND LOT	N/A			
36	FAA RTR SITE / ADS ANTENNA	265.8'			
37	ANTENNA / COMMUNICATION TOWERS	355.0'			
38	AIRPORT BUSINESS CENTER (SZELES)	N/A			
39	BAGGAGE TRAILER	210.0'			
40	SALT DOME	240'			
41	GOLF COURSE	N/A			
42	SOCCER FIELDS	N/A			
43	MERCER COUNTY LIBRARY, EWING BRANCH	165'			

FEDERAL AVIATION ADMINISTRATION
HARRISBURG AIRPORTS DISTRICT OFFICE
CONDITIONALLY APPROVED
DATE:
SUBJECT TO COMMENTS IN LETTER DATED:
AIRSPACE STUDY NUMBER: 2018-AEA-199-NRA

FAA'S APPROVAL OF THIS AIRPORT LAYOUT PLAN (ALP) REPRESENTS ACCEPTANCE OF THE GENERAL LOCATION OF FUTURE FACILITIES DEPICTED. DURING THE PRELIMINARY DESIGN PHASE, THE AIRPORT OWNER IS REQUIRED TO RESUBMIT FOR APPROVAL THE FINAL LOCATIONS, HEIGHTS AND EXTERIOR FINISH OF STRUCTURES. FAA'S CONCERN IS OBSTRUCTIONS, IMPACT ON ELECTRONIC AIDS OR ADVERSE EFFECTS ON CONTROLLER VIEW OF AIRCRAFT APPROACH AND GROUND MOVEMENT AREAS WHICH COULD ADVERSELY AFFECT THE SAFETY, EFFICIENCY OR UTILITY OF THE AIRPORT.



LEGEND

DESCRIPTION	EXISTING	PROPOSED
RUNWAY CENTERLINE		N/A
HOLD LINE		
RUNWAY SAFETY AREA (RSA)		N/A
RUNWAY OBJECT FREE AREA (ROFA)		N/A
RUNWAY PROTECTION ZONE (RPZ)		
RUNWAY VISIBILITY ZONE (RVZ)		N/A
OBSTACLE FREE ZONE (OFZ)		N/A
PRECISION OBSTACLE FREE ZONE (POFZ)		N/A
BUILDING RESTRICTION LINE (BRL)		
CFR PART 77 APPROACH SURFACE		N/A
AIRPORT DESIGN APPROACH SURFACE		N/A
NAVAID CRITICAL AREA		N/A
AIRPORT REFERENCE POINT		N/A
AIRPORT PAVEMENT		
GROUND VEHICLE PAVEMENT		
AIRPORT BUILDINGS		
MISCELLANEOUS BUILDINGS		N/A
AERONAUTICAL DEVELOPMENT AREAS	N/A	
TO BE REMOVED	N/A	
AIRPORT PROPERTY		N/A
AIRPORT EASEMENT		N/A
NGS MONUMENT		N/A
FENCE		N/A
TREE LINE		N/A
GROUND ELEVATION CONTOURS (10')	850	N/A
WETLANDS		N/A

NOTES:
- ALL POSITIONAL DATA REFERENCES NORTH AMERICAN DATUM OF 1983 (NAD83) AND NORTH AMERICAN VERTICAL DATUM 1988 (NGVD88).
- AERIAL MAPPING BY WOOLPERT, 2014.
- ROAD ELEVATIONS AS INDICATED INCLUDE CONSIDERATION OF VEHICLES PER CFR PART 77. (15' FOR ROAD, 17' FOR INTERSTATE, 23' FOR RAILROAD).
- BUILDING RESTRICTION LINE (BRL) DETERMINED BASED ON GUIDANCE IN AC 150/5300-13A (CHANGE 1). OBSTRUCTION LIGHTING OR OTHER MITIGATION MAY BE NECESSARY TO COMPLY WITH 14 CFR PART 77 REQUIREMENTS.

TRENTON TTN MERCER AIRPORT

AIRPORT SPONSOR APPROVAL:
NAME:
TITLE: Airport Manager
DATE: 5/24/2018

URBAN ENGINEERS
Formidably Excellent

TTN Terminal EA
Terminal Building
Alternative 2 -
Alternate Locations

Figure: 3-3

LEGEND
North Quadrant
South Quadrant
East Quadrant

PAGE NUMBER 3-9

NOT TO SCALE

REVISION	DESCRIPTION	DATE

TRENTON-MERCER AIRPORT
AIRPORT LAYOUT PLANS
PROJECT NO: 020.137.001

AIRPORT LAYOUT PLAN

DRAWN: JNH | APPROVED:
CHECKED: KWF | DATE: 05/10/2018

DRAWING NO. 3

SHEET NO. 3 of 30

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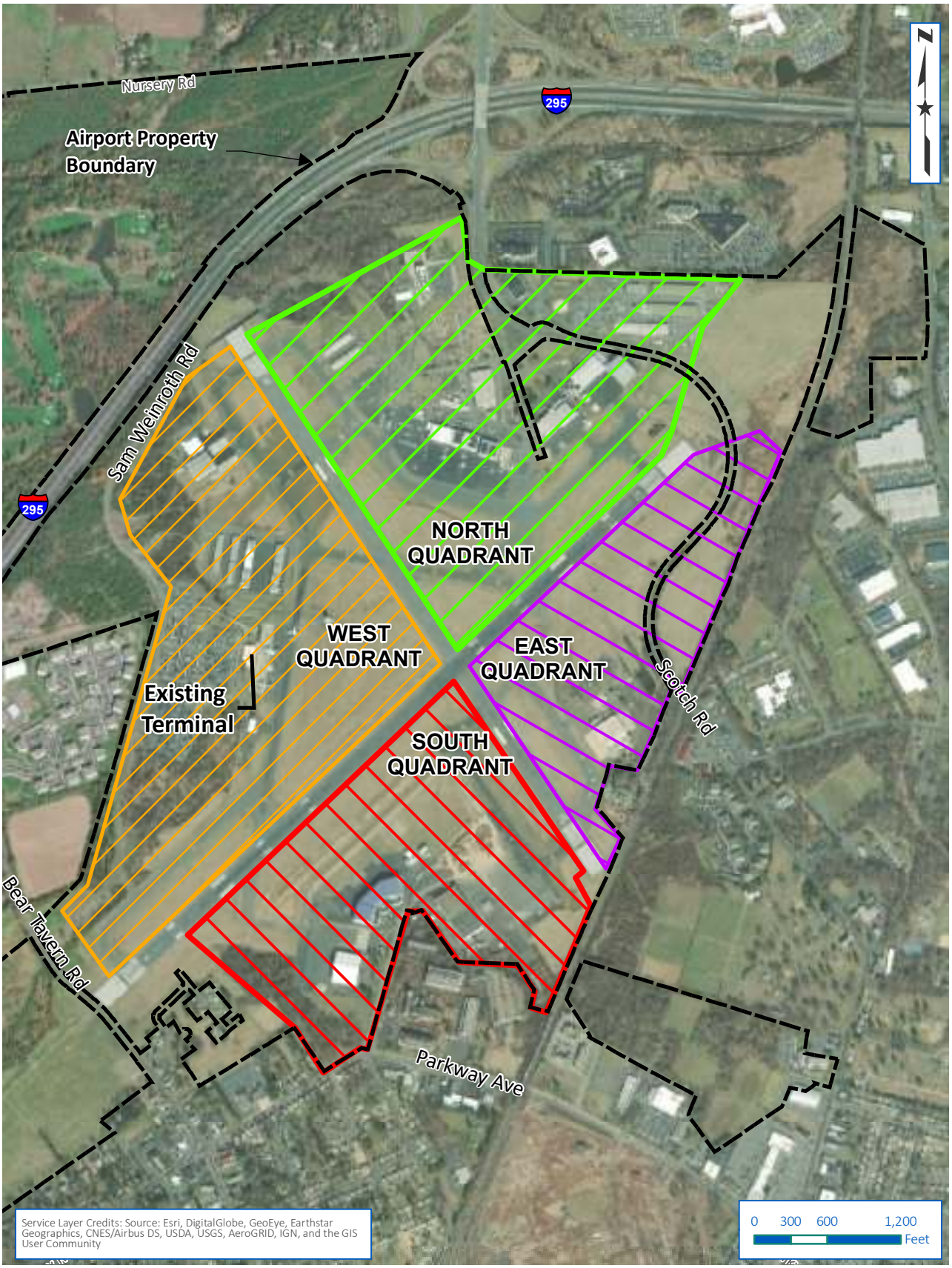
Figure 3-3a: Alternate Locations Aerial



Document Path: K:\Trenton\T-18408.00 TTN Terminal EA\Draw\GIS\3-x Alternate Locations1.mxd

deemed unreasonable due to the size constraint, land use compatibility concern related to the adjacent neighborhood, and required airfield improvements.

West Quadrant

The existing terminal facility is located in the west quadrant of the Airport property. Therefore, the area in the vicinity of the existing terminal is better suited with existing infrastructure, including access roads, parking, landside and airside development, and utilities. In addition, the west quadrant has better access to the road network and I-295 compared to the other quadrants.

Terminal Alternate Locations Comparison

Table 3-3 shows the results of the screening process for the terminal alternate locations. They are scored with a +, o or - to allow for a relative comparison between alternatives and variations. Detailed information supporting the evaluation metrics and siting considerations is provided above. The preferred alternative is based on the highest score.

Table 3-3: Terminal Location Evaluation Screening Matrix

Evaluation Metrics	North Quadrant	South Quadrant	East Quadrant	West Quadrant
Readiness, availability, and size of potential sites	(-) Poor	(-) Poor	(-) Poor	(+) Good
Available infrastructure (roads, parking, utilities)?	(+) Good	(+) Good	(-) Poor	(+) Good
Operational efficiency (access to landside and airside areas)	(+) Good	(o) Fair	(-) Poor	(+) Good
Access to road network	(+) Good	(-) Poor	(-) Poor	(+) Good
Total Score	2	-1	-4	4
Analyze in Environmental Consequences? (Yes or No)	No	No	No	Yes

Source: McFarland-Johnson, Inc. and Urban Engineers, 2020

Alternate locations for the terminal were identified and considered but eliminated prior to Step 2 screening because they were determined to be unable to meet the primary Purpose and Need due to insufficient available land to develop. In addition, the west quadrant scored the highest. In general, existing infrastructure (e.g. access road, parking, landside and airside development) is insufficient at the alternate locations. Furthermore, alternate locations were not developed further due to the potential amount of significant socioeconomic impacts from existing leaseholds and prohibitive costs.

3.5. TERMINAL BUILDING ALTERNATIVE 3 –TERMINAL RECONSTRUCTION

The current terminal building was built in the early 1970's and has a split-level design. The physical condition of the original structure, including HVAC, plumbing, roofing, glazing, finishes, etc., is in various stages of disrepair and is not energy efficient. In addition, code compliance (ADA, fire

egress, etc.) is deficient per current regulations. The building area available within the two structures is deficient in terms of accommodating current traffic demands. The split-level nature of the terminal building does not have any flexibility to accommodate overlapping uses or existing passenger holding and queuing, requiring stairs and elevators for the public movement throughout. The split-level design introduces additional technical complexities that add to operational costs (such as additional vertical HVAC circulation). A reconstruction, or retrofit, of the existing facility involves reviving the terminal in its existing footprint with minimal modifications to landside or airside facilities and upgrades out-of-date and non-code compliant features.

The new terminal building would have to be built immediately adjacent to and around the existing terminal building. Based on the evaluation of the current conditions of the existing terminal building, only a portion of the existing building foundations would be able to be used. The new terminal building construction would have to proceed while maintaining access to the existing terminal for passengers, operations, and aircraft. New roadway configurations, parking, and access for departures and arrivals would be disrupted significantly. The alternative would provide four aircraft parking positions, similar to the existing terminal, with the addition of passenger boarding bridges at each gate. The existing aircraft parking apron would need to be expanded to allow aircraft access to the passenger boarding bridges. The existing apron would remain and would be provide storage space for ground service equipment. For this option the main floor of the terminal would include the public lobby, ticketing, baggage claim, security checkpoint, hold rooms, and concessions/public amenities. The baggage handling facilities including baggage screening, mechanical and electrical rooms, and operations spaces would be located below the main floor of the terminal at the apron level.

In this scenario, expansion/retrofitting of the ARFF facility would be necessary to address deficiencies discussed in Section 3.6.1. However, the reconstructed terminal building and its proximity to the ARFF would not be ideal. The reconstructed terminal and aircraft apron would cut off access to the existing ARFF facility and a new ARFF access road would be required. In addition, ARFF operations would negatively impact the terminal apron operations and functions during an emergency and routine ARFF training. The existing working canine kennels and canine holding areas adjacent to the ARFF building would be displaced by the terminal expansion project. The canine kennels and holding areas would be relocated off-airport to a readily available Mercer County Sheriff's Department Facility.

The alternative would include the terminal access roadway and parking reconfiguration as discussed in Section 3.6.2. The alternative would include ancillary features of the proposed parking, roadway, terminal building, and ARFF facility. Ancillary features include landscaping and the extension and installation of utilities to service the proposed parking reconfiguration, roadways, terminal building, and ARFF facility, all of which currently service the existing terminal. Utilities would include, electric, telecommunications, sanitary sewer, water, natural gas, and stormwater management features. In addition, security improvements, such as security lighting, video surveillance system, security fence relocation, would be implemented.

Figure 3-4 illustrates the current terminal reconstruction alternative.

Significant facility impacts and complex construction logistics would be encountered. In order to accomplish the reconstruction of the current terminal building, extensive phasing, demolition, and

construction of temporary facilities would need to take place. Maintaining operations at the existing terminal would be difficult and could not be accomplished without the use of a new entrance and exit roadways, relocation of parking to an offsite location, and the construction of a temporary entrance and ticketing lobby for the terminal building during construction. It would be nearly impossible to stage the various phases of work while keeping operations near normal while also adhering to codes. Construction duration would be significant, approximately 42 months, due to the incorporation of the existing terminal building while maintaining operations. Constructing the new terminal around the existing terminal will also increase costs of excavation and construction. The differences in grades adjacent to the existing terminal will increase the quantity of rock excavation for foundations. The additional costs to maintain operations, provide passenger access, accommodate significant durations for phasing, and incorporate temporary facilities into the construction would increase the costs to construct substantially.

Reconstruction or retrofitting of the existing terminal building does not pass the Step 2 screening (refer to Table 3.8) due to the high construction costs and extended construction duration compared to other alternatives, the high level of difficulty associated with construction phasing, and the high level of impact to existing airport operations, services, and profits during construction. The Terminal Reconstruction Alternative is included in the terminal building alternatives comparison in Section 3.7.

3.6. TERMINAL BUILDING ALTERNATIVE 4 – TERMINAL REPLACEMENT

This alternative involves reconstruction of a new terminal building on a new location in the Western quadrant of the airport. Based on a screening of site conditions (terrain, existing facilities, etc.) it was generally determined that a new terminal in close proximity south of the existing terminal would most efficiently meet the project objective. This is primarily due to this location's ability to easily adapt to and maximize re-use of the existing parking and roadway network. To alleviate the multiple issues with the existing terminal building, three replacement alternatives have been developed and are evaluated below. It is important for the existing terminal building and remote baggage claim building to remain functional during construction to support ongoing passenger operations during construction. This approach allows for a much more seamless transition as the existing facility can continue to function independently while the new facility is constructed.

3.6.1. ARFF Facility Relocation

All the terminal building alternatives would require the demolition and relocation of the existing ARFF facility. The terminal building alternatives include expansion of the existing aircraft parking apron to allow aircraft access to the passenger boarding bridges. The expanded aircraft apron would displace the existing ARFF, which is located approximately 200 feet south of the existing apron, and therefore, would need to be relocated.

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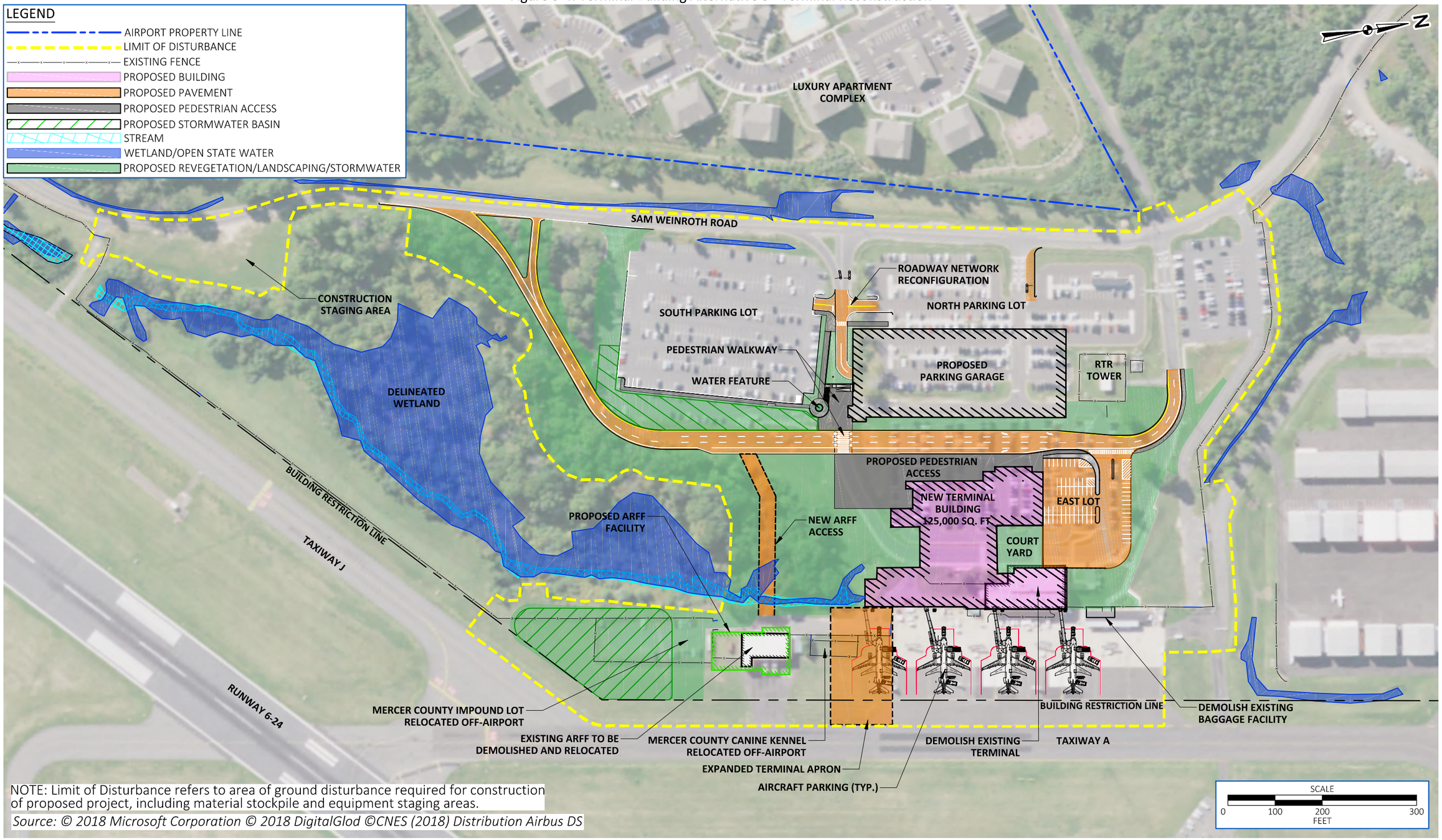
Figure 3-4: Terminal Building Alternative 3 - Terminal Reconstruction



NOTE: Limit of Disturbance refers to area of ground disturbance required for construction of proposed project, including material stockpile and equipment staging areas.

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Currently, the ARFF consists of four apparatus bays housing two ARFF vehicles, a back-up ARFF vehicle and a utility truck; living space for ARFF crews operating 24/7; and related equipment and firefighting agent storage. One additional vehicle, the Chief's vehicle, is housed outside the ARFF and subject to all weather conditions.

The following is a list of deficiencies of the current ARFF when compared to the design standards listed in FAA AC No. 150/5210-15A, *Aircraft Rescue and Firefighting Station Building Design*:

- Inadequate storage space for personal protective equipment (PPE), office supplies, and files.
- ARFF vehicle apparatus bays are undersized and staff is unable to perform maintenance on vehicles while parked in the bays.
- The use of drive-through bays are recommended in the AC to increase the operational safety and flexibility of the station. The existing ARFF vehicle apparatus bays are not drive-through due to insufficient turning radii from the driveway. Heating and air conditioning throughout the ARFF are inefficient and is in need of updating. The bathrooms are not currently heated.
- The kitchen and appliances need updating to comfortably serve the staff inhabiting the ARFF.
- The existing ARFF has a shared sleeping place for ARFF staff. Many facilities now provide individual rooms to allow for more comfortable and private sleeping quarters.
- There are currently not enough lockers to accommodate the ARFF staff.
- The apron adjacent to the ARFF is showing signs of deterioration.
- There is no bulk storage tank for the fire-fighting foam concentrate.

At approximately 5,000 SF, it is undersized for the current Airport size and operations and cannot house all of the ARFF vehicles. The proposed ARFF would have five apparatus bays, allowing all ARFF vehicles to be housed in a controlled environment and ready to respond in all weather conditions. The dimensions and total area of the apparatus bays are based on FAA-required minimum clearances keyed to the largest vehicle size. Each bay is designed to the same dimensions to maximize utility in the instance of a damaged door or inoperable equipment. The room-by-room space program reveals that the space allocated to the majority of rooms in the proposed ARFF is roughly at or below the suggested minimum areas in FAA AC No. 150/5210-15A.

In considering alternate locations for the ARFF facility, many of the same factors for the terminal alternate locations in Alternative 2 (see Section 3.4) also apply to the relocation of the ARFF facility.

Siting considerations for a new relocated ARFF facility include:

- Readiness and availability of potential sites,
- Accessibility to existing roadways,
- Ability of responding ARFF crews to meet Federal Aviation Regulations (FAR) Part 139 response time requirements, which is within 3 minutes from the time of the alarm, at least one required ARFF vehicle must reach the midpoint of the farthest runway serving aircraft from its assigned post,

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- Ability of responding airport firefighting and rescue crews to access the terminal during emergencies,
- Airfield visibility for responders positioned at the ARFF facility,
- Conformance to FAA standards with respect to safety areas and imaginary surfaces (FAA AC 150/5360-13); and
- Available infrastructure considerations.

Descriptions of the alternate locations and potential constraints for siting the ARFF facility are provided below.

North Quadrant

The north quadrant of the Airport is mostly built out with general aviation (GA) hangars and aprons. Of the two possible locations in the north quadrant, one would displace aircraft tie-downs that would need to be relocated elsewhere and the second would constrain the main vehicle access gate for that portion of the airport.

South Quadrant

The south quadrant has limited space for the ARFF facility and limited vehicle access. ARFF personnel reporting to the ARFF station would need to cross existing leaseholds. Most undeveloped areas are reserved for future GA development or located adjacent to a residential neighborhood. Visibility of the airfield is poor from the southwest end.

West Quadrant

The west quadrant has limited space for the ARFF facility and would comingle with hangar and/or terminal operations if sited in this location. ARFF operations would negatively impact the hangar and terminal operations and functions during an emergency and routine ARFF training. Any available space is constrained by existing access to the Air Traffic Control Tower and/or poor visibility of the airfield.

East Quadrant

The east quadrant is constrained by Scotch Road and the Delaware and Bound Brook Railroad tracks running along Airport property. Therefore, options for developing that quadrant are best suited for smaller facilities, such as an ARFF facility. An undeveloped area immediately north of the New Jersey Army National Guard (NJANG) area, and in close proximity to RW 6-24, is available and not reserved for future GA development as shown on the ALP (**Figure 3-3**). Scotch Road would provide ideal access to the ARFF facility. The east quadrant provides excellent access to the primary runway and visibility of the airfield for responders positioned at the facility.

ARFF Alternatives Comparison

Table 3-4 shows the results of the screening process for the ARFF alternate locations. They are scored with a +, o or - to allow for a relative comparison between alternatives and variations. Detailed information supporting the evaluation metrics and siting considerations is provided above. The preferred alternative is based on the highest score.

Table 3-4: ARFF Location Evaluation Screening Matrix

Evaluation Metrics	North Quadrant	South Quadrant	West Quadrant	East Quadrant
Readiness and availability of potential sites	(-) Poor	(-) Poor	(o) Fair	(+) Good
Accessibility to existing roadways	(o) Fair	(-) Poor	(o) Fair	(+) Good
Ability to meet response time	(+) Good	(+) Good	(o) Fair	(+) Good
Ability to access terminal	(o) Fair	(+) Good	(+) Good	(o) Fair
Airfield visibility	(-) Poor	(o) Fair	(o) Fair	(+) Good
Conformance to FAA standards	(+) Good	(o) Fair	(+) Good	(+) Good
Available infrastructure	(o) Fair	(-) Poor	(o) Fair	(o) Fair
Total Score	0	-1	2	5
Analyze in Environmental Consequences? (Yes or No)	No	No	No	Yes

Source: McFarland-Johnson, Inc. and Urban Engineers, 2020

Based on the above, the east quadrant of the Airport is the most viable option and preferred alternative. The proposed relocated ARFF facility is shown on **Figure 3-5.** It is expected the new ARFF facility will double in size from the existing 5,000 to 10,000 SF, which is adequate to house the fleet required for emergency response at the airport. As stated above, the space allocated to most rooms in the proposed ARFF is roughly at or below the suggested minimum areas in FAA AC No. 150/5210-15A. It would be oriented to face Runway 6-24 with adjacent pavement for parking ARFF vehicles on the airside of the building and allow for drive through bays. Vehicle parking for employees would be provided on the landside of the building. An access road would extend from the facility to Runway 6-24. In addition, the preferred relocation of the ARFF facility takes advantage of the sloping terrain in order to remain below the FAR Part 77 transitional surface.

3.6.2. Terminal Roadway and Parking Reconfiguration

All terminal alternatives impact existing terminal access and parking. Therefore, modifications to the existing parking areas and roadway access to the new terminal building and parking would be required. Alternatives for the terminal roadway and parking were developed simultaneously with the intent of being able to mix and match between terminal and roadway/parking options and make minor adjustments depending on the preferred alternatives.

In addition to the required terminal access reconfiguration, the AMPU forecasted a future need of approximately 2,900 vehicle parking spaces, including spaces for passenger vehicles, rental cars, employee parking, etc. to accommodate the increase in enplanements estimated (approx. 476,000) for 2035. Demand for auto parking at the Airport was evaluated based on the use characteristics of the existing auto parking lots. These existing paved surface parking lots include 1,303 spaces for public parking (1,182), rental cars (75), and employees (46). In addition, there is a remote unpaved lot that serves as an overflow lot which has approximately 600 additional spaces.

Traditionally, airports have offered both a short term and long-term parking product, however, the demand for a traditional short term lot has decreased at most airports, especially those where cell phone lots have been introduced and where Transportation Network Companies (TNC) service providers (e.g. Uber, Lyft) are prevalent. TNC and taxi services provide local rideshare service within the community and are traditionally used for travel less than 10 miles in distance with a national average of approximately 6 miles in most U.S. Cities (ride.guru, 2018). Short rides like the average trip length vary from $9 to $12 (Uber.com Investor Relations) provide the users of the Airport with alternatives to parking at the Airport. However, the Airport users extend well beyond a short 6 mile radius to communities such as Pennington, Ewing, and Trenton in Mercer County to outlying areas in Pennsylvania and New Jersey. TNCs and taxis may not be an option for most users beyond the 6 mile radius. Most of those passengers are expected to park at the Airport.

This analysis will focus on the overall passenger demand, assuming that short term demand can be accommodated via cell phone lot(s) and the main lot, with congestion management during peak times (i.e. signage directing short term parkers to the cell phone lot at busy periods).

Demand Calculation Methodology

Demand calculations is based on passenger user demand characteristics rather than limiting the analysis for forecast demand levels.

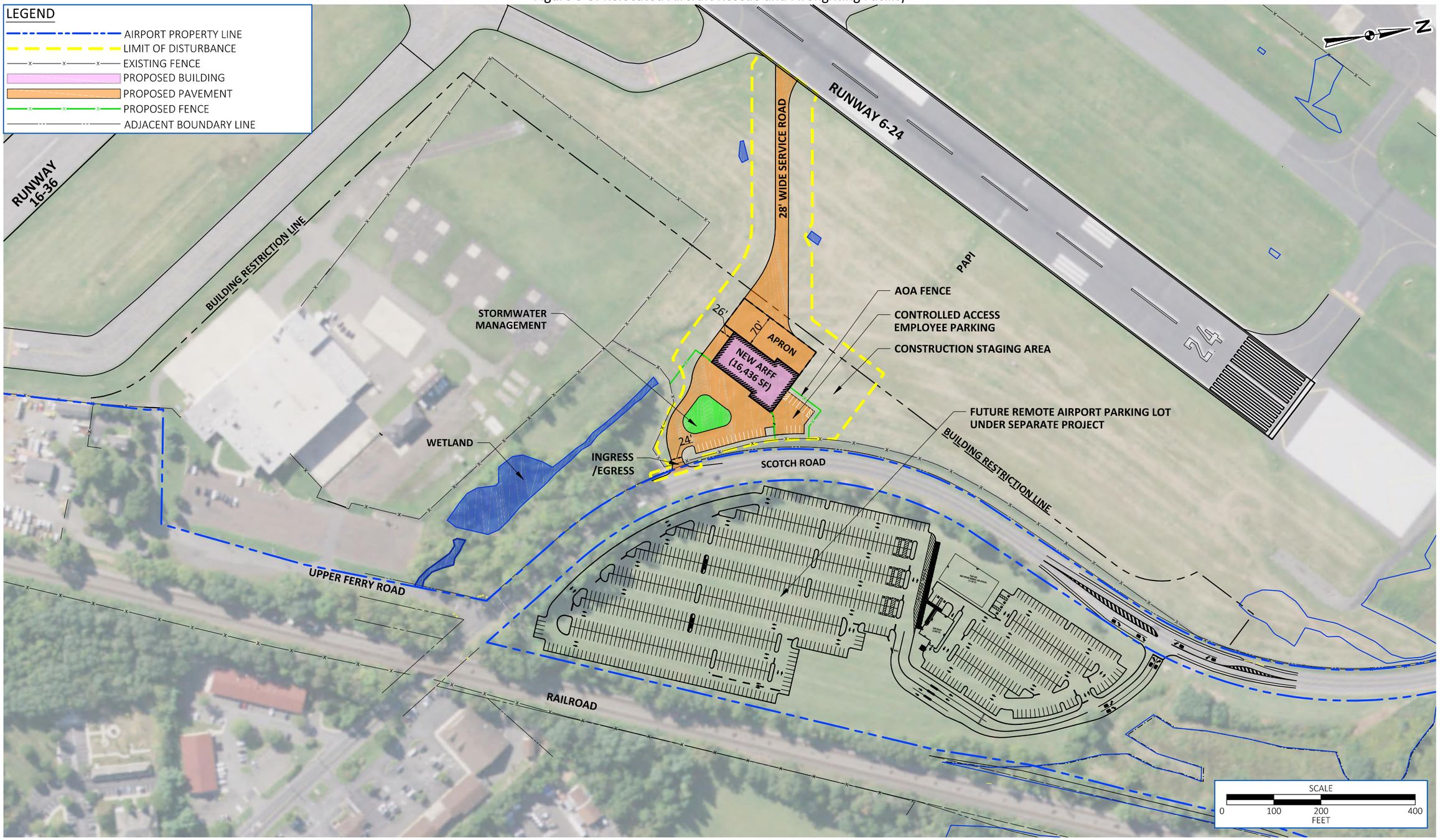
Enplanements/Load Factor – The formula contains enplanement levels ranging from 200,000 to 500,000 in 50,000 increments and assumes a 95 percent load factor for all flights. Displaying demand in a matrix as opposed to an annual progression will help the airport better plan for demand as service levels fluctuate over time.

Parking Factor – TTN is both an outbound and inbound passenger market and in addition, not all passengers are parking at the airport. It is assumed that approximately 60% of passengers are those who's itinerary originates in TTN (as opposed to inbound visitors/passengers); of that number it is assumed that approximately 70% of the leisure markets and 90% of the more business markets will park at the airport. These numbers will fluctuate over time as parking prices increase and the airline schedules and service patterns change. TTN originating passengers, not parking at the airport, arrive via bus, taxi, TNC providers, or are dropped off curbside.

Occupants/Vehicle – Using historical data, a 70% parking factor was applied, and the average number of enplanements per vehicle was determined to use in the demand formula and subsequent parking calculations. The less people in each car, the greater the auto parking demand. Based on available data the range of occupants per vehicle resulted is assumed to consist of between 2.25 (high) and 2.5 (low) for leisure routes and 1.25 (high) and 1.5 (low) for the business center markets. These factors are considered conservative but prudent for facility planning.

Duration – TTN parking data was reviewed to determine the average duration for which vehicles were parked in the parking lots, as the amount of days that a vehicle occupies a particular parking space can greatly affect the number of parking spaces required.

Figure 3-5: Relocated Aircraft Rescue and Firefighting Facility



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The demand formula contains an average of six (6) days for leisure-oriented passengers and between three (3) and four (4) days (low and high) for the more business-oriented destinations for auto parking. It is anticipated that as activity increases, so will the number of flight options, creating more choices for passengers. The addition of flight options, especially with less than daily service, has the potential to slightly reduce (improve or lengthen) the average duration over time.

A planning threshold of 90% was applied to the forecast parking lot capacity. Parking lot occupancy can be higher when aircraft departure and arrival times overlap as there is a short time when both groups of passengers have their cars parked. Additionally, the winter months reduce spaces due to accumulation of snow and ice in some spaces.

Presently there is only one on-site rental car provider that utilizes approximately 75 spaces at the airport. Other providers currently shuttle customers off-site. Airports of similar size typically accommodate between three and five rental car providers. While rental car spaces can be replenished throughout the day, it is important that the spaces be able to accommodate peak hour activity. Based on the forecast of year 2035 490 peak hour deplanements, combined with the 40% inbound market and between 1.25 and 2.5 passengers per party, results in a planning demand of between 40 and 80 spaces, assuming half of the inbound passengers get rental cars, while half are picked up. Since this location will also likely support off airport business at the airport location as they do in many other cities, a total of 100-125 rental car spaces should be planned.

The combination of the 90% planning threshold and peak season (busiest three-month average) was selected as the preferred method to determine the required number of vehicles parking spaces for TTN. The table below (**Table 3-5**) displays the auto parking requirements for potential enplanement levels at TTN. Based on the enplanement levels identified in the forecast, additional auto parking spaces are likely to be required in the intermediate to long range planning period; however, demand should be monitored. Planning for additional parking lots should start as lots reach 90% of their capacity.

Table 3-5: Auto Parking Requirements

Enplanements	Low	Medium	High	Peak Periods	Rental
200,000	633	680	771	1,071	40
250,000	792	850	964	1,339	50
300,000	950	1,020	1,157	1,606	75
350,000	1,108	1,190	1,349	1,874	100
400,000	1,267	1,360	1,542	2,142	125
450,000	1,425	1,530	1,735	2,410	150
500,000	1,583	1,700	1,928	2,677	200

Source: TTN Master Plan, McFarland Johnson, 2016.

Employee parking can be accommodated with a dedicated lot for employees only of in some cases it is integrated into the long-term lot with passes provided. On a long-term basis, the required employee parking spaces will vary based on the number of airlines and vendors employing personnel inside the passenger terminal and also the long-term location of airport operations and administrative support staff. For the near term and similar operating conditions, an estimated 100 employee parking spaces should be planned for, with a more detailed review at the number of jobs located in the terminal building increases. Employee parking for airport businesses outside of

the passenger terminal area is the responsibility of the business provider. The peak parking need for the airport including public parking, rental car, and employee parking is approximately 2,877.

There are currently 1,303 passenger vehicle parking spaces in permanent surface parking lots adjacent to the terminal. Additionally, there is a 600-space unpaved overflow lot near the intersection of Sam Weinroth Road and Lockheed Avenue, for a total of 1903 existing spaces. A separate standalone project to construct an additional remote parking lot on Scotch Road consisting of 800 parking spaces is under construction and due to open in Late 2020. The Scotch Road lot will replace the existing unpaved overflow parking near the intersection of Sam Weinroth Road and Lockheed Avenue. The existing overflow lot is problematic from a maintenance and operations perspective, especially during foul weather as it is subject to issues with drainage stormwater management and snow removal and impacts customer levels of service. The existing unpaved lot will be de-activated but remain in reserve for future temporary overflow parking if needed. Upon completion of the Scotch Road lot and de-activation of the overflow lot, approximately 700 new spaces would be needed to meet forecast demand. Based on preliminary design assessments, it is expected that approximately 250 existing spaces would be permanently lost to accommodate the new construction, leaving a total shortfall of approximately 950 spaces. The shortfall would be addressed through construction of a parking structured parking garage and surface parking improvements that could provide a total of approximately 2900 spaces. The table below provides a breakdown of the passenger parking. The parking garage has a footprint of approximately 86,700 square feet and consists of 4 floors, with 12 feet floor to floor height. The first floor of the garage is located at approximate elevation 197.0 with a top elevation of the fourth floor of the garage at elevation 233.0. The garage will consist of stair towers at each corner with an elevator lobby for each floor at the southeast corner.

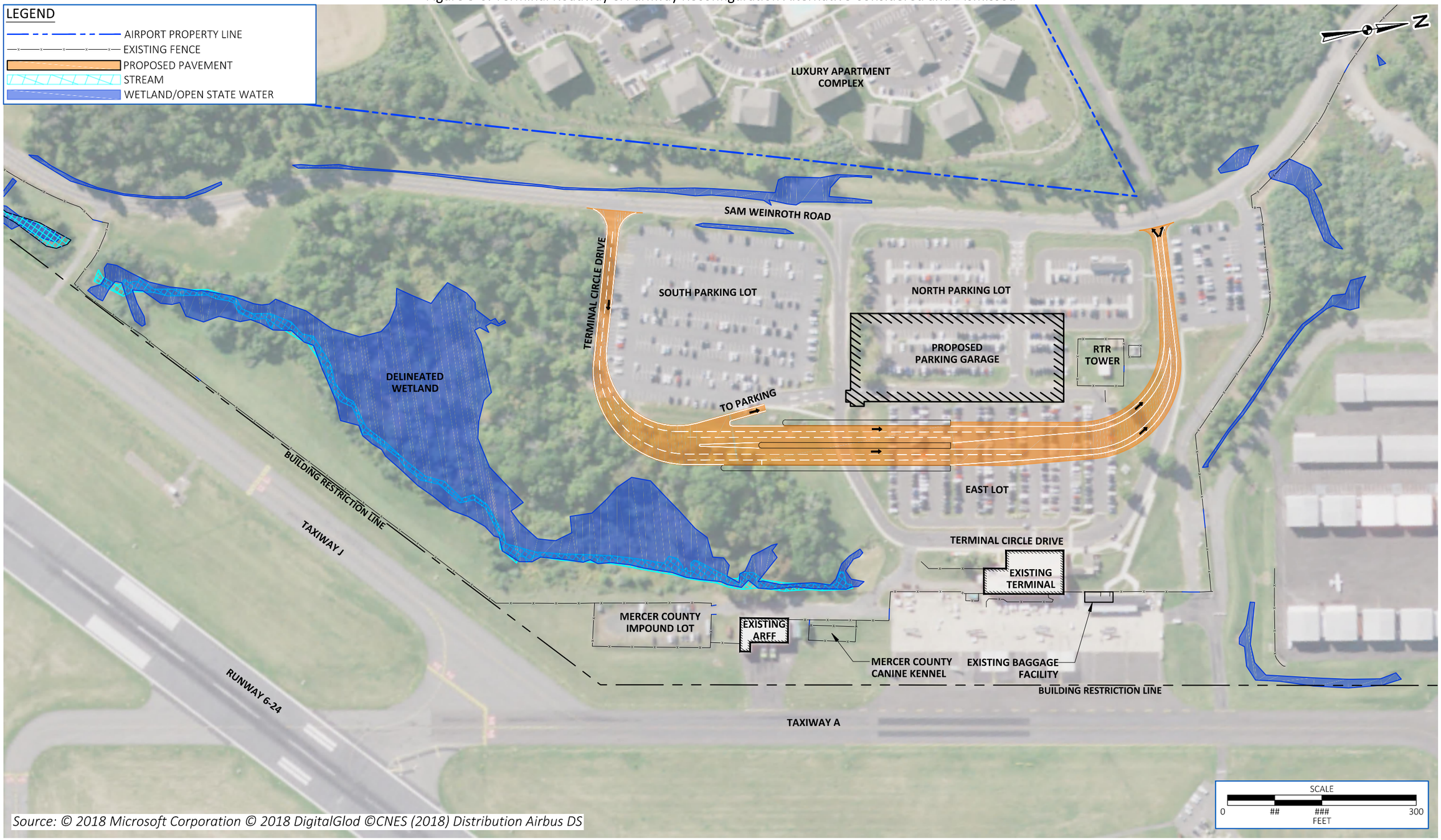
Table 3-F: Parking Summary

Passenger Parking Demand	2900
Existing Parking (includes overflow lot)	1903
Existing Scotch Road Parking Lot (opens late 2020)	800
Overflow lot (deactivated but held in reserve for future overflow)	(-600)
Existing spaces permanently lost to construction	(-250)
During Construction Existing Parking	1853
Proposed New Spaces (surface and structured parking garage)	1000
Final Number of Spaces	2853

Source: Urban Engineers

It is expected that construction of some of the proposed parking improvements would be phased as demand warrants in future years.

Figure 3-6: Terminal Roadway & Parkway Reconfiguration Alternative Considered and Dismissed



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Alternative Considered and Dismissed

One terminal roadway and parking reconfiguration alternative was considered and dismissed from further evaluation in this EA. The roadway ingress/egress layout of this alternative utilizes the existing roadway layout and cuts through the existing east parking lot as shown on **Figure 3-6.** This alternative would include a four-level parking structure as discussed above. The parking structure and other surface parking would be accessed from the reconfigured terminal access roadway and Sam Weinroth Road. This alternative's access roadway would improve the wayfinding slightly compared to existing conditions. However, this alternative would combine access for parking and terminal arrivals/departures leading to potential for congestion and driver confusion because it would require several driver decision points in a compressed space. Compressing decision points in a small space significantly increases the potential for congestion and accidents. Additionally, this alternative would require pedestrians to cross six lanes of traffic when transiting between the parking lots and the terminal. Overall, this alternative would provide an unacceptable user experience. Furthermore, due to existing topography, the alternative would involve the construction and maintenance of a retaining wall on the south side of the entrance road, which would be costly for construction and in long term maintenance costs. In addition, design of stormwater management features would be challenging due to limited space and steep slopes along the south side of the entrance road. This alternative was deemed impracticable due to the construction and maintenance costs, difficulty in meeting regulatory requirements for water quality, safety concerns, the driver confusion and congestion concerns, and the unacceptable user experience.

Preferred Alternative

In order to meet the parking demand and accommodate the new terminal and access roadway, reconfiguration of existing parking areas is necessary. Reconfiguration is focused in areas of existing parking to utilize existing facilities and minimize reconstruction work.

The terminal access roadway and parking reconfiguration for all terminal building alternatives includes the following elements. The entrance portion of the roadway would be located approximately 200 feet to the south of the existing southern parking area exit. Vehicles entering the Airport from the south along Sam Weinroth Road would have a dedicated right-hand turn lane, separated from the entrance for vehicles approaching from the north along Sam Weinroth Road. One lane along the curb would be dedicated to drop off and pickup of passengers. Separate access for parking and terminal arrivals/departures would provide improved pedestrian safety and a better user experience and wayfinding. Modifications and improvements to the parking entrances with ticket control and gate systems would be necessary. The alignment of the proposed roadway takes advantage of existing topography. The proposed roadway would provide suitable locations for stormwater management features.

This alternative would include a four-level parking structure as discussed above. The location of the parking structure was chosen based on the proposed terminal and roadway and parking reconfiguration layouts. The majority of the parking structure's footprint would be within the existing parking area as well as its close proximity in relation to the proposed terminal allowing for easy access for travelers and ADA compliance. A multi-level parking structure allows for many additional parking spaces without a large footprint or surface area impacts. The parking structure

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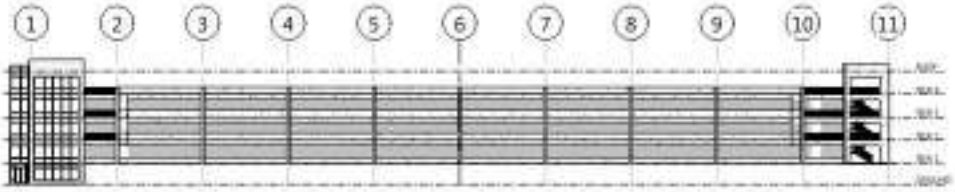
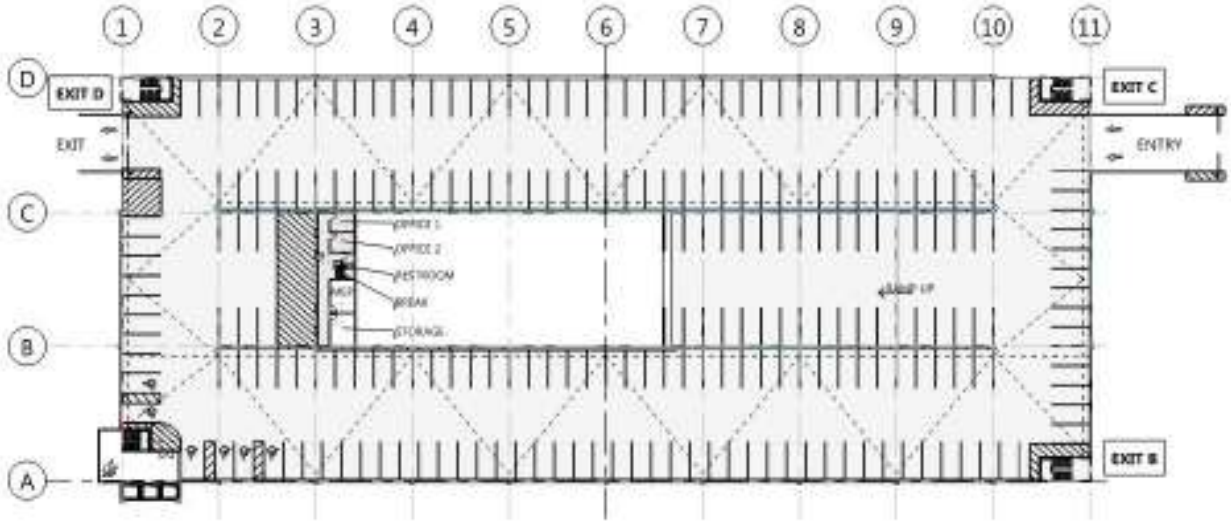
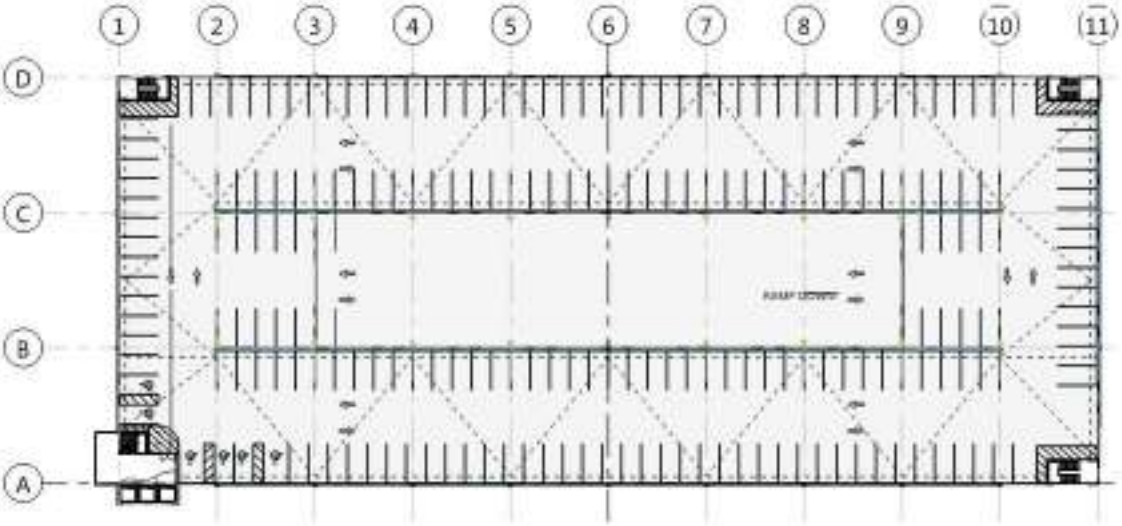
would add approximately 1,000 spaces while displacing approximately 150 spaces. A preliminary design rendering of the parking garage is provided below.



PROPOSED PARKING GARAGE – ELEVATION VIEW



PROPOSED PARKING GARAGE – PLAN VIEW (FIRST FLOOR)



PROPOSED PARKING GARAGE – PLAN VIEW (FLOORS 2-4 TYPICAL)

Terminal Roadway and Parking Alternatives Comparison

Table 3-7 shows the results of the screening process for the terminal roadway and parking alternatives. They are scored with a +, o or - to allow for a relative comparison between alternatives and variations. Detailed information supporting the evaluation metrics is provided above.

Table 3-7: Evaluation Screening Matrix

Evaluation Metrics	Considered & Dismissed Alternative	Preferred Alternative
Does the alternative allow for the use of existing landside facilities?	(+) Good	(o) Fair
Does the alternative improve access, and parking wayfinding and existing passenger parking capacity?	(o) Fair	(+) Good
Does the alternative improve safety?	(-)Poor	(+) Good
Does the alternative improve congestion?	(-)Poor	(+) Good
Construction & maintenance considerations	(-) Poor	(+) Good
Total Score	-2	4
Analyze in Environmental Consequences? (Yes or No)	No	Yes

Source: McFarland-Johnson, Inc. and Urban Engineers, 2020

Drivers often commit errors when they have to perform several highly complex tasks simultaneously under extreme time pressure. Errors of this type usually occur at urban locations with closely spaced decision points, intensive land use, complex design features, and heavy traffic. Information-processing demands beyond the drivers' capabilities may cause information overload or confuse drivers, resulting in an inadequate understanding of the driving situation. (AASHTO A Policy on Geometric Design of Highways and Streets, Driver Errors).

In general, the terminal roadway and parking layout improves the existing parking facilities. The terminal roadway and parking reconfiguration would minimize driver confusion by limiting decision points, improve terminal drop-off/pick-up, provide more convenient parking options, and provide adequate parking capacity.

3.6.3. Alternative 4A- Replacement Design A

In Alternative 4A, a new two-story terminal building, totaling approximately 158,000 SF, would be constructed approximately 100 feet south of the existing terminal building. This alternative utilizes a compact design however, it cannot provide the desired LOS C within 125,000 sf because of inefficiencies introduced by the compact design, especially in circulation and concessions. Additionally, this design requires a disproportionate volume of space at the apron level. The additional space created at the apron level increases the size and square foot area of the building but does not provide any improvement in the function, layout, and operations of the building. The existing terminal apron would be extended south to accommodate the new building and aircraft parking. The alternative would provide four aircraft parking positions, similar to the existing terminal, with the addition of passenger boarding bridges at each gate. Terminal Building

Replacement Alternative 4A and interior layout are shown in **Figure 3-7** and **Figure 3-8,** respectively.

The Alternative 4A terminal building is compact and rectangular in shape, relatively split evenly between secure, and non-secure or public areas. There are spaces for concessions on both the secure and public sides, as well as offices and support facilities and a play area for children and families. Due to the rectangular shape, interior corridors and spaces are created that offer no opportunity to bring daylight into the space and the alternative would not easily allow for other energy efficiency techniques that also enhance the customer experience. This option provides little flexibility to change uses in the future as air travelers progresses within the building from public spaces or ticketing to the security check point or from concessions to hold room and vice versa.

In general, the alternative would greatly enhance operational flexibility and efficiency over the existing terminal building. The main floor of the terminal would include the public lobby, ticketing, baggage claim, security checkpoint, hold rooms, and concessions/public amenities. The baggage handling facilities including baggage screening, mechanical and electrical rooms, and operational spaces would be located below the main floor of the terminal at the apron level. The alternative would include the terminal access roadway, parking reconfiguration, and ARFF relocation as discussed in Sections 3.6.1 and 3.6.2.

The alternative would include ancillary features of the proposed parking, roadway, terminal building, and ARFF facility. Ancillary features include landscaping and the extension and installation of utilities to service the proposed parking reconfiguration, roadways, terminal building, and ARFF facility, all of which currently service the existing terminal. Utilities would include, electric, telecommunications, sanitary sewer, water, natural gas, and stormwater management features.

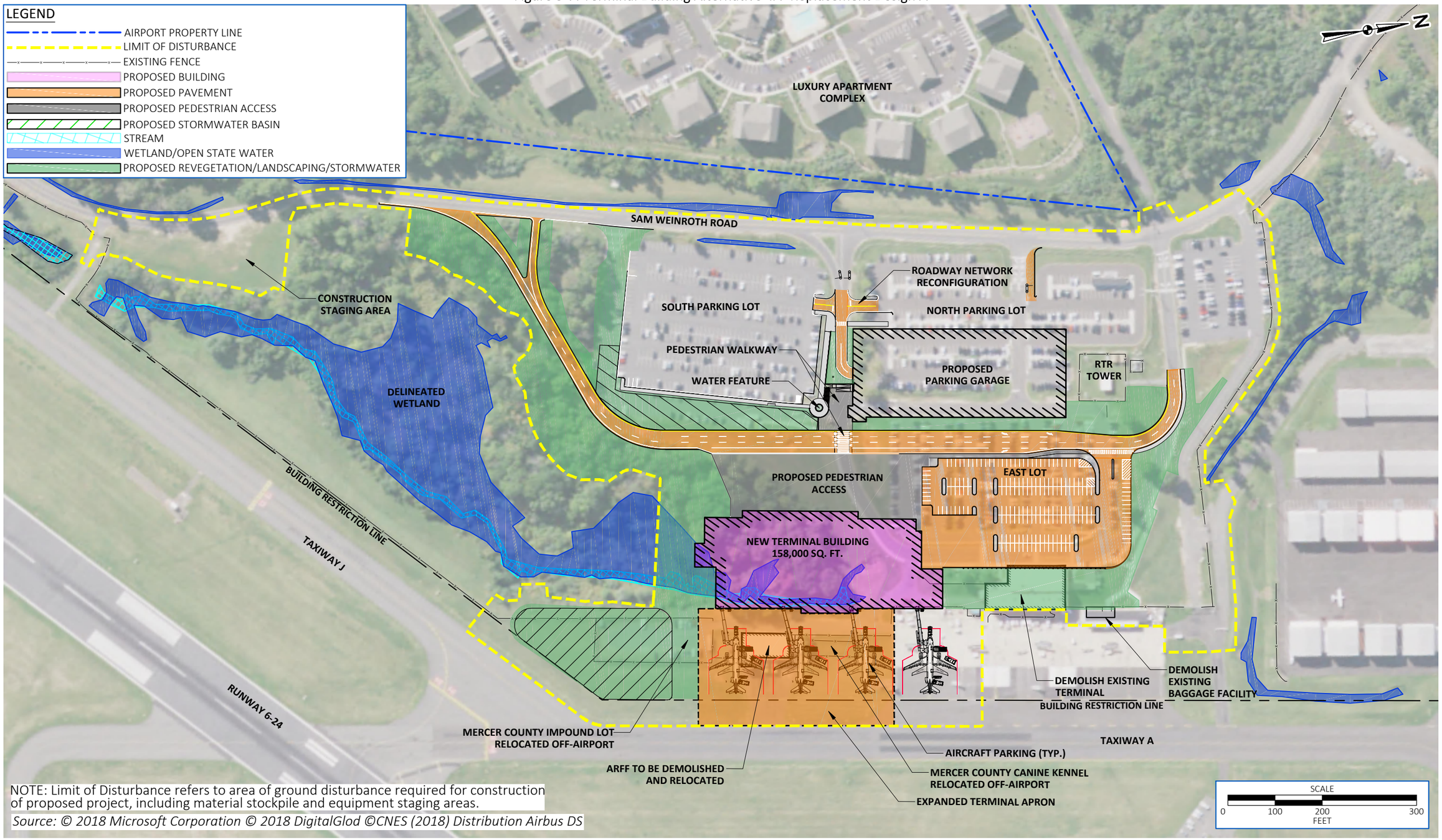
In addition, security improvements, such as security lighting, video surveillance system, security fence relocation, would be implemented. The existing vehicle impound lot and working canine kennels and canine holding areas adjacent to the ARFF building would be displaced by the terminal project. The vehicle impound lot would be relocated to an existing off-airport County-owned facility. The working canine kennels and canine holding areas would also be relocated to the Mercer County Sheriff's Department existing off-airport facility.

The existing terminal facility would continue to operate during construction of Alternative 4A. However, Terminal Circle Drive and passenger parking would need to be modified in order to maintain access to the existing terminal during construction. The southern, exit only, roadway would be closed during construction. Construction duration would be approximately 26 months. Demolition of the existing terminal building, baggage claim building, ARFF building, and portions of the terminal and access roads, and parking areas would be necessary for the construction of Alternative 4A. Demolition of these features would take place after construction of the replacement Terminal is complete.

3.6.4. Alternative 4B- Replacement Design B

Terminal Building Replacement Alternative 4B and interior layout are shown in **Figure 3-9** and **Figure 3-10,** respectively. Alternative 4B proposes constructing a new two-story terminal building,

Figure 3-7: Terminal Building Alternative 4A- Replacement Design A



NOTE: Limit of Disturbance refers to area of ground disturbance required for construction of proposed project, including material stockpile and equipment staging areas.

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Figure 3-8: Terminal Building Alternative 4A - Interior Layout

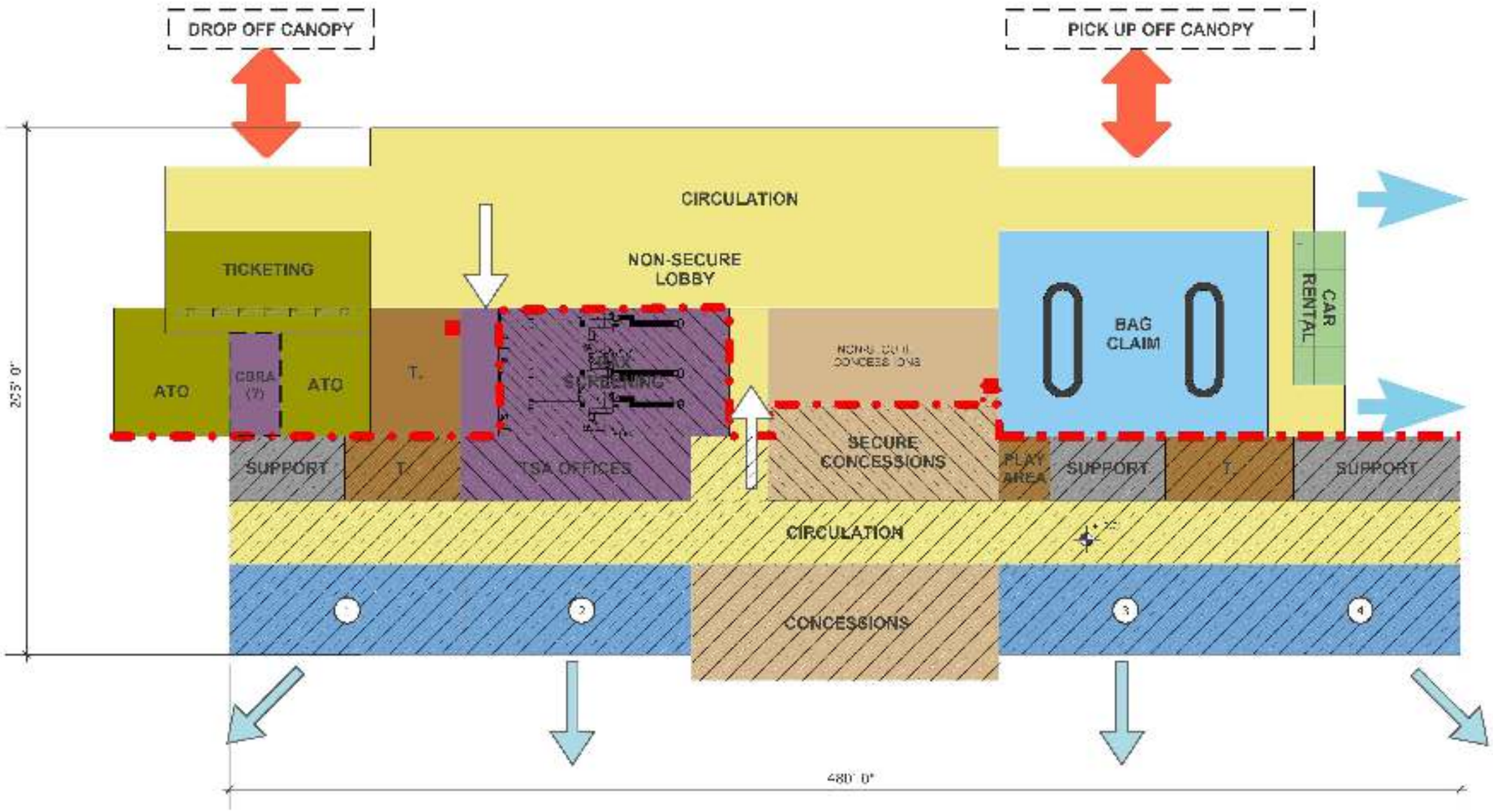

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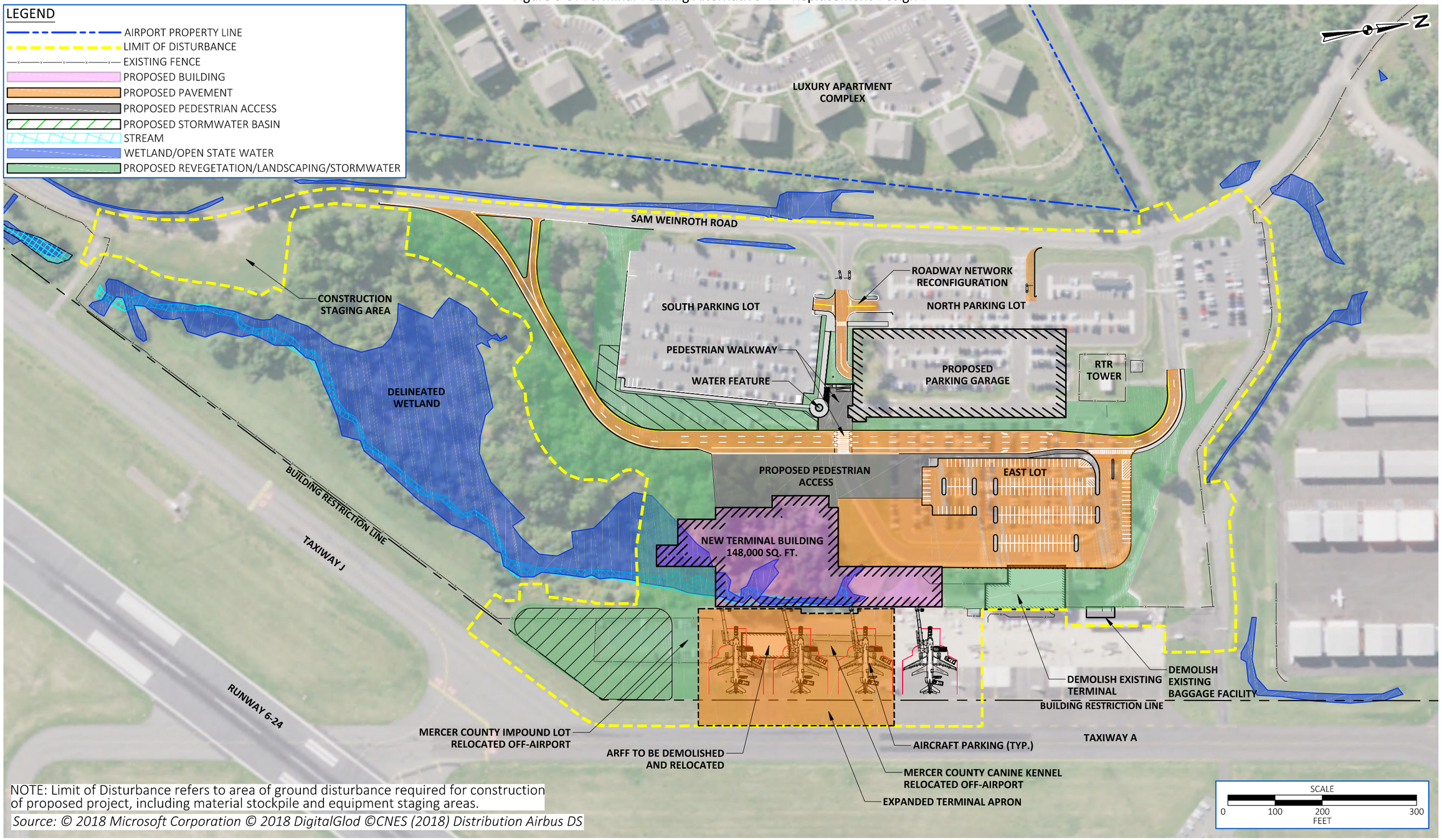
Figure 3-9: Terminal Building Alternative 4B - Replacement Design B



NOTE: Limit of Disturbance refers to area of ground disturbance required for construction of proposed project, including material stockpile and equipment staging areas.

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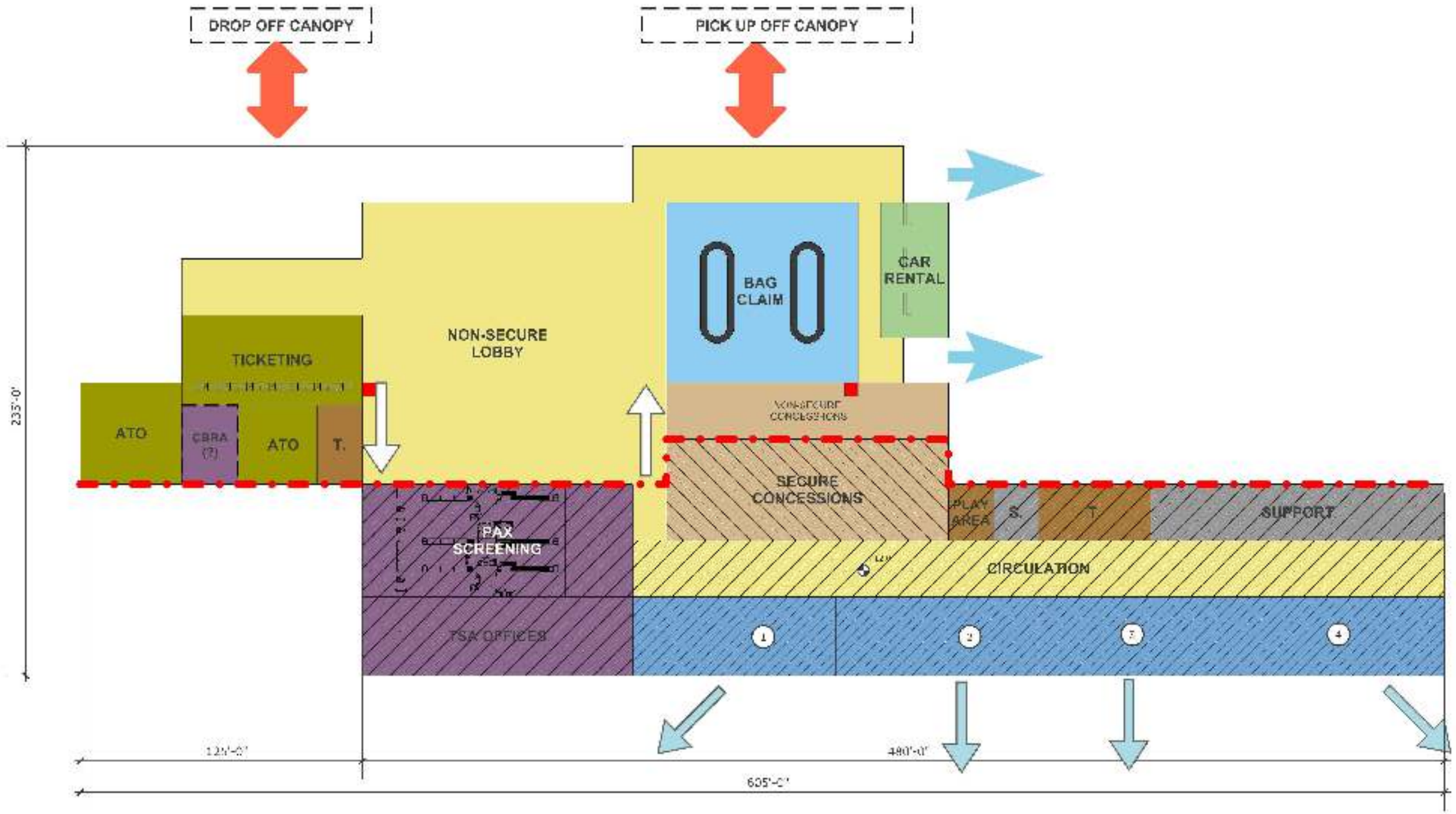
Figure 3-10: Terminal Building Alternative 4B - Interior Layout



Source: Urban Engineers

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approximately 143,000 SF, approximately 100 feet south of the existing terminal building. Similar to Alternatives, 3 and 4A it would necessitate the expansion of the terminal apron south to service the new building and aircraft parking. The alternative would also provide four aircraft parking positions and PBBs. The existing apron would remain and would be provide storage space for ground service equipment.

The public portion of the facility is shifted slightly to the south in order to preserve existing parking and roadway facilities. The layout of this alternative is less space efficient because of the circulation and queuing space requirements needed to provide LOS C. As a result, this alternative requires 143,000 sf to provide the desired LOS. Additionally, the alternative would not easily allow for use of daylighting and other energy efficiency techniques that enhance the customer experience. Public circulation and concourse areas would be closed in, artificially lit, and space constrained with interior corridors and spaces. The alternative would improve efficiency and operational flexibility compared to the existing terminal. However, future operational flexibility that may necessitate changes in uses in the future as air travelers progress within the building from public spaces or ticketing to the security check point or from concessions to hold room and vice versa would not be optimal. Similar to Alternatives 3 and 4A, the main floor of the terminal would include the public lobby, ticketing, baggage claim, security checkpoint, hold rooms, and concessions/public amenities. The baggage handling facilities including baggage screening, mechanical and electrical rooms, and operational spaces would be located below the main floor of the terminal at apron level.

The alternative would include the terminal access roadway, parking reconfiguration, and ARFF relocation as discussed in Sections 3.6.1 and 3.6.2.

The alternative would include ancillary features of the proposed parking, roadway, terminal building, and ARFF. Landscaping and the extension and installation of utilities to service the proposed parking reconfiguration, roadways, terminal building, and ARFF facility, would be included in the project. Utilities include, electric, telecommunications, sanitary sewer, water, natural gas, and stormwater management features.

In addition, security improvements, such as security lighting, video surveillance system, security fence relocation, would be implemented. The existing vehicle impound lot and working canine kennels and canine holding areas adjacent to the ARFF building would be displaced by this alternative. The adjacent vehicle impound lot, working canine kennels and canine holding areas would be relocated to off-airport County-owned facilities.

The existing terminal facility would continue to operate during construction of Alternative 4B. Terminal Circle Drive and passenger parking would be modified to maintain access to the existing terminal during construction. Similar to Alternative 4A, construction duration would be approximately 26 months. Demolition of the existing terminal building, baggage claim building, ARFF building, and portions of the terminal and access roads, and parking areas would be necessary for the construction of Alternative 4B.

3.6.5. Alternative 4C- Replacement Design C

Alternative 4 proposes a two-story building, approximately 125,000 SF, located approximately 150 feet south of the existing terminal facility. This alternative utilizes the falling terrain between the

airside and the landside to provide a more space efficient layout, allowing LOS C within a smaller footprint than the other alternatives. Like the other alternatives, it would necessitate the expansion of the terminal apron south to service the new building and aircraft parking. The alternative would also provide four aircraft parking positions and PBBs. The existing apron would remain and would be provide storage space for ground service equipment. The portion of the structure adjacent to the apron would be secure in that passengers arriving and/or waiting to board a flight have passed through the security screening checkpoint. The remainder of the structure, or the public portion would be utilized for ticketing, meters and greeters, rental cars and baggage claim. Terminal Building Replacement Alternative 4C is shown in **Figure 3-11** and the interior layout in **Figure 3-12.**

The terminal layout provides an opportunity to meet current customer demand as well as providing flexibility among the ticketing, security check point, and meet/greet areas to expand or

reduce these areas as needed to accommodate crowds. It also allows for improved circulation and concession space. The shape of the building easily allows the use of daylighting and other energy efficiency techniques to enhance the customer experience. The alternative provides an open and airy experience for passengers entering the public lobby/unsecure space and transitioning through the security screening checkpoint to the secure space, which results in a positive experience for travelers. Wayfinding in this alternative is intuitive as the airside can be seen directly from the public lobby, through the security checkpoint, and through the hold room. Similar to Alternatives 3, 4A, and 4B, the main floor of the terminal would include the public lobby, ticketing, baggage claim, security checkpoint, hold rooms, and concessions/public amenities. The baggage handling facilities including baggage screening, mechanical and electrical rooms, and operational spaces would be located below the main floor of the terminal at apron level.

The alternative would include the terminal access roadway, parking reconfiguration, and ARFF relocation as discussed in Sections 3.6.1 and 3.6.2.

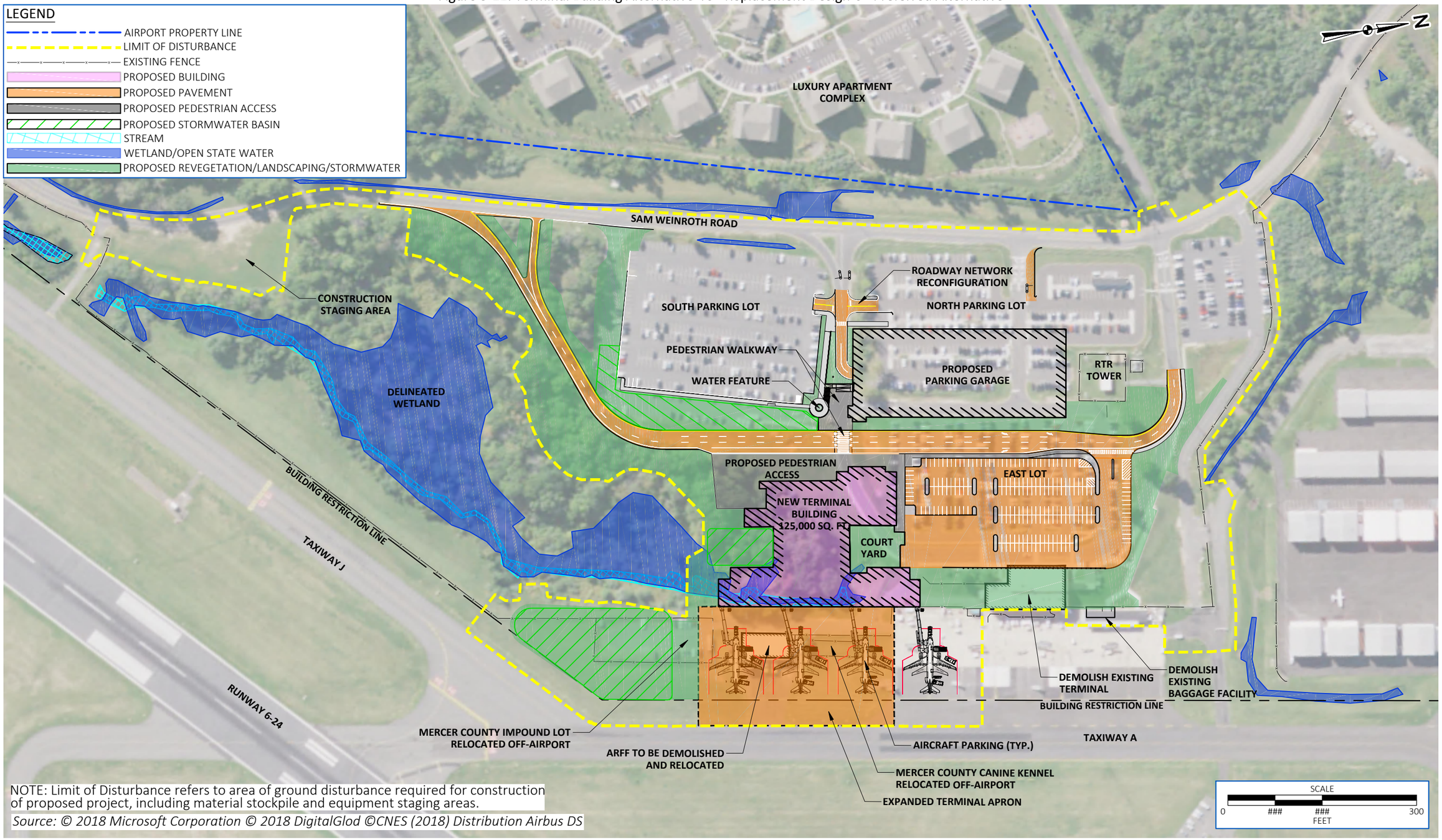
Alternative 4C would include ancillary features of the proposed parking, roadway, terminal building, and ARFF. Landscaping and the extension and installation of utilities (e.g. electric, telecommunications, sanitary sewer, water, natural gas, and stormwater management features) to service these features would be included in the project.

In addition, security improvements, such as security lighting, video surveillance system, security fence relocation, would be implemented. The existing vehicle impound lot and working canine kennels and canine holding areas adjacent to the ARFF building would be displaced by this alternative. The adjacent vehicle impound lot, working canine kennels and canine holding areas would be relocated to off-airport County-owned facilities.

Like the other alternatives, the existing terminal facility would continue to operate during construction of Alternative 4C. However, Terminal Circle Drive and passenger parking would need to be modified in order to maintain access to the existing terminal during construction and the southern, exit only, roadway would be closed during construction. Similar to Alternatives 4A and 4B, construction duration would be approximately 26 months.

Demolition of the existing terminal building, baggage claim building, ARFF building, and portions of the terminal and access roads, and parking areas would be necessary for the construction of

Figure 3-11: Terminal Building Alternative 4C - Replacement Design C - Preferred Alternative



NOTE: Limit of Disturbance refers to area of ground disturbance required for construction of proposed project, including material stockpile and equipment staging areas.

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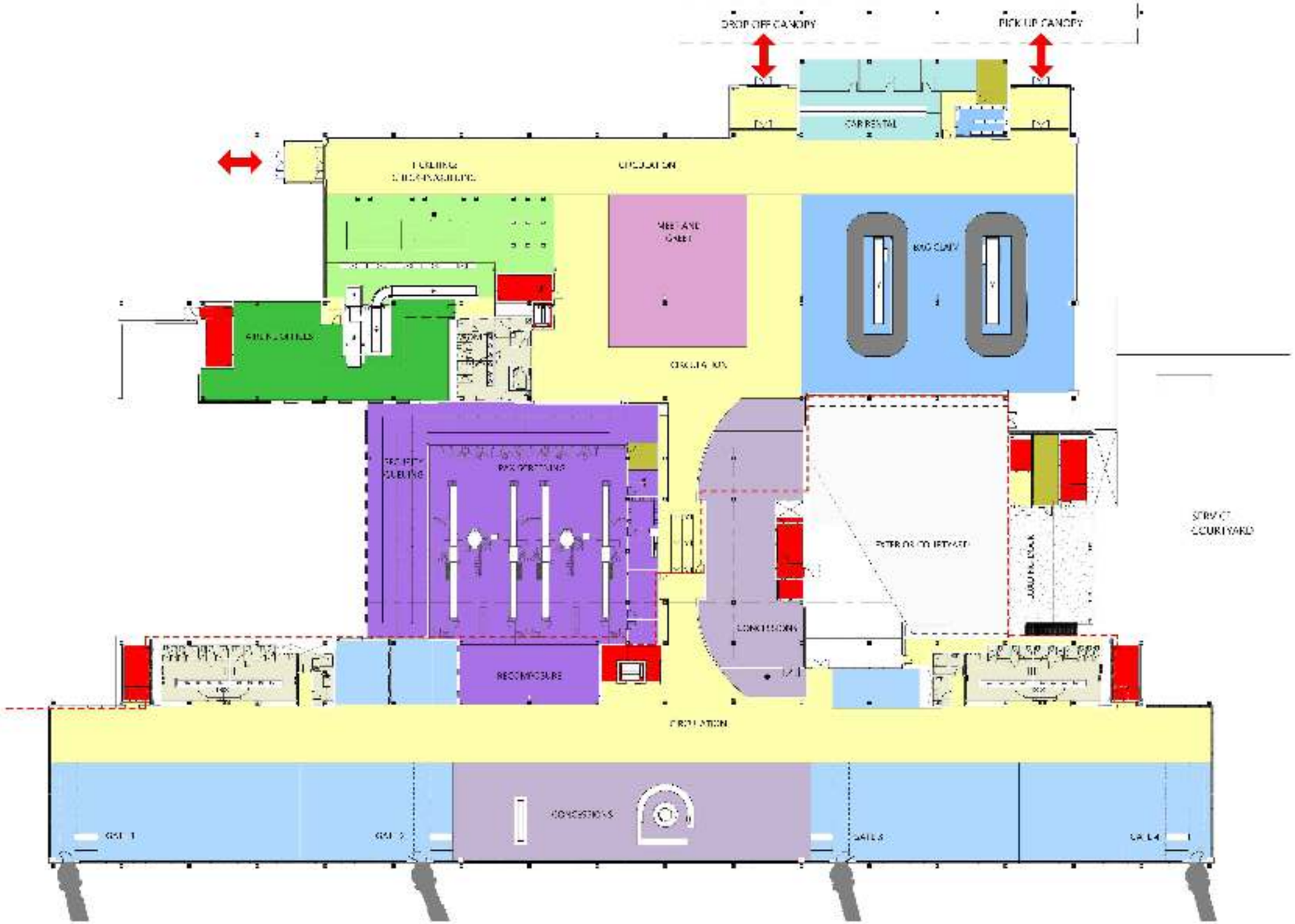
Figure 3-12: Terminal Building Alternative 4C - Interior Layout



Source: Urban Engineers

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Alternative 4C. Demolition of these features would take place after construction of the replacement Terminal is complete.

3.7. TERMINAL BUILDING REPLACEMENT ALTERNATIVES COMPARISON

The feasibility of the terminal building alternatives was measured against a series of criteria consistent with the proposed Purpose and Need as discussed in Section 3.2. **Table 3.8** shows the results of the screening process for the terminal building alternatives. They are scored with a +, o or - to allow for a relative comparison between alternatives and variations. Information supporting the evaluation metrics was based on information provided in the appropriate alternative sections.

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Table 3-8: Alternatives Screening Matrix

SCREENING STEP	EVALUATION CRITERIA	NO ACTION[1] – ALTERNATIVE 1	ALTERNATE LOCATIONS – ALTERNATIVE 2	TERMINAL RECONSTRUCTION – ALTERNATIVE 3	REPLACEMENT - ALTERNATIVE 4A	REPLACEMENT - ALTERNATIVE 4B	REPLACEMENT - ALTERNATIVE 4C
STEP 1: PURPOSE AND NEED	Does the alternative fulfill the Purpose and Needs of the Proposed Action? Would the alternative address existing chronic and severe passenger terminal area congestion and lack of services due to significantly undersized facilities?	No (33,000 SF[2])	Based on siting considerations, it was determined the existing west quadrant is best suited for the terminal.	Yes (125,000 SF)	Yes (158,000 SF)	Yes (143,000 SF)	Yes (125,000 SF)
CONTINUE TO STEP 2 SCREENING? (YES OR NO)		N/A	No	Yes	Yes	Yes	Yes
OPERATIONAL FLEXIBILITY AND EFFICIENCY	Does the alternative expedite movement of aircraft and/or passengers? Is passenger safety and convenience improved upon? Does design allow internal flexibility? Does the alternative allow for the use of jet bridge loading versus apron loading?	N/A	N/A	(+) Good	(-) Poor	(o) Fair	(+) Good
PHASING AND CONSTRUCTABILITY	How will construction of the alternative impact airport operations during the construction period? Can construction of the alternative be phased efficiently so disruptions to airport operations, services, and revenue are minimized to the extent possible?	N/A	N/A	(-) Poor	(o) Fair	(o) Fair	(o) Fair
DEVELOPMENT COST	How does the development cost of the alternative compare to other alternatives that achieve the same goal? Mercer County's construction budget for the total project is $130 million.	N/A	N/A	(-) Poor ($162.5 million[3])	(o) Fair ($121.3 million)	(o) Fair ($115.3 million)	(+) Good ($109.7 million)
TOTAL SCORE		N/A	N/A	-1	-1	0	2
STEP 3: ANALYZE IN ENVIRONMENTAL CONSEQUENCES? (YES OR NO)		Yes	N/A	No	No	No	Yes

Source: McFarland-Johnson, Inc. and Urban Engineers

[1] In accordance with FAA Order 1050.1F, the No Action alternative is carried forward for analysis of environmental consequences.
[2] The sizes of the proposed Terminal buildings for Alternative 4A to 4C are based on a preliminary level space program that was identified. It is the unoptimized anticipated space for each alternative for comparative purposes.
[3] Costs include construction of the terminal building and all connected actions, such as utilities, ARFF relocation, with the exception of the parking garage. The parking garage was not included because it is identical across all alternatives. A breakdown of costs is provided in Table 3-9.

Table 3-9: Terminal Alternatives Cost Breakdown

Alternative	Terminal Cost	Airside Cost	Landside Cost	Subtotal	Parking Garage Cost	Total
Alternative 3 (125,000 sf)	$113.9 M ($911/sf)	$7.3 M	$5.7 M	$135.6 M	$26.9 M	$162.5 M
Alternative 4A (158,000 sf)	$87.5 M ($554/sf)	$7.3 M	$15.9 M	$110.7 M	$26.9 M	$137.6 M
Alternative 4B (143,000 sf)	$82.4 M ($576/sf)	$7.3 M	$16.1 M	$105.8 M	$26.9 M	$132.7 M
Alternative 4C (125,000 sf)	$76.1 M ($609/sf)	$7.3 M	$14.7 M	$109.7 M	$26.9 M	$125.0 M

Source: Urban Engineers
Note: The ARFF Cost is estimated at $10.4 M for Alternatives 4A, 4B, and 4C, and $1.5 M for rehabilitation/reconstruction for Alternative 3.

The results of the alternatives analysis identified, **Alternative 4C- Replacement Design C**, as the preferred alternative since it received the highest score and for reasons summarized below. A new, adequately sized terminal building is necessary to meet the Purpose and Need and address the existing and forecast demands of the Airport. Therefore, Alternative 4C and the No Action alternative are being carried forward.

In accordance with FAA Orders 5050.4B and 1050.1F 6-2.1(d)., there is no limit requirement for a number of alternatives or specific range of alternatives to be included in an EA. The EA may limit the range of alternatives to the proposed action and no action when there are no unresolved conflicts concerning alternative uses of available resources. All of the alternatives were developed with an emphasis on minimizing effects on available resources. As such, there is not a meaningful difference between the alternatives with regard to use of resources and no unresolved conflicts have been identified. As a result, Alternative 4C and the No Action alternative are the only ones being carried forward. Explanations for why the other alternatives were considered but eliminated from consideration are provided below.

Alternate locations were considered, however were determined to be impracticable. The landside elements (parking lots and roadways) and airside elements (aprons and taxiways) exist in the current location and reproducing them elsewhere on the Airport would be cost prohibitive than providing an adequately sized terminal building in its current location. Expansion of the existing terminal was also determined to be impracticable due to the operational constraints during construction and significant costs. As stated in Section 3.5, maintaining operations and providing passenger access during construction would be challenging and costly and therefore, the alternative was not developed further.

Alternatives 4A and 4B require additional square footage to provide the desired LOS C due to inefficiencies in their layout and their less than ideal fit with the existing terrain. Additionally, these alternatives provide a less pleasing passenger experience and are less energy efficient due to enclosed interior corridors that require more artificial lighting rather than capitalizing on exterior natural light. The preferred terminal replacement alternative was chosen based on the

continued operation of the existing facility during construction, distinct secure and non-secure operational layout, and operational flexibility.

Terminal Building Replacement Alternative 4C would provide a new terminal building at a slightly lower cost than the other alternatives. Alternative 4C addresses the Purpose and Need with the smallest footprint, demonstrating that the layout is the most efficient use of space. The layout is flexible, allowing the airport to adapt to evolving traveler or other needs (e.g. security, passenger health and safety) over time. Compared to the other alternatives, Alternative 4C facilitates the use of daylighting to improve energy efficiency and provide the most pleasing customer experience. The open nature of the design also enhances the customer circulation, wayfinding, and experience compared to the other alternatives.

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4. AFFECTED ENVIRONMENT

Chapter 4 describes the environmental and social settings of the TTN proposed terminal replacement project. Information pertaining to the affected environment was obtained through on-site investigations, a review of published information, agency correspondence, and discussions with Airport personnel and public officials. The information presented herein serves as a basis for the assessment of environmental, social, and economic consequences (refer to Chapter 5) associated with the Proposed Action.

The study area evaluated for the following resources consists of the limit of disturbance boundary for the proposed terminal and ARFF facility, as shown on **Figure 3-11** and in some cases, resources are evaluated within the entire airport property.

The following resources are not relevant to the Proposed Action due to their absence within the project area as well as their absence in the surrounding area, and therefore no further analysis was conducted.

- Coastal Zones
- Coastal Barriers
- Section 4(f)
- Farmland
- Wild and Scenic Rivers

4.1. AIR QUALITY

This section sets forth the existing conditions of air quality within the TTN region. Additional documentation of air quality standards, requirements, existing conditions, and analysis methodology are discussed in more detail in the *Trenton-Mercer Airport New Terminal Environmental Assessment Air Quality Technical Memorandum* prepared by Harris, Miller, Miller, & Hanson, Inc. (HMMH) (see **Appendix** E).

4.1.1. Regulatory Setting

Air quality is regulated at the federal level by the Clean Air Act (CAA), which is administered by the U.S. Environmental Protection Agency (USEPA) in coordination with state and local governments.

4.1.1.1 National Ambient Air Quality Standards

The USEPA is responsible for enforcing the CAA (42 U.S.C. §§ 7401 to 7671q). The CAA as enacted in 1970 and amended in 1977 and 1990 is the comprehensive federal law regulating air pollutant emissions from stationary and mobile sources. The CAA requires the USEPA, under 40 CFR Subchapter C, to establish National Ambient Air Quality Standards (NAAQS) that apply throughout the United States and its territories. Under the authority granted by the CAA, USEPA has established NAAQS for six contaminants referred to as criteria pollutants: Carbon Monoxide (CO), Nitrogen Dioxide (NO_2), Ozone (O_3), Particulate Matter (PM), Sulfur Dioxide (SO_2), and Lead (Pb).

Ozone is a secondary pollutant, meaning that it is formed from reactions of "precursor" compounds under certain conditions; therefore, O_3 is addressed through analysis of its precursors—volatile organic compounds (VOC) and oxides of nitrogen (NOX). The NAAQS are categorized into primary standards and secondary standards. Primary standards are intended to protect the human health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards are environmental-based and intended to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. Table 1 of the Technical Memorandum presents the NAAQS that are currently in effect for criteria air pollutants.

The CAA assigns primary responsibility to individual states to assure compliance with the NAAQS. Air quality regions that meet the NAAQS for a criteria pollutant are designated as being in attainment. Areas with poor air quality that do not meet the NAAQS for one or more criteria pollutant are designated by the USEPA as nonattainment areas. Nonattainment designations under the CAA for O_3 are categorized into levels of severity—marginal, moderate, serious, severe, or extreme—based on the level of concentrations above the standard, which is also used to set the required attainment date. When a nonattainment area is redesignated as an attainment area, the CAA requires that a maintenance plan be put in place for a period between 10 to 20 years to ensure continued compliance with the corresponding NAAQS. Therefore, a former nonattainment area is also defined as a maintenance area.

The CAA also specifies future dates for achieving compliance with the NAAQS for nonattainment areas; these states must produce a State Implementation Plan (SIP) that defines mitigation strategies and timelines for attaining the NAAQS. Nonattainment areas that attain the NAAQS for a specific criteria pollutant are designated maintenance areas, and area maintenance plans are required to demonstrate continuing attainment of the NAAQS.

4.1.1.2 General and Transportation Conformity

The CAA requires federal agencies to ensure that actions proposed to occur in a designated nonattainment or maintenance area conform to the appropriate SIP, also known as General Conformity. The General Conformity Rule requires that a proposed action comply with the SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards. Under the General Conformity regulations, compliance is presumed if a proposed action would not cause emissions that exceed de minimis levels defined for the criteria pollutants. If the proposed action's emissions exceed the de minimis levels, a conformity determination would be required. The General Conformity Rule applies to all federal actions except for certain highway and transit programs that must comply with the Transportation Conformity Rule contained in 40 CFR Part 93, Subpart A. The Transportation Conformity Rule is not applicable to this project as the project does not require any approvals from the Federal Highway Administration (FHWA) or the Federal Transit Administration (FTA) and would not include any funding subject to Title 23 U.S.C. Therefore, only General Conformity applies to this project.

4.1.2. Attainment Status

Air quality in the TTN area (i.e. Mercer County) is designated by USEPA as in attainment for all criteria pollutants except the 2008 and 2015 eight-hour ozone standard and the $PM_{2.5}$ standard based on recent air monitoring data collected by the state agency. USEPA classifies the areas into categories based on the severity of non-attainment based on air quality. The classifications are, in increasing order of severity: Marginal, Moderate, Serious, Severe, and Extreme. Specifically, the TTN area is designated as a marginal non-attainment area for the 2008 and 2015 eight-hour ozone standard and maintenance area for the 2006 $PM_{2.5}$ standard.

Since the area is designated as both non-attainment and maintenance with the current USEPA air quality standards, the Proposed-Action Alternative for this project was analyzed for comparison with the General Conformity requirements of the CAA to ensure the net change in air emissions are below applicable air quality standards.

4.2. BIOLOGICAL RESOURCES

Biotic resources refer to the various types of flora (plants) and fauna (fish, birds, reptiles, amphibians, mammals, etc.), including state and federally listed threatened and endangered species, in a particular area. It also encompasses the habitats supporting the various flora and fauna, including rivers, lakes, wetlands, forests, and other ecological communities. Airport projects can affect these ecological communities and thereby affect vegetation and wildlife populations.

4.2.1. Ecological Communities

Most of the Airport and adjacent areas have been significantly disturbed by past Airport construction and the surrounding residential and commercial development. Most of the habitat at the Airport consists of maintained grassland, wetlands and drainages, interspersed with paved surfaces. All habitats identified at the Airport are common and secure within the region.

In 1994, the New Jersey Division of Fish and Wildlife's (NJDFW) Endangered and Nongame Species Program (ENSP) adopted a landscape level approach to rare species protection called the Landscape Project. The Landscape Project has been designed to provide peer reviewed, scientifically-sound information that is easily accessible and can be integrated with planning, protection and land management programs at every level of government, as well as non-governmental organizations and private landowners. The ENSP has developed landscape maps that identify critical rare species habitats based on land use classifications, documented rare species locations, and habitat models linked to each of the rare, threatened, or endangered species.

The habitat patches are assigned a Rank of 1 through 5, based on the status of the species present as follows:

Rank 5: Presence of one or more federally-listed threatened or endangered species.
Rank 4: Presence of one or more state-listed endangered species.
Rank 3: Presence of one or more state-listed threatened species.
Rank 2: Presence of one or more non-listed state priority species.

Rank 1: Habitat patches with minimum habitat specific suitability size requirement for threatened or endangered or priority species, but do not intersect with any confirmed occurrence.

In general, this ranking system is created by review of aerial photography and habitat type extracted from the New Jersey Department of Environmental Protection (NJDEP) Land Use/Land Cover (LU/LC) geographic information system data layer. Each habitat patch, identified by aerial photograph review, is delineated and assigned a unique identification number. Habitat patches are classified or ranked based upon the status of the particular species that is assumed or known to be present.

According to NJDEP Landscape Project, the TTN property has been determined to contain Rank 1 and Rank 2 habitats, with only Rank 1 habitats occurring within the proposed project area (see **Figure 4-1**). A majority of the Airport, including portions of the proposed project area, is unmapped by Landscape Project.

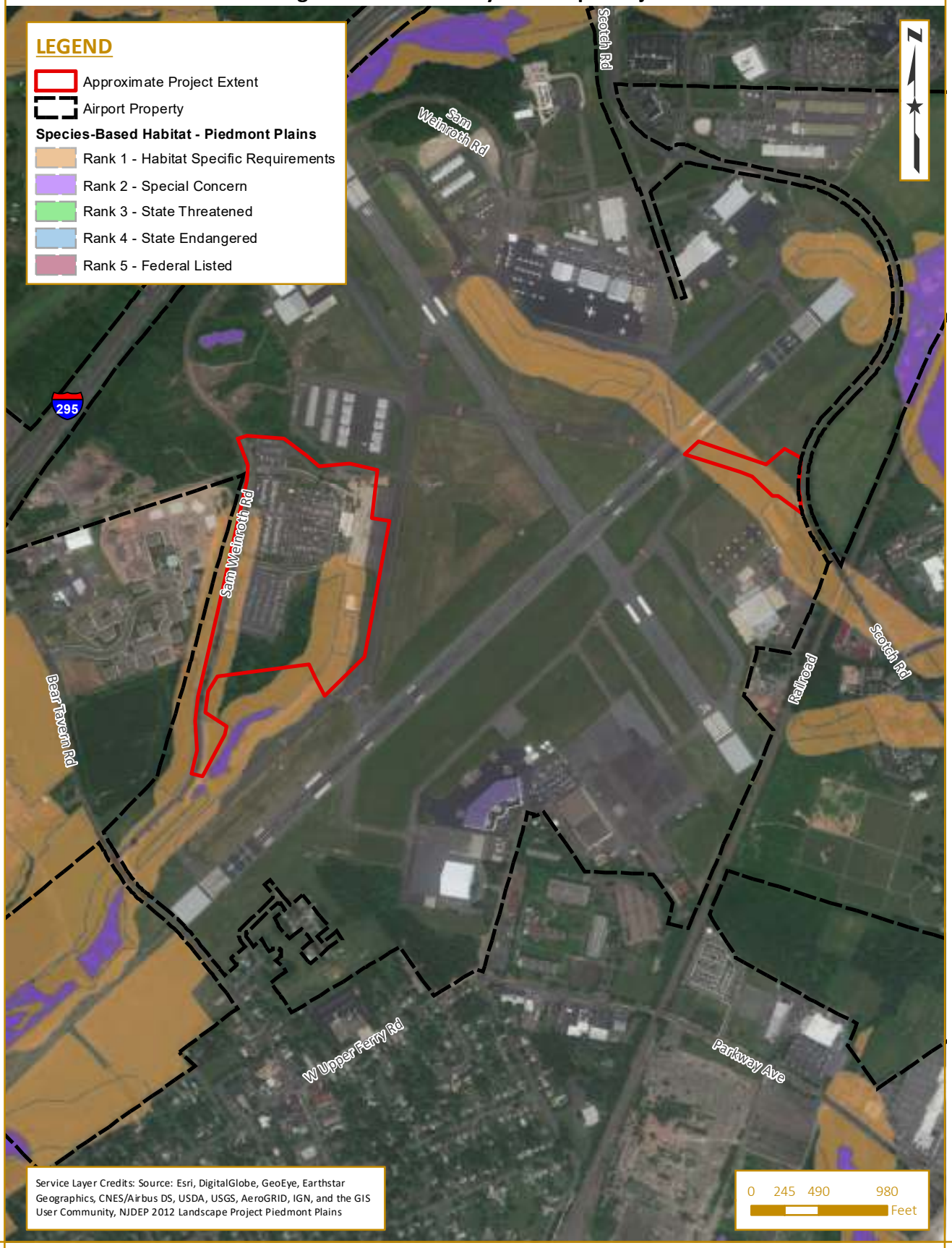
The study area consists of a variety of habitats, including previously disturbed, developed lands; regularly and periodically maintained lawns; secondary growth upland forest; woody old field; early successional fields; and freshwater wetlands. Land surrounding the Airport consists of mixed deciduous and oak-pine forests interspersed with residential and commercial development and agricultural lands.

Secondary growth forests are located primarily to the south, west and north of the existing airport terminal. The mixed forest and understory provide habitat for a variety of wildlife species including, but not limited to, white-tailed deer (*Odocoileus virginianus*), small mammals, bats, birds, raptors, wild turkeys (*Meleagris gallopavo*), and insects. Woody old fields are located to the west and north of the existing airport terminal. The woody old field habitats of the airport provide habitat for white-tailed deer, small mammals, birds, wild turkeys, and insects. A majority of the grasslands within the study area are regularly or periodically maintained. These areas are periodically mowed to conform with routine airport maintenance requirements. Maintained grasslands provide habitat for white-tailed deer, small mammals, bats, birds, insects, and reptiles.

Freshwater wetlands identified within the study area include forested, scrub-shrub, and emergent wetland types (see Section 4.8.1 below for more detail). Wetlands provide habitat for a variety of wildlife, including but not limited to, white-tailed deer, bats, other small mammals, amphibians, reptiles, birds, and insects.

Correspondence from the NJDEP Office of Natural Lands Management, dated January 22, 2019, states that the New Jersey Natural Heritage Program (NHP) Database and the NJDEP NJDFW Landscape Project (Version 3.3) has records of potential vernal pool habitat in the immediate vicinity of the project site. Potential vernal pool habitat areas were identified by Rutgers University Center for Remote Sensing and Spatial Analysis (CRSSA); however, not all potential vernal pool habitat sites/areas have been field verified by the NJDEP. The NJDEP GeoWeb indicates that the potential vernal pool habitat on Airport property is located north of the existing terminal building (Vernal Pool Habitat ID 1563).

Figure 4-1: New Jersey Landscape Project



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There are no other habitats located on the Airport that are designated as "critical habitat" for any state or federally listed threatened or endangered species, or species of special concern. State or federally listed threatened or endangered species or species of special concern are discussed in the next section. Further information regarding state and federally regulated waterways, floodplains, and wetlands is presented in Sections 4.14.

4.2.2. Federally Protected Species

The U.S. Fish and Wildlife Service (USFWS) protects federally-listed endangered and threatened wildlife and plant species and their habitat under the 1973 Endangered Species Act (ESA). The ESA of 1973 directs all federal agencies to work to conserve federally-listed endangered and threatened species and to use their authorities to further the purposes of the ESA. Section 7 of the ESA, titled "Interagency Cooperation," is the mechanism by which federal agencies ensure the actions they take, including those they fund or authorize, do not jeopardize the existence of any federally-listed species. Endangered species are those which are in imminent danger of extinction throughout their range or a significant portion of its range because of a loss or change in habitat, over-exploitation, predation, disease, inadequacy of existing regulatory mechanisms, or other natural or manmade factors affecting its continued existence. Assistance is needed to prevent future extinction. Threatened species are those which are likely to become endangered within the foreseeable future throughout all or a significant portion of their range if conditions surrounding them begin or continue to deteriorate. Candidate species are species for which the USFWS has sufficient information on the biological vulnerability and threats to support issuance of a proposal list, but issuance of a proposed rule is currently precluded by higher priority listing actions. Candidate species do not receive substantive or procedural protection under the ESA; however, USFWS does encourage federal agencies and other appropriate parties to consider these species in the planning process.

The USFWS's Information, Planning and Consultation (IPaC) System is a project-planning tool that streamlines the environmental review process by identifying federally-listed threatened and endangered species, critical habitat, migratory birds, and other natural resources that are known or expected to be on or in the vicinity of a project area, and thus potentially impacted by a project. Through IPaC, an Official Species List was obtained from the USFWS on August 21, 2020 and is included in **Appendix C**. Based on the Official Species List, the USFWS did not identify critical habitats within the Airport park; however, the list did identify the Indiana bat (*Myotis sodalis*, federally Endangered) and Northern long-eared bat (NLEB; *Myotis septentrionalis,* federally Threatened) as federal species that should be considered in effects analysis. Species listed by the USFWS are included in **Table 4-2**.

According to the *New Jersey Municipalities with Hibernation or Maternity Occurrence of Indiana Bat or Northern Long-Eared Bat*, prepared by USFWS New Jersey Field Office and last revised April 25, 2017, the project area is not located within a municipality identified as maternity or hibernation habitat for the NLEB or Indiana bat.

During summer months, NLEBs and Indiana bats roost singly or in colonies beneath bark, in cavities, or in crevices of both live and dead trees, typically greater than 3 inches in diameter. Suitable roosting habitat for NLEBs and Indiana bats is potentially present in the forested and treed

areas on and in the vicinity of the Airport property. NLEBs and Indiana bats may also transit other portions of the Airport property for foraging or other transient purposes.

A final 4(d) rule, published in the *Federal Register* on January 14, 2016, describes measures necessary to provide for the conservation of the NLEB. Tree removal within 150 feet of a known occupied maternity roost tree from June 1 through July 31 or within 0.25 mile of a hibernaculum at any time is considered an "incidental take" and is prohibited.

In August 2015, a summer acoustic study was conducted at the Airport in support of a separate and independent project, the runway obstruction removal project, to determine the presence or probable absence of federally listed bat species, specifically Indiana bat and NLEB. The level of effort for the survey was based on the maximum area of land disturbance that could be expected as a result of the obstruction removal project. As such, the 2015 study assumed that the proposed project would require the removal of individual or groups of trees that affect navigable airspace within an approximate 130 acres of forested habitat. Please note that the approximate 3.5 acres of tree clearing required for the terminal replacement project completely overlaps with the proposed obstruction removal project study area, which was based on the maximum area of possible land disturbance. Also note that the amount of tree clearing proposed as part of the obstruction removal project has since been significantly reduced to only include critical obstructions, which has been determined to be approximately 31 acres collectively of forested habitat, generally located at the departure and approach ends of each runway.

An informal habitat assessment conducted as part of the study determined that potential habitat in the area was characterized as being low to moderate quality for NLEBs and not likely to support Indiana bats. Most of the habitat consisted of early to mid-successional forest with a high amount of clutter in the understory and a limited number of potential roost trees. Observations of the surrounding area indicated this type of habitat was plentiful outside the Airport.

Automated and qualitative analysis of approximately 90 hours of acoustic data (i.e., eight detector nights) were collected during the summer bat acoustic survey for the obstruction removal project. Automated acoustic analysis determined the likely presence of eight species within the project vicinity, including the federally endangered Indiana bat and the federally threatened NLEB; however, qualitative analysis of the 16 suspected *Myotis* spp. calls confirmed only one of these calls as being from a *Myotis* species. Both the software and qualitative analysis indicate the call likely came from a little brown bat (*Myotis lucifugus*). Based on the habitat and acoustic survey data collected, it was determined that the habitat is unlikely to support Indiana bats and that any potential impacts to NLEB resulting from the obstruction removal project would be negligible to both the local and overall population.

As stated in a letter, dated October 8, 2015, the USFWS New Jersey Field Office concurred that the loss of foraging and roosting habitat due to the separate obstruction removal project was anticipated to be insignificant or discountable since no NLEBs or Indiana bats were detected during the acoustic study. The USFWS also agreed that the proposed obstruction removal project was not likely to adversely affect NLEB and Indiana bat. Although the activities associated with the obstruction removal project are not likely to adversely affect federally-listed species, the USFWS has indicated that the project may impact other bat species that are currently being reviewed for listing under the ESA, specifically little brown bat (*Myotis lucifugus*) and tri-colored bat (*Perimyotis*

subflavus); therefore, the USFWS recommends a time-of-year restriction on tree clearing activities for any trees ≥5" diameter at breast height from April 1 through September 30 to prevent incidental death or injury to other adult bat species and/or their pups.

Coordination with the USFWS New Jersey Field Office was conducted in October 2019 to determine whether additional presence/absence studies would be required. Results of the coordination are discussed in Section 5.2.2. All USFWS correspondence is included in **Appendix C**.

4.2.3. State Protected Species

The State of New Jersey Endangered and Nongame Species Conservation Act (N.J.S.A. 23:2A-13 *et seq*) includes the listing of state endangered animal species (N.J.A.C. 7:25-4:13) and a Nongame Species list, including threatened species (N.J.A.C. 7:25 4.179(a)). As part of this Act, all New Jersey animals appearing on the federal list are also included on this State list. Endangered plants in New Jersey have been identified in accordance with the *Endangered Plant Species List Act* (N.J.S.A. 13:1B-15.151 *et seq*). Under New Jersey legislation, an endangered species is one that has had its prospects of survival or recruitment in jeopardy or likely to be so within the foreseeable future due to the destruction, drastic modification, or severe curtailment of its habitat; over-utilization for scientific, commercial or sporting purposes; reduced in significant numbers by disease, pollution, or predation; or other natural or manmade factors affecting its survival within the state (N.J.S.A. 23:2A-3). Nongame species protected by New Jersey include any wildlife for which a legal hunting or trapping season has not been established or which has not been classified as an endangered species by statute or regulation by New Jersey (N.J.S.A. 23:2A-3).

Database searches of the New Jersey NHP and Landscape Project (Version 3.3) were conducted to ascertain whether state or federally-listed threatened or endangered species, critical habitat, or rare natural communities have been recorded onsite, in the immediate vicinity (within 0.25 mile), or within one mile of the project site as per the Endangered and Nongame Species Conservation Act (N.J.S.A. 23:2A-1et seq.) and the ESA of 1973 (16 U.S.C. 1531 et seq.), respectively. Database searches were conducted for the terminal replacement project study area and the ARFF relocation project study area. These study areas include each project area limits of disturbances, as well as immediate adjacent areas that contain environmentally sensitive areas, such as wetlands.

As stated in a letter, dated January 22, 2019 (NHP File #19-4007437-15901), the NHP does not have any records of rare plants, threatened or endangered wildlife species or wildlife habitat, or Natural Heritage Priority Sites within the terminal replacement project study area (referred to as "Area 1" on corresponding NHP letter response). However, the NHP does have foraging records of great blue heron (*Ardea herodias*), a State-listed Species of Special Concern, which is identified to the south of the proposed terminal replacement limit of disturbance. The NHP does not have any records of nesting for this species. New Jersey Species of Special Concern are identified by the State as species that warrant special attention because of evidence of population decline or inherent vulnerability to environmental deterioration or habitat modification that would result in the species becoming threatened if conditions surrounding the species begin or continue to deteriorate. Species listed as special concern are provided this special attention via regulatory protections on certain lands owned/managed by the State of New Jersey, including State Parks and Green Acres encumbered open space parcels. Since the subject parcels are not subject to these jurisdictions, no further analysis of NJ Special Concern Species is required.

Lastly, as discussed in Section 4.1.1, the NHP has records of potential vernal pool habitat in the immediate vicinity of the terminal project site. Refer to **Table 4-2** for a list of species identified by the NHP and **Appendix C** for a copy of the NHP letter response for the terminal replacement project study area (referred to as "Area 1" on corresponding NHP letter response). The potential habitat areas for the rare wildlife species on and in the immediate vicinity of the project area are shown on **Figure 4-2**.

A separate database search was also requested from the NHP for the proposed ARFF study area (referred to as "Area 2" on corresponding NHP letter response). As stated in a letter, dated June 7, 2019 (NHP File #19-4007437-16838), the NHP does not have any records of rare plants, wildlife, or ecological communities; threatened or endangered wildlife species or wildlife habitat; Natural Heritage Priority Sites; or other animal species tracked by the New Jersey Endangered and Nongame Species Program on the project site. Refer to **Table 4-2** for a list of species identified by the NHP and **Appendix C** for a copy of the NHP letter response for the ARFF project study area (referred to as "Area 2" on corresponding NHP letter response).

4.2.4. Biotic Resources Summary

The majority of the Proposed Action project areas consist of maintained airfield grasslands, previously disturbed and developed areas, and forested areas. The following table provides acreages of the land uses and covertypes on the proposed terminal and ARFF project areas.

Table 4-1: Land Uses and Covertypes on Project Area

Land Use or Covertype	Project Area Acreage	
	Terminal	ARFF
Maintained Grass (including airfield)	8.5	4
Forested	5.25	N/A
Roads, buildings, and other paved or impervious surfaces	22.25	0.1
Total	36	4.1

Source: McFarland-Johnson, Inc.

Both federal and state threatened and endangered species are located on or within the vicinity of the project areas. **Table 4-2** lists the species, their federal and state status, and how they are associated with the project areas. See Section 5.7 for further information regarding potential impacts to state and federally listed threatened and endangered species.

Table 4-2: Threatened and Endangered Species On, In the Immediate Vicinity Of, and Within One Mile of the Trenton-Mercer Airport

Common Name	*Scientific Name*	State/Federal Status	Record Type	Record Location	Record Source
Bald Eagle	*Haliaeetus leucocephalus*	State Endangered / Delisted[1]	Foraging	Terminal: Within 1-Mile ARFF: N/A	NJDEP NHP[2]
Cooper's Hawk	*Accipiter cooperii*	Special Concern/Not Listed	Breeding Sighting	Terminal: Vicinity ARFF: N/A	NJDEP NHP[2]
Eastern Meadowlark	*Sturnella magna*	Special Concern/Not Listed	Breeding Sighting	Terminal: Within 1-Mile ARFF: Within 1-Mile	NJDEP NHP[2,3]
Grasshopper Sparrow	*Ammodramus savannarum*	Threatened/Not Listed	Breeding Sighting	Terminal: Within 1-Mile ARFF: Within 1-Mile	NJDEP NHP[2,3]
Great Blue Heron	*Ardea herodias*	Special Concern/Not Listed	Foraging	Terminal: Project Site ARFF: Vicinity	NJDEP NHP[2,3]
Indiana Bat	*Myotis sodalis*	Endangered/Endangered	Potential	On Project Site[4]	USFWS IPaC[5]
Northern Long-Eared Bat	*Myotis septentrionalis*	Not Listed/Threatened	Potential	On Project Site[4]	USFWS IPaC[5]
Wood Thrush	*Hylocichla mustelina*	Special Concern/Not Listed	Breeding Sighting	Terminal: Vicinity ARFF: N/A	NJDEP NHP[2]

Source: NJDEP and USFWS

Notes:[1] *Federally protected under the Bald and Golden Eagle Protection Act*

[2] *NJDEP Natural Heritage Program Letter, dated January 22, 2019 (NHP File #19-4007437-15901)*

[3] *NJDEP Natural Heritage Program Letter, dated June 7, 2019 (NHP File #19-4007437-16838)*

[4] *Species may be present in the area of a Proposed Action.*

[5] *USFWS Official Species List, dated August 21, 2020 (Consultation Code: 05E2NJ00-2020-SLI-0096).*

4.3. CLIMATE

Climate change is a global phenomenon that can have local impacts.[1] Scientific measurements show that Earth's climate is warming, with concurrent impacts including warmer air temperatures, increased sea level rise, increased storm activity, and an increased intensity in precipitation events. Increasing concentrations of greenhouse gas (GHG) emissions in the atmosphere affect global climate.[2][3] GHG emissions result from anthropogenic sources, including the combustion of fossil fuels. GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone (O_3), and fluorinated gases.[4] CO_2 is the most important anthropogenic GHG because it is a long-lived gas that remains in the atmosphere for up to 100 years.

4.3.1. Regulatory Setting

Although no federal standards have been set for GHG emissions, it is well established that GHG emissions can affect climate. Based on guidance from the FAA Order 1050.1F Desk Reference, state and local policies and programs that address climate change are discussed in this section. The guidance recommends consideration of: (1) the potential effects of a proposed action or its alternatives on climate change as indicated by its GHG emissions; (2) the implications of climate change for the environmental effects of a proposed action or alternatives.

4.3.2. Affected Environment

Research has shown there is a direct correlation between fuel combustion and greenhouse gas (GHG) emissions. Implementation of the Proposed Action would not increase the number of flights or type of aircraft using the airfield compared to the No Action because it would only affect the landside systems. The Proposed Action would not increase or change the number of passengers that would utilize the Airport in the future, it would only change how they access the Airport and

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[1] As explained by the USEPA, "greenhouse gases, once emitted, become well mixed in the atmosphere, meaning U.S. emissions can affect not only the U.S. population and environment but other regions of the world as well; likewise, emissions in other countries can affect the United States." U.S. Environmental Protection Agency, Climate Change Division, Office of Atmospheric Programs, Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act 2-3, 2009, https://www.epa.gov/ghgemissions/technical-support-document-endangerment-and-cause-or-contribute-findings-greenhouse (accessed September 28, 2018).

[2] Intergovernmental Panel on Climate Change, Fifth Assessment Report, 2014, https://www.ipcc.ch/report/ar5/syr/ 9 (accessed September 28, 2018).

[3] U.S. Global Change Research Program, Global Climate Change Impacts in the United States, 2009, http://www.globalchange.gov/what-we-do/assessment/previous-assessments/global-climate-change-impacts-in-the-us-2009 (accessed September 28, 2018).

[4] U.S. Environmental Protection Agency, Overview of Greenhouse Gases, http://www3.epa.gov/climatechange/ghgemissions/gases.html (accessed May 11, 2017).

terminal facilities. Any new roadway lengths and surface vehicle changes (i.e. vehicle miles traveled) are expected to be minimal compared to the No Action. As a result, operational emissions, associated airfield emissions sources, parking, and traffic were not inventoried or evaluated as part of this EA.

To understand New Jersey's contribution to climate change, the NJDEP has prepared greenhouse gas inventories to assess the key drivers and recent trends in these data.[5] The inventory is a sector-based inventory including but not limited to: transportation, residential, commercial, industrial, land use, and electricity used in state. The most recent analysis was published in 2020 which included annual GHG emissions up to 2018. For 2018, New Jersey produced approximately 105.1 million metric tons (MMT) of CO_2 equivalents (CO_2e). It should be noted, that it was also estimated the state's land sector (forests and associated land cover) sequestered the equivalent of 8.1 $MMTCO_2e$ resulting in net greenhouse gas emissions of 97.0 $MMTCO_2e$ for 2018.

4.4. COASTAL RESOURCES

The federal Coastal Barrier Resources Act provides for review of federally funded projects undertaken within the Coastal Barrier Resources System (CBRS). The CBRS contains undeveloped coastal barriers along the coasts of the Atlantic Ocean, Gulf of Mexico, and Great Lakes.

The Airport is not located within a CBRS and the Coastal Barrier Resources Act would not apply to any proposed improvements at the Airport.

4.5. SECTION 4(F) RESOURCES

Section 4(f) of the Department of Transportation Act of 1966 protects publicly owned parks, recreation areas, wildlife and waterfowl refuges, and historic sites of national, state, or local significance from development unless there are no feasible alternatives.

There are no Section 4(f) resources located within the terminal and ARFF project areas, However, publicly owned parks and conservation lands are located within the vicinity of the Airport. For public parks, recreation areas, significant historic sites, and refuges, impacts as changes to access, visual, and noise levels resulting from the Proposed Action were chosen since these have the potential to result in substantial impairment to the property's activities, features, or attributes that qualify it for protection under Section 4(f). Therefore, public parks, recreation areas, significant historic sites, and refuges located within a 0.5 mile radius from the project areas was chosen to evaluate Section 4(f) resources. Public parks, recreation areas and refuges outside of that boundary were excluded because there would be no appreciable changes to access, visual, or noise level at this distance. The viewshed analysis can be referenced in Section 5.11 and noise analysis in Section 5.8 and Appendix E.

Most publicly owned parks in the vicinity of the project areas are located east of the Airport and owned by the Ewing Township. Other publicly owned parks include recreation fields associated with the Fisher Middle School located to the east of the Airport. The Mountain View Golf Course,

[5] https://www.nj.gov/dep/climatechange/docs/nj-scientific-report-2020.pdf

owned by Mercer County, is located west of the Airport and Interstate 295. These parks and recreational areas all serve the surrounding residential areas.

Municipally owned parks within 0.5 mile from the terminal and ARFF project areas include the following shown in **Table 4-3** and **Figure 4-4**.

Table 4-3: Parklands Within ½ Mile of Project Areas

Park	Distance from Nearest Project Area (miles)	
	ARFF	Terminal
Veterans Memorial Park	0.12	0.70
Rambling Creek Park	0.50	1.0
Fisher Middle School	0.50	1.0
Mountain View Golf Course	0.85	0.3

Source: McFarland-Johnson, Inc.

There are no wildlife or waterfowl refuges in the immediate vicinity of the Airport. The nearest refuge is the Charles H. Rogers Wildlife Refuge located 14 miles to the northeast. In addition, an impact to historic sites of national, state, or local significance on or near the Airport may be considered a use under Section 4(f).

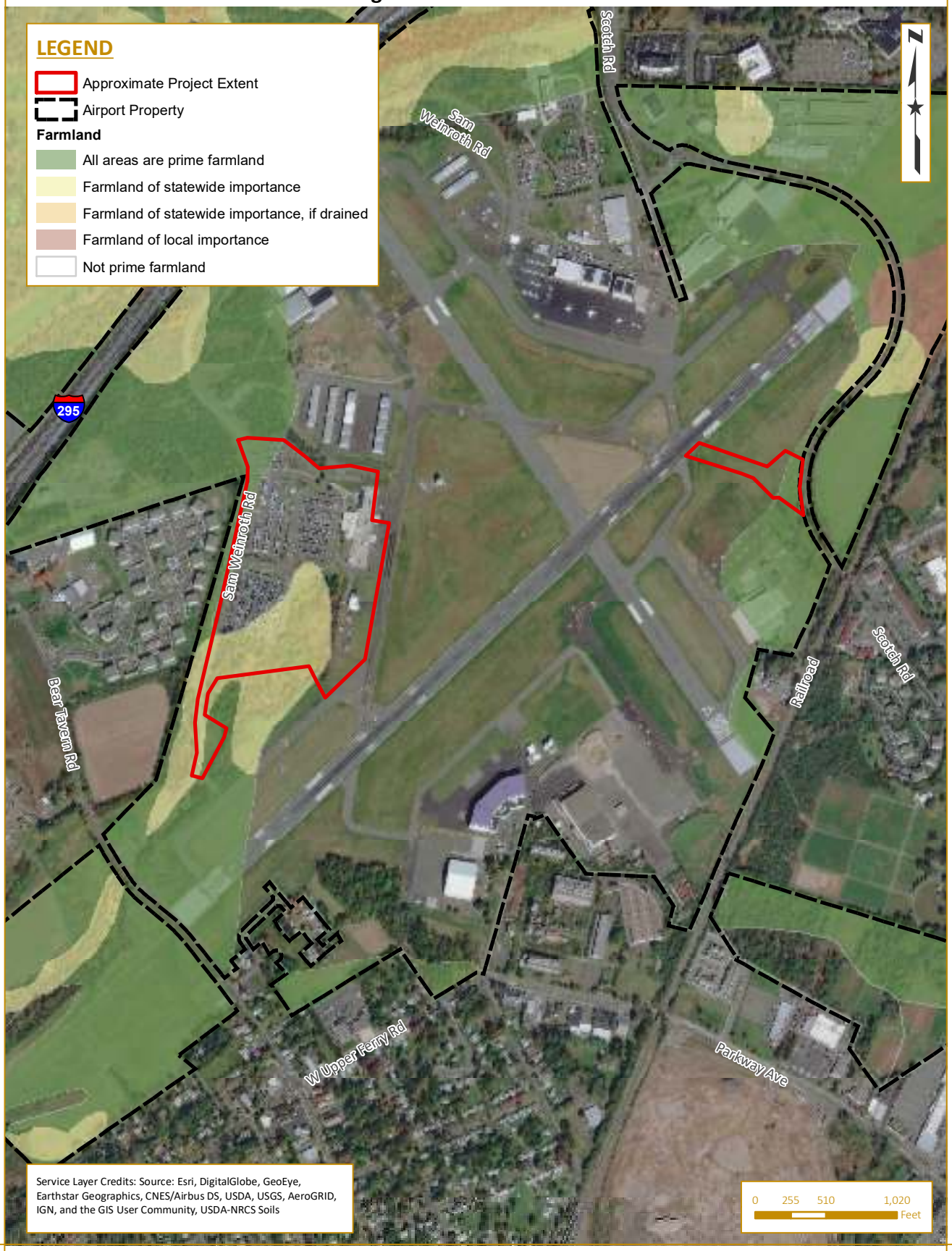
Section 4(f) resources are not located within the project areas. In addition, the Proposed Action does not propose the physical or constructive use of any Section 4(f) resource nor result in substantial impairment to the property's activities, features, or attributes that qualify it for protection under Section 4(f). The Proposed Action is located on Airport property, mostly used for aviation purposes, and will not have impacts on Section 4(f) resources. Historic resources are discussed further in Section 4.8.

4.6. FARMLANDS

The Farmland Protection Policy Act (FPPA), 7 C.F.R. § 658 1994, requires federal agencies to consider project alternatives that will minimize unnecessary and irreversible conversion of farmland to nonagricultural uses. For the purposes of the FPPA, farmland refers to soils classified as prime farmland, unique farmland, and land of statewide or local importance. According to the U.S. Natural Resource Conservation Service (NRCS) Web Soil Survey, accessed on January 29, 2019, approximately 60.2% of the Proposed Action is classified as not prime farmland, 28% is classified as Farmland of statewide importance, and 11.8% is classified as Prime Farmland. Farmland soil classification on Airport property is shown on **Figure 4-2**. There are no actively farmed soils within the Airport property.

The FPPA does not apply to land already committed to “urban development or water storage”. A majority of the Airport property has already been previously committed to urban development or current airport utilization and development and would not be subject to the FPPA regulations.

Figure 4-2: Farmland Soils



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In New Jersey, local municipalities also have the authority to regulate certain activities in agriculture zones under the Municipalities Planning Code (P.L. 805, Act No. 247, as amended). However, there are no zoned agricultural areas in the project areas.

4.7. HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION

This section identifies existing contaminated sites on or within the immediate vicinity of the project areas and local disposal capacity for solid and hazardous wastes generated form the Proposed Action or alternative(s).

Hazardous materials, solid waste, and pollution prevention are governed by many statues, Executive Orders (EO), and FAA orders. Federal statutes, mostly overseen by the USEPA, include but are not limited to, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), enacted in 1980, which was created to provide federal authority to respond to releases of hazardous substances which may be harmful to public health or the environment; the Resource Conservation and Recovery Act (RCRA) (1976) regulates the generation, storage, treatment, and disposal of waste, the Pollution Prevention Act (1990) requires pollution prevention and source reduction control so that wastes will have less effect on the environment while in use and after disposal; and the Oil Pollution Act (1990), which requires oil storage facilities to develop oil spill response plans. The CEQ Memorandum on *Pollution Prevention and the National Environmental Policy Act* (January 12, 1993) provides guidance to federal agencies to consider and incorporate pollution prevention measures early in the NEPA process.

In addition to federal statutes, NJDEP has established technical requirements to remediate a contaminated site and ensure that the remediation is protective of public health and the environment (N.J.A.C. 7:26E – Technical Requirements for Site Remediation).

4.7.1. Hazardous Materials – Phase I Environmental Site Assessment

A hazardous or contaminated environmental condition is the presence or likely presence of any hazardous substances or petroleum products (including products currently in compliance with applicable regulations) on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water, or surface water of the property.

The above is investigated by a Phase I Environmental Assessment (ESA) and Phase II (ESA). An explanation of each is provided below.

Phase I ESA – A diligent inquiry (records review and evaluation of documents) of a property regarding past history through current use. The due diligence review is used to gather information to evaluate if there are or may have been any conditions or activities that resulted in releases and/or discharges of petroleum or hazardous materials or chemicals at the property, now or in the past. These release/discharge conditions are collectively known as recognized environmental conditions (RECs). A Phase I ESA is meant to identify RECs at the property which may or may not require environmental investigations (i.e., Phase II ESA).

Phase II ESA - Environmental investigations of RECs found during the Phase I ESA process. A Phase II ESA further evaluates into these RECs with field sampling activities to confirm absence/presence

of contamination at the property. A Phase II ESA investigations may include a combination of soil, groundwater, and vapor intrusion sampling and analysis. The findings of the sampling investigations of the Phase II ESA are used to develop an action plan on how to make the property comply with environmental standards.

A Phase I ESA was completed by Urban Engineers, Inc. (Urban) in May 2019. The Phase I ESA involved the review of historic aerial photographs, correspondence with local, state, and federal agencies, site reconnaissance, and interviews with employees at the Airport. Urban also utilized the services of Environmental Data Resources, Inc. (EDR) to investigate potential recognized environmental conditions (RECs) and other environmental concerns. The EDR report is an environmental regulatory agency records review based on publicly available information from state and federal agencies. The complete Phase I ESA report is provided in **Appendix F**. The RECs identified in the Phase I ESA were further investigated as part of a Phase II ESA. The purpose of the Phase II ESA is to evaluate the presence, or absence of, petroleum products or hazardous substances in the subsurface of the site. This is accomplished by sampling and analysis of the underlying soil and/or groundwater. A summary of the methods and results of the Phase II ESA are presented in Section 4.7.2.

The Phase I ESA identified five RECs and include the following:

REC No. 1 – Fueling, Maintenance and Aircraft Operations

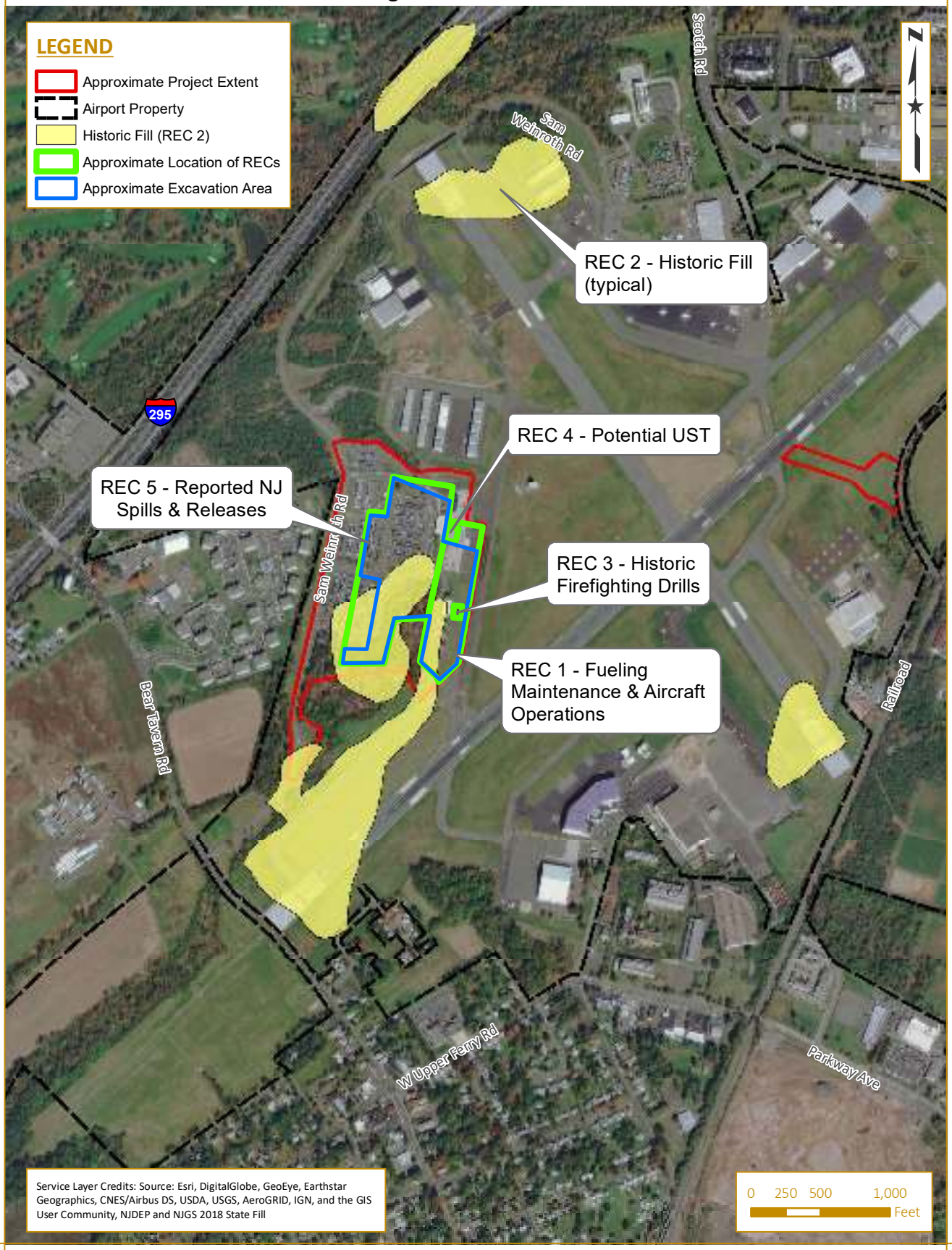
Based on the documented fuel spills and the ongoing fueling, maintenance, washing and deicing operations that occur at TTN within the West Area in combination with the lack of a containment system beneath the TTN apron and the ARFF, there is a potential that releases have impacted the subsurface at the TTN Terminal and Existing ARFF Area (West Area). Due to the number of potential spills over time, Urban recommended conducting a Phase II ESA that consists of soil sampling and analysis in areas of proposed earth disturbance in the vicinity of the apron and taxiways. A field sampling and analysis plan was prepared on July 16, 2020 and provided the basis for the soil and groundwater characterization performed as part of the Phase II ESA. Figure 3A of the Phase II ESA (Appendix G) provides the sample locations throughout the terminal project area, inclusive of fueling, maintenance and aircraft operations.

REC No. 2 – Historic Fill

The N.J.A.C. 7:26 *Administrative Requirements for the Remediation of Contaminated Sites* stipulates that the disturbance of soils considered to be historic fill material must be preceded by sampling and analysis as directed in N.J.A.C. 7:26E-4.6(b). Historic fill must be characterized on a per project basis. Under NJ rules in Brownfield and Contaminated Site Remediation Act (N.J.S.A. 58:10B-1 et seq), historic fills specifically refer to non-indigenous materials of undocumented origins placed on a site to raise its topographic elevation. The NJ Historic Fills Mapping is for informational purposes only and show areas where such fill covers over 5 acres. **Figure 4-3** illustrates the historic fill mapping and the proposed limits of excavation for the Proposed Action.

The Airport was opened to the public in 1929 and further developed to allow testing of the WWII Avenger Torpedo Bomber. A portion of the Airport parking area and runway ends 6, 16, and 34 and other elevated airport facilities footprints were filled with materials to either provide better support for foundations or to raise the ground elevations to a consistent level.

Figure 4-3: Historic Fill



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Due to the presence of historic fill on part of the West Area, there is a potential for subsurface contamination in the area of historic fill. Urban recommended performing soil sampling in the areas of historic fill as part of the Phase II ESA recommended in REC No. 1.

REC No. 3 – Historic Firefighting Drills

Aqueous film forming foam (AFFF) may have been previously used at TTN in the vicinity of the existing ARFF as part of firefighting training operations. The following interview record was included in the May 2019 Phase I ESA:

Stuart Steele, ARFF Fire Chief: Chief Steele confirmed that from at least 2005 to 2018 the fire department used the airside pavement to practice fire drills, which included using fire suppressing foams. In mid-2018 they were instructed that they could longer perform these drills on-site and had to move to an off-site facility.

AFFFs are commercial surfactant solutions used for several decades by the U.S. military, civilian airports, and other facilities to extinguish hydrocarbon fires. AFFF is a highly effective firefighting agent intended for high-hazard flammable liquid fires. These products are typically formed by combining hydrocarbon foaming agents with fluorinated surfactants. When mixed with water, the resulting solution achieves the interfacial tension characteristics that produce an aqueous film that spreads across the surface of a hydrocarbon fuel to extinguish the flame and to form a vapor barrier between the fuel and atmospheric oxygen to prevent re-ignition.

Per-and polyfluoroalkyl substances, also known as PFAS, are a group of manmade chemicals that have been manufactured and used in a variety of industries since the 1950s. Perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS), collectively called PFAS, are two man-made chemicals that were commonly used in household and industrial products, and historically in firefighting foams. PFOA and PFOS are persistent in the environment and have been increasingly tested for and found in groundwater, often in drinking water wells. In the environment, some PFAS break down slowly, if at all, allowing bioaccumulation (concentration) to occur in humans and wildlife.

Since fire suppressing foams (that may have contained PFAS) were used during fire drills adjacent to the ARFF between 2005 and 2018, Urban recommended conducting a Phase II ESA that consists soil and groundwater sampling and analysis in areas of proposed earth disturbance in the vicinity of the ARFF testing locations.

REC No. 4 – Potential Underground Storage Tank

Due to the potential presence of a 4,000-gallon fuel oil underground storage tank (UST) approximately 30 feet south of the terminal building and lack of records documenting the removal or closure of this tank there is a potential this UST exists within the subject property. Urban recommended performing a ground penetrating radar (GPR) survey to locate the potential UST onsite south of the terminal building.

REC No. 5 – Reported NJ Spills & Releases

The Phase I ESA noted the General Motors Corporation site and the Naval Air Warfare Center site, located 0.25-0.5 miles south-southeast of the project areas, listed as RCRA and Superfund sites. RCRA sites are facilities that generate, transport, store, treat, and/or dispose of hazardous waste.

Sites listed under the CERCLA, informally known as Superfund, are abandoned or uncontrolled hazardous waste sites. Superfund Enterprise Management Systems Archive (SEMS-ARCHIVE) sites identified in the Phase I ESA indicate that assessment at the site has been completed and that the USEPA has determined no further steps will be taken to list the site on the National Priorities List (NPL). The NPL is the list of sites of national priority among the known releases or threatened releases of hazardous substances, pollutants, or contaminants through the United States. The Phase I ESA findings determined that based on the distances and locations downgradient from the project areas, it is not likely the RCRA and Superfund sites impacted the project areas. According to the NJ Spills and Releases database, 14 hazardous material incidents and two hazardous material releases were reported in the project areas. However, specific locations were not revealed during the file review.

Due to the reported NJ Spills and Releases noted during the records review, there is a potential that historic spills and releases occurred in the project areas; however, the locations of these hazardous material incidents and hazardous material releases were not revealed during the file review or interviews. Therefore, similar to REC Nos. 1 and 2, Urban recommended conducting a Phase II ESA that consists soil sampling and analysis in areas of proposed earth disturbance associated with the TTN terminal expansion and ARFF project.

The approximate location of Phase I RECs are shown on **Figure 4-3**.

4.7.2. Hazardous Materials – Phase II Environmental Site Assessment

Urban conducted a Phase II ESA for TTN. The subject area includes the existing terminal building and ARFF building as well as the locations of the proposed terminal and ARFF buildings, located within the TTN property, in Trenton, New Jersey. The Phase II ESA was performed to further investigate the Phase I RECs identified above. The complete Phase II ESA report is provided in **Appendix G.**

The following general tasks were performed as part of the Phase II ESA as outlined in the TTN Terminal and ARFF Building Field Sampling Plan (July 16, 2020):

1. Geophysical Survey (September 1, 2020)
1. Soil Sampling/Analysis (September 2 through September 9, 2020)
2. Groundwater Well Installation and Sampling/Analysis (September 17, 2020)

The sampling procedures and laboratory analysis performed is described in Section 3.0 of the Phase II ESA. Analyses included: volatile organics, semi-volatile organics, PCBs, metals, pesticides, petroleum hydrocarbons, and PFAS.

The specific RECs and the Phase II conclusions and recommendations associated with each is provided below.

Rec No. 1 - Fueling, Maintenance and Aircraft Operations:

There were no exceedances of the NJDEP non-residential direct contact (NRDC) standard for any of the constituents analyzed within the proposed terminal expansion area (Samples S-1 to S-20 and GW-1 to GW-4). No further action required.

The metals Aluminum and Manganese were detected above the NJDEP Impact to groundwater (IGW) screening levels throughout the proposed terminal expansion area. These are non-health based (secondary standards) compounds and are typically naturally occurring with concentrations within normal ranges for ambient background. No further action required.

The metal Beryllium had uniform concentrations in excess of the IGW screening level throughout the proposed terminal expansion area. Follow-up Synthetic Precipitation Leaching Procedure (SPLP) analysis was performed and Beryllium was found to be within the NJDEP leachate criterion. The concentrations are within the range of the mean total beryllium concentrations for US soils as noted in Ambient Metals in NJ (Sanders, 2003) and is likely naturally occurring. No further action required.

The semi-volatile organic compound benzo(a)pyrene (BaP) was detected in Sample S-20B (4 feet below grade) at a concentration 0.360 mg/kg, which exceeds its IGW screening level of 0.200 mg/kg. Sample S-20B was collected at a depth of 4 feet below the existing asphalt parking lot. BaP is a compound within bituminous asphalt and was detected below its IGW screening level in other samples collected in the asphalt parking areas. This isolated exceedance does not appear to be a result of a previous spill or release. No further sampling required at this time. A site specific soil and material handling plan shall be prepared and included within the construction documents.

The above recommendations can be done concurrently with the design development and/or construction phases of the new terminal development project.

REC No. 2 – Historic Fill

The conclusions and recommendations provided above for Rec No. 1 also apply to the historic fill areas associated with the proposed terminal expansion area. See recommendations provided under REC No. 1.

Poly aromatic hydrocarbons (PAHs) were detected at concentrations exceeding their NJDEP NRDC and IGW standards/screening levels in the vicinity of the proposed new ARRF area. PAHs are often detected in areas that contain asphalt, historic fill or within the footprint and vicinity of subgrade utility corridors. The proposed ARFF building is located in an area that was a previously the realigned Scotch Road (circa 1958), an historic fill area due to the road realignment, and currently houses at least two sub-grade utility corridors (gas and communications). The PAH exceedances appear to be isolated to sample location ARFF-1, as the remaining five sample locations did not have PAH concentrations in excess of the NRDC or IGW standards/screening levels. Additional sampling and analysis is recommended around ARFF-1 to adequately delineate the extent of PAH impact in this area. This is an isolated area of PAH impact and not widespread. Further delineation will be conducted as part of the design development process and mitigation (i.e. removal and permitted disposal) of the isolated area will be addressed during the construction phase in accordance with NJDEP regulations.

Arsenic was detected in two (ARFF-2B and ARFF-5B) samples at concentrations above NJDEP direct contact and impact to groundwater standards/screening levels. Arsenic can be attributed to historic fill or slightly higher naturally occurring background concentrations. Additional sampling and analysis is recommended around ARFF-2 and ARFF-5 to adequately delineate the extent of arsenic impact in this area.

Similar to PAHs, these are isolated areas of elevated arsenic concentrations and the additional sampling will bound the isolated areas. Further delineation will be conducted as part of the design development process and mitigation (i.e. removal and permitted disposal) of the isolated area will be addressed during the construction phase in accordance with NJDEP regulations.

The isolated areas of PAH and arsenic concentrations above NJDEP direct contact and impact to groundwater standards do not pose an immediate or direct threat to human or ecologic health and will be mitigated during the construction phase. A soil and material handling plan will be developed and included as part of the construction documents and specifications with the focus on protecting construction worker exposure.

The above recommendations will be done concurrently with the design development and/or construction phases of the new terminal development project.

REC No. 3 – Historic Firefighting Drills

PFAS detections in the soil were generally confined to the samples collected in the immediate vicinity of the existing ARFF. Samples collected in the western parking lots and along the tree-line were non-detect for PFAS (S-10 was an exception). Refer to Table 4-2 of the Phase II ESA (Appendix G) for the samples with PFAS detections. There are currently no NJDEP or federal standards or screening levels for PFAS in soil. Therefore, the PFAS soil analytical results were used as a delineation indicator of the potential radial impact of PFAS around the existing ARFF. The PFAS soil results assist in determining the placement of additional monitoring wells for PFAS groundwater sampling and analysis. The regulated PFAS compounds PFNA, PFOA, and PFOS exceed their respective NJDEP groundwater quality criterion. Since all of the sampled wells have exhibited concentrations of PFAS in excess of their groundwater criterion the area of impact cannot be adequately delineated. It is expected that monitoring well GW-1 (no sample collected due to a dry well) is within the immediate area of previous AFFF usage during training exercises. Additional groundwater characterization and reporting is recommended to adequately delineate the nature and extent of PFAS impact.

Additional “source well(s)” (up gradient and down gradient wells) will need to be established and monitored to further delineate the nature and extent of PFAS impact in the vicinity of the existing ARFF. Based on water measurements collected during the Phase II ESA, the general direction of groundwater flow is southwesterly and the gradient is 0.04 ft/ft. The additional up-gradient and down gradient wells will be positioned to account for this groundwater flow direction. In addition, the flow direction and gradient will be used in the development and refinement stormwater runoff studies/designs.

The Phase I and II ESA findings haves identified PFAS compounds as contaminants of concern as they relate to NEPA hazardous material, solid waste, and pollution prevention. NJDEP has a mandated and prescribed regulatory path for notifying, assessing, remediating, and reporting groundwater impact cases. Section 5.7 of the Phase II ESA summarizes the NJDEP regulatory process.

The prescribed NJDEP regulatory path includes an early stage (within the 1st year of notification) human and ecological receptor evaluation. Although the Phase I and II ESAs conducted for this NEPA environmental assessment have positively identified the contaminants of concern,

continued evaluation will be done independent of the NEPA evaluation and conducted by a NJDEP Licensed Site Remediation Professional (LSRP) and reviewed by NJDEP. PFAS mitigation strategies, if needed, will be determined by the LSRP and NJDEP independent of this NEPA evaluation. The continued evaluation is completed independent of the NEPA evaluation because NEPA lacks the regulatory remediation authority that the NJDEP Technical Requirements for Site Remediation mandate. The above recommendations will be done concurrently with the design development and/or construction phases of the new terminal development project. A flow chart of the site remediation program process for the Proposed Action is included in **Appendix F**.

REC No. 4 – Potential Underground Storage Tank

No UST-associated piping or subsurface UST-like anomalies (via the ground penetrating radar and radio frequency scanning) were detected in the area south of the terminal building. In addition, samples collected boring locations S-7 and S-8 (vicinity of suspect UST) did not exhibit concentrations of substances typically associated with UST releases. No further action required.

A UST fill-port/vent pipe was noted within the fenced area of Sheriff's dog kennel (just north of the existing ARFF building). We were unable to access this area, but it is assumed a UST is present at this location. UST closure in accordance with NJDEP Underground Storage Tank Rules, NJAC 7:14b-9 is recommended prior to or as part of the terminal expansion project.

There is no indication from the samples collected in the vicinity of the noted fill-port/vent pipe that petroleum based impact exists; therefore, there is no immediate or direct threat to human or ecologic health. The above UST closure recommendation will be done concurrently with the design development and/or construction phases of the new terminal development project.

REC No. 5 – Reported NJ Spills & Releases

The conclusions and recommendations provided above for Rec No. 1 and No. 2 also apply to the evaluation of reported NJ spills and releases. See recommendations provided under RECs No. 1 and No. 2.

The above recommendations can be done concurrently with the design development and/or construction phases of the new terminal development.

4.8. HISTORIC, ARCHITECTURAL, AND ARCHEOLOGICAL, AND CULTURAL RESOURCES

According to Protection of Historic Properties, 36 C.F.R. § 800 2004, a historic property is "any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places (NRHP)." To be eligible for the National Register, a property must be at least 50 years old, or meet the Section 106 criteria for significance. Section 106 of The National Historic Preservation Act (NHPA) requires that federal agencies, such as the FAA, consider the effects of their actions on historic properties via consultation with the State Historic Preservation Office (SHPO).

The NJDEP GeoWeb was reviewed for information on historic and or archeological sites on or in the vicinity of the Airport. The NJDEP GeoWeb indicated that two separate facilities had cultural

and/or architectural surveys performed to determine if they were eligible for listing on the state or national historic register.

A Phase IA Historical and Archaeological Survey and Reconnaissance-Level Historic Architectural Survey for the Proposed Action was conducted by Richard Grubb & Associates. The full Phase IA report is provided in **Appendix D**. The area of potential affect (APE) for archaeology encompasses approximately 3.56 acres of the preferred alternative for the proposed ARFF facility and 22.01 acres of the preferred alternative for the proposed terminal building expansion, including roadway redesign, and appurtenances. The APE for architecture includes the area in which the project may directly or indirectly cause changes in the character or use of above-ground NRHP-eligible or -listed historic properties, and therefore extends beyond the actual construction limits of the project.

According to the Phase IA Survey, the APE for archaeology has been disturbed from prior airport development and was determined to have a low sensitivity for prehistoric and historic archaeological sensitivity. In addition, the Phase IA Survey identified five buildings/structures located within the APE more than 50 years of age. The buildings/structures were characterized as common and unremarkable examples and a common example of ongoing airport development, and therefore, an intensive-level survey for these buildings/structures was not recommended.

Consultation with the NJ SHPO office was conducted (SHPO project # 19-0726) and based on the above information, no archaeological investigation was recommended and intensive-level survey for the properties identified was not recommended. NJ SHPO concurred with the assessment and recommendations of the Phase IA Survey. Correspondence with NJ SHPO is included in **Appendix D**. No further surveys are recommended, and the Proposed Action is not expected to affect any historic, architectural, and archeological, and cultural resources.

4.9. LAND USE

When considering improvement projects that meet airport development goals, it is important early in the planning process to identify potential impacts to existing land uses on airport property and in the surrounding area and to determine how potential airport projects will affect future land use and development patterns. This will enable the project to incorporate measures into the future design and layout of airport developments that will avoid or minimize land use conflicts as well as improve existing conflicts when practicable.

Some land uses that are considered more susceptible to impacts from airport development include, but are not limited to, residential areas, schools, religious institutions, hospitals, and certain public places such as parks, recreational areas, and cemeteries, where quiet is an expected part of the user experience. Alternatively, there are some land uses that can negatively impact the operation of the airport and are considered incompatible with airport activity. These land uses can include park and recreational areas, golf courses, landfills, open water areas, and other land uses that have the potential to serve as wildlife attractants, and commercial and industrial facilities that generate high-voltage electricity, utilize bright lights, or create a significant amount of glare, smoke or steam.

FAA AC 150/5200-33B, *Hazardous Wildlife Attractants On or Near Airports* provides guidance on certain land uses that have the potential to attract hazardous wildlife on or near public-use airports. Potential wildlife attractants and congregation areas can include areas such as shopping malls, agricultural fields, livestock operations, golf courses, parks, waste handling facilities, waterbodies, wetlands, and water management facilities.

The Mountain View Golf Course, owned by Mercer County, is located on Airport property west of Interstate 295. Typically, golf courses attract hazardous wildlife, particularly Canada geese and some species of gulls. Wetlands and streams are located on and in the vicinity of the Airport. In addition, Delaware River is located approximately 1.5 miles south of the Runway 6 end. The river and wetlands serve as major wildlife attractants for a variety of bird species that can be hazardous to aircraft operations, such as gulls, wading birds, shorebirds, and waterfowl.

TTN is located in a moderately developed area of Mercer County and is surrounded by a mix of residential, agriculture, recreational, industrial, and commercial land uses. Land use located to the east of the Airport is a mix of commercial, industrial, residential and transportation, including the CSX freight rail line which runs in a north-south direction. Located to the south and west of the Airport, land use consists of a mix of residential, commercial and agriculture. Recreational and forested areas are located to the west and northwest. The project area is zoned Industrial Park (IP-1). Immediately adjacent to the terminal area and off-airport is zoned Multi-Family (R-M).

Adjacent to the Airport is the Parkway Avenue Redevelopment Area (PARA). The Parkway Avenue Redevelopment Plan, dated January 8, 2013, seeks to enhance the commercial and residential markets in Ewing by focusing on creating multimodal facilities. Development within the Township is guided by the existing Township Master Plan, the Town Zoning Codes, and the Town Subdivision Codes. In addition, Ewing has established an airport hazard zone, which regulates development within the Airport runway subzones and runway end subzones as defined in Article IV §215-38 of the Town Zoning Code. The Delaware Valley Regional Planning Commission, Regional Aviation Committee, also reviews aviation projects within the 12 counties from four states, including Mercer County. **Figure 4-4** depicts the land use and **Figure 4-5** depicts the zoning in the vicinity of the Airport.

4.9.1. Industrial and Commercial Activities Characteristics

Within the township of Ewing, the Airport is located within the industrial park zone. Immediately east of the Airport there are several retail stores off Scotch Road. Southeast of Airport property, along W Upper Ferry Road, there are several small businesses including gas stations, several

restaurants, a Ballroom, an animal hospital, banks, and other small commercial businesses. To the south along Bear Tavern Road there is a new luxury rental unit complex, a NJDOT Maintenance Yard, and the New Jersey Water Supply Authority. To the west of the Airport is the Mountain View Golf Course. North of the Airport along Scotch Road there are several businesses including hotels, health offices, and commercial offices.

Figure 4-4: Land Use

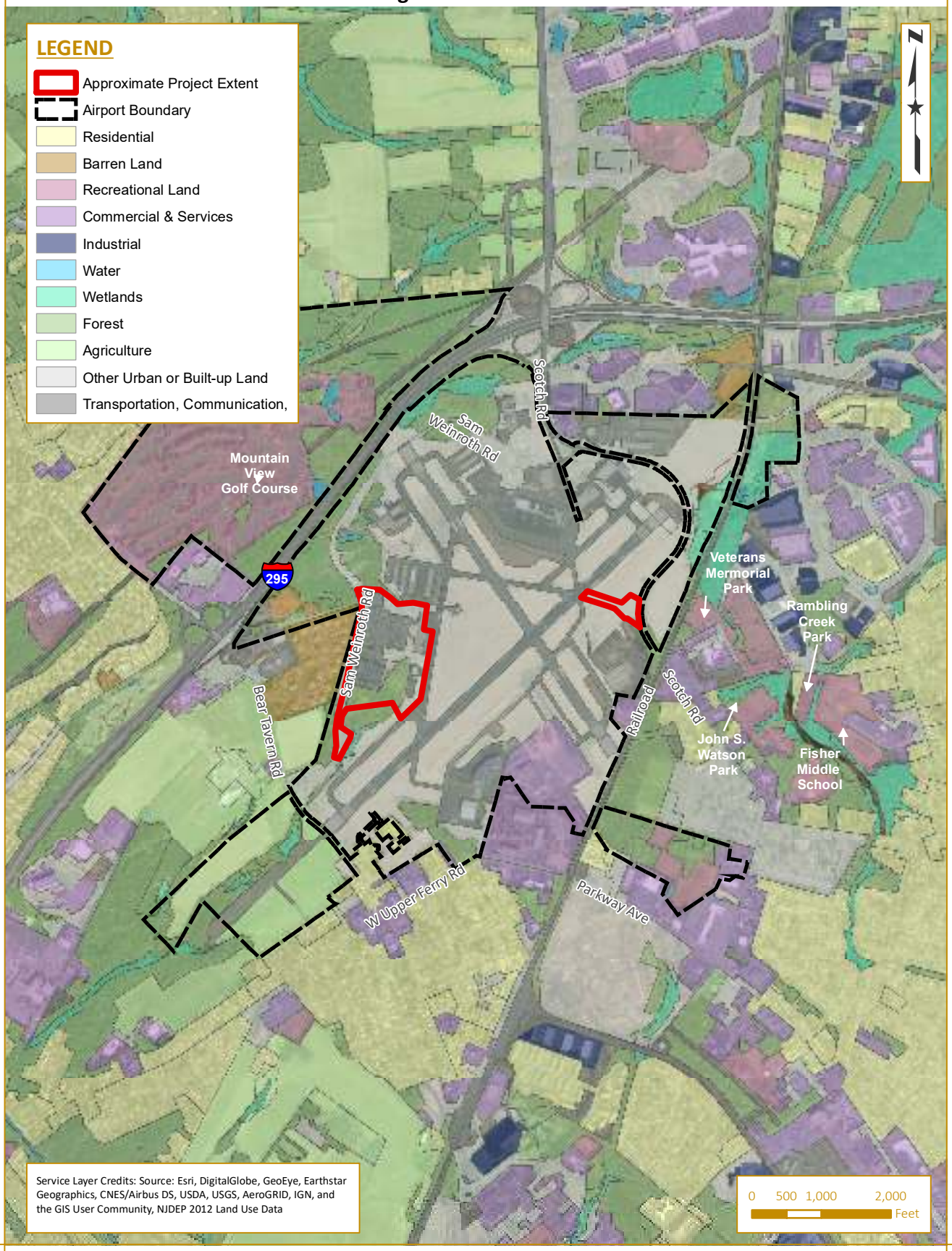

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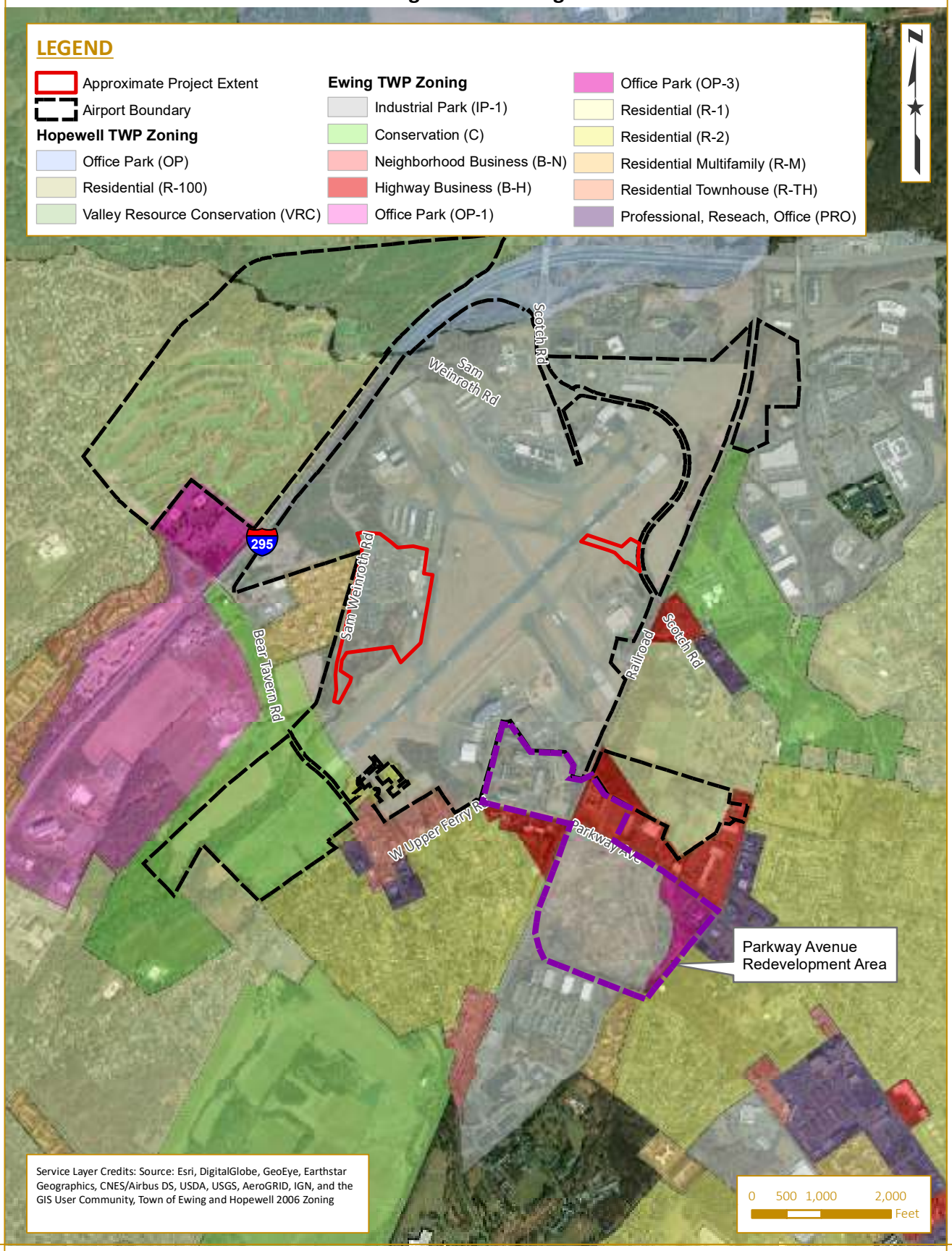
Figure 4-5: Zoning



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Additional industrial and commercial properties within one mile of Airport property consist of, but are not limited, to the following:

- Capital Health Medical Center
- PEAC Health & Fitness
- Ewing Sports
- Surface Technology
- Crest Ultrasonics Corporation
- Cenlar FSB
- Schafer Sports Center
- Rick Bus Company
- River Horse Brewing Company
- Firkin Tavern
- Traction Tire
- West Trenton True Value hardware
- Washing Well Laundromat
- OceanFirst Bank
- USDOT Office
- I.E. Shaffer & Company

4.9.2. Residential Areas, Schools, Places of Worship, Outdoor Areas

Residential areas, schools, elderly care facilities, and publicly owned outdoor areas are found in the immediate vicinity of the Airport. Fisher Middle School on Lower Ferry Road, The Goddard School and Ewing Church on Scotch Road are within one mile of the Airport, to the east. West Trenton Presbyterian Church on Grand Avenue, Our Lady of God Counsel Church on West Upper Ferry Road, and a residential area are located within one mile of the Airport to the southeast. A new luxury apartment rental complex between Bear Tavern Road and Sam Weinroth Road, Greene 750, is adjacent to the southwestern boundary of the Airport. Further to the southwest, Lore Elementary School is located on Westwood Drive, with surrounding residential development. Parks and recreational areas in the vicinity of the Airport are discussed in Section 4.3.A luxury apartment complex was recently constructed off Bear Tavern Road, within 200 feet of the existing terminal entrance and parking areas along Sam Weinroth Road. There are no other residential, schools, places of worship, or outdoor recreational areas within close proximity to the existing terminal and parking area.

4.9.3. Future Planned Uses

The Naval Air Warfare Center (30 acres) and General Motors (80 acres) sites are located along Parkway Avenue, less than a quarter mile from TTN, with the Naval Air Warfare Center having direct access to the Airport. Both the Ewing Township Master Plan and the PARA proposed redevelopment within this area aim to create a transit village to encourage development where infrastructure and transportation service currently exist. Planned future development of the Parkway Avenue area would improve the marketability of the surrounding area and benefit TTN. Goals for this area would include a future multi-use area shared by the Airport, adjacent train, and commercial development.

The Airport reviews developments in conjunction with Mercer County Planning and Ewing Township for compatibility with Airport function and use.

4.10. NATURAL RESOURCE AND ENERGY SUPPLY

Sections 1502.16(e) and (f) of the CEQ regulations require that federal agencies consider energy requirements, natural depletable resource requirements, and the conservation potential of alternatives and mitigation measures in the Environmental Consequences section of NEPA documents. Additionally, EO 13834, *Efficient Federal Operations*, instructs federal agencies to meet energy and environmental performance statutory requirements in a manner that increases efficiency, optimizes performance, eliminates unnecessary use of resources, and protects the environment.

The Terminal's design will be developed in accordance with FAA Order 1053.1, *Energy and Water Management Program for FAA Buildings and Facilities*), to encourage the development of facilities that exemplify the highest standards of design, including principles of sustainability.

Electricity and natural gas are currently provided to the existing terminal by Public Service Electric and Gas Co (PSE&G). PSE&G electricity and natural gas are also available along Scotch Road, near the ARFF site. The existing terminal and ARFF site are serviced by treated municipal water from Trenton Water Works. Two 13.2 kilovolt (kV) electrical service feeds are anticipated to sufficiently meet the entire building's electrical load requirements with redundancy. A new natural gas feed will be extended from Sam Weinroth Road to service the new terminal building.

4.11. NOISE AND NOISE-COMPATIBLE LAND USE

Aircraft noise emissions, inherent to the operation of an airport, can adversely impact land use compatibility between an airport and surrounding properties, particularly in the presence of noise-sensitive receptors. Residences, places of worship, hospitals, schools, parks, and amphitheaters are receptors that are sensitive to elevated noise levels. Noise levels inherent to airports are generally compatible with most industrial, commercial, and agricultural land uses. Therefore, it is important to measure or model existing noise levels and then predict future noise levels to determine if impacts would occur to any noise-sensitive land uses near the airport. Then, abatement measures can be incorporated into airport development plans to avoid or minimize the impacts. 14 CFR part 150, *Airport Noise Compatibility Planning* and the *Aviation Safety and Noise Abatement Act of 1979,* established a system under FAA to measure noise and determine the exposure of people to noise which includes noise intensity, duration, frequency, and time of occurrence; and to identify land uses normally compatible with various noise exposures.

HMMH prepared a Noise Technical Memorandum to assess the potential for impacts associated with the Proposed Action. Chapter 5, Section 5.8, provides additional details regarding noise related to the Proposed Action. In addition, detailed information including the noise analysis, noise contour maps are included in the Noise Technical Memorandum, **Appendix E**.

Aircraft Operational Noise

For aviation noise analysis, the FAA developed specific guidance and requirements for the assessment of aircraft noise. This guidance is specified in FAA Order 1050.1F. The FAA has determined that the cumulative noise energy exposure of individuals to noise resulting from aviation activities must be established in terms of Yearly Day Night Average Sound Level (DNL), the FAA's primary noise metric. DNL account for the noise levels of all individual aircraft events, the number of times those events occur, and the period of day/night in which they occur. The noise metric logarithmically averages aircraft sound levels at a location over a complete 24-hour period, with a 10-decibel (dB) adjustment added to those noise events occurring from 10:00 p.m. and up to 7:00 a.m. the following morning. The 10-dB adjustment has been added because of the increased sensitivity to noise during normal nighttime hours and because ambient (without aircraft) sound levels during nighttime are typically about 10-dB lower than during daytime hours. In practice, DNL is computed for an average annual day (AAD) of operations for the year of interest. DNL is a cumulative noise metric with respect to the number aircraft operations. In other words, as the number of aircraft operations increase proportionally, with all else remaining constant such as individual aircraft performance and noise characteristics, runway use and flight paths, the DNL values will increase.

Noise compatibility or non-compatibility of land use is determined by comparing the aircraft DNL values at a site to the values in the land use compatibility guidelines in 14 CFR part 150, Appendix A, Table 1.[6] FAA generally considers all land uses exposed to less than 65 dB DNL to be compatible. However, FAA recognizes that special consideration needs to be given to noise sensitive areas within Section 4(f) properties (including, but not limited to, noise sensitive areas within national parks; national wildlife and waterfowl refuges; and historic sites, including traditional cultural properties) where the land use compatibility guidelines in 14 CFR part 150 are not relevant to the value, significance, and enjoyment of the area in question. For example, the land use categories in the guidelines are not sufficient to determine the noise compatibility of areas within a national park or national wildlife refuge where other noise is very low and a quiet setting is a generally recognized purpose and attribute.

For this project, no noise-sensitive area has been identified that would require special consideration beyond the land use compatibility guidelines in 14 CFR part 150, Appendix A, Table 1. Further, the Town of Ewing's Noise Ordinance does not apply to aircraft noise via Chapter 240-3 and including of exemptions listed at New Jersey Administrative Code (N.J.A.C). 7:29-1.5.[7] Therefore, further analysis 14 CFR part 150, Appendix A, Table 1 will be used to determine noise land use compatibility or non-compatibility.

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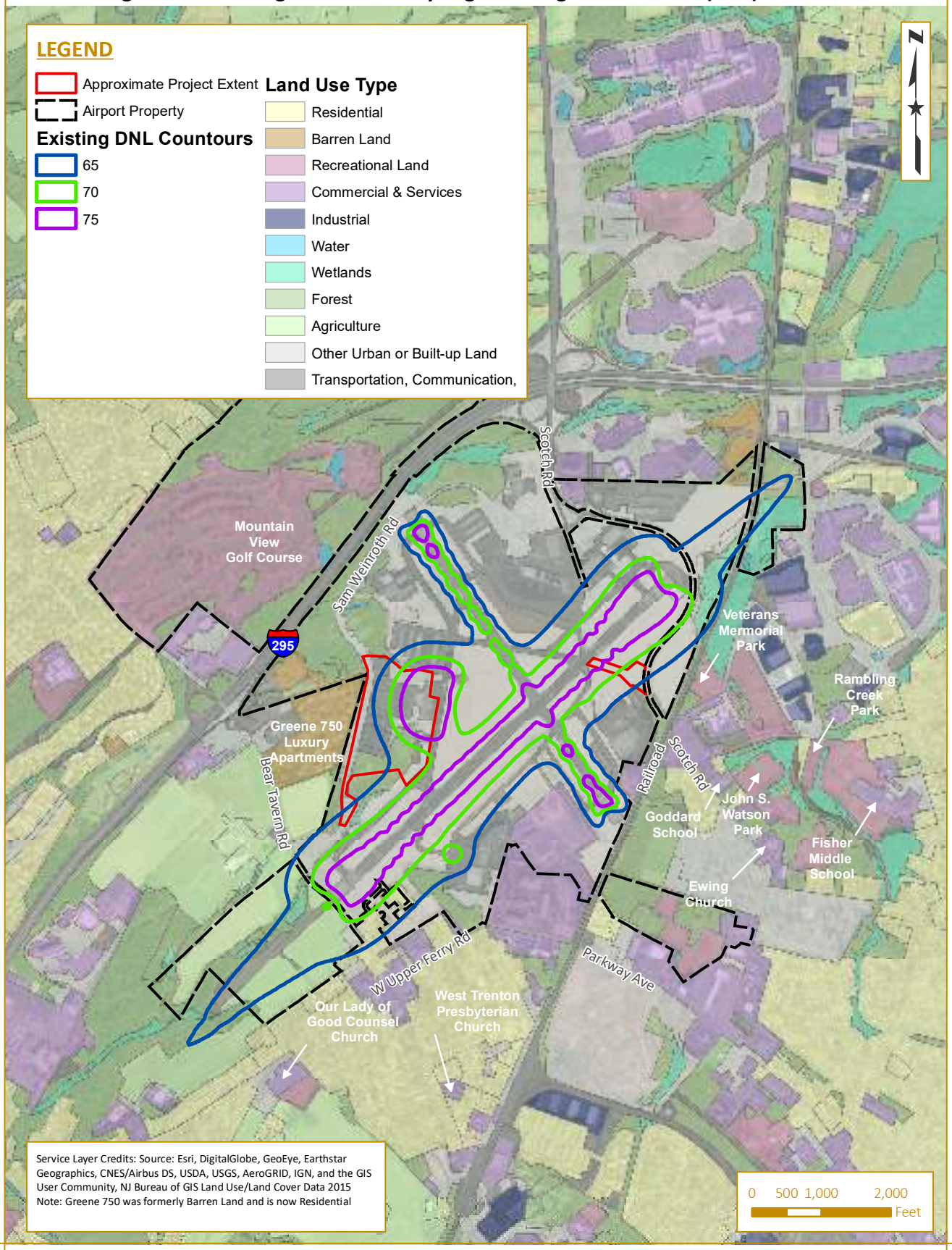
[6] 14 CFR part 150, Appendix A, Table 1 "Land Use Compatibility With Yearly Day-Night Average Sound Levels" is available at https://ecfr.federalregister.gov/current/title-14/chapter-I/subchapter-I/part-150/appendix-Appendix%20A

[7] Town of Ewing's Noise Ordinance https://ecode360.com/9390418 N.J.A.C. 7:29-1.5 https://www.state.nj.us/dep/rules/rules/njac7_29.pdf

Figure 4-6: Existing Conditions Day-Night Average Sound Level (DNL) Contours



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For an action occurring on or in the vicinity of a single airport, the desk reference directs the use of the Aviation Environmental Design Tool (AEDT) for detailed noise modeling (§11.1.4 of FAA Order 1050.1F Desk Reference). This software package models aircraft operations to determine predicted noise exposure, enabling an evaluation of anticipated effects that the Proposed Action or its alternatives would have on the noise setting. The No Action Alternative model, which represents existing conditions, must also be used to produce DNL 65 dB, DNL 70 dB, and DNL 75 dB contours. Details of the noise modeling process are presented in Noise Technical Memorandum, **Appendix E**.

Figure 4-6 presents the average annual DNL 65 dB, DNL 70 dB, and DNL 75 dB contours for calendar year 2019. For this EA, calendar year 2019 was used for the affected environment, using a complete year of records from FAA. FAA reported 106,219 operations. As discussed previously, aircraft operations have decreased in 2020 during as a result of the pandemic. Therefore 2020 noise levels are anticipated to be less than that shown here. The modeling includes aircraft arriving and departing the airport along with use of the existing four terminal gates. The 65 dB DNL contour, and the contours at higher levels, are primarily on airport property, Overall, seventeen individual residential units have been identified within the 65 dB DNL and 70 dB DNL contours and an additional three between the 70 dB DNL and 75 dB DNL contours. All of twenty of the residences within the 65 dB DNL and higher contours are to the south of the airport in an area north of West Upper Valley Rd, south of Runway 6/24, along Bear Tavern Rd and several side streets. All of the residences within the 65 dB DNL and higher contours are approximately 1,000 ft or less from Runway 6/24 and most of the residences abut the airport property line. US Census data indicates that the average household in the area has 2.6 people per residence. Therefore, fifty-three people are estimated to live within the 65 dB DNL contour, with eight of those also being within the 70 dB DNL contour.

Construction Noise

Construction of the Proposed Action would result in temporary elevated noise levels at nearby noise sensitive receptors related to heavy vehicles hauling materials and debris to and from the work site and on-site construction activities. An increase in noise levels from construction activities has the potential to adversely affect noise sensitive land uses around the Project. Noise sensitive receptors can be located indoors or outdoors and include but are not limited to residences, hotels, motels, schools, places of worship, health care facilities, and parks.

Sensitive receptors were identified in the immediate vicinity of the Proposed Action, near the existing terminal area and the location of the new ARFF building and include single- and multi-family residences, institutional facilities, recreational facilities, a cemetery, and two hotels. The nearest receptor to proposed work within the existing terminal area is the Greene 750 apartment complex, located directly west of the Airport. Residences in the complex are located within 200 feet of the existing terminal and parking areas and will have direct line of site to construction activities. Noise sensitive receptors are also located east of the Airport, near the work area where the new ARFF building will be constructed. The closest residential receptor is located approximately 1,500 feet southeast of the work area and includes residences within the Scotch Road apartment complex. Additionally, Veterans Park is located within 1,200 feet northeast of the ARFF work area. A Noise Technical Memorandum was prepared by HMMH which assesses noise

impacts associated with the construction of the Proposed Action. The memorandum includes the construction noise analysis in its entirety and is located within **Appendix E**.

4.12. SOCIOECONOMICS, ENVIRONMENTAL JUSTICE, AND CHILDREN'S ENVIORNMENTAL HEALTH AND SAFETY RISKS

4.12.1. Socioeconomics

This section provides information on the socioeconomic characteristics of the area surrounding the Airport. The most recent statistics from the U.S. Census Bureau's American Factfinder were used to examine the population profile, characteristics and trends for the region.

According to the American Factfinder American Community Survey, population has remained relatively stable in Ewing, with the population increasing from 35,707 in 2000 to 36,437 in 2017. Hopewell experienced a population increase of approximately 13 percent between 2000 and 2017. Mercer County also experienced a population increase between 2000 and 2010 of approximately four percent, with a slightly smaller increase between 2010 and 2017 of almost two percent.

Table 4-4 below is a brief compilation of demographic profiles for the town of Ewing, Hopewell, and Mercer County. As shown on the table, the socioeconomic characteristics included are population, racial/ethnic composition, median household income, travel time to work, and population in the labor force.

Table 4-4: Demographics

	Township of Ewing	Township of Hopewell	Mercer County
Population	36,057	18,224	368,762
White	23,100 / 64.1%	15,641 / 85.8%	241,383 / 65.5%
Hispanic or Latino	3,026 / 8.4%	917 / 5.0%	63,371 / 17.2%
Black or African American	10,697 / 29.7%	920 / 5.0%	79,230 / 21.5%
Asian	1,912 / 5.3%	1,781 / 9.8%	42,844 / 11.6%
Native Hawaiian or other Pacific Islander	0	209 / 1.1%	706 / 0.2%
American Indian/ Alaska Native	442 / 1.2%	1	1,982 / 0.5%
Other	727 / 2.0%	302 / 1.7%	11,032 / 3.0%
Minority Percentage	35.9%	14.2%	34.5%
Median Household Income	$97,610	$132,813	$79,990
Mean Travel Time to Work (minutes)	22.5	29.5	28.0

In Labor Force (above 16 years old)	30,880/63.4%	14,967/64.1%	193,843/64.8%
Population Below Poverty Level	8.8%	2.4%	10.9%

Source: 2018 ACS Estimates.

Throughout New Jersey, the most ethnically and racially diverse areas are located in the state's largest cities, especially in close proximity to the New York and Philadelphia metropolitan areas. The racial and ethnic makeup in the vicinity of TTN is less diverse; however, Ewing is 29.8 percent African American, which is higher than the county and state percentages. Otherwise, Hopewell is racially and ethnically less diverse than Mercer County and the State of New Jersey.

4.12.2. Environmental Justice

In accordance with EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, federal agencies are required to incorporate environmental justice into their planning processes.

The USEPA and the NJDEP define environmental justice (EJ) as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." Fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental, and commercial operations or policies. Meaningful Involvement means that:

- people have an opportunity to participate in decisions about activities that may affect
- their environment and/or health
- the public's contribution can influence the regulatory agency's decision
- their concerns will be considered in the decision-making process
- The decision makers seek out and facilitate the involvement of those potentially affected

According to the EPA Environmental Justice Screening and Mapping Tool (Version 2018) accessed on March 13, 2019, low income and minority populations are generally located southeast of the Airport and in Trenton, approximately over a mile to two miles from the project area. The mapping did not identify any areas of concern in the vicinity of the project areas for populations that are potentially sensitive to environmental justice. This tool identified that the project area has a 20% minority population and a 10% low-income population. This places these indexes for the project area below the average for the state of New Jersey (30% and 27%), and the United States of America (USA) (38% and 12%). As shown in **Table 4-4**, the project area is not within a potential environmental justice area.

4.12.3. Children's Health and Safety Risks

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, defines the risks to children's safety that are attributable to products or substances that the child is likely to

touch or ingest such as: the air the child breathes; the food the child eats; the water the child drinks or uses for recreation; and the soil used to grow food.

There are no schools, daycares, parks, and/or children's health clinics in the project areas. Children's population statistics show that Ewing's younger population is consistent with Mercer County and New Jersey, with the exception of a higher percentage of 15 to 19-year old persons and smaller percentages of 5 to 14-year-old persons (see **Table 4-5**).

Table 4-5: Children's Population Statistics

	New Jersey	Mercer County	Township of Ewing
Total Population	8,908,520	369,811	36,057
Under 5 years	517,694 / 5.9%	20,928 / 5.7%	1,819 / 5%
5 to 9 years	517,905 / 6.1%	19,894 / 5.8%	1,329 / 3.7%
10 to 14 years	573,092 / 6.3%	23,839 / 6.2%	1,704 / 4.7&
15 to 19 years	556,312 / 6.4%	26,639 / 7.4%	3,895 / 10.8%

Source: 2018 ACS Estimates.

4.13. VISUAL EFFECTS

A visual effect refers to the potential effects due to light emissions, as well as the potential effects to visual resources and character of the existing environment. There are no special purpose laws, permits, or certificates for light emissions or their visual effects. However, light emissions or resulting visual effects from any proposed development action have the potential to affect nearby residential areas or properties covered under Section 4(f) of the USDOT Act, the Land and Water Conservation Fund Act, and Section 106 of the National Historic Preservation Act.

The Airport is situated in somewhat of a valley landscape with the area to the west slightly higher in elevation and the east slightly lower in elevation. A majority of the airfield is surrounded by aviation-related structures and facilities with some forested areas near the proposed terminal and parking.

4.13.1. Light Emissions

TTN is classified as a Part 139 Class I airport (scheduled Large Air Carrier Aircraft) and is required to follow the Airport Safety guidelines as stated in Certification of Airports, 14 C.F.R. § 139. These guidelines include lighting and signage utilized both on the ground and in the air as well as other airport procedures. Light emissions are typically one of the greatest concerns for residents in neighborhoods, as well as users of other parcels adjacent to an airport that could be directly impacted by a change in lighting.

The current level of light emissions from airside and landside sources associated with the project area include the following:

Airside lighting:

- Terminal apron box shield/downward facing lighting provided to light the aircraft parking areas.
- Terminal building airside lighting directed down with box shielded fixtures provided to light the areas between the building and aircraft for ground operations employees.
- ARFF facility box shield/downward facing lighting for airside parking area.
- Baggage claim facility box shield/downward facing lighting in and around the entrances of the facility.

Landside lighting:

- Terminal building lighting.
- Parking lot box shield/downward facing lighting.
- Parking garage lighting mounted on the top floor slab of the structure and extending up to 25 ft above the top floor of the parking structure with box shield/downward facing lighting.
- Access roadway box shield/downward facing lighting.
- ARFF facility box shield/downward facing lighting for landside parking area and security lighting on building.

The Proposed Action lies within the developed portion of Airport property consisting of the existing terminal facilities, ARFF, and parking areas. The current terminal area is well lit with high mast lighting used to light the parking and movement areas for both vehicles and aircraft. The new terminal building's lighting would be designed to accentuate architecture, provide safety and security to passengers and Airport staff, enhance navigation within the terminal, and provide a comfortable and enjoyable experience for the public. Lighting associated with the terminal building would incorporate energy efficient technologies, and wherever feasible, use natural lighting.

The proposed ARFF area currently consists of vacant maintained airfield. The ARFF project area currently has no light emissions associated with it. The railroad, which extends along the Airport property southeast of the ARFF project area, is higher in elevation than the surrounding commercial, municipal and residential land uses, and would serve as a buffer for potential light emissions. In addition, wooded areas are located along the railroad corridor and around the wetland area south of the ARFF project area.

4.13.2. Visual Resources and Character

TTN is located in a moderately developed area consisting of a mix of residential, commercial, recreation, industrial, and agriculture land uses. There are no unique visual resources near the terminal or ARFF project areas. The nearest visual resources, including historic and eligible historic sites, near the project areas consist of the following:

- Aeronautical Turbine Laboratory Complex Historic District - located south of the Airport near West Upper Ferry Road (> 0.50 mile south of ARFF project area)
- Delaware & Bound Brook (Reading) Railroad Historic District - located along the railroad corridor, east of the Airport (0.10 mile southeast of project area)

- First Presbyterian Church - located to the east on Scotch Road (> 0.50 mile south of ARFF project area)
  Cemetery of Ewing - located to the east on Scotch Road (> 0.50 mile southeast of ARFF project area)

The newly constructed luxury apartment complex (*Greene 750 at Bear Tavern*) located across from the Airport terminal has views of the terminal area through trees located along Sam Weinroth Road. The Google Earth image below shows the existing view from the third floor (elevation 239 FT) of apartment building #10 at Greene 750 at Bear Tavern. Potential visual impacts as a result of the Proposed Action are discussed in Section 5.11.2.

Additional information on the historic sources can be found in the Phase IA Historical and Archaeological Survey and Reconnaissance-Level Historic Architectural Survey report provided in **Appendix D.**

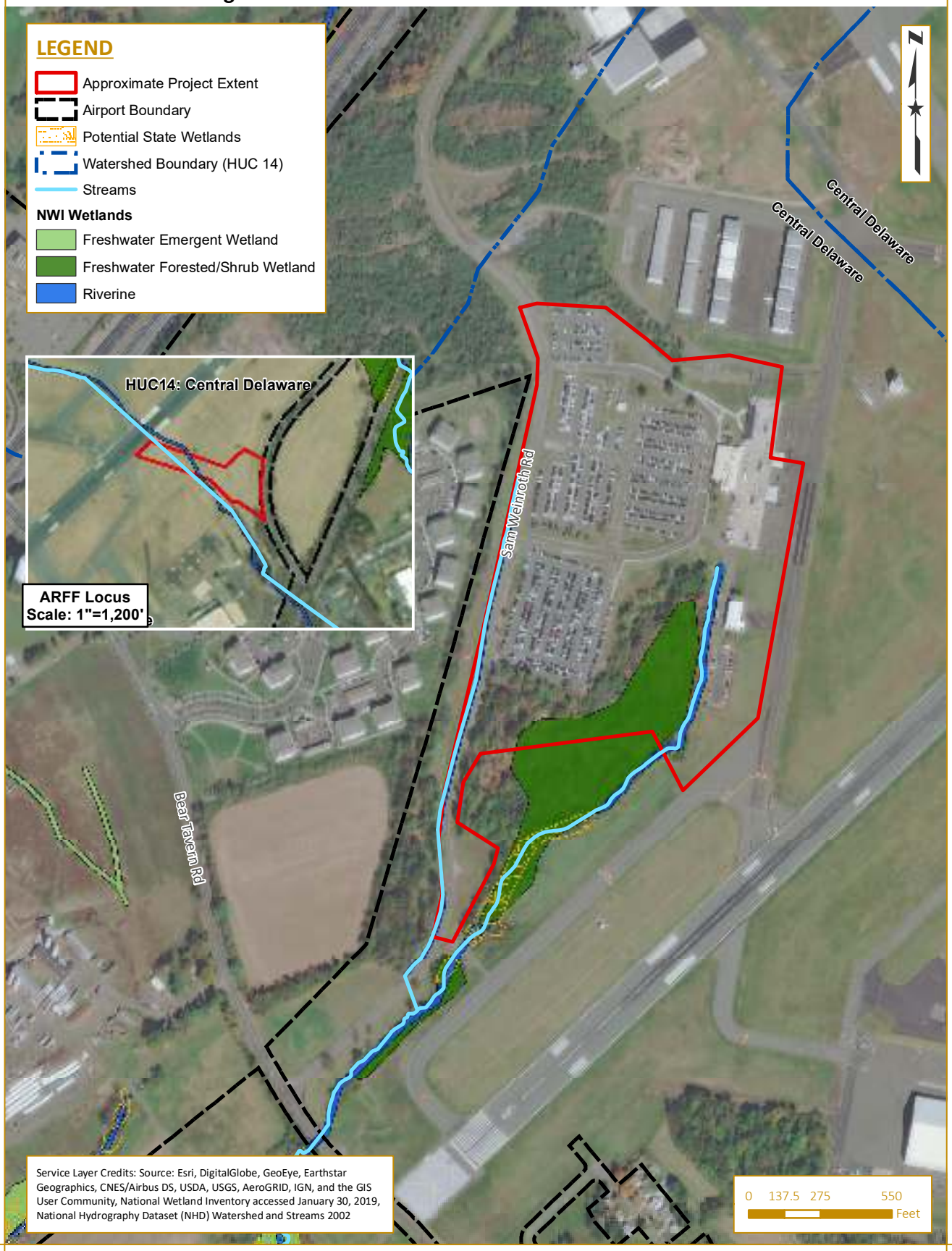
Exhibit 4-1: View from Apartment Building #10

Source: Google Earth

4.14. WATER RESOURCES

This section discusses potential affects to water resources including groundwater, wetlands, surface waters (streams, rivers, ponds, and lakes), and floodplains.

Figure 4-7: State & Federal Wetlands and Surface Waters



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4.14.1. Wetlands

Federal

The United States Army Corps of Engineers (USACE) regulates activities in wetlands that have a significant nexus to traditional navigable waters (TNWs) under Section 404 of the Clean Water Act (CWA). The USACE requires that an area have hydrophytic vegetation, hydric soils, and wetland hydrology present in order to be considered a wetland. The National Wetland Inventory (NWI) mapping is typically used to determine the potential presence of federal wetlands prior to any site reconnaissance. NWI mapping indicates potential wetland areas identified by the USFWS using aerial photography. These maps do not have any regulatory consequence, but rather indicate areas that may meet federal wetland criteria. Locations of NWI-mapped wetlands is depicted in Figure 4-7.

On April 21, 2020, the USEPA and USACE published the Navigable Waters Protection Rule in the Federal Register to finalize a revised definition of "waters of the United States" ("WOTUS") under the Clean Water Act. The rule streamlined the definition of WOTUS to include four simple categories of jurisdictional waters, provides clear exclusions for water features that have not been traditionally regulated, and provides regulatory definitions for terms previously undefined. The Navigable Waters Protection Rule regulates the nation's navigable waters and the core tributary systems that provide perennial or intermittent flow into them. This final rule became effective on June 22, 2020. In this final rule, WOTUS is interpreted to encompass the territorial seas and traditional navigable waters; perennial and intermittent tributaries that contribute surface water flow to such waters; certain lakes, ponds, and impoundments of jurisdictional waters; and wetlands adjacent to other jurisdictional waters. Further, this final rule defines "adjacent wetlands" as wetlands that abut a territorial sea or traditional navigable water, a tributary, or a lake, pond, or impoundment of a jurisdictional water; are inundated by flooding from a territorial sea or traditional navigable water, a tributary, or a lake, pond, or impoundment of a jurisdictional water in a typical year; are physically separated from a territorial sea or traditional navigable water, a tributary, or a lake, pond, or impoundment of a jurisdictional water only by a natural berm, bank, dune, or similar natural feature; or are physically separated from a territorial sea or traditional navigable water, a tributary, or a lake, pond, or impoundment of a jurisdictional water only by an artificial dike, barrier, or similar artificial structure so long as that structure allows for a direct hydrological surface connection to the territorial sea or traditional navigable water, tributary, or lake, pond, or impoundment of a jurisdictional water in a typical year, such as through a culvert, flood or tide gate, pump, or similar artificial feature.

As described in further detail below, New Jersey has taken assumption of CWA Section 404 jurisdiction.

State

The USEPA authorized the state of New Jersey to administer the CWA Section 404 Permitting Program in delegable waters, as defined at N.J.A.C. 7:7A-1.4. In non-delegable waters, including but not limited to, Delaware River, Greenwood Lake and Hackensack Meadowlands Development Commission jurisdictional waters, the USACE retains jurisdiction under federal law. The state also protects wetlands under its own Freshwater Wetlands Protection Act, N.J.S.A. 13:9B, which is

implemented under the New Jersey Freshwater Wetlands Protection Act (NJFWPA) Rules at N.J.A.C. 7:7A. The NJDEP regulates activities in freshwater wetlands, wetland transition areas, and state open waters under the NJFWPA (N.J.S.A. 13:9B-1).

A wetland is defined by the NJFWPA (N.J.S.A. 13:9B-3) as:

> *An area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation.*

Wetlands generally include swamps, marshes, bogs, and similar areas. The NJDEP has adopted the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (January 1989) as the technical basis for delineating wetlands in New Jersey. This manual was prepared by the Federal Interagency Committee for Wetland Delineation (FICWD) consisting of representatives from the US Army Corps of Engineers, US Environmental Protection Agency, the USFWS, and the United States Department of Agriculture (USDA) Soil Conservation Service. In accordance with this methodology, the following three parameters are diagnostic of wetlands: 1) the land is dominated by hydrophytes; 2) the substrate is undrained hydric soil; and 3) the substrate is saturated with groundwater or flooded for a significant part (1 week or more) of the growing season each year. All three parameters must be present for an area to be identified as wetland, unless abnormal circumstances are determined to be present.

Wetlands are classified according to their resource value as determined by the New Jersey Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A-3.2). Each wetland resource value classification has a corresponding transition area, or upland buffer, that must be maintained between the wetland and adjacent development to protect the integrity and viability of the wetland ecosystem (N.J.A.C.7:7A-3.3). There are three different resource value classifications: exceptional, ordinary and intermediate:

Exceptional resource value wetlands are the highest quality wetlands and require a 150-foot transition area. Wetlands of exceptional resource value are defined by the state as freshwater wetlands which discharge into Freshwater 1 (FW1) waters and Freshwater 2-Trout Production (FW2-TP) waters or which are documented habitats for endangered or threatened species [N.J.A.C. 7:7A-3.2(b)]. Exceptional value areas are subject to a higher burden of proof during the permit review process requiring the necessity of weighing the project impact against a compelling public need, extraordinary hardship, or the lack of any other alternative available to the project sponsor.

Ordinary resource value wetlands are typically viewed as the lowest quality wetlands and do not require a transition area. Wetlands of ordinary resource value include ditches, swales, detention facilities, and certain isolated wetlands. In order to be classified as ordinary resource value, an isolated wetland must be smaller than 5,000 square feet and more than 50 percent of the area within 50 feet of the wetland boundary must consist of maintained lawn or landscaping, impervious surfaces, active railroad rights-of-way, or gravel parking/storage areas or roads [N.J.A.C. 7:7A-3.2(f)].

Intermediate resource value wetlands include all freshwater wetlands not defined as exceptional or ordinary. These wetlands are subject to a standard 50-foot transition area. The NJDEP has the final authority to determine the resource value classification of wetlands. The NJDEP developed land use/land cover baseline mapping, which serves as a resource-management tool and a comprehensive inventory of the New Jersey's freshwater wetlands. The mapping provides resource agencies with a statewide planning tool for early detection and assessment of changes in wetlands. Mapping is based primarily on aerial interpretation; therefore, field investigations are required to determine the presence or absence of wetlands; limit and extent of any onsite wetlands; and character of identified wetlands.

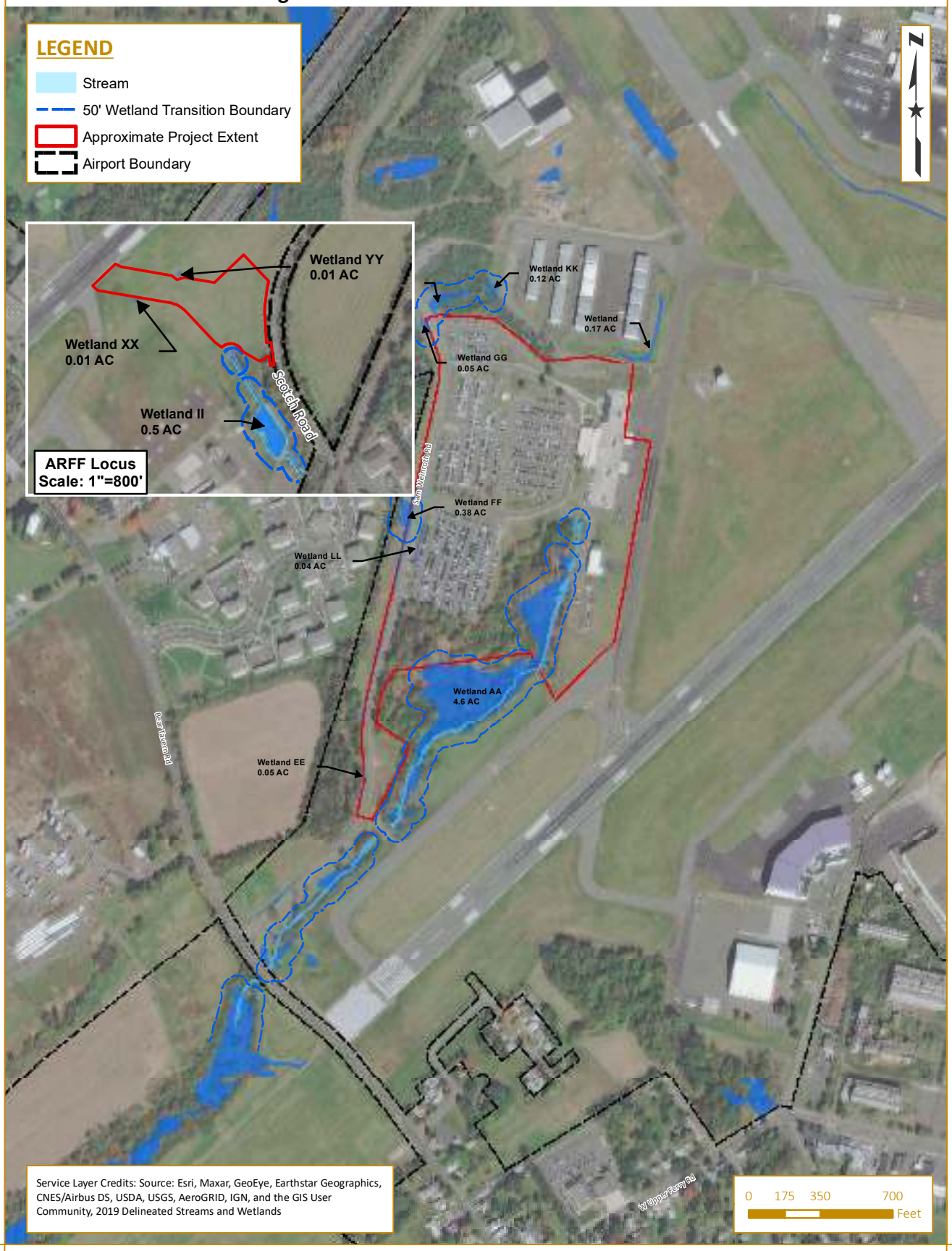
NJDEP Wetlands Mapping indicates the presence of a Palustrine forested wetland and scrub-shrub wetland associated with a perennial stream (unnamed tributary to the Delaware River) to the southwest of the existing terminal building and parking lots. NJDEP Wetlands Mapping also indicates the presence of Palustrine forested, scrub-shrub, managed-maintained, and herbaceous wetlands northeast and east of Scotch Road (i.e., northeast of the proposed ARFF facility). These wetlands are associated with the West Branch Shabakunk Creek. Another tributary associated with the West Branch Shabakunk Creek is also mapped to the west-southwest of Scotch Road. Locations of NJDEP-mapped wetlands is provided in **Figure 4-7**.

A wetland delineation was completed for the proposed terminal replacement study area in November-December 2018 and for the proposed ARFF relocation study area in December 2018, May 2019, and June 2019 by Amy S. Greene Environmental Consultants, Inc. Vegetation, soils, and hydrology were examined for evidence of wetland characteristics according to the methodology outlined in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (Federal Interagency Committee on Wetland Delineation, 1989). Use of this methodology is required by the NJDEP Division of Land Use Regulation in accordance with the NJFWPA. Wetlands were identified within both Airport study areas, a majority of which are not identified by NJDEP Wetlands Mapping. Locations of delineated wetlands are shown on **Figure 4-8**.

Wetlands identified within and immediately adjacent to the proposed terminal replacement project area consist of Palustrine forested, scrub-shrub, and emergent wetlands, as well as manmade emergent wetland ditches and swales adjacent to Sam Weinroth Road. These wetlands ultimately drain to the unnamed tributary to the Delaware River, which has received a surface water quality classification of Freshwater 2, Non-Trout and Category 2 by the NJDEP. In accordance with the New Jersey Freshwater Wetlands Protection Act rules (N.J.A.C. 7:7A), a majority of the wetlands identified within the proposed terminal replacement project area will likely be classified as Intermediate Resource Value subject to a standard 50-foot wetland transition area or buffer. By definition, the manmade wetland ditches or swales identified within or adjacent to the proposed terminal project area will likely be classified as ordinary resource value and will not be subject to a standard transition area (N.J.A.C. 7:7A-3.2).

The resource value classifications and boundaries of delineated wetlands are subject to review and verification by the NJDEP. These are formally established when the NJDEP issues a Letter of Interpretation (LOI) for a site. A LOI is obtained by submitting an application to the NJDEP Division of Land Use Regulation in accordance with the requirements found at N.J.A.C. 7:7A-3. Applications for LOIs were prepared and submitted to the NJDEP for the ARFF Study Area and Terminal

Figure 4-8: Delineated Streams and Wetlands



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Replacement Study Area to verify the limits and resource values of onsite freshwater wetlands. The LOI for the ARFF Study Area was issued by the NJDEP on September 18, 2020 (NJDEP File #1102-12-0002.5 FWW190001). The LOI verified the limits and resource value classifications of the onsite wetlands and state open waters, as delineated by the project team. Specifically, wetlands (Wetlands "HH" and "II") associated with the Tributary to the West Shabakunk Creek are classified as Intermediate Resource Value with a standard 50-foot wetland transition area. State open waters associated with tributary are not subject to wetland transition areas. The onsite isolated wetlands (Wetlands "XX" and "YY") are classified as Ordinary Resource Value and are not subject to standard wetland transition areas. The LOI for the Terminal Replacement Study Area was issued by the NJDEP on March 24, 2021. The LOIs are included in Appendix H.

Detailed information regarding the delineated wetlands and their locations are presented in the Applications for Letter of Interpretation, Regulatory Line Verification in **Appendix H**.

4.14.2. Floodplains

Floodplains are low lying land areas typically associated with bodies of water that are likely to become inundated during a flooding event. Floodplains serve an important function in retaining stormwaters to protect against downstream flooding, property damage, and potential loss of life.

The size of a floodplain will vary according to the magnitude of the storm event, as determined by the storm reoccurrence interval. For example, a five-year storm has a magnitude that can be expected once every five years or statistically has a 20-percent chance of occurring during any given year. FEMA utilizes a 100-year storm reoccurrence interval for flood preparation. Flooding related to a 100-year storm statistically has a 1-percent chance of occurring during any given year. A regulatory floodway is the channel of a watercourse and the adjacent land areas that must be reserved in order to discharge a base flood without cumulatively increasing the peak water surface elevation more than a designated height. It is important to note that reoccurrence intervals can change when there are significant changes in flow patterns in an area or changes in land use due to development, such as converting forested land to a residential development.

(EO 11988, *Floodplain Management,* directs all federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid the direct and indirect support of floodplain development wherever there is a practicable alternative.

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program under the National Flood Insurance Act of 1968 (NFIP), as well as overseeing the federal floodplain management programs and flood hazard mapping. Federal flood hazard areas are identified on community specific Flood Insurance Rate Maps (FIRM). No FEMA mapping exists for the onsite portions of the unnamed tributary to the Delaware River and the West Branch Shabakunk Creek. FEMA

The state of New Jersey protects residents and property from flood events through its Flood Hazard Area Control Act (FHACA) at N.J.S.A. 58:16A-50. The Act is implemented under the FHACA Rules at N.J.A.C. 7:13, which tends to be more stringent than federal standards with regard to development in flood hazard areas (FHA) and riparian zones adjacent to surface waters throughout the state. Specifically, the FHACA Rules regulate the alteration of topography through excavation,

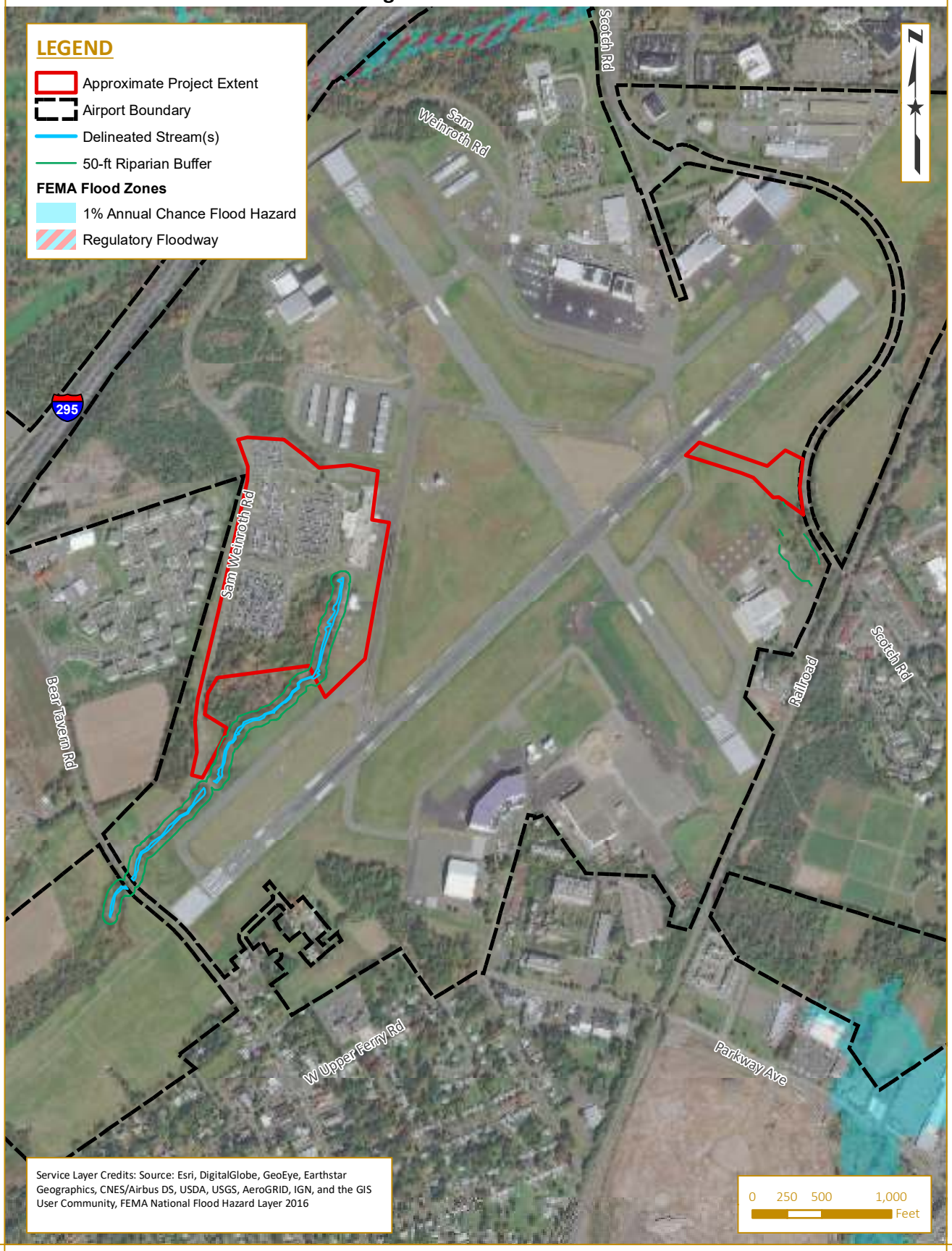
grading, and/or placement of fill; the creation of impervious surface; the storage of unsecured material; and construction, reconstruction, repair, alteration, enlargement, elevation and removal of structures in the flood hazard area. The FHACA Rules also regulate the clearing, cutting, and/or removal of vegetation in a riparian zone, the land and vegetation within and adjacent to a regulated water. In order to minimize flooding impacts as the result of uncontrolled development, the NJDEP has instituted a 0% net-fill change in the maximum total percentage of flood storage volume displacement lawfully allowed, including offsite credits (N.J.A.C. 7:13-11.4). The FHACA Rules are designed to be highly descriptive, and to a certain extent, prescriptive to mitigate the adverse impacts to flooding and the environment that can be caused by development.

As mentioned above, the FHACA Rules regulates activities within regulated waters, as defined at N.J.A.C. 7:13-2.2, as well as within two independent, but often overlapping areas associated with the regulated water: the flood hazard area and the riparian zone. A flood hazard area exists along every regulated water that has a drainage area of 50-acres or more. The flood hazard area consists of a flood fringe and a floodway, except within and along tidal waters in which the entire flood hazard area consists of a flood fringe. New Jersey flood hazard areas are based upon peak flood water elevations equal to the FEMA 100-year flood elevation plus an additional amount of water in fluvial areas that accounts for future flow increases due to development or other factors. In New Jersey, the FHACA Rules designate six methods that can be used to determine the flood hazard areas for a particular site or study area. The NJDEP was contacted for flood hazard maps for the streams located within the Airport boundary. NJDEP staff provided a FEMA GIS composite from the Mercer County FIS, along with state maps for Ewing Creek. Since no NJDEP flood hazard area delineation and no FEMA floodplain mapping exists for the onsite regulated waters, the flood hazard area of the unnamed tributary to the Delaware River and the West Branch Shabakunk Creek was determined using Method 5 (Approximation Method) in accordance with N.J.A.C. 7:13-3.5. The regulated riparian zones and flood hazard areas are shown on **Figure 4-9**, Flood Zones.

A riparian zone exists along on each side of a regulated water and includes the water itself. The portion of the riparian zone located outside of a regulated water is measured landward from the top-of-bank. The width of the riparian zone is dependent upon the classification of the regulated water or other related factor(s), as described at N.J.A.C. 7:13-4.1(c) of the FHA Rules. A 300-foot riparian zone is assigned to any regulated water designated as a Category 1 (C1) water, as well as all upstream tributaries within the same HUC-14 watershed as the C1 water. A 150-foot riparian zone is allocated to streams designated as trout production waters and all upstream waters; trout maintenance waters and all upstream waters located one stream mile of the trout maintenance water; and any segment of water flowing through an area that contains a threatened or endangered species and/or documented habit for threatened or endangered species of flora or fauna that are critically-dependent on the regulated water for survival, as well as all upstream waters located within one stream mile of such habitat. For all other regulated waters, the width of the riparian zone is 50-feet.

Unnamed tributaries to the Delaware River are located within the western portion of the airport property, the main tributary of which originates near the existing airport terminal entrance road. The upper reach of this tributary is located within the proposed terminal project area. A second tributary is situated along the north side of Sam Weinroth Road. This feature flows southwest and eventually converges with the main tributary. The West Branch Shabakunk Creek and associated tributaries are located within the eastern portion of the Airport property in the vicinity of the

Figure 4-9: Flood Zones



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proposed ARFF project area. The West Branch Shabakunk Creek flows in a southeasterly direction, eventually discharging to the Assunpink Creek. According to the New Jersey Surface Water Quality Standards (N.J.A.C. 7:9B), the unnamed tributaries to the Delaware River and West Branch Shabakunk Creek have received a surface water quality classification of Freshwater 2, Non-Trout and C2 by NJDEP.

The NJDEP Natural Heritage Program letter, dated January 22, 2019 and June 7, 2019, has no documented habitat for any threatened or endangered plant or animal species that are critically dependent on the regulated water for survival on or within 1 mile downstream of either project areas. Additionally, the project site is not located upstream of a Category 1 (C-1) water within the same HUC-14.

Based on the above, the riparian zone for the unnamed tributary to the Delaware River and West Branch Shabakunk Creek and its tributaries is anticipated to be 50 feet from the top-of-bank. Because the portion of the unnamed tributary to the Delaware River parallel to Sam Weinroth Road appears to be manmade, the drainage area should be determined. If the tributary drains less than 50-acres, the feature should not contain a regulated riparian zone; however, the NJDEP would make the final determination on whether this feature is regulated under the FHACA Rules (N.J.A.C. 7:13).

The NJDEP will issue a Flood Hazard Area Verification for an entire site or a portion of a site, which provides a formal determination of one or more of the following: the flood hazard area design flood elevation, flood hazard area limit, floodway limit, and/or riparian zone limit. A request for a Flood Hazard Area Verification was prepared and submitted to the NJDEP for the ARFF Study Area to verify the flood hazard area limit, the riparian zone limit, and flood hazard area design flood elevation. As stated in the approval letter, dated May 12, 2020 (NJDEP File No. 1102-12-0002.5 LUP 200001), the NJDEP concurs with the limit of the flood hazard area, which was established using Method 5 (Approximation Method) and the flood hazard area design flood elevation is a depth of six feet above the stream's invert. The NJDEP also concurs that the riparian zone extends 50 feet from the stream's top of bank. A copy of the Flood Hazard Area Verification is included in Appendix C. A Flood Hazard Area Verification has not yet been obtained for the Terminal Replacement Study area. A Verification will be requested concurrently with the Flood Hazard Area permit application for the project.

4.14.3. Surface Waters

The TTN Airport property is located in the Central Delaware Watershed Management Area (WMA ID #11) as defined by the Division of Watershed Management of NJDEP. The WMA is characterized by agriculture and extensive suburban development. More specifically, the property is situated in two watersheds and three subwatersheds. The northernmost and western portions of the Airport property, which includes the proposed terminal project area, lies within the Alexauken Creek/Moore Creek/Jacobs Creek Watershed. The eastern and southeastern portions of the Airport property, which includes the proposed ARFF project area, are situated within the Assunpink Creek (below Shipetaukin Creek) Watershed. Additionally, the northern portion of the Airport property is located in the Jacobs Creek (below/including Woolsey Brook) Subwatershed; the eastern portion is located in the Shabakunk Creek Watershed; and western portion is located in the Mercer (Calhoun Stream to Jacobs Creek) Subwatershed. Unnamed tributaries to the

Delaware River are located within the western portion of the Airport property. The main tributary originates near the existing airport terminal entrance road and flows southwest, ultimately discharging to the Delaware River. The upper reach of this tributary is located within the proposed terminal project area. A second tributary, identified as a "ditch" by NJDEP streams mapping, is situated along the north side of Sam Weinroth Road. This feature flows southwest, then south through a culvert under Sam Weinroth Road until converging with the main tributary.

The West Branch Shabakunk Creek and associated tributaries are located within the eastern portion of the Airport property, in the vicinity of the proposed ARFF project area. The West Branch Shabakunk Creek flows in a southeasterly direction, eventually discharging to the Assunpink Creek.

All of the streams on and in the vicinity of the TTN property are classified by the NJDEP as Freshwater 2 Non-Trout (FW2-NT) and Category 2 pursuant to the Surface Water Quality Standards, N.J.A.C. 7:9B. Refer to **Figure 4-7** for watershed and streams locations on and in the vicinity of the TTN property.

Under Section 303(d) of the Federal Clean Water Act, each state is required to identify and make public information on impaired waterbodies. New Jersey is required to list impaired waterbodies as part of the water quality planning process pursuant to the Water Quality Planning Act (N.J.S.A. 58:11A-7). New Jersey uses chemical and biological stream monitoring to determine these impaired waters. Waterbodies cannot be removed from the 303(d) list until the water quality standards are met.

The Clean Water Act requires that each impaired (non-attaining for pollutants) waterbody is given a priority ranking of high (H), medium (M), or low (L) with the goal of lowering the Total Maximum Daily Load (TMDL) of the particular pollutant. The prioritization process takes into account various environmental, social, and political factors. Prioritization criteria include source and parameters of impairment; additional data needs; TMDL complexity and nature; waterbody use and cultural or historic importance; efficiency concerns; watershed management activities; sensitive species concerns; and public interest.

The NJDEP's 2014 Final 303(d) List of Water Quality Limited Waters identifies portions of the West Branch Shabakunk Creek as containing pollution impairment levels sufficient for listing on the 303(d) list. Contaminants include arsenic, as well as mercury in fish tissue, both of which have a low priority ranking. No impacts to, or direct discharge to, the West Branch Shabakunk Creek are proposed. The onsite portion of the unnamed tributary to the Delaware River is not identified in the Final 303(d) list. Any impacts to surface waters, including associated riparian zone, flood hazard areas, wetlands, and wetland transition areas, must be authorized through one or more permit authorized by the NJDEP under the FWPA Rules (N.J.A.C. 7:7A) and the FHACA Rules (N.J.A.C. 7:13).

Delaware & Raritan Canal Commission

The Delaware and Raritan Canal Commission (DRCC) was created pursuant to the Delaware and Raritan Canal State Park Law of 1974 (N.J.S.A. 13:13A-1 et seq.). The DRCC administers a land-use regulatory program in central New Jersey where new development could have drainage, visual or other ecological impact on the Delaware and Raritan (D&R) Canal State Park. "Major Projects" are projects that result in the cumulative coverage, since January 11, 1980, of ¼-acre of land with

impervious surface, or the disturbance of one (1) acre or more of land. Major projects must be reviewed and approved by the DRCC to ensure conformance with the objectives of the Master Plan and the specific standards of the DRCC Review Zone Regulations (N.J.A.C. 7:45).

The DRCC has jurisdiction over the entire state-owned D&R Canal and its Review Zone, including Zones A and B. The Review Zone includes the Canal Park, lands within 1,000 feet of the canal, and watersheds of all streams that enter the canal park. Zone A is defined as "the area within 1,000 feet on either side of the center line of the Canal, except in Princeton Township where the west bank of Carnegie Lake shall be the boundary of Zone A, and where the Raritan River is within 1,000 feet, its furthest bank being the boundary" (N.J.A.C. 7:45-1.3). Zone B is the balance of the Review Zone, as delineated by DRCC maps. Trenton-Mercer Airport and the Proposed Action is situated within DRCC Review Zone B.

The new terminal project would automatically be considered a "major project," as defined at N.J.A.C. 7:45-1.3; therefore, approval from DRCC would be required, which would include review of stormwater runoff quantity and water quality impact (N.J.A.C. 7:45-8), as well as evaluation of stream corridor impacts (N.J.A.C. 7:45-9). The stream corridor is defined as "Any water course that flows into the Park, its tributaries, the 100-year floodplain associated with the water course and its tributaries, and all of the land within a 100-foot buffer adjacent to the 100-year flood line associated with the water courses and their tributaries." A stream corridor "starts from the point that the water course enters the Park, upstream to the point that the water course or its tributaries drain less than 50 acres." The DRCC agreed to accept the NJ Flood Hazard Area in place of the 100-year floodplain for establishing the DRCC stream corridor limits.

The DRCC regulates activities in the stream corridor, which is defined as "Any water course that flows into the Park, its tributaries, the 100-year floodplain associated with the water course and its tributaries, and all of the land within a 100-foot buffer adjacent to the 100-year flood line associated with the water courses and their tributaries." Sufficient information to determine the 100-year floodplain within the project areas was not available. Therefore, the buffer used to determine the stream corridor was based on the FHA in accordance with NJDEP Flood Hazard Area Control Rules. Correspondence with the DRCC regarding the use of the FHA is provided in **Appendix C**. Coordination with the DRCC was performed to verify the boundaries of the stream corridor in the vicinity of each project and pre-application meetings for the terminal and ARFF project areas were conducted. Further details of DRCC coordination are provided in Chapter 5, Section 5.11.3.

4.14.4. Groundwater

Groundwater serves as an important potable water supply for many individual households, small communities, and larger municipalities. Potential impacts from airport development projects can include reduced groundwater recharge and potential contamination through chemical, toxin or other pollutant releases.

The NJDEP protects the quality of the state's groundwaters and their designated uses under the *Ground Water Quality Standards* (GWQS) (N.J.A.C. 7:9C) rule. The GWQS are implemented primarily through the New Jersey Pollutant Discharge Elimination System (NJPDES) discharge to ground water permit program and the Site Remediation Program.

Federal groundwater protection is provided under the Safe Drinking Water Act (SDWA), recently amended in 1996. The SDWA was established to protect drinking water and its sources, including rivers, lakes, reservoirs, springs, and groundwater wells. The USEPA Sole Source Aquifer (SSA) program was established under the SDWA. According to the USEPA, a SSA is defined as one that supplies at least 50 percent of the drinking water for its service area, and wherein which there is no reasonably available alternative drinking water sources should the aquifer become contaminated. The SSA program allows for USEPA review of federally funded projects that have the potential to affect designated SSAs and their source areas.

According to the NJDEP GeoWeb (http://www.nj.gov/dep/gis/geowebsplash.htm), Airport areas outside of the airfield are designated as groundwater recharge areas. A majority of the groundwater recharge rates surrounding the Airport are 8-10 in/year and 11-15 in/year. A few areas on the outskirts of the Airport property have a groundwater recharge rate of 1-7 in/year. The western portion of Airport property is located over the Coastal Plain SSA while the eastern portion of the Airport property is not located over an SSA. The Coastal Plain SSA is depicted on **Figure 4-10**. An USEPA request for a Sole Source Aquifer project review was submitted. The results of the USEPA review are detailed in Section 5.12.4.

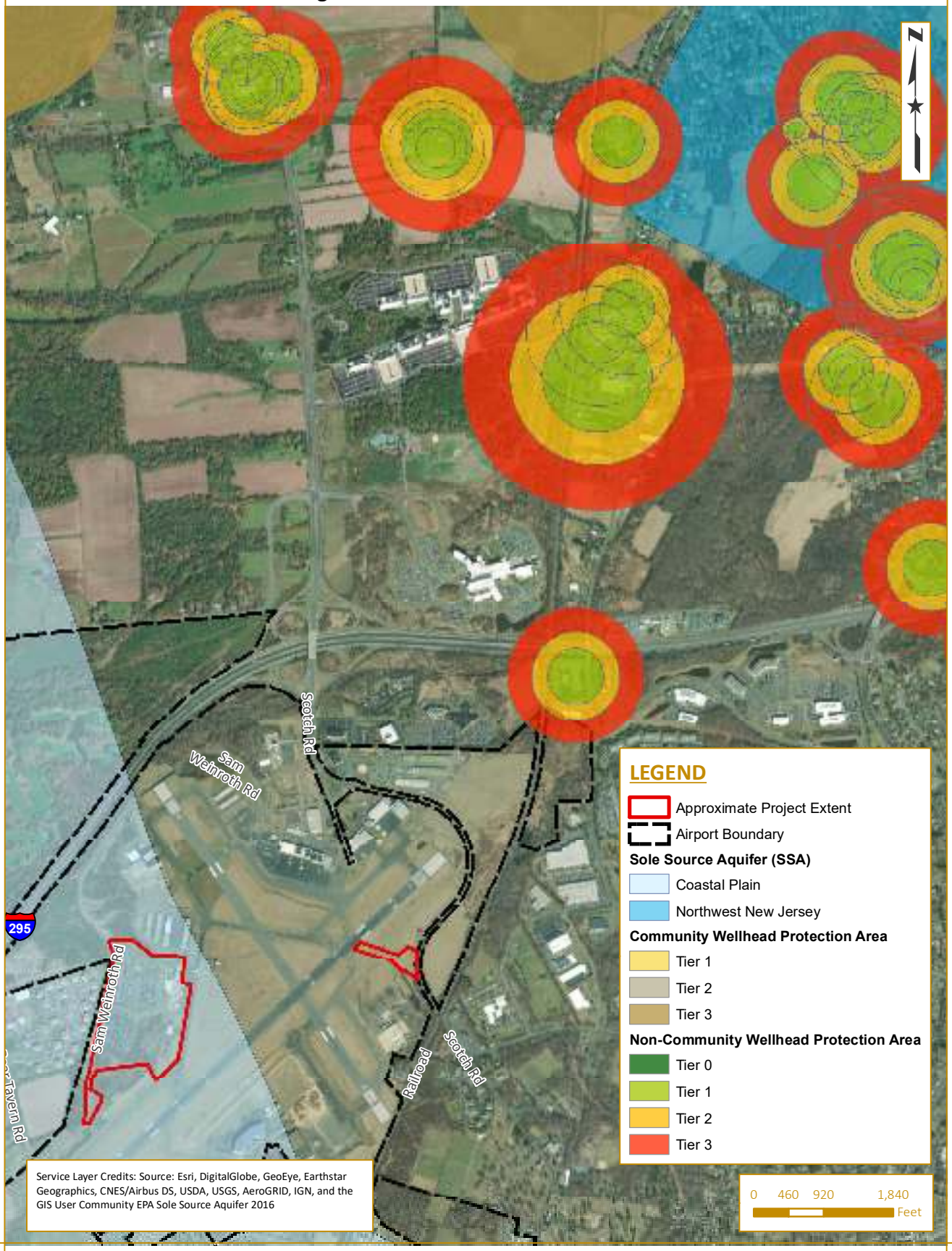
According to the NJDEP GeoWeb, there are no community or non-community water supply wells on Airport property. However, a non-community well and Non-Community Wellhead Protection Area is located immediately northeast of the Airport property. A "noncommunity" water system is a public water system used by individuals other than year around residents for at least sixty days of the year and can include schools, restaurants, motels. A Wellhead Protection Area (WHPA) for a Public Non-Community Water Supply Well (PNCWS) in New Jersey is a calculated area around a well that delineates the horizontal extent of ground water captured by the well pumping at a specific rate over a two-, five-, and twelve-year period. WHPAs are depicted on **Figure 4-10**. The Greene 750 apartment complex west of the terminal project area is connected to municipal water supply.

As discussed in Section 4.7.1, AFFF may have been previously used at TTN in the vicinity of the existing ARFF as part of firefighting training operations. The Airport currently uses non-PFAS containing foam for firefighting drills and equipment testing. A Phase II ESA was conducted and included the existing terminal building, ARFF building as well as the locations of the proposed terminal and ARFF buildings. PFAS exceedances were detected in groundwater monitoring wells conducted during the Phase II ESA.

The Phase I and II ESA has identified PFAS compounds as contaminants of concern as they relate to NEPA hazardous material, solid waste, and pollution prevention. NJDEP has a mandated and prescribed regulatory path for notifying, assessing, and reporting groundwater impact cases. Section 5.7 of the Phase II ESA summarizes the NJDEP regulatory process. The continued evaluation is completed independent of the NEPA evaluation because NEPA lacks the regulatory remediation authority that the NJDEP Technical Requirements for Site Remediation mandate.

Section 5.5 of this EA further discusses the next steps to address PFAS exceedances and compliance with federal and state regulations.

Figure 4-10: Groundwater Resources



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4.14.5. Wild and Scenic Rivers

The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. Rivers may be classified by Congress, or in certain situations the Secretary of the Interior, as wild, scenic, or recreational.

Based on a review of the National Park Service Wild and Scenic Rivers Program website, there are no federally designated wild and scenic rivers on or adjacent to the Airport. The Lower Delaware River is the nearest designated river to the project area. The nearest portion of this designated river is located approximately 2.4-miles west-northwest of the project area. The Lower Delaware River is classified as recreational but is also recognized for providing a wealth of natural, cultural, and historic features of national significance.

The proposed project would not impact any federally designated wild and scenic rivers.

5. ENVIRONMENTAL CONSEQUENCES

This chapter describes the anticipated environmental, social, and economic consequence of the Proposed Action. Information pertaining to the environmental consequences was obtained through an alternative analysis, evaluation of conceptual plan, on-site investigations, review of published information, agency correspondence, and discussions with the Airport personnel and public officials. The design and the various alternatives developed and presented in Chapter 3 is the result of a cohesive and integrated planning effort, minimizing impacts by the post development condition. The following table presents, in a comparative form, the level of impacts per each alternative.

Table 5-1: Level of Environmental Consequences per Alternatives

KEY CRITERIA - ENVIRONMENTAL CONSEQUENCES		Selection Matrix – Level of Direct Impacts	
		Alt. 1 (No Action)	Alt 4C
MEET PURPOSE AND NEED		NO	YES
CULTURAL RESOURCE	Archeological	None	None
	Historic Properties	None	None
	Section 4(f)	None	None
	Section 6(f)	None	None
NATURAL ENVIRONMENT	Biological Resources	None	Low
	Protected species	None	None
	Wetlands	None	0.17 ac
	Surface Waters	None	0.18 ac
	Groundwater	None	None
	Floodplains	None	Low
	Coastal Resources, Barriers and Sanctuaries	None	None
	Wilderness Areas	None	None
	Wild and Scenic Rivers	None	None
	Natural Resources / Energy Supply	None	Improved Existing Condition
HUMAN ENVIRONMENT	Air Quality	None	Improved Existing Condition
	Land use	None	None
	Farmlands	None	None
	Noise	None	Improved Existing Condition
	Hazardous Materials	None	Improved Existing Condition
	Socioeconomic, Environmental Justice, and Children's Health and Safety Risks	None	None
	Traffic and Surface Transportation	None	Improved Existing Condition

KEY CRITERIA - ENVIRONMENTAL CONSEQUENCES		Selection Matrix – Level of Direct Impacts	
		Alt. 1 (No Action)	Alt 4C
	Light Emission and Visual Impacts	None	Improved Existing Condition
	Solid Waste Management	None	Improved Existing Condition
CUMULATIVE IMPACTS		Not significant (NS)	NS

Source: McFarland-Johnson, Inc.

After analyzing the results of the data collected as part of the environmental planning process and compared to the No Action, it is concluded that due to the nature and location of the project and implementation of site-specific best management practices (BMPs), the Proposed Action would result in limited environmental impacts, not significant to the natural and human environment. Necessary measures and BMPs would be established to further minimize and mitigate any environmental impacts the Proposed Action may have.

Alternative 1 (No Action) does not meet and address the needs of the Airport. The No Action alternative assumes that the Proposed Action is not implemented and the conditions at the Airport would remain unchanged, including current deficiencies and inability to accommodate existing demand, limiting the ability of TTN to maintain revenue. Alternative 2 (Alternate Locations) does not meet the purpose and need, would result in higher development costs and budget and would have a longer construction duration. Alternative 2 has been dismissed and is not further discussed in this chapter. Alternative 3 (Terminal Reconstruction) does not meet and address the needs, and expansion of the terminal is not feasible due to existing terminal building split-level design. In addition, the existing terminal is over 40 years old, does not meet current codes and its physical condition including HVAC, plumbing, roofing, glazing and finishes, is in various stages of disrepair and is not energy efficient. Therefore, Alternative 3 is dismissed and is not further discussed in this chapter. For details of the evaluated alternatives refer to Chapter 3.

Alternative 4 (Terminal Replacement) meets the purpose and need and includes three (3) design variations (e.g., 4A, 4B, and 4C). Alternative 4C is the preferred alternative and considered as the Proposed Action. Therefore, for the purpose of this chapter, the discussion of the environmental consequences and mitigation measures is focused on Alternative 4C (Preferred Alternative and Proposed Action). Alternative 4C, as the Proposed Action, is compared to the No Action (Alternative 1) throughout this chapter as per FAA Order 1050.1F, Section 6-2.1.f.

The potential impacts from the Proposed Action are discussed in the following sections and quantified to the maximum extent as possible. In areas where quantitative measures cannot be provided, qualitative assessments are provided. The following resources are not present within the project area or immediate vicinity; therefore, do not require further evaluation:

- Coastal Zones
- Coastal Barriers
- Section 4(f)

- Farmland
- Historic, Architectural, Archaeological, and Cultural Resources
- Wild and Scenic Rivers

The absence of these resources is documented in Chapter 4.

5.1. AIR QUALITY

This section sets forth the potential impacts to air quality from the Proposed Action and the No Action Alternative. Potential impacts related to construction and operation of the Proposed Action are considered herein.

5.1.1. Operational Emissions

The Proposed Action would not induce aircraft operations or passengers or change the aircraft fleet using TTN beyond forecast operations compared to the No Action. The Sponsor has assumed any increase in operations will be commensurate with the forecast demand developed in the AMPU and not a direct result of the Proposed Action. This is based on known aviation markets, leisure travelers (low corporate), Airport runway constraints, and five years of historical data since Frontier began operating at TTN.

During the years of construction and after construction, operational emissions associated with aircraft, traffic, and parking emissions would be the same (i.e. no increase or change) with the implementation of the Proposed Action and the No Action alternative. Implementation of the Proposed Action would change how passengers access the Airport Terminals and parking areas, in particular surface vehicle traffic patterns as they are expected to change with the Proposed Action accessing the new Terminal from Sam Weinroth Road. However, any new roadway lengths and surface vehicle changes (i.e. vehicle miles traveled) are expected to be minimal (or insignificant) compared to the No Action as shown in Appendix E. Therefore, operational emissions associated with airfield emissions sources, parking, and traffic were not inventoried or evaluated as part of this EA.

5.1.2. Proposed Action

The Proposed Alternative will consist of removing parking spaces from existing parking lots and the construction of a 1,000 vehicle multi story parking garage which would replace the lost surface parking as well as provide for the additional capacity growth. A preliminary design rendering of the parking garage is included in Chapter 3. The 1,044-car open garage parking structure is planned in conjunction with the new terminal building. The garage is proposed to be a naturally ventilated precast concrete structure, four tiers high. Tiers 1, 2, and 3 are to be approximately 86,300 SF each while tier 4 is to be approximately 66,700 SF. An administration space for the parking operations and management will be provided in a built and fitted out section of the garage for offices and break rooms. Stair/elevator towers are planned at the four corners of the building. The southwest elevator tower will align with the new terminal building and drop-off curb and will provide direct access to the exterior of the proposed drop-off plaza. The existing terminal would be demolished and a new approximately 125,000 square foot terminal will be constructed. Demolition of the existing ARFF and construction of a new ARFF located along Scotch Road and north of the Army National Guard

is proposed. To facilitate efficient access to and from the airport, terminal circulation and access road improvements are also proposed. Table 5-2 presents the primary components of the Proposed Action.

Table 5-2: Proposed Action New Terminal and Roadway Improvements

Project Action Component	Area (Square Feet)	Construction Start	Construction End
Construction of New Roadway	159,750	2022: QTR 3	2023: QTR 2
Construction of New Terminal Building	125,000	2022: QTR 3	2023: QTR 4
Site Work (including restoration, utilities, etc.)	n/a	2022: QTR 3	2024: QTR 1
Construction of New Parking Garage	160,000	2022: QTR 4	2023: QTR 2
Construction of New Apron	189,028	2023: QTR 3	2023: QTR 4
Construction of New ARFF Building	10,000	2023: QTR 1	2023: QTR 4
Demolition of Existing ARFF Building	5,500	2024: QTR 1	2024: QTR 1
Demolition of Existing Roadways	52,500	2022: QTR 3	2024: QTR 1
Demolition of Existing Terminal Building	13,900	2024: QTR 1	2024: QTR 3

Source: Urban Engineers, November 2020

Construction of the Proposed Action would result in short-term changes in air emissions from sources such as exhaust emissions from nonroad construction equipment such as haul trucks, site clearing, and grading. On-road vehicles include those associated with transport and delivery of supplies, materials and equipment to and from the site, and construction worker trips. Additionally, fugitive dust emissions include site preparation, land clearing, material handling, equipment movement on unpaved roads and evaporative emissions from the application of asphalt paving.

Construction activities associated with the Proposed Action are expected to begin in the third quarter of 2021 and be completed in the third quarter of 2023. Construction activity emission estimates were derived from the ACRP Airport Construction Emissions Inventory Tool (ACEIT). The ACEIT model has the ability to estimate nonroad and on-road activity data using the EPA NONROAD and MOVES model for a variety of standard airport construction projects, including the associated activity types and the equipment used for each activity, hours and engine sizes (horsepower), and vehicle trips. Based on the project dimensions for each activity, the ACEIT model scales these activities internally and provides air emission estimates for each activity on an annual basis. Detailed information regarding methodologies and assumptions for calculating construction and demolition emissions are provided in Appendix E.

5.1.4. Construction Impacts

Proposed Action

Criteria pollutant emissions inventories were prepared for each year of construction from 2021 through 2023. The emissions inventory for construction-related activities associated with the Proposed Action for all criteria pollutants is presented in Table 5-4. Construction-related pollutant emissions were compared against the General Conformity *de minimis* thresholds established by

the USEPA to gauge conformity with the SIP. As shown in **Table 5-4**, annual construction-related emissions between 2021 and 2023 would be below the *de minimis* thresholds for all pollutants including NO_x, VOCs and $PM_{2.5}$. Therefore, a General Conformity determination is not required for the Proposed Action. Additionally, in accordance with the FAA Air Quality Handbook, the Proposed Action can be determined to "not cause a significant air quality impact, since it is unlikely the pollutant concentration analyzed would exceed a NAAQS." No significant adverse air quality impacts would be expected to result from construction of the Proposed Action.

Table 5-3: Proposed Action Construction Emission Inventory

	Estimated Total Annual Emissions (TPY)					
Year	VOC[1]	NO_2[1]	$PM_{2.5}$	CO	SO_2	PM_{10}
2021	2.1	5.9	0.3	10.5	0.04	1.3
2022	3.3	7.4	0.4	10.6	0.06	1.9
2023	0.1	0.3	0.02	0.4	0.002	0.1
Peak Annual Emissions	3.3	7.4	0.4	10.6	0.06	1.9
De minimis threshold	50	100	100	100	100	100
Exceed *de minimis* threshold?	No	No	No	No	No	No

Source: HMMH

Notes: 1. Following standard industry practice, ozone was evaluated by evaluating emissions of VOC and NO_X, which are precursors in the formation of ozone.

5.1.5. No Action Alternative

The No Action Alternative assumes that the Proposed Action is not implemented, and air quality would remain unchanged, therefore no additional air quality impacts would occur.

5.1.6. Significance Analysis

As provided in FAA Order 1050.1F, an action would cause a significant air quality impact if pollutant concentrations would exceed one or more of the NAAQS established by the USEPA under the CAA, for any of the time periods analyzed, or would increase the frequency or severity of any such existing violations.

Additionally, the CAA requires federal agencies such as the FAA to ensure their actions conform to the appropriate SIP. Conformity requires that a project or action adheres to the SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards. The General Conformity Rule applies to this project since the project area is designated marginal non-attainment with the 2008 and 2015 ozone standards and maintenance for PM2.5. If General Conformity applies, an applicability analysis is performed to determine if a General Conformity Determination is required to demonstrate that the Proposed Action conforms to the approved SIP(s). A conformity determination is required if the total direct and indirect pollutant emissions resulting from a project are above the de minimis

emissions threshold levels specified in the conformity regulations.[1] The de minimis thresholds represent emission quantities of a NAAQS-regulated pollutant or its applicable precursors over which a proposed action in a nonattainment or maintenance area may cause or contribute to a new or continued violation of the NAAQS. A conformity determination is not required if the differences in emissions between the Proposed Action and the No Action Alternative are below the applicable de minimis emission threshold levels, or if the proposed action is exempt or included in the FAA list of "presumed to conform activities." Federal de minimis emission thresholds for attainment and nonattainment areas relevant to TTN are listed in Table 5-3.

Table 5-4: General Conformity De Minimis Thresholds Relevant to TTN

Pollutant	Attainment Status (Severity)	Pollutant	Thresholds (tons per year)
Ozone (O_3) [1]	Nonattainment (Marginal)	Nitrogen Oxides (NO_X)	100
		Volatile Organic Compounds (VOC)	50
Fine Particulate Matter ($PM_{2.5}$)	Maintenance	$PM_{2.5}$	100
Carbon Monoxide (CO)	Attainment	CO	100
Respirable Particulate Matter (PM_{10})	Attainment	PM_{10}	100
Sulfur Dioxide (SO_2)	Attainment	SO_2	100

Source: EPA
Notes: 1. Ozone is addressed through analysis of its precursors—VOCs and NOX

As indicated in Section 5.1.4, air quality impacts associated with implementation of the Proposed Action would not be significant when compared to the No Action Alternative; therefore, no mitigation measures are required. However, TTN is committed to best practices to reduce public health and environmental impacts during construction and operation of the Proposed Action. To ensure construction impacts remain at or below less-than-significant adverse levels, emissions would be minimized and controlled through the implementation of BMPs and reasonably available control measures, such as:

- Sequencing or phasing construction activities
- Minimization of the amount of disturbed soils at any given time during project activities
- If needed, water spray for dust suppression to prevent fugitive dust from becoming airborne

[1] US Environmental Protection Agency, General Conformity De Minimis Tables, https://www.epa.gov/general-conformity/de-minimis-tables (accessed June 4, 2019).

- Suspend or adjust intensity of project activities during periods of sustained high wind speeds (e.g., 30 mph and over), as defined by the Occupational Safety and Health Administration (OSHA)
- Maintaining vehicles and equipment in good working conditions
- Limit engine idling by turning off engines after three (3) to five (5) minutes of inactivity
- Decreasing vehicle speed limits while at project site or tracts to reduce fugitive dust generation and obeying posted vehicle speed limits while off-site
- Trucks would not be loaded with debris to their maximum hauling capacity
- Use tarp covers on trucks transporting construction materials and construction debris to and from the site

These best management practices would reduce air quality effects associated with dust or particulate emissions from the project. Additionally, re-vegetation (ground cover) would be promoted at the project with the completion of the construction activities.

5.2. BIOLOGICAL RESOURCES

5.2.1. Ecological Communities

A variety of low-quality and fragmented habitats subject to human and airport activities occur within the project areas. These activities include periodic maintenance as per FAA requirements, including regular mowing and obstruction removal.

The areas within the Airport property consist of a variety of habitats that are common, of limited ecological function and value, and abundant in the vicinity of the project areas and within New Jersey. Therefore, significant impacts to ecological communities in the vicinity of the project areas resulting from the Proposed Action are not anticipated.

5.2.2. State and Federal Listed Threatened and Endangered Species

As discussed in Section 4.2, NJ NHP and USFWS indicated the presence or potential presence of rare plants, threatened or endangered wildlife species or wildlife habitat, or Natural Heritage Priority Sites within and in the vicinity of the project areas. Copies of the NJ NHP and USFWS consultation is included in Appendix C.

An Acoustic bat survey was conducted in Summer 2015 for a separate and independent project on the airport, specifically the obstruction removal project, as discussed in Section 4.2.1 of this EA. The proposed terminal replacement project overlaps with the proposed obstruction removal project study area. Coordination with Ms. Alicia Protus of the USFWS New Jersey Field Office on October 10, 2019 indicated that no additional presence/absence studies would be required for the terminal replacement project if tree clearing is completed during the winter based on the estimated amount of tree clearing required. The Proposed Action would require approximately 3.5 acres of on-airport land clearing (e.g., trees) for site preparation and construction of the project. After construction, approximately 1.68 acres of the 3.5 acres along the south side of the new terminal access road and terminal building would be revegetated with native species. Revegetation would take into consideration the natural environment while maintaining the safety

and efficiency of TTN and following FAA Engineering Brief No. 91 (*Management of Vegetation in the Airport Environment*). Any planting would be performed with the objective to limit the effect or prevent future object penetrations in airspace protection zones.

A USWFS request for a project review was submitted on August 19, 2020. The project review for the Proposed Action was conducted to formalize the above guidance. As stated in the USFWS concurrence letter, dated November 12, 2020, a known occurrence or potential habitat for Indiana bat and NLEB is located on or near the project's action area; however, the proposed project is not likely to adversely affect federally-listed or proposed-listed species. The basis for the USFWS's determination is due to the amount of tree clearing proposed (approximately 3.5 acres), reforestation of approximately 1.68-acres following construction, and tree removal activities limited to October 1 through March 31 to avoid adverse effects to Indiana bat, NLEB, and at-risk species, including little brown bat *(Myotis lucifugus*) and tricolored bat *(Perimyotis subflavus*).

Copies of the NJ NHP correspondence, the USFWS Official Species List, and USFWS Concurrence Letter are included in Appendix C.

As discussed in Section 4.2.1, potential vernal pool habitat on Airport property is located north of the existing terminal building. The outer edge of the vernal pool habitat overlaps with employee parking lot, however, there is no work proposed in this area. Therefore, potential impacts to the vernal pool habitat are not anticipated.

5.2.3. No Action Alternative

The No Action alternative does not meet the purpose and need of the project. The No Action assumes that the existing Airport footprint and associated infrastructure would remain unchanged if Proposed Action is not implemented.

5.2.4. Significance Analysis

FAA Order 1050.1F establishes the thresholds for significant threatened and endangered species impacts as follows: USFWS or the National Marine Fisheries Service (NMFS) determines that the action would be likely to jeopardize the continued existence of a federally listed threatened or endangered species, or would result in the destruction or adverse modification of federally designated critical habitat. Based on FAA Order 1050.1F, the FAA has not established a significance threshold for non-listed species. However, factors to be considered in assessing impacts include whether the action would have the potential for:

- A long-term or permanent loss of unlisted plant or wildlife species (i.e., extirpation of the species from a large project area)
- Adverse impacts to special status species (e.g., state species of concern, species proposed for listing, migratory birds, bald and golden eagles) or their habitats
- Substantial loss, reduction, degradation, disturbance, or fragmentation of native species' habitats or their populations

- Adverse impacts on a species' reproductive success rates, natural mortality rates non-natural mortality rates (e.g., road kills and hunting), or ability to sustain the minimum population levels required for population maintenance

Based on the estimated acreage of tree clearing (approximately 3.5 acres total) required for the Proposed Action, the USFWS has indicated that no additional presence/absence studies would be required if tree clearing is completed during the winter months (refer to **Appendix C** for a copy of the USFWS email correspondence, dated October 10, 2019, and USFWS Concurrence Letter, dated November 12, 2020). Tree removal would be limited to October 1 through March 31 to avoid direct impacts to individual bats and potential occupied roost trees. Implementation of this tree clearing timing restriction would also provide protection to migratory birds during the nesting season. Proposed landscaping and revegetation would provide roughly 50% mitigation of tree removal impacts.

Substantial loss, reduction, degradation, disturbance, or fragmentation of native species' habitats or their populations is not anticipated. Based on the above and measures to avoid, minimize, and mitigate impacts, it is anticipated that the Proposed Action is not likely to adversely affect biological resources nor does it have the potential to exceed the significant thresholds listed above for non-listed species.

5.3. HISTORIC, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

These resources are not present within the project site; therefore, the Proposed Action is not expected to have an effect on historic, architectural, and archeological, and cultural resources. According to the Phase IA Survey the area of potential effect (APE) for archaeology has been disturbed from prior airport development and was determined to have a low sensitivity for prehistoric and historic archaeological sensitivity.

In the event of inadvertent discoveries, the following actions would be followed:

- **Discoveries:** If human remains, funerary objects, sacred objects or objects of cultural patrimony are discovered, immediate telephone notification of the inadvertent discovery, with written confirmation, to the SHPO.
- **Ceasing Activity:** If the inadvertent discovery occurred in connection with the Proposed Action, the person, in addition to providing the notice described above, must stop the activity in the area of the inadvertent discovery and make a reasonable effort to protect the human remains, funerary objects, sacred objects, or objects of cultural patrimony discovered inadvertently.
- **Resumption of activity:** The activity that resulted in the inadvertent discovery would resume after coordination with SHPO and receipt of written confirmation.

5.3.1. Significance Analysis

The FAA has not established a significance threshold for historical, architectural, archeological, and cultural resources. However, the FAA has identified a factor to consider when evaluating the

resources, in which the proposed action or alternative(s) would result in a finding of Adverse Effect through the Section 106 process.

NJ SHPO concurred with the Phase IA findings, including the following:

- APE has a low sensitivity for prehistoric and historic archaeological sensitivity and no additional archaeological investigation is recommended; and
- No intensive-level survey for resources identified to be more than 50 years of age is recommended.

Based on the above, the Proposed Action would not result in adverse effects to historical, architectural, archeological, and cultural resources in accordance with 36 CFR 800.5.

5.4. CLIMATE

This section sets forth the potential impacts to climate from the Proposed Action and the No Action alternative. Potential impacts related to construction of the Proposed Action are considered herein.

5.4.1. Operational Activities

As discussed in the Air Quality section, the Proposed Action would not induce aircraft operations or passengers or change the aircraft fleet using TTN beyond forecast operations compared to the No Action. During the years of construction and after construction, operational emissions associated with aircraft, traffic, and parking emissions would essentially be the same (i.e. no increase or change) with the implementation of the Proposed Action and the No Action alternative (See **Appendix E** for operational emission estimates for Parking garage which are insignificant). Therefore, operational emissions associated with airfield emissions sources, parking, and traffic were not inventoried or evaluated as part of this EA.

5.4.2. Methodology

For this analysis, GHG emissions associated with the Proposed Action were prepared for carbon dioxide, methane, and nitrous oxide and presented as carbon dioxide equivalent (CO_2e) in metric tons per year relevant to their global warming potential. The carbon dioxide equivalent is estimated by taking the mass equivalent of each pollutant (TPY) and multiplying by the global warming potential equivalent (GWP) of each pollutant and adding them together. For example, the GWP of CO_2 is 1, CH_4 is 28 GWP, and N_2O is 265 GWP, according to the IPCC Fifth Assessment Report.[2]

The methodology and assumptions for the GHG analysis are consistent with the air quality analysis discussed in Section 5.1. GHG emissions associated with the construction and demolition activities of the Proposed Action were qualitatively evaluated. The results are compared to U.S., local, and global levels.

[2] https://www.ipcc.ch/assessment-report/ar5/

5.4.3. Construction Impacts

Construction and demolition activities associated with Proposed Action could result in a temporary increase in equipment usage. Research has shown that there is a direct relationship between the amount of greenhouse gases emitted and fuel consumption greenhouse gas emissions associated with diesel fuel and gasoline usage to support truck and vehicle trips along with construction. A temporary increase in GHG emissions associated with construction and demolition activities are expected from gasoline and diesel fuel usage. As discussed, there are no significance thresholds for aviation GHG emissions, nor has FAA identified any factors to consider in making a significance determination for GHG emissions. As shown in the following table, construction and demolition emissions under the Proposed Action would not be regionally significant and would comprise a very small fraction of the U.S. based emissions of 6,472 million metric tons of carbon dioxide equivalents (MMTCO2e) and the State of New Jersey's most recent GHG inventory emissions of 97.0 MMTCO2e and even less than the 49 gigatons of carbon dioxide equivalent global GHG emissions.[3] [4] [5]

Table 5-5: Estimated GHG Emissions from Construction Activities

Greenhouse Gases Emissions (Metric Ton)				
Year	CO_2	CH_4	N_2O	CO_2E
2021	5,354	0.02	0.63	5,522
2022	7,104	0.03	0.70	7,285
2023	311	0.001	0.03	318

Source: HMMH

5.4.4. No Action Alternative

The No Action alternative would not result in increases in fuel burn or GHG emissions. No changes to GHG emissions would occur and there would be no impact as a result of implementation of the No Action alternative.

5.4.5. Significance Analysis

The FAA has not established a significance threshold for climate and GHG emissions, nor has the FAA identified specific factors to consider in making a significance determination for GHG emissions. No accepted methods of determining significance applicable to aviation or transit projects emissions have been developed. Therefore, direct linkage is difficult to isolate and to

[3] https://www.epa.gov/sites/production/files/2019-02/documents/us-ghg-inventory-2019-main-text.pdf

[4] http://ipcc.ch/publications_and_data/ar4/syr/en/contents.html

[5] https://www.mwcog.org/documents/2016/04/22/metropolitan-washington-community-wide-greenhouse-gas-emissions-inventory-summary--greenhouse-gas/

understand.[6] For disclosure purposes, GHGs associated with the alternatives have been calculated in accordance with FAA guidelines. Estimated GHG emissions from construction of all alternatives are provided below.

GHG emissions from the Proposed Action have been quantified and disclosed consistent with FAA guidelines. In addition, measures are included in the construction and operation of the Proposed Action that would help minimize and reduce GHGs. These would include the emission reduction measures discussed in Section 5.1.6.

5.5. HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION

The FAA 1050.1F, *Desk Reference,* states that the EA should describe wastes generated as a result of the Proposed Action; waste handling and disposal requirements; identify if waste disposal would impact the capacity of the disposal facility; and determine whether the Proposed Action would interfere with ongoing remediation of contaminated sites within the project area or in the immediate vicinity.

Implementation and operation of the Proposed Action would comply with all applicable federal, State, and local regulations regarding hazardous materials, hazardous waste management, solid waste, and pollution prevention. The subsections that follow summarize the hazardous substances identified during the Phase I and II ESAs, their significance as it relates to the NEPA evaluation, and the mitigation measures that will be implemented.

5.5.1. Hazardous Materials

Urban Engineers, Inc. (Urban) conducted a Phase I Environmental Site Assessment (May 2019) and a Phase II Environmental Site Assessment (November 2020) for Trenton-Mercer Airport (TTN). The subject area includes the existing terminal building and Aircraft Rescue and Fire Fighting (ARFF) building as well as the locations of the proposed terminal and proposed ARFF buildings, located within the TTN property, in Trenton, New Jersey. The Phase I recognized environmental conditions RECs are identified as follows and further detailed in Section 4.7.1 of this EA:

REC No. 1 – Fueling, Maintenance and Aircraft Operations

- REC No. 2 – Historic Fill
- REC No. 3 – Historic Firefighting Drills
- REC No. 4 – Potential Underground Storage Tank
- REC No. 5 – Reported NJ Spills & Releases

The complete Phase I ESA is provided in **Appendix F**.

The Phase II ESA further investigated the RECs identified in the Phase I ESA. The results, conclusions, and recommendations are summarized in Section 4.7.2 of this EA and fully detailed

[6] US Department of Transportation, Federal Aviation Administration, Order 1050.1F Desk Reference, February 2020.

in the Phase II ESA (**Appendix F**). The table below provides a concise summary of the recommendations provided in Sections 5.1 to 5.5 of the Phase II ESA.

Table 5-f: Summary of Phase II Recommendations

Phase I ESA REC (May 2019)	Phase II Recommendation/Remedial Approach
REC No. 1 – Fueling, Maintenance and Aircraft Operations	▪ No further sampling is required at this time. ▪ A soil and material management plan shall be included in the construction contract.
REC No. 2 – Historic Fill	▪ No further sampling is required at this time within the Terminal Expansion Area. ▪ Additional PAH and Arsenic sampling and analysis shall be conducted within the proposed ARFF Building area. ▪ A soil and material management plan shall be included in the construction contract.
REC No. 3 – Historic Firefighting Drills	▪ The Phase I and II ESA findings have identified PFAS compounds as contaminants of concern as they relate to NEPA hazardous material, solid waste, and pollution prevention. ▪ Additional groundwater characterization and reporting shall be conducted to adequately delineate the nature and extent of PFAS impact. ▪ Groundwater flow direction (southwesterly) and gradient (0.04 ft/ft) will be used in the development and refinement stormwater runoff studies/designs. ▪ NJDEP has regulatory authority with regard to notifying, assessing, remediating, and reporting PFAS groundwater impact cases (no federal oversight of the remedial investigation/action is required at this time). Adhere to the NJDEP regulatory path described in Section 5.7 of the Phase II ESA. ▪ The continued evaluation is completed independent of the NEPA evaluation because NEPA lacks the regulatory remediation authority that the NJDEP Technical Requirements for Site Remediation mandate.
REC No. 4 – Potential Underground Storage Tank (UST)	▪ No UST detected in the area south of the existing Terminal building. No further action at this time. ▪ UST fill port/vent pipe noted in the area north of the existing ARFF building (Sheriff's dog kennel).

	UST closure in accordance with NJDEP Underground Storage Tank Rules, NJAC 7:14B-9 shall be conducted prior to or as part of the terminal expansion project.
REC No. 5 – Reported NJ Spills & Releases	▪ No further sampling is required at this time. ▪ A soil and material management plan shall be included in the construction contract.

Source: Urban Engineers

As noted in previous sections of this EA and in the Phase II ESA, soil and groundwater impacts were identified above NJDEP criteria/standards at select RECs investigated at the property. Specifically, soil and groundwater impacts were identified near the existing and proposed ARFF building locations. Based on these identified impacts, additional delineation pursuant to NJAC 7:26E shall be conducted. In addition, a suspected UST was identified and closure of this tank pursuant to NJAC 7:14 and 7:26F shall be conducted. Proposed delineation of each media by REC (i.e., Area of Concern) and closure of the UST are discussed in Section 6.0 of the Phase II ESA (Appendix F).

Implementation and operation of the Proposed Actions would comply with all applicable federal, state, and local regulations regarding hazardous materials, hazardous waste management, solid waste, and pollution prevention. The remedial action measures described Section 6.0 of the Phase II ESA will be conducted concurrently with the design development and/or construction phases of the new terminal development and in accordance with NJDEP regulations.

The Phase I and II ESA findings have identified PFAS compounds as contaminants of concern as they relate to NEPA hazardous material, solid waste, and pollution prevention. NJDEP has a mandated and prescribed regulatory path for notifying, assessing, remediating, and reporting groundwater impact cases. Section 5.7 of the Phase II ESA summarizes the NJDEP regulatory process. In addition, a flow chart of the site remediation program process for the Proposed Action is included in Appendix F. The continued evaluation is completed independent of the NEPA evaluation because NEPA lacks the regulatory remediation authority that the NJDEP Technical Requirements for Site Remediation mandate.

Documentation of the remedial investigations of PFAS impacts to the NJDEP will be required. This documentation is independent of this NEPA evaluation and performed by an LSRP and reviewed by NJDEP. Based on the findings from the delineation activities proposed above, submittal of data will be incorporated into a Remedial Investigation Report (RIR). The submittal of the RIR will be conducted in accordance with NJAC 7:26E (NJDEP Technical Requirements for Site Remediation) and NJAC 7:26C (Administrative Requirements for the Remediation of Contaminated Sites) to meet the regulatory and/or mandatory timeframes, as applicable. NJDEP has established these technical requirements which provides the framework used to remediate a contaminated site and protect public health, safety, and the environment.

The RIR will include an initial Receptor Evaluation (human and ecological) and groundwater Classification Exception Area (CEA). The LSRP retained for the PFAS investigation will be responsible for oversight, review, and submittal of the RIR including supporting information to be uploaded to the NJDEP portal. The NJDEP process also includes a requirement for the development

of a Remedial Action Workplan (RAW) and Remedial Action Report (RAR). Again, these are developed by the LSRP and reviewed by NJDEP.

Appropriate engineering and administrative controls shall be implemented to avoid releases of any hazardous materials or wastes. The Proposed Action would adopt a Spill Prevention Control and Counter Measure Plan (SPCC) and will be followed in the event of a release, minimizing hazards to employees and the environment.

Additionally, prior to the demolition of the structures a lead base paint (LBP) and asbestos containing material (ACM) survey would be performed by a qualified professional. If LBP and/or ACM are documented, an abatement plan would be developed and implemented in accordance with state and federal regulations by a licensed contractor.

5.5.2. Solid Waste

Increases in solid waste generation should be proportional to the anticipated increases in usage in the new terminal, which are in line with the modest increase in forecasted enplanements. With consolidation of terminal administration, there will be commensurate reductions at the sites they currently occupy when they are combined within new terminal.

Management and disposal of construction and vegetative debris will be in accordance with federal, state, and local regulations. As applicable, debris from demolition activities would be transported to an authorized facility, with recycling capability for the potential to be used in future projects by others. Also, clean excavated soils may be reutilized on-site to the maximum extent possible and in accordance with site-specific design specifications. Excess soils could also be reutilized off-site, if warranted. Vegetative debris would be managed by chipping/grinding for use in landscape as mulch and compost, and excess disposed according with applicable regulation.

During the operational phase, solid waste would mainly consist of common office waste and other domestic items left behind by passengers and trash containers associated maintenance activities. Solid waste would continue to be collected weekly in designated dumpsters and disposed in compliance with federal, state and local regulations. Currently, the Airport has a contract with Central Jersey Waste, a local waste management company. All solid waste is transported approximately five (5) miles southeast to the Mercer County Improvement Authority transfer station located in Ewing, which is then transported to the Tullytown/GROWS Landfill in Falls Township, Pennsylvania. Tullytown/GROWS Landfills are commercial landfills owned and operated by Waste Management.

5.5.3. Pollution Prevention

To further avoid and minimize the risk of unanticipated incidental impacts the following pollution prevention and mitigation measures would be implemented:

- New drainage systems would include oil / water separators
- Dispose of debris and solid waste generated by the project according to applicable federal, state and local regulations
- Re-use excess soils on-site to the maximum extent possible
- Stage and operate construction equipment in designated areas

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- Perform construction vehicle maintenance and inspections to reduce the risk for accidental spills
- Perform proper equipment/vehicle maintenance and routine inspections to reduce the risk for incidental releases of vehicle fluids
- Follow manufacturer's specifications when performing maintenance on equipment or storing hazardous material (e.g., batteries, fluids, lubricants, solvents, paints, etc.)
- Implement spill and leak prevention and response procedures for construction equipment
- Maintain spill kits to rapidly respond to and limit impacts from accidental releases of vehicle fluids
- Report releases of regulated quantities and perform cleanup according to applicable regulatory requirements
- Manage solid wastes in designated areas and establish routine pickup for disposal according to applicable regulations

5.5.4. No Action Alternative

The No Action alternative does not meet the purpose and need of the project. The No Action assumes that the existing Airport footprint would remain unchanged. With the No Action alternative, similar direct, long-term and less-than-significant adverse impact on solid waste and hazardous materials would remain as to-date. However, different to the Proposed Action, the No Action does not provide integration of oil/water separator as part of their drainage systems, neither considered the identification and removal of potential unknown contaminated soil or historic fill within the project site.

Similar to the Proposed Action, TTN would continue generating a consistent quantity and type of solid waste on a routine basis. However, with the lack of adequate space and aging infrastructure, the capability and good practices for storing, staging, recycling and managing hazardous material and/or solid waste would continue to be limited with the No Action.

5.5.5. Significance Analysis

The FAA has not established a significance threshold for hazardous materials, solid waste, or pollution prevention in FAA Order 1050.1F. The FAA has identified factors to consider in evaluating the context and intensity of potential impacts. If these factors exist, the FAA must evaluate these factors to determine if there are significant impacts. Factors to consider include, but are not limited to, situations in which the Proposed Action or alternative(s) would have the potential to:

- Violate applicable federal, state, tribal, or local laws or regulations regarding hazardous materials and/or solid waste management.
  - → The terminal expansion project will include construction specifications and conditions that compliance with applicable federal, state, tribal, and local regulations is a condition of the contract.
- Involve a contaminated site (including, but not limited to, a site listed on the NPL). Contaminated sites may encompass relatively large areas. However, not all of the grounds within the boundaries of a contaminated site are contaminated, which leaves space for siting a facility on non-contaminated land within the boundaries of a contaminated site, if

appropriately mitigated, actions within the boundaries of a contaminated site would not have significant impacts.

→ The Phase I and II ESA has identified PFAS compounds as contaminants of concern as they relate to NEPA hazardous material, solid waste, and pollution prevention. NJDEP has a mandated and prescribed regulatory path for notifying, assessing, and reporting groundwater impact cases.

→ As discussed in Section 5.5.1, the identification of PFAS in the groundwater adjacent to the existing ARFF requires that the site comply with NJDEP's Site Remediation Program. The documentation, remedial investigation, planning and action will be completed by an LSRP and reviewed by NJDEP. This will be completed independently of the NEPA process and in accordance with NJAC 7:26E and NJAC 7:26C. The continued evaluation is completed independent of the NEPA evaluation because NEPA lacks the regulatory remediation authority that the NJDEP Technical Requirements for Site Remediation mandate. The required remedial planning will inform the terminal expansion design effort and mitigation measures will be coordinated through the LSRP and NJDEP. The required action is expected to extend beyond the life of the terminal expansion project and the overall impact will be mitigated though the NJDEP site remediation process. A flow chart of the site remediation program process for the Proposed Action is included in Appendix F.

- Produce an appreciably different quantity or type of hazardous waste.
  → There are no indications within the Phase I or II ESA that the terminal expansion project will produce an appreciably different quantity or type of hazardous waste.
- Generate an appreciably different quantity or type of solid waste or use a different method of collection or disposal and/or would exceed local capacity.
  → There are no indications that the terminal expansion project will generate an appreciably different quantity or type of solid waste or use a different method of collection or disposal and/or would exceed local capacity.
- Adversely affect human health and the environment.
  → The terminal expansion project will not adversely affect human health and the environment. The independent NJDEP site remediation program (PFAS-groundwater impact) has built-in receptor (human and ecological) evaluations, remedial investigation, planning, and action requirements geared to the protection of human health and the environment. While the site remediation program will be performed independently of this NEPA evaluation and the terminal expansion project, the data generated will be used to inform the terminal expansion design and construction phases.

Implementation and operation of the Proposed Action would comply with all applicable federal, state, and local regulations regarding hazardous materials, hazardous waste management, solid waste, and pollution prevention. The amount of solid waste to be generated by the Proposed Action during the operational phase is not expected to be a significant increase over the current levels produced by current TTN operations. Furthermore, findings and recommendations from the Phase II ESA are discussed in this EA and incorporated into the project's final design.

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5.6. LAND USE

Airport development projects have the potential to cause land use impacts. The compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of an airport's noise impacts. However, it can also be associated with disruptions of the surrounding community, residential or business relocations, changes in vehicular traffic patterns, induced socioeconomic effects, and even off-airport effects from on-airport facilities such as lighting units, which are addressed in Sections 5.9 and 5.10. Noise effects are regulated under *49 U.S. Code Section 47501, et seq.* (formerly the *Aviation Safety and Noise Abatement Act* of 1979) and addressed in Section 5.8. According to the *Airport and Airway Improvement Act* of 1982 (section 511(a) (5)), the EA shall include documentation that demonstrates that the Airport sponsor has, to the extent reasonable, taken the appropriate measures to place restrictions on the use of land, adjacent to or in the immediate vicinity of the Airport, to ensure that existing and planned land-uses would remain compatible with normal airport operations, including the landings and takeoffs of aircraft.

In planning future airport developments, it is important to identify early in the planning process existing and planned land uses that could affect or be affected by the Airport improvements to avoid or minimize effects that would disrupt land use compatibility with the Airport. Chapter 4 identified and discussed existing and planned land uses in the vicinity of the Proposed Action. Sensitive land uses generally include residences, schools, religious institutions, parks and recreation areas, and other public places. Potential impacts to these sensitive receptors include noise generated by aircraft and ground traffic and safety hazards. Other potentially incompatible land uses near airports include facilities that generate high levels of electrical transmissions or bright lights, wildlife habitat that attracts birds and other animals with the potential to interfere with airport operations, and tall structures or other objects obstructing navigable airspace.

Local and regional planning documents encourage redevelopment and new development in the vicinity of the Airport to provide jobs and boost the economy. The Proposed Action is in conformance with local and regional planning documents.

Potential environmental consequences for noise compatible land use are discussed in Section 5.8.

5.6.1. No Action Alternative

The No Action alternative does not meet the purpose and need of the project. The No Action assumes that the existing Airport footprint would remain unchanged.

5.6.2. Significance Analysis

The FAA has not established a significance threshold for land use, and the FAA has not provided specific factors to consider in making a significance determination for land use. A determination of significant impacts is typically based on the significance of other impacts.

The Proposed Action would occur within TTN property and in accordance with current Airport land use. Land use surrounding the Airport would remain unchanged, and no adverse effects are anticipated. Implementation of the Proposed Action would not relocate residences, disrupt

established communities, or induce negative socioeconomic impacts. Overall, no significant impact to land use compatibility is anticipated with implementation of the Proposed Action.

5.7. NATURAL RESOURCES AND ENERGY SUPPLY

Electrical and natural gas service would be provided to the Airport through PSE&G. Treated municipal water is supplied to the Airport via Trenton Water Works. The Proposed Action would use readily available natural resources for construction and demolition of the Proposed Action. The proposed terminal building would be approximately 91,000 SF larger than the existing terminal building and baggage claim facility, which combined are approximately 33,000 SF. The existing main terminal building was constructed in 1975 and is in various stages of disrepair including the HVAC, plumbing, roofing, windows, finishes, etc. The existing terminal building is heated and air conditioned with small, inefficient packaged equipment that uses older, less environmentally friendly, refrigerants.

The new MEP systems are designed to minimize operating costs while providing the highest level of control over the interior environment of the terminal. Utility savings are realized by using high efficiency heating and cooling equipment and the latest technology to control the systems. Domestic hot water related energy costs would be reduced by using local hot water heaters at each point of use. Eliminating a large centralized system with hot water circulation loops would minimize hot water distribution losses and would eliminate the cost of pumping domestic hot water through the building.

The new terminal building would contain an electrical substation, housed in the basement level of the new terminal building, that transforms power from 13.2 kV down to 480/277 volts for distribution to equipment in the building. The higher voltage system has fewer line losses and reduces the voltage drop for the given power flow to the facility.

5.7.1. Significance Analysis

The FAA has not established a significance threshold for natural resources and energy supply. The FAA has identified the following factor to consider when determining potential impacts: the action would have the potential to cause demand to exceed available or future supplies of these resources.

The Proposed Action's potential to cause demand to exceed available or future supplies of these resources was evaluated.

The proposed terminal building and ARFF would be built to current standards and therefore be more energy efficient than the existing structures.

Based on the above, the Proposed Action is not expected to result in significant impacts to natural resources and energy supply and existing utilities can supply the project demand.

5.7.2. No Action Alternative

The No Action alternative does not meet the purpose and need of the project. The No Action assumes that the existing Airport footprint and aged infrastructure remain unchanged without

addressing the deficiencies of the TTN. This alternative does not promote the integration of energy efficient systems and the adoption of more efficient technology to reduce energy losses or consumption.

5.8. NOISE AND NOISE-COMPATIBLE LAND USE

The Proposed Action involves the replacement of the existing under sized four-gate terminal building with a larger four-gate terminal and associated terminal access and parking improvements. The Proposed Action is not anticipated to change aircraft operations, nor does it include any changes to runway lengths, runway alignments, instrument procedures, navigational equipment, or other factors that affect airfield capacity.

HMMH prepared a Noise Technical Memorandum to assess the potential for impacts associated with the Proposed Action (see Appendix E). Detailed information including the noise analysis, noise contour maps, and construction impacts related to noise are included in Appendix E. A summary of the analysis is provided below.

5.8.1. Aircraft Operational Noise Impact

FAA order 1050.1F considers the evaluation of the environmental consequences noise impacts of a given proposed action by comparison to the no action alternative of the same time frame. The Order defines the significant impact threshold and provides various analyses that should be disclosed for a given proposed action.

FAA Order 1050.1F identifies the threshold of "significant impact" based on the yearly DNL and an incorporation of compatible land-use standards found at 14 CFR Part 150, Airport Noise Compatibility Planning, specifically Table 1 in Appendix A of that regulation. FAA defines significant impact with respect to aircraft noise if implementation of the proposed action would increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe. For example, an increase from DNL 65.5 dB to 67 dB is considered a significant impact, as is an increase from DNL 63.5 dB to 65 dB. The determination of significance must be obtained through the use of noise contours and/or grid point analysis along with local land use information and general guidance contained in Appendix A of 14 CFR part 150. (FAA Order 1050.1F, §4.3.3, Exhibit 4-1, B-1.5).

In addition to defining significant impacts, FAA Order 1050.1F includes additional reporting requirements such as maps of the noise exposure at least at 65, 70, and 75 dB levels reporting the number of residences or people residing at or above DNL 65 dB and location of noise sensitive uses and disclosure of potentially newly non-compatible land use regardless of whether there is a significant noise impact. FAA Order 1050.1F and the desk reference require the use of AEDT to develop the DNL noise contours and/or grid point values to determine the significance of changes in exposure to aircraft noise and land use compatibility.

The 1050.1F Desk Reference recommends that the timeframes usually selected are the year of anticipated project implementation and 5 to 10 years after implementation. The project implementation date with respect to the aircraft noise analysis is the opening of the new terminal

and the transition from the existing four terminal aircraft gate parking positions to the new proposed terminal aircraft gate parking positions. The transition to the new gate parking positions is the only portion of the Proposed Action expected to affect aircraft operations and is expected to be completed approximately in the middle of the overall multi-year project schedule. At the time that this aircraft operational noise analysis commenced in early August 2020, the anticipated year of the terminal opening and the transition to the proposed terminal gates was calendar year 2022. Therefore, this analysis is based on an anticipated "First year of proposed implementation" as calendar year 2022 and "Future year of proposed implementation" as calendar year 2027. The detailed aircraft operations for calendar 2022 and calendar year 2027, No Action and Proposed Action used in the noise analysis, were developed from the higher-level Master Plan forecast discussed in Chapter 1. The following presents the key findings for the 2022 and 2027 forecast conditions. Appendix E includes additional details and discussions regarding the analysis, the changes in noise over the years along possible effects of the noise analysis by project schedule changes and forecast changes.

Figure 5-1 presents the 65 dB through 75 dB DNL contours for the 2022 Proposed Action compared to the 2022 No Action and Figure 5-2 presents the 65 dB through 75 dB DNL contours for the 2027 Proposed Action compared to the 2027 No Action. The majority of the contours remain on airport property for both the Proposed Action and the No Action, and no 1.5 dB or greater change within 65 dB DNL or greater has been found off airport property. The only notable changes within the 65 dB DNL contours are around the terminal area and on the east side of Sam Weinroth Rd. The change is associating with the relocation of aircraft parking between the two scenarios. In both scenarios, the 65 dB DNL contour extend onto Sam Weinroth Rd. and remain on airport property. The changes between the 2022 No Action and 2022 Proposed Action 65 dB DNL contour do not overlap with noise sensitive locations. In both scenarios, all of the noise-sensitive locations within the 65 dB DNL contour are existing residences to the south of the airport in an area north of West Upper Valley Rd, south of Runway 6/24, along Bear Tavern Rd and several side streets. All twenty-four of the residences within the 65 dB DNL contour are approximately 1,100 ft or less from Runway 6/24. In both cases, the same seventeen residences are between the 65 dB DNL and 70 dB DNL contours, and the same seven between the 70 dB DNL and 75 dB DNL contours. US Census data indicates that the average household in the area has 2.6 people per residence. Therefore, a total of sixty-four people are estimated to live within the 65 dB DNL and to 75 dB DNL contours for both the 2022 No Action and Proposed Action. Additional details are provided in Appendix E. There are no other noise-sensitive or Section 4(f) locations within the 65 dB DNL contours.

In summary, the 2022 Proposed Action compared to the 2022 No Action does not cause significant noise impacts and does not change land use compatibility or non-compatibility.

Figure 5-2 presents the 65 dB through 75 dB DNL contours for the 2027 Proposed Action compared to the 2027 No Action. The majority of the contours remain on airport property for both the proposed action and the No Action and no 1.5 dB or greater change within 65 dB DNL or greater has been found off airport property. The only notable changes within the 65 dB DNL contours are around the terminal area and on the east side of Sam Weinroth Rd. The change is associated with the relocation of aircraft parking between the two scenarios. In both scenarios, the 65 dB DNL contours extend onto Sam Weinroth Rd. and remain on airport property. The changes between

Figure 5-1: 2022 - Proposed Action Noise Contours Compared to 2022 No Action Noise Contours

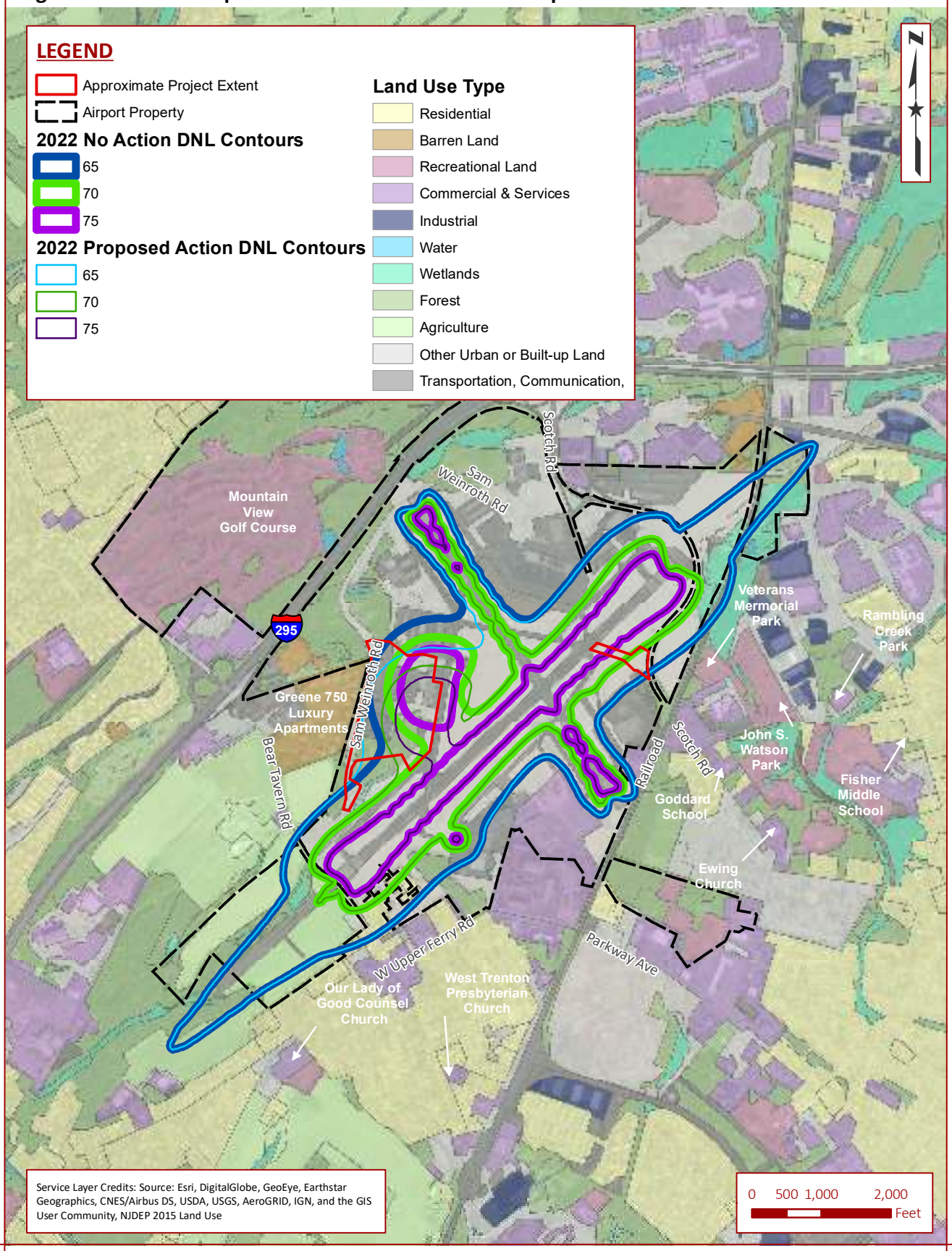

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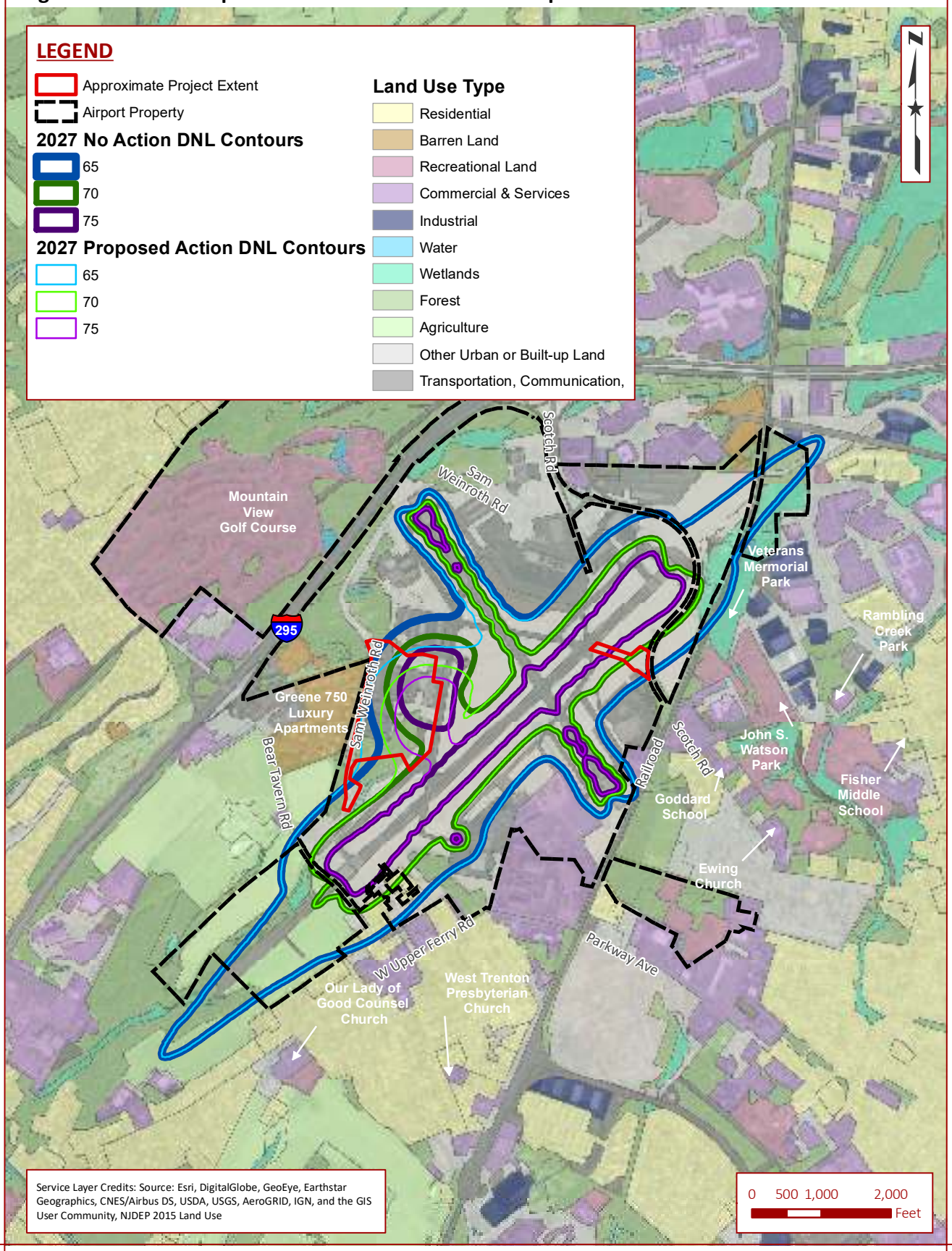
Figure 5-2: 2027 -Proposed Action Noise Contours Compared to 2027 No Action Noise Contours



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the 2027 No Action and 2027 Proposed Action 65 dB DNL contour do not overlap with noise sensitive locations. In both cases, all of the noise-sensitive locations within the 65 dB DNL contour are existing residences to the south of the airport in an area north of West Upper Valley Rd, south of Runway 6/24, along Bear Tavern Rd and several side streets. All twenty-five of the residences within the 65 dB DNL contour are approximately 1,200 ft or less from Runway 6/24. In both cases, the same seventeen residences are between the 65 dB DNL and 70 dB DNL contours, and the same eight are between the 70 dB DNL and 75 dB DNL contours. A total of sixty-four people are estimated to reside within the 65 dB DNL and to 75 dB DNL contours for both the 2027 No Action and Proposed Action. Additional details are provided in Appendix E. There are no other noise-sensitive or Section 4(f) locations within the 65 dB DNL contours.

In summary, the 2027 Proposed Action compared to the 2027 No Action does not cause significant noise impacts and does not change land use compatibility or non-compatibility.

Appendix E further discusses the changes in noise over the forecast years, along with possible effects of the noise analysis by project schedule changes and forecast changes. In summary, project schedule changes and forecast changes are not expected, in most cases, to cause different overall conclusions with respect to significant noise impacts or changes to land use compatibility or non-compatibility. The forecast over the years model has a relatively modest effect on noise and a relatively small effect on the inventory of non-compatibility land use. Therefore, should the project schedule change, the analysis and conclusions presented can be considered representative of similar forecast years. The forecast for 2022 and 2027 are based on the Master Plan forecast discussed in Chapter 1 and were developed using pre-COVID 19 pandemic data and assumptions. The level of non-compatible land use for the 2022 and 2027 No Action and the Proposed Action scenarios presented above will likely be delayed because of the effects of the pandemic. The reduction in aircraft operations as a result of the pandemic and relative to what was used for the 2022 and 2027 scenarios described above, will not cause significant noise impact to occur between the Proposed Action and No Action of the same timeframe. Further discussion of this EA's forecast assumptions and the relationship to the current reduction in aircraft operations associated with the pandemic are presented in Chapter 1.

5.8.2. Construction Noise Impacts

The FAA does not provide significance thresholds for construction noise and therefore, state and local ordinances were used to identify potential construction noise impacts. Noise control and abatement within the State of New Jersey is regulated by the NJDEP within Title 7, Chapter 29 of the N.J.A.C 7:29. N.J.A.C 7:29 does not regulate noise from construction activities, however, provisions within N.J.A.C 7:29 allow local municipalities to adopt a noise ordinance that is at a minimum consistent with N.J.A.C 7:29 but can be more stringent.

The Proposed Action is located within Ewing Township and is subject to the Township's Noise Control Ordinance, which has been reviewed and approved by NJDEP. The Township has adopted exterior sound level limits for receiving land uses consistent with N.J.A.C 7:29 and are summarized below.

- For residential property, or residential portion of a multi-use property, a sound source or sources cannot equal or exceed a maximum sound level of 65 dBA between the hours of 7 AM and 10 PM.
- For residential property, or residential portion of a multi-use property, a sound source or sources cannot equal or exceed a maximum sound level of 50 dBA between the hours of 10 PM and 7 AM.
- For a commercial facility, public service facility, non-residential portion of a multi-use property, or community service facility, a sound source or sources cannot exceed a maximum sound level of 65 dBA at any time.

In addition to the limits set forth above, the Township's Noise Control Ordinance also regulates impulsive sound. As per the ordinance, impulsive sound occurring between 7 AM and 10 PM cannot equal or exceed 80 decibels. Between 10 PM and 7 AM, impulsive sound which occurs less than four times in any hour shall not equal or exceed 80 decibels. Impulsive sound which repeats four or more times in any hour shall be measured as continuous sound and shall meet the noise level limits in the bulleted list above.

According to the ordinance, construction noise within the Township of Ewing is exempt during weekdays between 7 AM and 6 PM and on weekends and federal holidays between 9 AM and 6 PM. Construction activities are not permitted outside of these time periods unless such activities can meet the applicable sound level limits summarized above.

The construction of the Proposed Action would commence in the beginning of 2021 and will be completed by the first quarter in 2024. Construction activities would result in temporary elevated noise levels from on-site construction equipment, personal vehicles used by construction workers to access the construction employee parking areas, and delivery/haul trucks used for equipment and material delivery and haul trips along local roads surrounding the work area.

Roadways carrying worker vehicles and heavy truck traffic to and from the work area would experience an increase in traffic during certain periods of the day, however these traffic increases would be temporary in nature and not result in significant impacts to receptors adjacent to these routes. Noise generated from on-site construction equipment would be variable depending on the construction activity occurring on the project site. On-site construction activities include the demolition and construction of various airport facilities including demolition and construction of roadways, terminal building, and ARFF building as well as construction of a parking garage, new apron, and general site work.

During typical workdays, construction noise levels would fluctuate and often be lower than the predicted worst-case levels. Additionally, the analysis only takes into account the maximum noise level produced by a single piece of construction equipment and does not include other noise sources that make up the existing noise environment, such as airport operations and traffic noise from surrounding roadways. Due to the influence of these other noise sources, the overall contribution from construction activities related to the Proposed Action is not anticipated to significantly impact noise sensitive receptors when compared to the existing noise environment.

Construction activities are expected to occur during normal daytime working hours. Since the Township of Ewing exempts construction noise from 7 AM-6 PM on weekdays and from 9 AM-6PM on weekends and holidays, no significant impacts would occur. The loudest construction

noise levels predicted are associated with activities that involve the use of track-mounted augers, dump trucks, and impact equipment, including chipping guns, jackhammers, and hoe rams. Residences within the Greene 750 apartment complex are located within 200 feet of the existing terminal and parking areas and are predicted to experience the highest noise levels when work is occurs within this area. Elevated noise levels at sensitive receptors can be expected for various periods of time once work begins in Quarter 3 of 2021 and last through project completion in the beginning of 2024. Construction noise levels related to the proposed ARFF are predicted to be the highest at residences located approximately 1,500 feet southeast, within the Scotch Road apartment complex and Veterans Park. Sensitive receptors can anticipate periods of increased noise levels throughout the 18 months of construction within the ARFF work area.

To minimize and reduce project construction noise within the surrounding community, noise mitigation should be implemented where practical and can include, but is not limited to the use of noise pathway controls, such as noise barriers and enclosures, and development of a Noise Control Plan. A detailed list of recommendations is included in the Noise Technical Memorandum within Appendix E.

Airside construction activities would have minimal impacts on the operation of the Airport. As a result of the proposed construction activities, minimal closures to pavements throughout the construction period are anticipated, which would lead to variations in operations in the vicinity of the terminal apron. The existing runways and taxiways would remain operational throughout the duration of the terminal building and ARFF construction. Construction activities would be carefully coordinated with Airport FBO and the contractor(s). Notices to Airmen (NOTAM's) would be issued by Airport management as needed. The construction sites would be marked and barricaded in accordance with current FAA standards.

5.8.3. No Action

The No Action alternative does not meet the purpose and need of the Proposed Action. The No Action assumes that no construction activities would be performed; therefore, related temporary increase in noise level would not be generated. Similar to the Proposed Action, noise from TTN aircraft operations would remain, and would continue to change over time associated with trends in aviation demand and activity.

5.8.4. Significance Analysis

The FAA significance threshold according to FAA Order 1050.1F, is if the action would increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe. For example, an increase from DNL 65.5 dB to 67 dB is considered a significant impact, as is an increase from DNL 63.5 dB to 65 dB. Based on the information above and the analysis provided in the Noise Technical Memorandum, it can be concluded that the Proposed Action would not result in any significant noise impacts associated with aircraft operations.

The FAA does not provide significance thresholds for construction noise and therefore, state and local ordinances were used to identify potential construction noise impacts. Township of Ewing

ordinance apply for this project. Noise from construction of the Project will not result in significant impacts. Construction contract documents would require limits of certain activities at certain times, and construction equipment to be properly equipped and maintained, so as to minimize off-site construction noise impacts in accordance with the Township of Ewing ordinance.

5.9. SOCIOECONOMIC, ENVIRONMENTAL JUSTICE, AND CHILDREN'S HEALTH AND SAFETY RISKS

The Proposed Action maintains a balance between the natural and physical environments and does not have the potential to adversely affect socioeconomic conditions in surrounding communities. TTN plays a vital role in the transportation network and supports the regional economic needs and local community, providing a closer and more convenient location for most parts of central and southern New Jersey, and southeastern Pennsylvania.

The scope of the Proposed Action does not have a regional impact and would not promote shifts in populations, incomes, and growth patterns; public service demands; or negative pressure over business and economic activity, disruption to established neighborhoods, or urban proliferation. The Proposed Action does not require alterations to public services including fire and police protection, education and utility services or businesses. Potential impacts and/or changes to transportation patterns is discussed in Section 5.10, Traffic.

5.9.1. Industry, Employment and Income

The Proposed Action would result in positive socioeconomic impact. During the construction phase temporary jobs would be created, supporting the local economy. With the Proposed Action, TTN would continue to support existing jobs and local economy.

The Proposed Action would not require alterations to public services including fire and police protection, education and utility services, businesses, or weaken employment opportunities.

According to the job creation formula provided by the U.S. White House under the American Recovery Act (ARRA), the following is used to estimate potential jobs that may be created as result of the Proposed Action:

- $92,000 of government spending creates one (1) job year
    - 64 percent of the job-years represent direct and indirect effects
    - 36 percent of the job years are induced effect

Applying the ARRA formula to the estimated construction cost ($109 million), the Proposed Action has the potential to create the following job estimates (cumulative):

- Up to 1,185 job years
    - Approximate Direct and Indirect: 758
    - Approximate Induced effect: 427

5.9.2. Community Tax Base

No significant changes are expected between pre-development and post-development conditions. The Proposed Action is located mostly on Airport property and is not anticipated to negatively affect landowners, and therefore would not produce a substantial change in the community tax base.

5.9.3. Environmental Justice

No adverse effects to disadvantaged communities are anticipated by the Proposed Action as discussed in Section 4.12.2. The Proposed Action will take place on existing Airport property. Environmental justice areas in Mercer County are not located within or in the immediate vicinity of the project areas. In addition, impacts to environmental resources discussed throughout this EA are primarily concentrated on Airport property and will be mitigated as discussed, and therefore, are not anticipated to impact environmental justice populations.

Therefore, based on the above, it can be concluded that disproportionately high and adverse human health or environmental effects are not anticipated to occur among minority or low-income populations as a result of the Proposed Action.

5.9.4. Children's Health and Safety Risks

No changes are expected between pre-development and post-development conditions, regarding health and safety risks. The proposed alternatives have been evaluated for their potential to have a disproportionate effect on children's environmental health or safety, including, but not limited to, water quality, air quality, and noise. The proposed project will not create or make more readily available products or substances that contact or ingestions through air, food, drinking water, recreational waters, or soil could harm children. It has been concluded that the Proposed Action is not of the nature or magnitude to have an adverse effect upon the health and safety of children. Mitigation is not proposed.

5.9.5. No Action Alternative

The No Action alternative does not meet the purpose and need of the Proposed Action. The No Action alternative assumes that the Proposed Action is not implemented and existing Airport terminal and ARFF would remain unchanged. The No Action has the potential to result in negative socioeconomic impacts, limiting the ability from TTN to maintain revenue and aviation needs and current operations. In addition, the No Action do not support jobs creation within the community, including direct and induced jobs associated to the construction phase.

5.9.6. Significance Analysis

The FAA has not established a significance threshold for socioeconomics in FAA Order 1050.1F. However, factors that should be considered in assessing impacts include whether the action would have the potential to:

- Induce substantial economic growth in an area, either directly or indirectly (e.g., through establishing projects in an undeveloped area).

- Disrupt or divide the physical arrangement of an established community.
- Cause extensive relocation when sufficient replacement housing is unavailable.
- Cause extensive relocation of community businesses that would cause severe economic hardship for affected communities.
- Produce a substantial change in the community tax base.

The Proposed Action would stimulate the local economy by creating construction jobs, demand for readily available construction materials, and job availability for the new terminal and ARFF construction, resulting in increased tax revenue to the community. The increase in the community tax base is not expected to be significant. The Proposed Action would not have any disproportionate effects on minority and low-income populations and would not adversely affect health and safety of children. No relocation of residences or businesses is proposed.

Based on the above analysis, substantial induced or secondary impacts to socioeconomic resources, environmental justices, and children's health and safety resulting from the Proposed Action are not anticipated.

5.10. TRAFFIC

Urban performed a traffic analysis to determine the anticipated traffic impacts at study area intersections resulting from the proposed project and the anticipated increase in vehicular traffic to and from the Airport as a result of the forecasted enplanements. The Traffic Engineering Report (TER) is included in Appendix G.

5.10.1. Study Area and Data Collection

The Airport's passenger terminal has two ingress and egress points from the main roadway within the Airport, Sam Weinroth Road. These access points are the intersections of Sam Weinroth with Bear Tavern Road in the south and Scotch Road in the north.

The study area consists of the following six (6) intersections:

- Bear Tavern Road & I-295 Southbound Ramps (signalized)
- Bear Tavern Road & Sam Weinroth Road (unsignalized)
- Bear Tavern Road/Grand Avenue & Upper Ferry Road (signalized)
- Scotch Road & Sam Weinroth Road (signalized)
- Lockheed Avenue/Scotch Road Ramp & Sam Weinroth Road (unsignalized)
- Scotch Road Ramp & Sam Weinroth Road (unsignalized)

Weekday turning movement counts were performed at these locations on Wednesday, November 14, 2018 between the hours of 7:00 AM – 9:00 AM and 4:00 PM – 6:00 PM. Saturday counts were performed at the same locations on Saturday, November 17, 2019 between the hours of 12:00 PM - 2:00 PM. Cars, Heavy Trucks and Pedestrians were counted at each location during 15 minute intervals. In addition, portable Automatic Traffic Recorder (ATR) counts were performed at four locations, three on Bear Tavern Road and one on Sam Weinroth Road. The count data was used

to determine peak hour volumes for all locations. **Exhibit 5-1** shows the traffic analysis project study area.

Exhibit 5-1: Study Area

Existing Conditions

2018 Traffic Count Volumes

The count data for the study intersections was examined in order to determine the existing weekday morning and afternoon peak hour traffic volumes, as well as the Saturday midday peak hour. Based on 15-minute count periods, the weekday morning peak hour was determined to occur between 8:00 AM – 9:00 AM. The weekday afternoon peak hour was determined to occur between 4:30 PM – 5:30 PM. Lastly, the Saturday midday peak hour was determined to occur between 12:45 – 1:45 PM for all the intersections located on Bear Tavern Road, and between 12:30 PM – 1:30 PM for the remaining locations. Figures X1-1, X1-2 & X1-3 (TER, **Appendix G**) show volume figures for the 2018 existing weekday morning, weekday afternoon and Saturday midday peak hours respectively. The count data is included in Appendix X2 (TER, **Appendix G**).

Future without Airport Development Conditions

In order to study the design year (2035) without development conditions, the future without development volumes were determined. A general background growth of 5% was applied to all non-airport traffic in the network based on a review of demographic forecasts (population and employment) from DVRPC for both Mercer County and Ewing Township. This growth represents the organic growth in traffic between 2019 and 2035 and represent a 0.30% growth rate per year, which exceeds current growth rate forecasts for Ewing and Mercer, and thus was considered a conservative value. The growth rate was reviewed with the County professional staff and approved by the Mercer County Traffic Engineer.

In discussions with Mercer County Public Works, it was noted that there is a substantial amount of new/anticipated development near the airport that would likely impact study area intersections. However, calculating trips for each new trip generator was deemed not practical. Instead it was decided to add 100 vehicles for each peak hour to the northbound and southbound through traffic at all the intersections along Bear Tavern Avenue and along Scotch Road. Figure X1-4 (TER, **Appendix G**) shows these additional new development volumes. Figures X1-5, X1-6 & X1-7 (TER, **Appendix G**) show the 2018 non-airport traffic volumes grown by 5% total and with the new development traffic from Figure X1-4 (TER, **Appendix G**) included for the weekday morning, weekday afternoon and Saturday midday peak hours respectively.

Future with Airport Development Conditions

In order to study the design year (2035) future with development conditions, the future with development volumes were determined. This was done by adding the trips generated by the proposed development to the future without development volumes.

To determine the growth in trips to the airport between 2018 and 2035, the projected yearly enplanements for the airport were analyzed. Data from Table 2-13 (contained in section 2.9) of the Trenton-Mercer Airport Master Plan (shown in TER, **Appendix G**) was used to extrapolate a growth rate that could be applied to the existing 2018 airport traffic to give us projected 2035 traffic volumes for the airport. Table 5-6 shows the steps taken to calculate the overall growth in enplanements between 2018 and 2035.

Table 5-7: Forecasted Airport Enplanement Growth Rates

2014 Enplanements 2020 Enplanements	377,544 358,728
Growth Rate	-0.85%/Yr
2018 Calculated Enplanements	364,893
2035 Forecasted Enplanements	476,507
Overall Growth between 2018 & 2035	30.59% (1.8% per year)

Source: McFarland Johnson, Inc. and Urban Engineers

Trip Distribution & Assignment

The calculated overall growth rate of 30.59% was applied to the airport traffic for all three peak periods to calculate the "new" trips to and from the airport. This growth rate equates to a 1.8% per year growth and is directly proportional to the approved forecast of enplanements over the

same period. These trips were then distributed throughout the network based on existing traffic patterns, a review of zip codes for airport users and engineering judgement. Figures X1-8, X1-9 & X1-10 (TER, **Appendix G**) show these new trips for the weekday morning, weekday afternoon and Saturday midday peak hours respectively.

Table 5-5: Traffic Growth Attributed to Airport Development

		AM		PM		SAT	
		Sam Weinroth (east of Terminal)					
		WB	EB	WB	EB	WB	EB
	Existing	119	183	189	169	84	89
	Proposed	155	239	247	221	109	116
	New Trips	36	56	58	52	25	27
		AM		PM		SAT	
		Sam Weinroth (west of Terminal)					
		WB	EB	WB	EB	WB	EB
	Existing	105	114	117	138	56	59
	Proposed	137	149	153	181	73	77
	New Trips	32	35	36	43	17	18

Source: Urban Engineers
*Note: EB is towards the terminal and **WB is towards the terminal***

Future Volumes with Airport Development

The trips generated by the development at the airport were added to the future without development volumes giving the future with development volumes.

Figures X1-11, X1-12 & X1-13 (TER, **Appendix G**) show the 2035 "With Development" volumes for the weekday morning, weekday afternoon and Saturday midday peak hours respectively.

Capacity & Queuing Analysis

Capacity analysis was conducted for the study area intersections using SYNCHRO software (Version 10). SYNCHRO takes into account the geometry, speed limits, turning-lane lengths, peak hour factors, volumes, heavy vehicle percentages, and signal phasing and timings. The SYNCHRO program analyzes the information with equations to determine the LOS for the intersections numerically.

In order to consider the impact of new trips to the study network, the most desirable scenario would be that the intersection overall operates as closely as possible under "with development" conditions to "without development" conditions. In addition, it is desirable that individual lane groups operate as closely as possible under "with development" conditions to "without development" conditions.

Matrix Tables detailing the delay per vehicle and LOS overall and for each lane group at each intersection are included in Appendix X3 (TER, **Appendix G**).

5.10.2. No Action

The No Action alternative does not meet the purpose and need of the Proposed Action. The No Action assumes that improvements to terminal access would not occur. Traffic concerns and the need for improvements, if the Proposed Action did not take place, is discussed below.

5.10.3. Significance Analysis

The FAA has not established a significance threshold for traffic in FAA Order 1050.1F. However, factors that should be considered in assessing impacts include whether the action would have the potential to:

- Disrupt local traffic patterns and substantially reduce the levels of service of roads serving an airport and its surrounding communities.
  - → Based on the above information and further described below, the Proposed Action is not anticipated to reduce the level of service for roadways surrounding the proposed terminal and ARFF.

As can be seen from the results of the SYNCHRO analysis, the network operates well overall, but with some capacity/queuing issues at certain approaches and turn movements. The westbound approach at the intersection of Bear Tavern & Sam Weinroth is projected to see an increase in delay based on the traffic analysis results. However, that westbound approach currently operates with significant delay (LOS F) and will continue to operate at LOS F with or without the proposed project, indicating there's a need to address the intersection operations independently of the proposed development. This is the key location within the development area to consider for future infrastructure improvements. The need for improvements is an existing concern that gets worse over time independent of the proposed project and is an issue that Mercer County professional staff are aware of. Analysis showed that the anticipated traffic increases on Bear Tavern as a result of the recent and planned off-airport projects, exacerbated to a small degree when combined with the traffic from the airport development, will result in significant delays for traffic exiting from the Airport. Consideration of signalization or a modern roundabout for intersection control should lead to acceptable traffic operations for all movements at the intersection. It is recommended that Mercer County pursue such a remedy independently of the proposed terminal replacement project.

5.11. VISUAL EFFECTS

Above ground structures would be constructed within the TTN boundaries away from neighboring developments, however, these proposed structures are not proposed to increase current light emissions or produce significant adverse light emission impacts. Lighting associated with the Proposed Action would incorporate energy efficient technologies, and as feasible the use natural lighting. The lighting design would follow TTN safety/security standards and applicable local codes and regulations. Energy efficient luminaries would be utilized, with appropriate spacing to avoid excessive lighting and visual effects outside the TTN boundaries. In addition, the use of shielding would be considered to block certain light and minimize light trespassing to neighboring properties, as applicable.

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An evaluation of potential visual effects, (obstruction of visual resources, light emissions interference with normal activities and contrast with visual character) was conducted and is discussed below.

5.11.1. Light Emissions

The FAA is required to consider potential lighting impacts associated with a proposed development action. Because most air navigational systems and other airport development actions produce relatively low levels of light intensity compared to surrounding background levels, adverse effects on human activity are unlikely.

Proposed Lighting:

The Proposed Action would be designed to accentuate architecture, provide safety and security to passengers and Airport staff, enhance navigation within the terminal, and provide a comfortable and enjoyable experience for the public. Lighting associated with the terminal building would incorporate energy efficient technologies, and wherever feasible, use natural lighting.

The Proposed Action would involve the following airside and landside lighting changes:

Airside lighting:

- Terminal apron box shield/downward facing lighting similar to existing apron lighting.
- Lighting would be attached to the sides, roof line, or other parts of the terminal building and directed down with box shielded fixtures toward the east, onto the apron, and ramps, stair exits, or other areas on the airside for workers and users of the terminal.
- ARFF facility security lighting similar to existing ARFF lighting, attached to the sides, roof line, or other parts of the ARFF building and directed down with box shielded fixtures.

Landside lighting:

- Pedestrian level fixtures lighting walkways would be bollard lighting or overhead lighting from roadway lighting that is directed downward onto paths and sidewalks with shielded fixtures. Terminal drop-off area bollard lighting.
- Access roadway box shield/downward facing lighting. Roadway lighting would follow standard NJDOT style lighting with downward facing and box/shielded style fixtures.
- Parking lot box shield/downward facing lighting similar to existing lighting.
- Parking garage lighting (described below).
- ARFF facility box shield/downward facing lighting for landside parking area and security lighting on building.

The proposed parking garage would have circuit outside lights separate from the interior lights. The outer row of lights on the covered tiers would operate dusk to dawn by photocell or astronomic clock. The lights would be LED (light-emitting diode), and lighting would follow the Illuminating Engineering Society (IES) guidelines.

5.11.2. Visual Resources and Character

It is not anticipated that the Proposed Action would result in significant lighting or visual effects on the nearest neighboring property (apartment complex). A viewshed analysis was conducted to determine potential visual impacts associated with the new luxury apartment complex (Greene 750 at Bear Tavern) west of Sam Weinroth Road, across from the existing Airport parking lots and terminal building. The viewshed analysis included views of the existing and proposed terminal building and parking garage from the apartment buildings point of view. Existing trees located between Sam Weinroth Road and the apartment complex were incorporated into the viewshed analysis existing and proposed views to illustrate real world conditions. The viewshed analysis is included in Appendix B. In addition, a Google Earth view from the top floor of apartment building #11 at Greene 750 at Bear Tavern is included in Appendix B.

The proposed terminal building would be constructed adjacent to the existing terminal building and approximately 700 feet away from the nearest neighboring property. The proposed parking garage would be located within the eastern portion of the existing TTN surface level parking, approximately 300 feet away from the nearest neighboring property. An existing fringe of tall vegetation exists along the property line of the apartment complex, immediately adjacent to Sam Weinroth Road and west to TTN. This existing natural vegetative fringe creates a natural barrier minimizing potential visual effects from the Proposed Action.

The proposed ARFF location is not within a view of any residential or other non-airport related properties and therefore, no visual impacts are anticipated. In addition, due to the topography surrounding the site and nearby forested areas, the potential for light emissions to surrounding commercial, municipal, and residential land uses is low.

5.11.3. No Action Alternative

The No Action alternative does not meet the purpose and need of the Proposed Action. Light emissions would remain unchanged for the No Action alternative. Similar to the Proposed Action, the No Action alternative it is not considered to produce adverse light emission impacts or visual effects. However, the No Action does not incorporate energy efficient technologies, LED luminary and guidelines from IES.

5.11.4. Significance Analysis

According to FAA Order 1050.1F, significant thresholds have not been established for visual effects. Taking into consideration the scope of work from the project and its location, light emissions and visual effects would be less than significant by the Proposed Action. The Proposed Action does not have the potential to:

- Create annoyance or interfere with normal activities from light emissions
- Affect the visual character of the area due to the light emissions
- Affect the nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources

- Block or obstruct the views of visual resources, including whether these resources would still be viewable from other locations

Based on the above evaluation and given the Airport's size, location, history, and surrounding land use, an increase in light emissions is unlikely to be significant and overall, significant visual impacts are not anticipated.

5.12. WATER RESOURCES

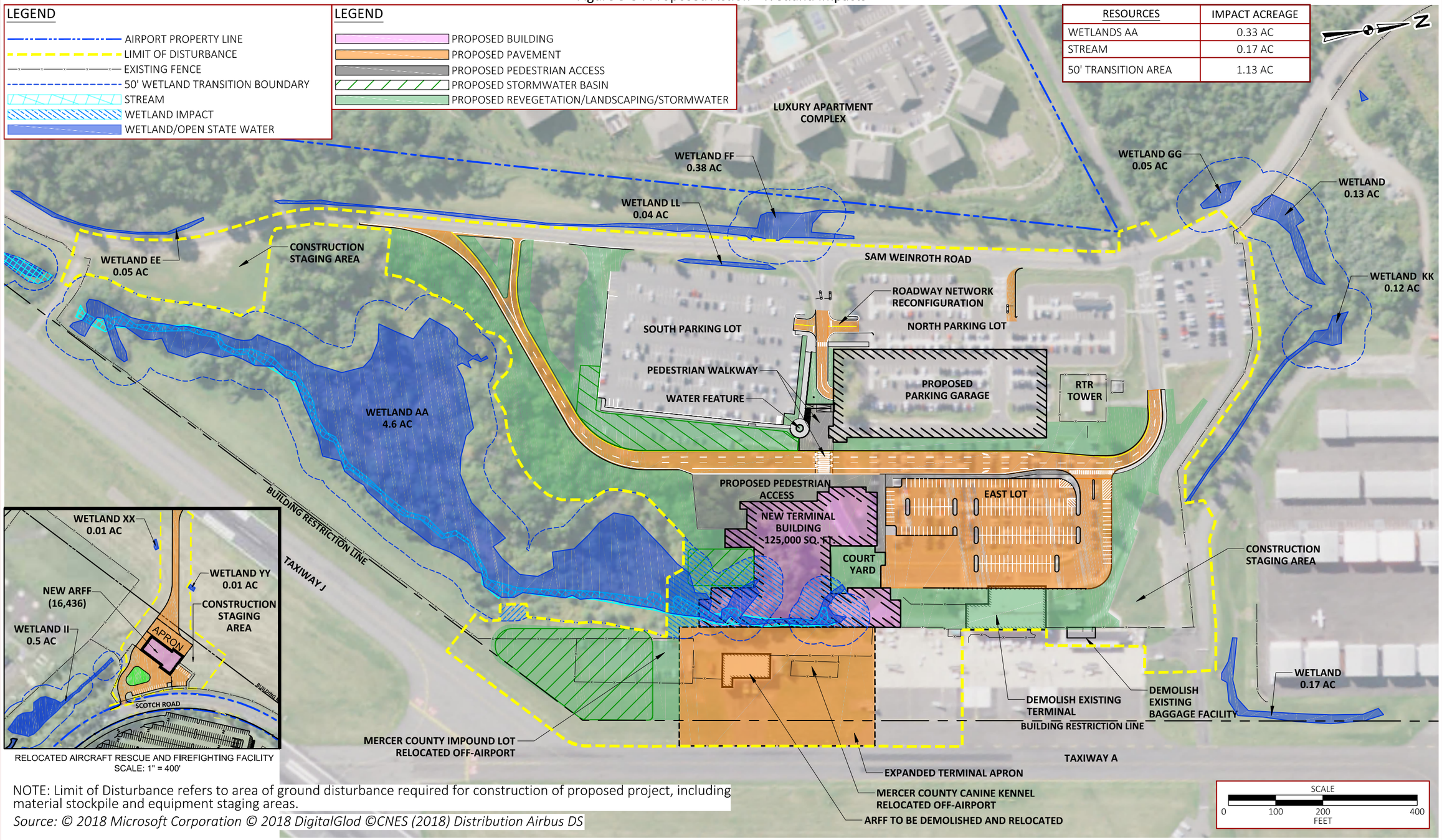
The Proposed Action avoids and minimizes impacts to water resources and is not expected to cause significant impacts. Design considerations, controls during construction, and other mitigation measures would be implemented to further minimize significant impacts to water resources and water quality. The use of BMPs for stormwater management will include the installation of stormwater basins to reduce the peak flow and detain the rainfall from entering the stream immediately, discharging over a longer period of time, thereby allowing for some settlement of total suspended solids (TSS) or sediments. Where possible, infiltration of the runoff into the existing soils and groundwater will occur. The use of grass or vegetative swales, grass and vegetative basins, and other BMPs will be designed to reduce runoff and improve water quality on the project site.

5.12.1. Wetlands

The Proposed Action minimizes direct impacts to approximately 0.22 acre within state-regulated (jurisdictional) wetlands (designated as Wetland "AA") and 0.86-acre within the 50 feet wetland transition area ("buffer"). Wetland impacts would result from the filling and excavation for construction of the terminal building, terminal apron, conversion of existing terminal access road to lawn/landscaping, stormwater management features, and roadway resurfacing. A summary of wetlands and acreage of impacts is provided in Table 5-7. Freshwater wetland, state open waters, and wetland transition area impacts within the proposed project's limit of disturbance[7] are shown on Figure 5-3.

[7] A project's limit of disturbance is typically defined as the boundary within which all construction, materials storage, grading, landscaping and related activities shall occur.

Figure 5-3 : Proposed Action - Wetland Impacts



RELOCATED AIRCRAFT RESCUE AND FIREFIGHTING FACILITY
SCALE: 1" = 400'

NOTE: Limit of Disturbance refers to area of ground disturbance required for construction of proposed project, including material stockpile and equipment staging areas.

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Table 5-9: Summary of Project Footprint within Regulated Wetland Areas

Jurisdictional Wetlands (ID)	Wetland Classification	Wetland Areas (Acres)	Project Footprint (IMPACTS)*		Project Components
			Wetlands Impacts (Acres)	50' Buffer (Acres)	
AA	Palustrine	4.6	0.22	0.86	Terminal Building
BB	Palustrine	0.65	--	--	Avoided
CC	Palustrine	0.75	--	--	Avoided
DD	Palustrine	0.05	--	--	Avoided
EE	Palustrine	0.05	--	--	Avoided
FF	Palustrine	0.38	--	--	Avoided
GG	Palustrine	0.05	--	--	Avoided
JJ	Palustrine	0.13	--	--	Avoided
KK	Palustrine	0.12	--	--	Avoided
LL	Emergent	0.04	---	---	Avoided
HH	Palustrine	0.05	--	--	ARFF – Avoided
II	Palustrine	0.50	--	--	ARFF – Avoided
XX	Isolated	0.01	--	--	ARFF – Avoided
YY	Isolated	0.01	--	--	ARFF – Avoided
Existing Wetlands Area		**7.39**			
Total Direct (Footprint) Impacts			0.22	0.86	
Estimated Construction Buffer (Indirect)			0.11	0.27	
Total Regulated Impacts			**0.33**	**1.13**	**Minimized Impacts**

Wetlands Area To Remain	**7.06**

Source: McFarland-Johnson, Inc., Amy Greene LOIs, and Urban Engineers
Notes: Areas (acreage) and impacts are approximate. Wetland AA delineation includes an unnamed stream where approximately **0.17 acre of riverine habitat falls within the limit of disturbance from Proposed Action. See Section 5.11.3.*

This portion of the freshwater wetland/open water complex and adjacent streambed are highly degraded due to the presence of fill, scouring, and presence of invasive species. With exception to nutrient/sediment removal, this portion of the wetland provides limited ecological functions due to its degraded condition. A small portion of project impacts may be considered temporary disturbances. Temporarily impacted freshwater wetlands, State open waters, and/or the associated 50' wetland transition areas would be restored to their original or improved condition.

The proposed ARFF relocation avoids direct impacts to NJDEP-regulated wetlands, State open waters, and the 50' wetland transition area. The proposed ARFF service road would be constructed between two (2) isolated wetlands, designated as Wetlands "XX" and "YY", which by definition, are not subject to standard transition area requirements; therefore, the service road would not impact any regulated areas.

Opportunities for mitigation on Airport property are very limited due to FAA restrictions within runway protection zones and runway approaches; therefore, compensatory mitigation for freshwater wetlands impacts is proposed through the purchase of NJDEP-approved mitigation bank credits within the watershed. Two (2) wetland mitigation banks are located within a service

area that includes the Lower Delaware Watershed Management Area (WMA #11), the Nishisakawick and Willow Grove Lake. All mitigation banks have credits available to sell. The NJDEP would determine the amount of mitigation required as part of the permit application process.

A NJDEP Pre-Application Meeting would be requested to present the project to the NJDEP and to proactively address any questions or concerns the Department may have.

5.12.2. Floodplains

According to the FIRM Map 34021C0114F, Panel 0114F[8], the proposed terminal replacement project is located in Zone X (Area of Minimal Flood Hazard). FEMA National Flood Hazard Layer FIRMettes for the terminal and ARFF project areas are provided in **Appendix C**. While there are no FEMA designated floodplains within the project areas, NJDEP-regulated riparian zones and FHAs associated with the unnamed tributary of the Delaware River are located within a small portion of the proposed terminal replacement project footprint. NJDEP-regulated riparian zone and FHA is located immediately outside of the ARFF project area. Under the FHACA Rules, NJ regulates the alteration of topography through excavation, grading, and/or placement of fill; the creation of impervious surface; the storage of unsecured material; and construction, reconstruction, repair, alteration, enlargement, elevation and removal of structures in the FHA. The Rules also regulate the clearing, cutting, and/or removal of vegetation in a riparian zone, the land and vegetation within and adjacent to a regulated water. Riparian zone and FHA impacts would result from the filling and excavation for construction of the terminal building, terminal apron, and stormwater management features. The riparian zone and FHA impacts within the proposed project's limit of disturbance are shown on **Figure 5-4**.

Table 5-10: Summary of Riparian Zones and FHAs

NJDEP Regulated Areas	Existing (Acreage)	Potential Impacts (Acreage)
Riparian Zones	8.63	1.14
Flood Hazards (FHAs)	4.94	0.04
Perennial (unnamed) stream	0.68	0.17
Total	**14.25**	**1.35**

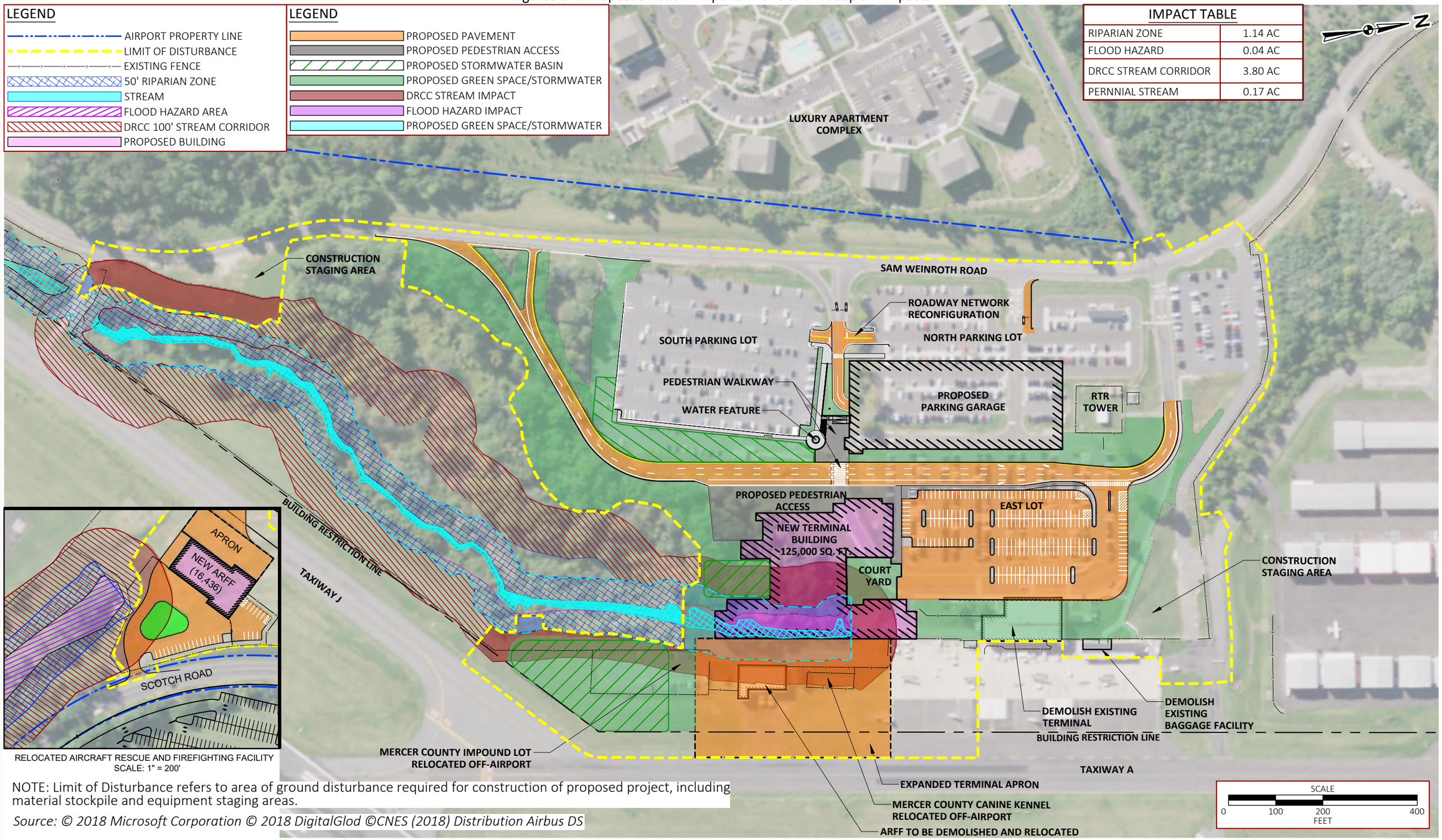
Riparian Zones and FHAs To Remain	**12.9**

Source: McFarland-Johnson, Inc. and Urban Engineers

The proposed ARFF relocation avoids direct impacts to the NJDEP-regulated riparian zone and FHA. However, construction of the new terminal would directly impact the riparian zone and FHA.

[8] https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd&extent=-74.84248410644518,40.18511338175197,-74.67631589355477,40.25065321726062

Figures 5-4: Proposed Action - Riparian Zone and Floodplain Impacts



RELOCATED AIRCRAFT RESCUE AND FIREFIGHTING FACILITY
SCALE: 1" = 200'

NOTE: Limit of Disturbance refers to area of ground disturbance required for construction of proposed project, including material stockpile and equipment staging areas.

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Approximately **1.14 acres of riparian zone** impacts and approximately **0.04 acre of FHA** impacts would result from site preparation associated with construction of the terminal building and stormwater management features, including a stormwater basin and outfalls. A small portion of project impacts may be considered temporary disturbances and the FHA would be restored to its original or improved condition.

Authorization from the NJDEP Division of Land Use Regulation would be required in accordance with the FHACA Rules at N.J.A.C. 7:13. Stormwater runoff from the proposed terminal and ARFF relocation project areas would be designed and managed in accordance with state regulations to manage the 100-year storm event and avoid flooding on and offsite. Proposed stormwater management features would address flooding conditions associated with the existing terminal area watershed.

Mitigation would be required to compensate for the impacts to these regulated areas. Opportunities for riparian zone mitigation on Airport property are very limited and would likely result in a conflict with FAA regulations (FAA AC 150/5200-33B, *Hazardous Wildlife Attractants on or Near Airports)*; therefore, mitigation would likely be satisfied through compensatory mitigation for riparian zone impacts through the purchase of NJDEP-approved mitigation bank credits. Two riparian zone mitigation banks are located within a service area that includes the Lower Delaware Watershed Management Area (WMA #11): the Nishisakwick and Wickecheoke Creek Mitigation Banks. All mitigation banks have credits available to sell. The NJDEP will determine the amount of mitigation required as part of the permit application process.

5.12.3. Surface Waters

As shown in **Figure 5-4**, the Proposed Action involves limited unavoidable direct impacts of approximately **0.17 acre** to a NJDEP-regulated perennial headwater stream (unnamed). The construction of the new terminal would result in the filling and alteration of a small segment of the stream. This portion of the stream appears to be highly disturbed, manipulated, and partially channelized. Evidence of scour and erosion were also noted along the upper reach of the stream, near an existing culvert. The streambed and adjacent areas are highly degraded due to the presence of fill, scour, and invasive species.

The Proposed Action would disturb more than one acre of land and therefore, would require a NJPDES permit. First, a Soil Erosion and Sediment Erosion Control Plan Certification must be obtained by the Mercer County Soil Conservation District. The project would be designed in accordance with the NJPDES permit, current NJDEP New Jersey State Standards and Specifications for Erosion and Sediment Control, and the current New Jersey State Stormwater Management Rules. Appropriate BMPs would address potential impacts to water quality from stormwater runoff during and following construction. Also, temporary erosion and sediment controls would be implemented to avoid impacts to water quality during the construction of the proposed project.

Post-construction stormwater management practices would be implemented to enhance water quality and provide water quantity control through peak flow attenuation. Due to the new impervious area from the Proposed Action, stormwater runoff must be addressed meeting the goal of no-net increase in peak stormwater runoff from pre-project conditions. Proposed subsurface stormwater storage and stormwater basins would accommodate additional runoff

from new impervious surfaces. The selected BMPs would be incorporated into the final design to control water quality and quantity and fulfill the peak flow attenuation requirements of the permit. The stormwater management plan would comply with FAA AC 150/5200-33B, *Hazardous Wildlife Attractants on or Near Airports,* which would exclude wet/retention stormwater basins that would attract wildlife and pose a hazard to aircraft. Based on the Stormwater Pollution Prevention Plan (SWPPP) developed for the Airport and the application of proper BMPs, no difficulty is expected in obtaining a stormwater permit.

The terminal project would drastically improve the quality of the runoff leaving the site and substantially reduce the amount of stormwater runoff during and immediately after stormwater events. This would dramatically minimize on-site flooding conditions as they currently exist. The stormwater design would manage the 100-year storm event and would more than satisfy the NJDEP and DRCC requirements. The stormwater management design would ensure there is no increase, as compared to the pre-construction peak runoff rates.

Delaware River & Raritan Canal Commission (DRCC)

The Proposed Action would automatically be considered a "major project", as defined at N.J.A.C. 7:45-1.3; therefore, approval from DRCC would be required, which would include review of stormwater runoff quantity and water quality impact (N.J.A.C. 7:45-8), as well as evaluation of stream corridor impacts (N.J.A.C. 7:45-9). The Proposed Action would result in approximately **3.8 acres** of direct impacts (e.g., earth disturbance, fill) to the stream corridor, which is defined as "Any water course that flows into the Park, its tributaries, the 100-year floodplain associated with the water course and its tributaries, and all of the land within a 100-foot buffer adjacent to the 100-year flood line associated with the water courses and their tributaries." Impacts to the stream corridor include filling and excavation for construction of the terminal building, terminal apron, and stormwater management features as shown on **Figure 5-4**.

The DRCC and County/TTN entered into a Memorandum of Agreement (MOA) on April 28, 2011, which permits activities in regulated areas to maintain a safe, secure, and legally compliant airport facility. The MOA is included in **Appendix B**. The stream corridor shown on the Stream Buffer Plan associated with the MOA is slightly different from the steam corridor generated for the Proposed Action, and therefore, impacts may be smaller. Coordination with the DRCC to confirm the stream corridor is being conducted and the recommendation(s) will be incorporated into this EA.

Pre-application meetings were held with the DRCC for the Proposed Action. On April 15, 2020, the proposed ARFF relocation was presented with the DRCC. On August 19, 2020, the proposed terminal replacement project was presented with the DRCC. These were discussed with the DRCC to determine the feasibility of obtaining approval from the Commission and to obtain input on the project design and permitting requirements. Since both projects would impact the DRCC stream corridor, a request for a waiver of strict adherence to review standards would be requested as part of the permit application in accordance with N.J.A.C. 7:45-12.3. The DRCC confirmed in the Pre-Application meeting that other New Jersey Transit projects with extensive stream corridor impacts have been approved. Therefore, for the purpose of this EA and expected limited potential impacts, the Proposed Action is considered permittable and regulatory viable.

Mitigation would be required to compensate for anticipated impacts to the stream corridors, in coordination with the DRCC during the permitting process. The anticipated impacts (**3.8 acres**) to the DRCC stream corridor would be less-than-significant and are mitigable. As discussed with DRCC during the Pre-Application Meetings, most of the on-airport areas that could potentially be used for mitigation are under FAA obstruction restrictions and on-site mitigation is discouraged to prevent wildlife hazard, limiting on-site mitigation options. Therefore, in-situ/in-kind mitigation would not be feasible. The DRCC confirmed that off-site mitigation can be satisfied at a ratio of 2:1 or equivalent to its functional value, via land acquisition with an agreement with the property owner plus a deed restriction on behalf of the DRCC. A search of www.zillow.com for land for sale with the following criteria was conducted on August 20, 2020: 1. greater than 8 acres; 2. with a stream on or in the immediate vicinity of the property; and 3. within DRCC Zone B review zone. There were multiple properties for sale that meet these criteria, and therefore, it is assumed the County would be able to satisfy the DRCC off-site mitigation requirements. Off-site mitigation options and details would be further coordinated and presented to the DRCC during the advance design stage and as part of the local permitting process. During the architecture and engineering design stages, projects elements would be further analyzed, and stream corridor impacts continue to be evaluated in coordination with the DRCC for permitting requirements and mitigation commitments.

5.12.4. Groundwater

The western portion of Airport property is located over the EPA designated Coastal Plain SSA, while the eastern portion of the Airport property is not located over an SSA. No water well or stormwater injection wells are proposed under the Proposed Action. An SSA project review was conducted by the USEPA to determine whether it would pose a public health risk and/or impact groundwater resources in accordance with the SDWA. Based on the information provided to the USEPA, the USEPA determined that the Proposed Action would not pose a significant threat to public health or groundwater resources and complies with Section 1424(e) of the SDWA. The EPA determination and supporting documentation are provided in **Appendix C**.

According to the Phase II ESA, elevated levels of PFAS, exceeding their respective NJDEP groundwater quality criterion, were detected in groundwater monitoring wells in the vicinity of the existing ARFF. Additional groundwater characterization and reporting shall be conducted to adequately delineate the nature and extent of PFAS impact. NJDEP regulations shall be followed as described in Section 5.7 of the Phase II ESA. Further details regarding potential groundwater impacts related to PFAS and mitigation measures, are discussed in in Section 5.5.

After construction of the relocated ARFF facility, firefighting training involving AFFFs will take place in the existing location of the terminal apron. In addition, proposed aircraft deicing will take place on the terminal apron. As stated in Section 4.7.1, the Airport currently uses “No-Foam” for firefighting drills and equipment testing, which does not discharge AFFFs and therefore no cleanup is required. In an actual emergency, when foam is spent, the Airport will follow emergency cleanup operations and contact their on-call environmental consultant for spill response, as needed.

BMPs, such as a future deicing pad with a collection system, would be utilized to capture spent deicing fluids and ensure fluids do not flow to the stormwater management system or surface waters in the vicinity of the apron to prevent pollutant runoff and/or contamination.

5.12.5. No Action Alternative

The No Action alternative does not meet the purpose and need of the Proposed Action. The No Action alternative assumes that existing conditions would remain unchanged; therefore, no direct impacts over wetland areas and stream corridors would occur, and compensatory mitigation is not required. However, these areas would continue to be subject to FAA regulations and obstruction removal activities.

5.12.6. Significance Analysis

The proposed project's potential to impact water resources, including wetlands, floodplains, surface waters, and groundwater are discussed below.

Wetlands, Floodplains, and Surface Waters

FAA Order 1050.1F provides significance threshold for wetlands. A significant impact exists if the action would:

- Adversely affect a wetland's function to protect the quality or quantity of municipal water supplies, including surface waters and sole source and other aquifers
- Substantially alter the hydrology needed to sustain the affected wetland system's values and functions or those of a wetland to which it is connected
- Substantially reduce the affected wetland's ability to retain floodwaters or storm runoff, thereby threatening public health, safety or welfare (the term welfare includes cultural, recreational, and scientific resources or property important to the public)
- Adversely affect the maintenance of natural systems supporting wildlife and fish habitat or economically important timber, food, or fiber resources of the affected or surrounding wetlands
- Promote development of secondary activities or services that would cause the circumstances listed above to occur
- Be inconsistent with applicable state wetland strategies

FAA Order 1050.1F provides significance threshold for floodplains. A significant impact exists if the action would cause notable adverse impacts on natural and beneficial floodplain values. FAA Order 1050.1F provides significance threshold for surface waters. A significant impact exists if the action would:

- Exceed water quality standards established by federal, state, local, and tribal regulatory agencies; or
- Contaminate public drinking water supply such that public health may be adversely affected.

Impacts to regulated water resources are summarized in the table below. All water resource areas are regulated by the NJDEP, with the exception of the stream corridor, which is regulated by DRCC. Acreages are based on the 50% design and may change slightly depending on the final design.

Table 5-11: Anticipated Impacts from Proposed Action

Water Resource Description	Existing	Impact Acreage
Wetland	7.39 ac	0.33 ac
Wetland 50' Transition ("Buffer") Area	--	1.13 ac
Perennial Stream	0.68 ac	0.17 ac
Riparian Zone	8.63 ac	1.14 ac
Flood Hazard Area (FHAs)	4.64 ac	0.04 ac
DRCC Stream Corridor	12.15 ac	3.8 ac

Source: McFarland-Johnson, Inc. and Urban Engineers

Due to the onsite constraints and limitations, compensatory mitigation for freshwater wetlands and riparian zone impacts is proposed through the purchase of NJDEP-approved mitigation bank credits. Two wetland mitigation banks are located within a service area that includes the Lower Delaware Watershed Management Area (WMA #11), the Nishisakawick and Willow Grove Lake. Similarly, two riparian zone mitigation banks are located within a service area that includes the WMA #11: the Nishisakwick and Wickecheoke Creek Mitigation Banks. The above listed mitigation banks have credits available to sell. LOIs for the terminal and ARFF project areas were submitted to the NJDEP. LOIs were issued by the NJDEP In March 24, 2021 and September 18, 2020, respectively. A NJDEP Permit Pre-Application Meeting would be requested to further coordinate the approval of the final design. The NJDEP will determine the amount of mitigation required as part of the permit application process.

Off-site mitigation for DRCC stream corridor impacts would be satisfied at a ratio of 2:1 or equivalent to its functional value, via land acquisition plus a deed restriction on behalf of the DRCC. Based on an internet search, land meeting the mitigation criteria is available for purchase.

Based on the above information, it is assumed the Proposed Action would qualify for permits associated with impacts to water resources. Permit conditions and approvals would ensure the proposed activities would not violate water quality standards. In addition, the Proposed Action would not adversely affect functions or substantially alter the hydrology of wetlands, floodplains, and surface waters as discussed. Based on the above, impacts would be mitigated and reduced below the significance thresholds established by the FAA.

Appropriate stormwater design will reduce impacts from the Proposed Action on water resources. In addition, implementation of a SWPPP during the construction phase and proper stormwater management during the operational phase, and compliance with NJDEP regulations and FAA guidelines, no significant impacts to water quality are expected to result from the Proposed Action during the operation or construction phases.

Groundwater

FAA Order 1050.1F provides significance threshold for groundwater. A significant impact exists if the action would:

1. Exceed groundwater quality standards established by federal, state, local, and tribal regulatory agencies; or
2. Contaminate an aquifer used for public water supply such that public health may be adversely affected.

BMPs, such as, engineering and administrative controls, would be incorporated into the design of the Proposed Action to avoid contamination of groundwater. Based on the above information, the Proposed Action is not expected to cause any significant impacts to groundwater quality in the project areas during the operation or construction phases of the project. Based on the above, impacts would be mitigated and reduced below the significance thresholds established by the FAA.

5.13. CUMULATIVE IMPACTS

Consistent with CEQ guidelines and the process of determining overall environmental consequences, direct and cumulative impacts associated with the Proposed Action and the consequences of subsequent related actions must be evaluated. According to CEQ, cumulative impacts represent the "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes other actions (see 40 CFR § 1508.7). Cumulative impacts can result from individually minor, but collectively significant actions taking place over time. According to Chapter 15 of the Desk Reference, the significance of cumulative impacts should be determined in the same manner as the significance of direct and indirect impacts. In some cases, cumulative impacts from other proposed or implemented project(s), in conjunction with the direct and indirect impacts from the Proposed Action or alternative(s) may together yield significant impacts and lead to a finding of significance, even though the direct and indirect impacts from the proposed action or alternative(s) alone are not significant.

Cumulative impacts were determined for projects occurring within the past three years and projects within the next five years (see Table 5-12). Past projects are defined as those that have undergone NEPA review by the FAA and/or have been constructed. Future projects have been identified by the County under the Airport Capital Improvement Program (ACIP) and have not undergone NEPA review.

The geographic area of concern for this analysis is generally the Airport property. For some resources, such as socioeconomics, impacts may extend further, and the geographic area of concern is larger. The time period for cumulative effects analysis is the cycle during which the project is expected to affect a resource, ecosystem, or human community, if that is the case.

Not including this EA, since 2014 there have been twelve (12) single and complete actions subject to NEPA reviews that have been processed by the FAA for projects at TTN, including.

- Four (4) was categorized by the FAA as an EA

- Eight (8) were categorized as Categorical Exclusions (CATEX) with minimal impacts

Past projects reviewed by the FAA took into account the cumulative impacts on the environment and each other. Each of the reviews and findings were published by the FAA. All of the reviews were performed by the staff of the FAA in the Harrisburg Airports District Office.

The environmental impacts of potential future Airport projects would be analyzed in separate environmental documents, reviewed by the FAA, and by permitting/approval regulatory agencies. These projects would be designed to avoid, minimize, and/or mitigate environmental impacts on Airport property.

Projects reviewed for cumulative impacts are presented in the following table. These actions have been implemented, are under current planning, or are anticipated in the near future to bring the Airport into compliance with federal design standards, remove critical obstructions, improve safety of Airport operations, and improve the facility's infrastructure.

Cumulative Impacts Comparison

Chapter 4—Affected Environment, describes the existing environmental conditions within the project study area. These conditions serve as a baseline for comparison of past, present, and foreseeable future projects to assess cumulative impacts.

This comparison only considers the environmental categories impacted by the proposed project along with the previous projects and future projects. These categories include:

- Biological resources (habitat and T&E species)
- Hazardous materials
- Water resources (surface water, riparian zones, and wetlands)
- Construction impacts

Past Projects (Reviewed under NEPA)

Rehabilitate Runway 6-24- The project involved pavement rehabilitation and overlay of bituminous pavement, grading, lighting, signage, and pavement markings for 6,006' long by 150' wide runway. Due to the minor nature of the project with no associated earth disturbance, no environmental resources were impacted as a result of the project.

Reconstruct Taxiway H & B- Included within this project was the reconstruction and overlay of bituminous pavement, grading, lighting, signage, drainage, and pavement markings for 2,500' long by 75' wide Taxiway H and 1,200' long by 75' wide Taxiway B. Since this project was a replacement of existing infrastructure with no new areas of disturbance, no environmental resources were impacted for this project.

Reconstruct Taxiway D/Rehabilitate Taxiway G- The Taxiway D aspect of the project included removal of 8,333 square yards of existing pavement, relocation of Taxiway D, and reconstruction and overlay of bituminous pavement, grading, lighting, signage, drainage, and pavement markings

for 1,950' long by 50' wide taxiway. The Taxiway G construction consisted of pavement rehabilitation and overlay of bituminous pavement, grading, lighting, signage, and pavement markings for 1,300' long by 50' wide taxiway. The project occurred on areas that were previously disturbed with no new areas of disturbance, and therefore, no environmental resources were impacted.

Construct Scotch Road Remote Parking Lot- The project involved construction of a paved parking lot to accommodate 800 vehicles (approximately 29,040 square yards). The project included constructing a paved overflow parking lot to accommodate parked vehicles and rental car operations. The limit of disturbance was 10.15 acres with a total impervious area of 6 acres (29,040 square yards). The project did not result in impacts to T&E species, hazardous materials, or wetland/water resources.

Construct Taxiway F and Taxiways D & G Connector- The project involved the removal of 19,444 square yards of existing pavement, reconstruction and overlay of bituminous pavement, grading, lighting, signage, drainage for 2,200' long by 50' wide taxiway. Construction of bituminous pavement, grading, lighting, signage, drainage, and pavement markings for a connector taxiway 2,300 feet long by 50 feet wide. The Taxiway "F" separation distance from taxiway centerline to runway centerline did not comply with federal design standards so the project brought the Airport up to standard. In addition, the taxiway crossed the runway non-perpendicular, which did not meet FAA geometry requirements. The reconstruction/relocation of the existing Taxiway "F" project involved the removal of approximately 15,300 square yards of pavement between Taxiway "E" and Runway 6-24 and the construction of approximately 30,000 square yards of new pavement for the relocated parallel Taxiway F (2,200 feet long x 50 feet wide). Construction included paving, drainage, lighting, grading and pavement markings. The project did not result in impacts to T&E species, hazardous materials, or wetland/water resources.

Redevelopment of Former Naval Air Warfare Center- The redevelopment consisted of demolition of existing buildings, excavation, installation of new building foundations to construct an FBO hangar/building and overlay of pavement. Redevelopment of the Former Naval Air Warfare Center accommodated a current fixed base operator who has outgrown their current facility. Approximately 10 acres of the site accommodated a new 100,000 square foot building and provided approximately 37,300 square yards of aircraft parking apron. The apron was repaved. The project did not result in impacts to T&E species, hazardous material impacts, or wetland and water resources.

RPZ and Obstruction Removal Project- The project involves the on and off-airport obstruction removal of 30.7 acres of tree obstructions. Impacts to T&E species within the project area will be avoided/mitigated to the extent necessary. The project will result in impacts to 18.2 acres of upland forest, 5.2 acres of upland field, and 4.2 acres of forested wetland (restored to 4.2 acres of scrub-shrub/emergent wetland).

Civil Air Patrol Building Demolition- The project involved the demolition of the one-story Civil Air Patrol Building (approximately 3,100 square feet) and the site was seeded. No T&E species, hazardous materials, or wetland/water resource impacts resulted from the project.

Table 5-12: Cumulative Impacts Table

Project Name	Description	Past Impacts/Anticipated Future Impacts	Construction Date
Past Projects (Undergone NEPA Review)			
Rehabilitate Runway 6-24	Pavement rehabilitation and overlay of bituminous pavement, grading, lighting, signage, and pavement markings for 6,006' long by 150' wide runway.	No impacts to T&E species, no impacts to hazardous materials, and no impacts to wetlands or water resources resulted.	2017-2018
Reconstruct Taxiways H & B	Reconstruction and overlay of bituminous pavement, grading, lighting, signage, drainage, and pavement markings for 2,500' long by 75' wide Taxiway H and 1,200' long by 75' wide Taxiway B.	No impacts to T&E species, no impacts to hazardous materials, and no impacts to wetlands or water resources resulted.	2015 -2017
Reconstruct Taxiway D / Rehabilitate Taxiway G	Taxiway D: Remove 8,333 square yards of existing pavement, relocate Taxiway D, and reconstruction and overlay of bituminous pavement, grading, lighting, signage, drainage, and pavement markings for 1,950' long by 50' wide taxiway. Taxiway G: Pavement rehabilitation and overlay of bituminous pavement, grading, lighting, signage, and pavement markings for 1,300' long by 50' wide taxiway.	No impacts to T&E species, no impacts to hazardous materials, and no wetland or water resources impacts resulted.	2017-2018
Construct Scotch Road Remote Parking Lot	Construction of a paved parking lot to accommodate 800 vehicles (approximately 29,040 square yards).	No impacts to T&E species, no impacts to hazardous materials, and no wetland or water resources impacts resulted.	2019-2020
Construct Taxiway F and Taxiways D & G Connector	Removing 19,444 square yards of existing pavement, reconstruction and overlay of bituminous pavement, grading, lighting, signage, drainage for 2,200' long by 50' wide taxiway. Construction of bituminous pavement, grading, lighting, signage, drainage, and pavement markings for a connector taxiway 2,300 feet long by 50 feet wide.	No impacts to T&E species, no impacts to hazardous materials, and no wetland or water resources impacts resulted.	2019-2020
Redevelopment of Former Naval Air Warfare Center	Demolition of existing buildings, leaving existing building slabs and foundations intact, excavation, installation of new building foundations to construct an FBO hangar/building and overlay of pavement.	No impacts to T&E species, no hazardous materials were encountered, and no impacts to wetland or water resources resulted.	2019-2020
RPZ and Obstruction Removal Project	On and off-airport obstruction removal of 30.7 acres of trees.	Impacts to T&E species within the project area will be avoided/mitigated to the extent necessary, impact of 18.2 acres upland forest, 5.2 acres upland field, 4.2 acres forested wetland (restored to 4.2 acres scrub-shrub/emergent wetland).	2021-2024
Civil Air Patrol Building Demolition	Demolition of the one-story Civil Air Patrol Building, approximately 3,100 square feet and site was seeded.	No T&E species, hazardous materials, or wetland/water resource impacts.	2019
Change in ALP Golf Course and Public Utility Parcels to Non-Aeronautical	Certain facilities on-airport property had been historically non-compliant with aeronautical uses. Some were sold, others were maintained as airport property with a change to non-aeronautical designation.	No impacts to T&E species, no impacts to hazardous materials, and no wetland or water resources impacts resulted.	2018
Parallel Taxiway B and Taxiway A Reconstruction Project	Reconstruction of Taxiway A and construction of a segment of new taxiway between existing TW J/A intersection and TW B/H intersection to create a full parallel taxiway to Runway 6-24.	No impacts to T&E species and no wetland or water resources impacts anticipated." The project is located within known historic fill areas.	2021-2024
Parcel A	FBO project.	No impacts to T&E species, no impacts to hazardous materials, and no wetland or water resources impacts anticipated."	2021

Wetland Restoration- Northeast of Runway 24	Restoration of a wetland area northeast of Runway 24 that was damaged by tree trimming operations, also included installation of a deer exclusion fence.	No impacts to T&E species and no impacts to hazardous materials resulted. Project was initiated to provide wetland restoration and a deer exclusion fence from the area.	2019
Anticipated Future Projects			
Construct SRE/Maintenance Building	Construction of a combined snow removal equipment storage and maintenance facility.	No proposed T&E species, hazardous materials, or wetland/water resource impacts.	2021
Construct Replacement Electrical Building	Demolition of existing electrical building and construction of a building.	No T&E species impacts proposed, no proposed hazardous materials impacts, and no proposed wetland or water resource impacts.	2021
Rehabilitate / Extend Taxiway E	Pavement rehabilitation and overlay of bituminous pavement, grading, lighting, signage, and pavement markings for 1,500' long by 75' wide taxiway. This also includes extending Taxiway E 1,300' to intersect with Runway 6-24 and Taxiway B.	No impacts to T&E species anticipated, no impacts to hazardous materials, and no wetland or water resources impacts resulted.	2021
Extend Taxiway H	Construction of 2,200' long by 50' wide taxiway with access taxiway, grading, lighting, signage, drainage, and pavement markings.	Potential wetland impacts of 0.02 scrub-shrub wetlands	2023
Construct Replacement Air Traffic Control Tower	Demolition of the existing air traffic control tower and construction of a new air traffic control tower along with rerouting of electrical and control circuits on the airfield to the new tower.	No proposed impacts to T&E species, hazardous materials, noise, air, or wetland/water resource impacts are anticipated.	2023
Construct Deicing Containment Facility	Construction of a paved deicing pad adjacent to a gate area, taxiway or runway, a collection system with separate storage facility, and a drainage system separate from the airport's stormwater system. A preliminary location has been identified but could change during design of the project.	No proposed T&E species, hazardous materials, or wetland/water resource impacts.	2024
Extend Taxiway F	Construction of 2,200' long by 50' wide taxiway with access taxiways, grading, lighting, signage, drainage, and pavement markings.	No proposed wetland impacts	2024

Source: McFarland-Johnson, Inc., C&S Companies, and Urban Engineers

Change in ALP Golf Course and Public Utility Parcels to Non-Aeronautical- Certain facilities on-Airport property had been historically non-compliant with aeronautical uses. Some were sold, others were maintained as Airport property with a change to non-aeronautical designation. Since this project was a change in aeronautical to non-aeronautical, no impacts to T&E species, no hazardous material impacts, and no impacts to wetland or water resources resulted.

Parallel Taxiway B and Taxiway A Reconstruction Project-The project involves the reconstruction of Taxiway A, including minor modifications to the lighting system. The project also includes the construction of a segment of new taxiway between existing Taxiway J/A intersection and Taxiway B/H intersection to create a full parallel taxiway to Runway 6-24. No impacts to T&E species or wetland and water resources are anticipated. The project is located within known historic fill areas.

Wetland Restoration-Northeast of Runway 24- The proposed project was initiated to provide wetland restoration of a wetland that was damaged by tree trimming operations, and a deer exclusion fence. No impacts to T&E species and no impacts to hazardous materials resulted from the project.

Anticipated Future Projects

Detailed project information is not available for the foreseeable future projects. In order to provide an anticipated level of impact, preliminary information was used. This included the currently approved ALP drawing, ACIP, recent meetings held, and similar projects at other airports.

Construct SRE/Maintenance Building- The proposed project consists of the construction of a combined snow removal equipment storage and maintenance facility. No proposed impacts to T&E species, hazardous materials, or wetland/water resource impacts are anticipated.

Construction Replacement Electrical Building- The proposed project includes the demolition of the existing electrical building and construction of a new building. No proposed impacts to T&E species, hazardous materials, or wetland/water resource impacts are anticipated.

Rehabilitate/Extend Taxiway E- The proposed project consists of pavement rehabilitation and overlay of bituminous pavement, grading, lighting, signage, and pavement markings for 1,500' long by 75' wide taxiway. This also includes extending Taxiway E 1,300' to intersect with Runway 6-24 and Taxiway B. No impacts to T&E species, hazardous materials, or wetland/water resources impacts are expected.

Extend Taxiway H- The proposed project includes the construction of 2,200' long by 50' wide taxiway with access taxiway, grading, lighting, signage, drainage, and pavement markings. No impacts to T&E species or hazardous materials are anticipated. There are potential impacts of 0.2 acre of scrub-shrub wetland.

Construct Replacement Air Traffic Control Tower - The proposed project includes the demolition of the existing air traffic control tower and construction of a new air traffic control tower (ACTC) along with rerouting of electrical and control circuits on the airfield to the new tower. The project is not connected to the Proposed Action. The planning, design, and construction of the new air traffic control tower and demolition of the existing tower is not connected to the planning, design, and construction of the new terminal or new ARFF facility for which this EA addresses. No

proposed impacts to T&E species, hazardous materials, noise, air, or wetland/water resource impacts are anticipated.

Construct Deicing Containment Facility- The proposed project includes the construction of a paved deicing pad adjacent to a gate area, taxiway or runway; a collection system with separate storage facility; and a drainage system separate from the Airport's stormwater system. A preliminary location has been identified but could change during design of the project. No proposed impacts to T&E species, hazardous materials, or wetland/water resource impacts are anticipated.

Extend Taxiway F- The proposed project involves the construction of 2,200' long by 50' wide taxiway with access taxiways, grading, lighting, signage, drainage, and pavement markings.

5.13.1. Construction Impacts

Temporary and short-term impacts to air quality, noise, traffic, and solid waste may occur during construction phase. All these impacts are temporary and would not result in long-term and permanent impacts to the environment or surrounding land. BMPs would be implemented to further minimize temporary and control the risk of unanticipated and unforeseen incidental impacts. Unavoidable wetland impacts have been minimized as the result of the Proposed Action. In addition, the Proposed Action does not propose additional operations and there are no plans for additional operations.

Projects disturbing more than one acre of land would require a NJPDES permit. Projects would be designed in accordance with the NJPDES permit, current NJDEP New Jersey State Standards and Specifications for Erosion and Sediment Control, and the current New Jersey State Stormwater Management Rules.

Construction activities are short-term and temporary in nature, and usually do not cause significant adverse environmental impacts at airports. The cumulative project impacts include short-term construction impacts that will not create long-term adverse impacts. FAA construction standards will be adhered to during construction and BMPs would be implemented when necessary, thus no cumulative effects related to construction activities are anticipated.

Based on the above information, it is not anticipated that implementation of the Proposed Action contributes significantly to cumulative impacts. In determining the significance of the impacts associated with the Proposed Action, the overall impact of project components detailed in the EA and the consequences of other related projects were considered.

5.13.2. Summary

Due to the lack of environmental resources present within the project areas at TTN and the limited amount of impacts to the natural and human environment, cumulative impacts are not a significant issue for the Proposed Action. All the previously discussed impacts associated with the Proposed Action are considered less than significant. Table 5-1 included at the beginning of this chapter summarizes the level of anticipated impacts which would be a result of the Proposed Action. It should be noted that the Proposed Action would minimize and lower the risk of potential long-term direct and indirect impacts, and would result in cumulative environmental benefits (positive impacts) such as:

- Improved safety and security
- Relieve terminal building operational capacity constraints
- Enhanced internal vehicular circulation system
- Promote a more efficient ground operations and improved aviation operations helping TTN to maintain their revenue
- More efficient and environmentally oriented ground operations
- Adequate stormwater capacity and treatment of runoff
- Compensatory mitigation of potential environmental impacts in off-site areas that provide greater long-term ecological value than the jurisdictional areas to be affected
- Support current jobs associated with the TTN operations and promote temporary construction jobs in the community

Mitigation commitments would be implemented to offset unavoidable impacts to wetlands, riparian zones and DRCC stream corridors. The compensatory mitigation would strive to achieve a goal of no net loss according to the ecological values and functions. The compensatory wetland mitigation would involve off-site mitigation and the purchase of mitigation bank credits in coordination with the NJDEP and DRCC. Proper permitting would be obtained in accordance with local, state, and federal regulations.

Since the project would be developed in phases, the Proposed Action would be required to meet NPDES permit requirements, protecting water quality in the vicinity of the Airport. Additionally, appropriate state and federal permits would be required prior to construction. The permit applications review process would include an evaluation of the permit history and would assure that cumulative impacts would be avoided. Given the preliminary nature of the Proposed Action, during the final architecture and engineering design stages, projects elements would be further analyzed, and environmental impacts continue to be evaluated in more detail and in coordination with mitigation actions.

5.14. LIST OF ANTICIPATED PERMITS AND APPROVALS

The following section discusses permits, approvals, or reviews which may be required for the Proposed Action:

Executive Order 11990

The Proposed Action includes new construction located within wetlands that cannot be avoided, and therefore, an EO 11990 “Wetland Finding” must be prepared by the FAA to document compliance with the order and that the wetland impacts are justified. The finding must be made in the Finding of No Significant Impact (FONSI) or Record of Decision (ROD) and documentation necessary to support the finding must be contained in the NEPA document.

NJDEP Freshwater Wetlands Letter of Interpretation (LOI)

An LOI is issued by the NJDEP to verify the presence or absence of wetlands, State open waters, or transition areas, and their boundaries. LOIs also determine the resource value classification of a wetland when present, thus indicating the width of the regulated transition area. An LOI does not provide authorization to conduct a regulated activity. When requesting an LOI, a Division of Land Use Regulation Application Form must be completed, in addition to all requirements at N.J.A.C. 7:7A Subchapter 4. Once issued, an LOI is valid for five years, unless it is determined that the LOI is based on inaccurate or incomplete information, in which case the NJDEP would void the original letter and reissue a revised LOI reflecting the actual conditions onsite. An LOI may be extended one time for an additional five years provided the information upon which the original LOI was based remains valid. Obtaining an LOI may expedite processing of a general or individual freshwater wetland permit application.

Applications for LOIs were prepared and submitted to the NJDEP for the ARFF Study Area and Terminal Replacement Study Area to verify the limits and resource values of onsite freshwater wetlands. The LOI for the ARFF Study Area was issued by the NJDEP on September 18, 2020 (NJDEP File #1102-12-0002.5 FWW190001). The LOI for the Terminal Replacement Study Area has also been reviewed by the NJDEP and very minor modifications are being made to satisfy their concerns. The LOI for the Terminal Replacement Study Area was issued by the NJDEP on March 24, 2021. The LOI applications and NJDEP determination letters are included in Appendix H.

Freshwater Wetlands General Permit or Freshwater Wetlands Individual Permit

Typically, Freshwater Wetlands General Permits are required for regulated activities that will cause minor impacts on freshwater wetlands and state open waters; cause minimal adverse environmental impacts when performed separately; and have only minimal cumulative adverse impacts on the environment. Requirements and thresholds for all general permits are outlined in N.J.A.C. 7:7A Subchapter 7. Mitigation would be required for certain General Permits if limits on disturbance are exceeded. If General Permit thresholds are exceeded or if a regulated activity does not qualify for a General Permit, a NJDEP Freshwater Wetlands Individual Permit would be required. Individual Permits are outlined in N.J.A.C. 7:7A Subchapter 9 and require wetland mitigation in the form of wetland creation, restoration, or enhancement, mitigation bank credit purchase, monetary contribution, preservation, or a land donation. Once issued, a Freshwater Wetland General Permit or Individual Permit are valid for a period of five years and may be extended one time for an additional five years.

The Proposed Action would result in direct impacts to state open waters, freshwater wetlands, and wetland transition areas; therefore, authorization from the NJDEP Division of Land Use Regulation may be required in accordance with the NJFWPA Rules at N.J.A.C. 7:7A.

A Pre-Application Meeting would be arranged with the NJDEP prior to the preparation and submission of any Freshwater Wetlands Permit Applications. Early coordination with the NJDEP would provide important feedback and would help avoid or minimize unnecessary delays during the review process.

Wetland Transition Area Waiver

Pursuant to N.J.A.C. 7:7A Subchapter 8, a Transition Area Waiver may be required. Any person proposing to engage in regulated activities (those activities outlined in N.J.A.C. 7:7A-2.3), within 150 feet of an exceptional resource value wetland, or within 50 feet of an intermediate resource value wetland shall apply to the NJDEP for a transition area waiver. The NJDEP's authorization of certain activities under a statewide general permit or individual permit may automatically include a transition area waiver.

Water Quality Certification

Section 401 of the CWA provides the authority to ensure that federal agencies do not issue permits or licenses that violate their water quality standards. Pursuant to N.J.A.C. 7:7E and N.J.A.C. 7:7A, Water Quality Certification (WQC) is required for all projects involving a federal permit for the discharge of dredged or fill material into waters of the United States and/or their adjacent wetlands. WQC insures consistency with state water quality standards and management policies. Projects within the jurisdiction of the Freshwater Wetlands Protection Act shall receive a decision on certification concurrently with a Freshwater Wetlands or State Open Water Permit.

Delaware & Raritan Canal Commission (DRCC)

As discussed in Chapter 4, the Proposed Action is located within the DRCC's jurisdictional Review Zone B. The Proposed Action would automatically be considered a "major project," since it would disturb one (1) acre or more of land and would result in the cumulative coverage, since January 11, 1980, of one quarter acre of land with impervious surface, as defined at N.J.A.C. 7:45-1.3. Therefore, approval from DRCC would be required.

Review of visual, historic, and natural quality impact is only required for projects situated in Zone A. Review of traffic impacts is required for any major project within one mile of any portion of the Canal State Park and having direct access to a road that enters Zone A. The Proposed Action does not appear to be within one mile of any portion of the Canal State Park and having access to a road that enters Zone A. Therefore, review of visual, historic, natural quality, and traffic impacts is not anticipated. DRCC review of stormwater runoff quantity and water quality impact (N.J.A.C. 7:45-8), as well as evaluation of stream corridor impacts (N.J.A.C. 7:45-9) would be required.

Soil Erosion and Sediment Control Plan (SESCP) Certification

New Jersey has required the management of soil erosion and stormwater from virtually all non-agriculture, construction-based soil disturbances through its adoption of the NJ Soil Erosion and Sediment Control Act (N.J.S.A. 4:24-39 et seq). Implemented by the Department of Agriculture (NJDA) and the state's soil conservation districts, the act requires all construction activities greater than 5,000 square feet to be developed in accordance with a plan to control erosion during construction. The plan must also ensure that erosion would not occur once construction is completed. The SESCP would be submitted to the Mercer Soil Conservation District (SCD).

NJ Pollution Discharge Elimination System (NJPDES)

Pursuant to Section 402 of the CWA, stormwater discharges from certain construction activities are unlawful unless they are authorized by a NPDES permit or a similar state permitting program.

The NPDES stormwater program regulates stormwater discharges from municipal separate storm sewer systems (MS4s), construction activities, and industrial activities. Generally, projects that disturb one of more acres require a Construction General Permit (CGP). The proposed project would disturb greater than one acre of land and would therefore require a New Jersey CGP. The issuance of a NJPDES permit for stormwater discharges associated with construction activities requires the preparation of a Stormwater Pollution Prevention Plan (SPPP). Permit conditions and approvals would ensure the proposed activities would not violate water quality standards.

The Proposed Action would disturb more than one acre of land and therefore, would require a NJPDES permit. First, a Soil Erosion and Sediment Erosion Control Plan Certification must be obtained by the Mercer County Soil Conservation District. The project would be designed in accordance with the NJPDES permit, current NJDEP New Jersey State Standards and Specifications for Erosion and Sediment Control, and the current New Jersey State Stormwater Management Rules. Appropriate BMPs would address potential impacts to water quality from stormwater runoff during and following construction. Also, temporary erosion and sediment controls would be implemented to avoid impacts to water quality during the construction of the proposed project.

NJDEP Flood Hazard Area

The NJDEP prohibits most activities within 25-feet of the top of bank of a regulated water and regulates certain activities in regulated waters, flood hazard areas, and riparian zones. A permit or authorization is required from the NJDEP prior to conducting a regulated activity in a regulated water, flood hazard area, or riparian zone.

The NJDEP would issue a Flood Hazard Area Verification to provide an official determination on the flood hazard area design flood elevation, the flood hazard area limits, the floodway limits, and/or the riparian zone limits on or within a portion of a site. A Flood Hazard Area Verification does not provide authorization to conduct activities within regulated areas. A Verification may be required prior to or concurrent with a Flood Hazard Area General Permit or Individual Permit application. A request for a Flood Hazard Area Verification was prepared and submitted to the NJDEP for the ARFF Study Area. The NJDEP issued a Flood Hazard Area Verification for the ARFF Study Area on May 12, 2020 (NJDEP File No. 1102-12-0002.5 LUP 200001), which verified the limit or extent of the flood hazard area, riparian zone, and flood hazard area design flood elevation associated with the tributary to West Branch Shabakunk Creek; a copy of the Flood Hazard Area Verification is included in Appendix C. A Flood Hazard Area Verification has not yet been requested for the Terminal Replacement Study area. A Verification will be requested concurrently with the Flood Hazard Area permit application for the Terminal Replacement project.

The NJDEP would issue a General Permit-by-Certification or General Permit for specific construction activities which have been determined to have minimal impacts on flooding and the environment. Requirements and thresholds are provided in Subchapter 8 of N.J.A.C. 7:13 for all General Permit-by-Certifications and in Subchapter 9 for all General Permits. If General Permit or General Permit-by-Certification thresholds are exceeded or if a regulated activity is not covered by same, a NJDEP Flood Hazard Area Individual Permit would be required. The requirements and limits of Individual Permits are outlined in Subchapters 10, 11, and 12 of the Rules. Riparian zone mitigation would be required if limits on disturbances are exceeded or for all impacts occurring in a 300-foot riparian zone. Riparian zone mitigation requirements are discussed in detail in N.J.A.C. 7:13 Subchapter 13. Once issued, a Flood Hazard Area General Permit, General Permit-by-

Certification, or Individual Permit are valid for a period of five years from the issuance date and may be extended one time for an additional five years.

The Proposed Action would result in direct impacts to FHAs and riparian zones; therefore, authorization from the NJDEP Division of Land Use Regulation would be required in accordance with the NJDEP Flood Hazard Area Control Act Rules at N.J.A.C. 7:13.

A Pre-Application Meeting would be arranged with the NJDEP prior to the preparation and submission of any Flood Hazard Area Permit Applications. Early coordination with the NJDEP would provide important feedback and would help avoid or minimize unnecessary delays during the review process.

Mercer County Soil Erosion and Sediment Control Plan

The Soil and Sediment Control Act of 1976 stipulates that any project proposing more than 5,000 square feet of soil disturbance must have a Soil Erosion and Sediment Control Plan certified by the local District to ensure that the project meets State Standards.

Water Quality Management Plan Consistency Determination

Pursuant to N.J.A.C. 7:15-1 et seq., projects affecting water quality and requiring NJPDES permits or Treatment Works Approval (TWA) and that receive approval from the NJDEP Commissioner, are subject to a determination of water quality management consistency (WQMC).

TTN is subject to NJPDES regulations and could require TWA. Therefore, WQMC is required to assure that projects do not conflict with the statewide and area-wide Water Quality Management Plans. Review of this application is by the NJDEP Division of Water Quality.

5.15. PUBLIC PARTICIPATION

Public involvement for development of the Proposed Action and Draft EA was conducted in accordance with FAA Order 1050.1F, "*Environmental Impacts Policies and Procedures*". The Proposed Action was discussed at numerous meetings and correspondence with stakeholders, including the Mercer County Freeholders, representatives of the Airport, USFWS, NJDEP, EPA, DRCC, FAA, and the public.

Methods of public outreach have included notifications through printed publications (newspaper), the Mercer County website, the project website (www.ttnterminal.com), emails using previous lists of attendees for the Master Plan and EA public meetings, emails and notifications to Lower Makefield, community groups, previous attendees and commenters from the Master Plan or previous EA meetings, Mercer County Facebook page, and other social media. A website for the Airport's AMPU and this EA was developed and provides public outreach information (see www.ttnterminal.com). Frequently Asked Questions regarding this EA are provided on the website and will be updated continually throughout the EA process.

As of August 2020, a Public Scoping Meeting, and one Public Meeting have been held. An additional Public Hearing will be scheduled during the public comment period.

Public participation documentation including the public notice, public comments and response to public comments are provided in **Appendix I** of this EA.

5.15.1. Public Scoping Meeting

A public scoping meeting was held at Element Hotel on October 23, 2018, in Ewing New Jersey. 88 individuals signed into the meeting. The meeting consisted of a brief recap of the Master Plan and ALP process and introductory presentation about the meeting purpose and desired outcomes. The public scoping meeting was held as schematic design began for the Terminal design and minimal work had been performed beyond the initial programming and concept development prior to the meeting for presentation. An hour-long question and answer session followed the presentation. Preceding and following the presentation, workstations were set up and utilized to solicit input from attendees by requesting responses to open-ended questions pertaining to preparation of the future NEPA document. Topics included: Specific concerns related to the project; Social, economic, and environmental resources that should be addressed; Federal, state, local agencies that should be engaged in the NEPA process; A number of comments were submitted during the meeting on comment sheets and after the meeting via email correspondence. 54 individual comments, some lengthy, were received (see **Appendix I).**

The comments were generally consistent in tone and content with those received as part of the preceding Master Plan Update. As with the Master Plan Update, most common topics included statements that an Environmental Impact Statement should be completed, noise, air quality, water quality, impact on the community, and cumulative impacts. The comments received were generally as expected. No new information that necessitated a modification to the original scope of work was received.

5.15.2. Public Meeting/Hearing

A public meeting was held on January 23, 2019 at the West Trenton Ballroom. The format was similar to the public scoping meeting in October 2018 and consisted of a presentation of the EA process, Purpose and Need, and Alternatives developed to date, followed by Q&A. The initial alternative concepts for the Terminal, Roadway and Aircraft Rescue and Fire Fighting Facility locations were presented. The public meeting focused on the terminal alternatives that had been developed and include the options for Terminal Alternatives 4A, 4B, and 4C. Advancement of the rebuild/reconstruction (Alternative 3) and advancement of the initial concepts (Alternatives 4A, 4B, 4C) were advanced in programming, planning, and design from early 2019 through the end of 2019. Those concepts and the preferred alternative (4C) are substantively the same except for the one roadway alternative that was determined to be not practical.

The question and answer session of one hour followed the presentation. Public comments from the public were received on comment sheets and via email. The alternatives presented at that meeting were substantively the same in terms of location and general layout as what is presented in Chapter 3 except for one roadway concept that was quickly identified as impractical and therefore dropped from consideration when three- dimensional design was initiated. Comments received were similar to those received at the October 23 meeting. Comments included noise, cumulative impacts, and requests for an EIS. An EIS is prepared when one or more environmental

impacts of a proposed action would be significant and mitigation measures would not reduce the impact(s) below significant levels. As stated in Section 5, the environmental analysis concluded that due to the nature and location of the project and implementation of site-specific best BMPs and mitigation measures, the Proposed Action would result in limited environmental impacts and would not significant to the natural and human environment.

The Draft EA will be released for public review later in 2020, after it has been thoroughly reviewed by the FAA. After issuance of the Draft EA to the public, considering COVID-19, a virtual Public Hearing will be held and consist of a brief presentation of the Draft EA followed by comments from the public. The virtual Public Hearing is anticipated to occur in Winter 2021. Public notifications are published in the Trenton Times and Bucks Courier Times, provided on the Mercer County website (www.mercercounty.gov), and sent out via Mercer County email subscribers. In accordance with FAA Order 5050.4B, public notice of the hearing will occur 30 days prior to the hearing date and the public will have a minimum of 10 days following the hearing to provide comments.

5.15.3. Public and Agency Comments

Mercer County has and will continue to accept comments throughout the EA process. All comments received throughout the process will be included in the project record and responses would be prepared as appropriate. If needed, the Draft EA will be revised to address received comments. The comments and responses will be reviewed by the FAA. Substantive comments, comments relating to the environmental impacts due to the Proposed Action, on the EA will be addressed, as applicable.

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6. LIST OF PREPARERS

This Environmental Assessment was prepared by the following companies (in alphabetical order) and professionals involved in the preparation of the document:

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