TWEED
NEW HAVEN
AIRPORT

Tweed New Haven Airport

NEPA Draft Environmental Assessment
Runway 02-20 Extension and
Terminal Expansion Program

March 2023

McFarland Johnson

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

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Date

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Federal Aviation Administration
New England Region |Airports Division

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LIST OF ACRONYMS

Acronyms	*Names*
ACEIT	Airport Construction Emissions Inventory Tool
ACRP	Airport Cooperative Research Board
ADG	Aircraft Design Group
ADRM	Airport Development Reference Manual
AEDT	Aviation Environmental Design Tool
AFFF	Aqueous Film Forming Foam
ARFF	Aircraft Rescue and Firefighting Facility
BDL	Bradley Airport
BMPs	Best Management Practices
CDC	Center for Disease Control and Prevention
CEPA	Connecticut Environmental Policy Act
CEQ	Council on Environmental Quality
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CFR	Code of Federal Regulations
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
CT DEEP	Connecticut Department of Energy and Environmental Protection
CTDOT	Connecticut Department of Transportation
CY	Cubic Yards
dba / dB	Decibel
DNL	Day/Night Average Sound Level
EA	Environmental Assessment
EIS	Environmental Impact Statement
EJ	Environmental Justice
EMAS	Engineered Materials Arresting System
EPA	U.S. Environmental Protection Agency
EWR	Newark Liberty International Airport
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
FONSI	Finding of No Significant Impact
GHG	Greenhouse Gas
GIS	Geographic Information System
GPS	Global Positioning System
H_20	Water
HPN	Westchester County Airport
HVN	Tweed New Haven Airport
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IPaC	Information for Planning and Conservation
JFK	John F. Kennedy International Airport

LGA	La Guardia Airport
MALSF	Medium-Intensity Approach Lighting System with Sequenced Flashers
MSL	Mean Sea Level
N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NAVAID	Navigation Aids
NDDB	CT DEEP Natural Diversity Data Base
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NLR	Noise Level Reduction
NMFS	National Marine Fisheries Service
NO_2	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration
NO_X	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
O_3	Ozone
OSHA	Occupational Safety and Health Administration
OSTA	Connecticut Department of Transportation Office of State Traffic Administration
PAPI	Precision Approach Path Indicators
PFAS	Per- And Polyfluoroalkyl Substances
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctane Sulfonate
PM	Particulate Matter
PVD	Rhode Island T.F. Green International Airport
RCRA	Resource Conservation Recovery Act
REILs	Runway End Identifier Lights
RON	Remain Overnight
SF	Square Feet or Square Footage
SHPO	State Historic Preservation Office
SO_2	Sulfur Dioxide
SPCC	Spill Prevention Control and Countermeasure
SWPPP	Stormwater Pollution Prevention Plan
TCO_2e	Tons of carbon dioxide equivalents
TSA	U.S. Transportation Security Administration
US	United States
USACE	United States Army Corps of Engineers
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VASI	Visual Approach Slope Indicator
VOC	Volatile Organic Compound
WOTUS	Waters Of The United States

1. INTRODUCTION

The Environmental Assessment (EA) addresses the foreseeable environmental, social, and economic consequences associated with the proposed extension of Runway 02-20 and construction of a new airport terminal ("East Terminal") and associated facilities at Tweed New Haven Airport (HVN or the Airport). See **Table 1-1** and **Table 1-2** for a description of the Proposed Action. The EA has been prepared in accordance with guidelines from the Federal Aviation Administration (FAA) set forth in FAA Orders 1050.1F, *Environmental Impacts: Policies and Procedures,* and *5050.4B, National Environmental Policy Act Implementing Instructions for Airport Actions* and 40 Code of Federal Regulations (CFR) Parts 1500-1508, the FAA 1050.1F Environmental Desk Reference Version 2, dated February 2020, and is in conformance with the National Environmental Policy Act (NEPA) of 1969 and the Council on Environmental Quality (CEQ) regulations. 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 preparation of an Environmental Impact Statement (EIS) or will issue a "Finding of No Significant Impact" (FONSI).

HVN is a public airport, constructed in 1929, that plays a vital role in the regional transportation system for accommodating aviation activity and airline passenger travel, with regularly scheduled commercial service in southern Connecticut (CT). HVN is classified as non-hub primary commercial service facility[1] in the FAA National Plan of Integrated Airport Systems (NPIAS). HVN offers business and leisure travelers convenient access to major urban areas while maintaining the multitude of advantages of a regional airport, including shorter check-in times and less congestion. HVN is owned by the City of New Haven and occupies approximately 437 acres. The location for the proposed new terminal (the East Terminal Area) is leased and operated by Avports. The remainder of the Airport, including the runway, is leased by the Tweed-New Haven Airport Authority (TNHAA or "the Authority"), and managed by Avports. HVN is located three (3) miles southeast of downtown New Haven, New Haven County (CT), and is located within the municipal boundaries of the City of New Haven and the Town of East Haven. The HVN physical address is 155 Burr Street, New Haven, CT 06512. The Airport is situated near New Haven Harbor and Morris Cove where the mouth of the Quinnipiac River flows into New Haven Harbor. Existing facilities at the HVN[2] include one (1) active runway (5,600 feet long), designated Runway 02-20; a taxiway system (Taxiways A-J); two (2) aprons (West Ramp and East Ramp); terminal building (originally constructed as Airport's first hangar and recently remodeled); three (3) conventional hangars; fuel farm; Aircraft Rescue and Firefighting (ARFF) and operations facility; Air Traffic Control Tower; vehicle parking; and associated infrastructure.

HVN is one of two airports with regularly scheduled commercial service in Connecticut.[3] Bradley Airport (BDL) is the other commercial service airport in Connecticut. Alternative airports used by New Haven area passengers include BDL, Westchester County Airport (HPN) in New York State, Rhode Island T.F. Green International Airport (PVD), or the New York City area airports: La Guardia Airport (LGA), John F. Kennedy International Airport (JFK), and Newark Liberty International Airport (EWR). **Figure 1-1** is a Location Map showing the HVN property over a U.S. Geological Survey (USGS) Topographic Map.

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[1] Receives less than 0.05 percent but more than 10,000 of the annual U.S. commercial enplanements.
[2] HVN formerly had a crosswind runway, Runway 14-32. Runway 14-32 is decommissioned.
[3] https://en.wikipedia.org/wiki/List_of_airports_in_Connecticut; https://www.airport-data.com/usa-airports/state/Connecticut.html

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Figure 1-1: Location Map

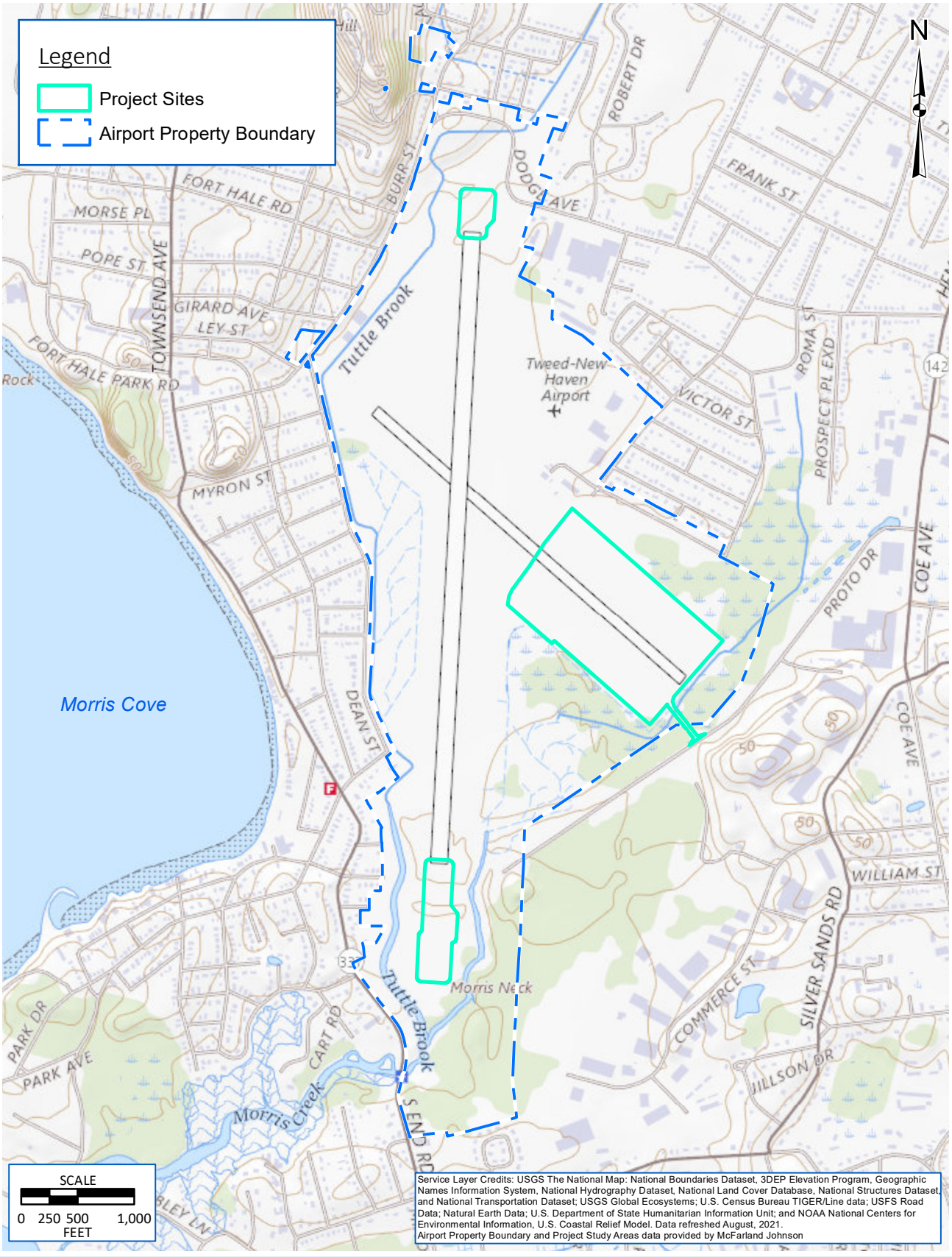

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Figure 1-2 includes an Aerial Image with the location of HVN. An Airport Layout Plan was conditionally approved by the FAA, pending NEPA and airspace review of proposed development, in 2021 as part of a Master Plan Update.

The 2021 Master Plan Update identified specific development options and multiple possible improvements to better accommodate passengers of the Greater New Haven region, address terminal congestion, and improve airside and landside operations, including extension of Runway 02-20 and the replacement of the existing terminal (West Terminal) with a new terminal development on the east side of Airport property. Chapter 2 (Purpose and Need) details the Proposed Action.

The 2021 Master Plan Update conducted a market analysis that identified HVN as one of the most underserved airports in the country. The HVN is centrally located and there are over 2.2 million people residing within 30 miles of the Airport. Additionally, New Haven and the Airport's catchment area are subject to a thriving bioscience, technology, and innovation hub, which are cornerstones in the region's economic development and influence airport demand. As demonstrated in the past grant applications from the Small Community Air Service Development Program,[4] which is designed to help communities to address air service and airfare issues, airlines have expressed interest in serving HVN; however, the existing 5,600-foot runway length has prevented them from doing so. For example, in a February 2020 letter, Allegiant indicated interest in serving HVN but indicated a runway "of approximately 6,000 feet" would be required. In November 2021 Avelo first launched service at HVN, being New Haven the first East Coast base for the airline, initially serving 4 destinations in Florida. As of Summer 2022, Avelo was serving 14 destinations with 84 weekly departures. Avelo has also identified the need to extend Runway 02-20. See Appendix A, (which includes Avelo's performance engineering analysis data) for a detailed analysis and justification of runway length requirements. Avelo is the only airline currently offering commercial services at HVN However, as a public airport, HVN is available to other carriers that may be interested in serving HVN in the future. As of this writing, there are no firm proposals from other carriers to serve HVN.

Nationally, airlines have reported a strong rebound in travel from the impacts of the COVID-19 pandemic. During the low points experienced in mid-April 2020, the U.S. Transportation Security Administration (TSA) screened approximately four (4) percent of the volume of passengers nationwide that it screened the same day in 2019. Led by domestic leisure travel, air travel began to slowly rebound later in April 2020 and by Summer 2021 passenger screenings were approaching 2019 numbers.[5] By early 2022, airlines were struggling to accommodate the strong demand. Accordingly, airlines have focused on adding capacity to leisure destinations, such as Florida, instead of traditional business hubs.[6] American Airlines, the only air carrier previously serving HVN at the start of the COVID-19 pandemic, reduced, then paused, then re-started limited service at HVN between Spring 2020 and late Summer 2021. American Airlines left the market permanently in September 2021 as schedules and connections opportunities were apparently not viewed as desirable by the market, as demonstrated by the relatively low load factors occurring at that time[7].

[4] Grant program designed to help small communities address air service and airfare issues.
[5] TSA throughput data accessed at https://www.tsa.gov/coronavirus/passenger-throughput in December 2021.
[6] Airlines Are Ditching Business Hubs and Rerouting Flights to Florida, Eric Rosen, Luxury Travel, Feb. 8, 2021, accessed Sep. 23, 2021. https://www.bloomberg.com/news/articles/2021-02-08/airlines-are-ditching-business-hubs-and-rerouting-flights-to-florida.
[7] Analysis provided by HVN indicates that load factors experienced by American in the second and third quarters of 2021 ranged from 43-77%. American reported system wide load factors of 77.0 and 77.8% respectively during those same periods.

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Figure 1-2: Aerial Map

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The relative underperformance of HVN routes combined with the widely reported industry-wide pilot shortage were likely factors in American's decision to exit HVN after 10 years of operations. These factors created a need for HVN and the airline service network to modify services offered in response to changing markets for air services, and better aircraft utilization to serve a region that is underserved by providing routes point-to-point (i.e., nonstop services) at affordable cost fares for passengers. Avelo's growth at HVN demonstrates the strength of the existing market and previously unmet need for convenient air service in southern Connecticut.

1.1. DESCRIPTION OF PROPOSED ACTION

A plan has been established for HVN to provide the required infrastructure to support immediate and foreseeable needs for commercial and general aviation at HVN. HVN proposes the extension of Runway 02-20 and the replacement of the existing West Terminal with a new terminal ("East Terminal") on previously disturbed land on the east side of the Airport property ("Proposed Action"). The following tables provide details of the Proposed Action.

Table 1-1: Proposed Runway Improvements

Proposed Runway Improvements		
AIRSIDE	Runway 02-20 Extension	• Extension of Runway 02-20, which entails approximately an additional 639 feet at Runway 02 end and 336 feet at Runway 20 end. • Adjust runway elevation and profile according to runway design to be compliant with FAA standards. • Construction of Engineered Material Arresting System (EMAS)[8] at Runway 02 end. • Existing lighting system that assists pilots in identifying the end of the runway (the Medium Intensity Approach Lighting System with Sequenced Flashers, a system of 7 rows of light bars) would be removed and replaced by another (Runway End Identifier Lights, just 2 lights) at the Runway 02 end. • Incidental grading, stormwater drainage, runway stripes and markings for runway extension. • Relocate, adjust, and calibrate navigation aids for the relocated Runway 02 threshold. • Install runway edge lighting, guidance signs, and other accessory features to fully comply with FAA design standards.

Sources: McFarland Johnson and PGAL, 2022.

Based on the Master Plan Update, the recommended Runway 02-22 extension is approximately 975 feet, for a total runway length of approximately 6,635 feet. During the preparation of this EA, the runway extension was further evaluated taking into consideration more recent available information (e.g., wetland delineation and preliminary grading plan). In an effort to minimize environmental impacts, the TNHAA (sponsor) in consultation with the airport's operators determined that a 60 feet reduction to the proposed runway extension could avoid construction impacts within tidal wetlands. Therefore, the proposed runway

[8]EMAS uses crushable material placed at the end of a runway to stop an aircraft that overruns the runway. The EMAS is a passive safety system that quickly de-accelerates an aircraft and brings it to a safe stop in case of an overrun.

length would be approximately 6,575 feet and accomplishes the Purpose and Need discussed in **Chapter 2,** while fully complying with FAA design and safety standards. The operational impact of this reduction is expected to be minor compared to the benefits of avoiding filling tidal wetlands adjacent to Runway 02-20. See **Chapter 3** (Alternatives) for details on selection of the Preferred Alternative.

Table 1-2: Proposed Terminal Area Development

	Proposed Terminal Area Development	
LANDSIDE	New East Terminal Building	• Replacement of existing West Terminal with the construction of a new terminal building ("East Terminal") on the east side of the Airport with an approximate gross square footage (SF) (functional area) of 80,000 SF, with four (4) gates and two (2) additional boarding positions (6 total). • Existing West Terminal would be closed to commercial air traffic. Future use is to support airport administration and operations. • Security fencing and access gate relocation/installation. • Incidental site work, including grading, stormwater management system and connection to existing on-site utilities such as electricity, water, wastewater, telephone and internet, and site work activities.
	New Apron at East Terminal	• Construction of a new aircraft apron, with an area of approximately 462,500 SF, including ancillary site elements, which would serve the new East Terminal. The aircraft apron would include two (2) Remain Overnight (RON) parking positions. The aircraft apron would include a collection system for spent aircraft de-icing fluid. • Construction of an access taxilane from the terminal apron to the existing Taxiway B. • Incidental site work, including deicing pads, grading, stormwater management system and utilities. • Removal of a FAA owned decommissioned VOR. Distance Measuring Equipment (DME) co-located with the VOR would be decommissioned and removed. The VOR and co-located DME are located within the footprint of the proposed terminal area improvements. The DME co-located with the localizer would remain in its current location and would be unaffected by the Proposed Action.
	New Vehicle Parking and Access Road	• Construction of approximately 4,000 new parking spaces consisting of a combination of surface parking and parking garage with an approximate footprint of 816,887 SF, to serve the new East Terminal. • Construction of a bridge and new two-lane airport access road from Proto Drive and associated improvements. • Installation of electrical lighting, wayfinding, signage, landscaping associated with new parking. • Incidental site work, including grading, stormwater management system and utilities.

Sources: McFarland Johnson and PGAL, 2022.

Refer to **Figure 1-3** for an illustration of the Proposed Action. The Proposed Action takes into consideration the Airport's location within the 100-year floodplain and would incorporate resiliency measures, such as raising the finished floor elevation above the 100 year flood elevation, placing key building mechanical systems in a raised mezzanine or roof top location where they would be above flood elevation, and site design considerations to promote drainage and make facilities flood resistant(see **Chapters 3** and **Section 5.14.3**). The proposed East Terminal would be constructed on piers, raising the finished floor elevation above mean sea level. The space below the finished floor elevation would be left open to allow floodwater to pass. Additionally, the Proposed Action would take place within the airport property and within an existing airport dedicated easement. The new access road would connect with existing Proto Drive; therefore, limited construction would occur within public rights-of-way which mainly entails roads in the immediate vicinity of the Airport. No private property is intended to be acquired as part of the Proposed Action.

1.2. ROLES AND RESPONSIBILITIES FOR THE PROPOSED AIRPORT IMPROVEMENTS

This EA evaluates development at the Airport related to the Airport Layout Plan changes that could potentially impact environmental, human and cultural resources. FAA's role, as the Lead Agency, is to review and issue a findings statement, and if appropriate, to approve the Proposed Action in accordance with 49 U.S.C. §47107(a)(16) and Section 163 of the FAA Reauthorization of 2018 (P.L. 115-254). Associated with these changes, TNHAA would seek federal grant funding through the FAA's Airport Improvement Program for the proposed activities in this EA, once the FAA issues an environmental finding.

1.2.1. REGULATORY BASIS

Airport projects that include proposed federal actions (e.g., unconditional Airport Layout Plan approval and fundings requests including Passenger Facility Charge[9] applications, Airport Improvement Program[10] grants, and other grant programs administered by the FAA) require a federal environmental determination. Per statutory and regulatory requirements, the FAA must evaluate the environmental consequences of proposed changes to the approved Airport Layout Plan.[11] The Airport Layout Plan serves as a critical planning tool that depicts both existing facilities and planned development at the Airport. Airports that receive Federal assistance must maintain a current Airport Layout Plan. This involves a systematic and multidisciplinary approach that verifies compliance with the requirements of the NEPA. NEPA is a federal statute that requires federal agencies to consider and evaluate the potential environmental impacts of a proposed action and factor them into the decision-making process. The CEQ Regulations set the standards for implementing NEPA compliance and directing federal agencies to develop their own procedures. FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, provides the FAA's agency-wide policies and procedures for ensuring compliance with NEPA and the CEQ Regulations.

This EA meets the requirements of the NEPA; CEQ regulations; FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*; and FAA Order 5050.4B, *NEPA Implementing Instructions for Airport Actions*. Since the Project has not received state funding, the Connecticut Environmental Policy Act (CEPA) is not applicable. As required by NEPA and the implementing regulations from CEQ and FAA, the alternative of

[9] FAA Order 5500.1, Passenger Facility Charge, Effective August 9, 2001.

[10] Airport Improvement Program (AIP) Handbook: FAA Order 5100.38D, Change 1. Effective date: February 26, 2019.

[11] FAA AC 150/5300-13B, Airport Design, Section 1.7. Effective date: March 30, 2022.

taking no action is evaluated, providing a baseline for comparison of potential impacts from the action alternative (i.e., the Proposed Action).

1.2.2. FAA Reauthorization Act - Part 163 Applicability and NEPA

Section 163 of the FAA Reauthorization Act of 2018, which amended 49 U.S.C. 47107(a)(16), narrowed the scope of FAA's Airport Layout Plan approval authority. The FAA completed a Section 163 determination (see **Appendix B**) for the Proposed Action and determined it lacked approval authority over certain project elements. However, the environmental, social, and economic consequences of all elements because 1- they are connected actions and 2- to maintain the ability to use future Airport Improvement Program, Passenger Facility Charge, or other FAA administered funding programs. See **Appendix B** for FAA's determination of Part 163 and NEPA applicability for the Project as per their letter dated August 09, 2021. This is also consistent with FAA's updated Section 163 Guidance.[12]

1.3. AGENCY COORDINATION AND PUBLIC INVOLVEMENT

The CEQ gives Federal agencies instructions on NEPA's public involvement process at 40 CFR 1506.6. In addition, FAA Order 5050.4B requires notice and opportunity for public involvement under the NEPA process. To meet the requirements, HVN announced its intent to present an EA pursuant the to the NEPA by issuing a notice of availability (NOA) for the Draft EA. The Draft EA is available for public review at the HVN website (https://www.tweedmasterplan.com/nepa-documents) and Airport offices at 155 Burr Street, New Haven, CT 06512. Throughout the NEPA review process, HVN and the FAA seek input in writing from the public and federal, tribal, state and local agencies. The NEPA process for this Draft EA would include a 45-day public comment period, starting from publication of the NOA in local newspaper, giving time to the public, interested agencies, organizations and Native American tribes to provide input and comments on all aspects of the Draft EA. All substantive written comments received during the 45-day public comment period would be considered in preparing the Final EA.

During the preparation of the EA, HVN conducted coordination with federal and state regulatory agencies. Correspondences from regulatory agencies are include in **Appendix C**. Also, for the preparation of the Draft EA, a public information meeting was held on November 18, 2021, to inform the public about the proposed action and NEPA process. The meeting was held in person at Nathan Hale School Cafeteria, 480 Townsend Ave, New Haven, CT 06512, from 6:00 pm to approximately 9:00 pm. In addition, two (2) project advisory committee meetings were held virtually on January 13, 2022, and October 27, 2022, respectively. See **Appendix D** for details of public involvement details and agency coordination. Since the project information meeting, around 380 public comments were received by the project team, via email (hvn-ea@mjinc.com) and project website form[13], in advance and outside the 45-day public comment period for the Draft EA. These comments were reviewed and considered during the preparation of the Draft EA, as applicable. See **Appendix D** public involvement details.

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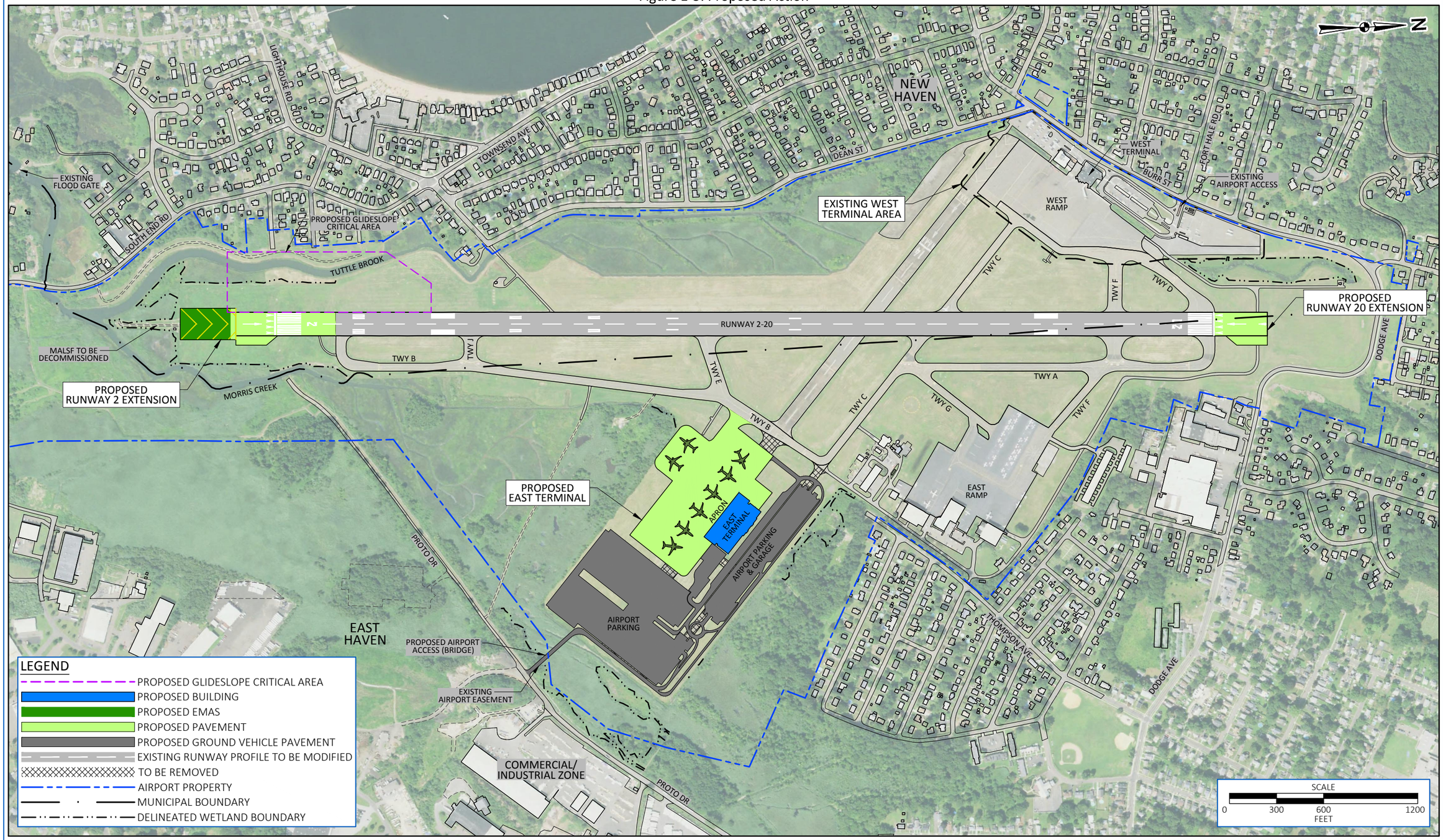
[12] FAA, *Updated Instructions to Airports District Offices and Regional Office of Airports Employees Regarding Airport Layout Plan Reviews and Projects Potentially Affected by Section 163 of the FAA Reauthorization Act of 2018* (Aug. 3, 2022) (clarifying that if FAA has Airport Layout Plan approval authority over any portion of the project, then the FAA retains approval authority over the entire project).

[13] https://forms.office.com/Pages/ResponsePage.aspx?id=uye6bBwUskKOciL3LjtelSGv73avpqFDoXyxlT2gfHdUMFJVNUg3NldPVjA5SE9QV1hIUFg0MjE2Mi4u

Figure 1-3: Proposed Action



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2. PURPOSE AND NEED

The purpose of the Proposed Action is to provide airfield and terminal area facilities to accommodate existing and reasonably foreseeable aircraft operations and passenger volumes. The Airport Authority's goal is to ensure that HVN can efficiently meet current and future aviation needs by improving airside and landside operations. HVN needs to strive for better utilization of available land (currently underutilized) to support existing tenants and airport dependent users. The Proposed Action would improve the operational flexibility resulting in a more efficient and sustainable airport, address the +$1.8 million annual State and City subsidy, and provide better landside access through non-residential areas avoiding the New Haven and East Haven neighborhoods.

2.1. PURPOSE

The EA continues a process that began with the Master Plan Update completed in 2021. The Master Plan Update (see www.tweedmasterplan.com) identified a near term need for various airfield and terminal area improvements to accommodate expected demand at HVN. The FAA's interest in the Proposed Action (in addition to being lead agency for purposes of NEPA) includes Airport Layout Plan approval, safety, grant authorization, and Airport Improvement Program/ Passenger Facility Charge approval. The goal of the Proposed Action is to enhance efficiency and terminal area capacity and alleviate the operational constraints at HVN while ensuring the Airport continues to develop in order to provide an airport facility that reliably and safely offers consistent and adequate level of service for the forecasted demand. The Proposed Action would allow HVN to respond effectively and efficiently to current needs, future changes, and towards air service improvements in southern Connecticut. Specifically, the Project would address operational constraints through the runway extension and replacement of existing terminal with a new East Terminal. This would include associated landside (parking and roadways) infrastructure and aircraft parking areas in a manner that efficiently utilizes the available land within the airport developed footprint. This includes:

- Proposed Action is projected to be constructed and operation by 2026 to address severe operational deficiencies.
- Runway and apron areas sized to safely accommodate aircraft with 150-200 seats (such as the Boeing 737 and Airbus A320 aircraft families) serving primarily domestic U.S. markets.
- Construct all facilities to comply with applicable design and safety standards (e.g., FAA, Building Code, etc.).
- Accommodate current and forecasted passenger demand during peak hours:
    - Sufficient terminal gates sized to accommodate the current and projected aircraft fleet mix.
    - Sufficient modern space in public areas within the terminal (i.e., check-in, security screening, passenger hold room areas, concessions, and restrooms) that provides the right amount of space to avoid or minimize overcrowding or very long queues of waiting passengers, and efficiently process arriving and departing passengers.

- Sufficient concourse corridor widths to provide an optimum level of service as defined by International Air Transport Association and meet Americans with Disability Act requirements.
- Sufficient terminal curbside space for loading and unloading vehicles near the terminal to reduce vehicle wait times and improve pedestrian safety, while simultaneously meeting TSA recommendations for the setback of ground transportation areas from passenger terminals.

- More intuitive and direct roadway connections that minimize use of access corridors through residential areas.
- Better use of underutilized and previously developed "on-airport land".
- In order to avoid impacts on land use and adjacent property and utilize the existing airport land, the proposed airport improvements should be constructed within existing HVN property boundaries and/or easement areas.[14]
- Improve the resiliency and sustainability of the airport passenger terminal.
- In accordance with the U.S Department of Transportation (USDOT) Climate Action Plan (Aug 2021) elements of the project would be designed to ensure that federal dollars are used wisely and that building structures would be planned, designed, and constructed to be resilient to climate change as appropriate.
- Continue and expand HVN's role in regional economy by enhancing convenient access to air travel and job creation in New Haven and East Haven.

2.2. NEED

The needs for the Proposed Action at HVN are presented below and in greater detail in the following sections. These include:

- Need to accommodate existing and projected demands including adequate runway length, apron and taxilane space to provide efficient operations and reduce payload / weight penalties, imposed by the existing runway length for existing and anticipated aircraft, while complying with FAA safety and design standards.
- Address and reduce incompatible land use immediately surrounding the Terminal area in an effort to mitigate the impact of terminal operations on nearby residential areas.
- Need for modern and resilient terminal facilities to comfortably accommodate passenger needs with sufficient gate and apron capacity that can efficiently manage existing and forecasted passenger demand and aircraft movement.
- Need for efficient and safe terminal roadways and curb frontages within the existing airport boundary comply with TSA recommendations.
- Need to provide sufficient curbside access, adequate parking, and improved traffic flow.

[14] A search of vacant properties near HVN, conducted in July 2022 found one available parcel comprising seven (7) acres within five (5) miles of HVN. That parcel was surrounded by residential land use and contained wetlands. Thus, given the lack of suitable parcels, land acquisition is not a practical solution for addressing the project Purpose and Need.

- Need to utilize existing Airport property, to avoid land use impacts and environmental impacts to the extent necessary, to accomplish the Proposed Action.

2.2.1. Summary of Expected Aviation Activity

As shown in **Table 2-1** below, 2022 actual Air Carrier/ Air Taxi Operations and enplanements exceeded the FAA approved forecasts for HVN and are expected to continue to grow through 2031. It is anticipated that as the airline becomes established at HVN, load factors[15] would rise to the low-cost carrier[16] average of approximately 85 percent and more frequencies would be added over time. Peak hour passengers, which are dictated by aircraft size and flight schedule) drive terminal sizing needs while aircraft type and stage lengths (flight distances) drive runway length needs.

Table 2-1: Summary of Expected Aviation Activity [Note 1]

Scenario	Enplanements	Air Carrier/Air Taxi Operations	Total Operations
2025 Master Plan Update Forecast	82,273	5,267	25,219
2021 (actual)	29,372	3,600	40,031[Note 3]
2022[Note 2] (actual)	351,506	5,650	26,372
2026 No Action	665,334	11,680	35,321
2026 Proposed Action	665,334	9,928	33,569
2031 No Action	1,222,551	19,856	43,702
2031 Proposed Action	1,222,551	16,352	40,198

[Note1] *Sources:* FAA, 2021 Master Plan, Avelo Airlines Preliminary Schedule, Avports Analysis, McFarland Johnson Analysis.
[Note2] *Sources*: Avelo Airlines and OPSNET Report
[Note3] Local general aviation operations (typically flight training and pleasure flying) increased 97% between 2019 and 2021.

As described in **Appendix A**, enplanements and scheduled departures are expected to grow from the 12 daily (average) to an average 22 daily departures[17] in 2031, and approximately 1.2 million enplanements. The average 22 daily departures assumes that Runway 02-20 extension progresses, allowing for use of 189 seat aircraft. If the Runway 02-20 extension is not completed, an average of 27 daily departures using 147 seat aircraft would be required to meet the projected demand.

2.2.2. Runway 02-20 Extension

The 2021 Master Plan found that a runway length of 6,635 feet is the recommended feasible length that meets the operational performance of aircraft using HVN within the physical constraints at HVN and would accommodate expected general aviation and commercial service aircraft operations and destinations while complying with FAA design and safety standards. The Master Plan analysis focused on potential operations by the Airbus A320 and Boeing 737 families of aircraft. These families of aircraft are similar in size and

[15] Load factor is the ratio of passengers to available seats.
[16] A Low-Cost Carrier is an airline that does not offer traditional services that are normally included as part of the fare, thereby offering lower fares.
[17] As an existing sub-daily carrier (less than daily), Avelo's daily schedule will vary based on demand, and other factors determined by the airline.

performance[18] and are in widespread use around the world. HVN currently has commercial and general aviation operations by multiple aircraft types that are weight limited[19] by the existing runway length (5,600-feet).

As described in **Appendix A** (Runway 02-20 Length Eligibility Analysis), Avelo operates a mix of Boeing 737-700 and 737-800 aircraft. Avelo desires to increase the percentage of the 737-800 aircraft at HVN. The airline currently operates those aircraft at other airports and has constructed its business model around those models. On May 6, 2021, Avelo announced it was creating a base at HVN which became operational in November 2021. Avelo's based fleet at HVN is expected to be predominantly 800s by the end of 2031. Existing Boeing 737-800 operations at HVN are limited to 162 seats due to the existing runway length, which is termed payload constraint, meaning some number of passengers would not be accommodated (e.g., airline would block seats from sale). In other words, the 189 seat Boeing 737-800 is limited to 162 passengers to operate on the existing runway. Extension of the runway would allow the airline to meaningfully reduce the weight penalty, allowing for more efficient operations. Over the long term, the runway extension would allow use of aircraft with higher seat capacity compared to the no action alternative.

In summary, the Master Plan Update determined that 6,635 feet of runway length is recommended, both for commercial and general aviation operations, to reduce existing weight penalties and accommodate anticipated near-term fleet mix changes. In an effort to minimize environmental impacts, the TNHAA (sponsor) in consultation with the airport's operators determined that a 60 feet reduction to the runway extension proposed in the Master Plan Update could avoid construction within tidal wetlands. Therefore, the proposed runway length would be approximately 6,575 feet and accomplishes the Purpose and Need discussed in **Chapter 2,** while fully complying with FAA design and safety standards. The operational impact of this reduction is expected to be minor compared to the benefits of avoiding impacts to tidal wetlands. See **Chapter 3** (Alternatives) for details.

2.2.3. New Terminal Development including Building, Apron, Vehicle Parking, and New Airport Access Road ("East Terminal")

The new terminal is needed to meet accepted airport terminal design best practice / guidance, including sufficient space for a comfortable environment and acceptable wait times, as described within the International Air Transport Association (IATA) Airport Development Reference Manual (ADRM, 11th Edition). The Proposed Action would address existing chronic and severe passenger terminal area congestion, lack of comfort and services due to significantly undersized and outdated facilities, and non-standard land use compatibility of the terminal area with adjacent land use.

[18] A considerable number of factors are taken into consideration when determining aircraft performance and the runway requirements that must be met for an aircraft to use a particular runway. These include (but are not limited to) airport elevation, aircraft weight, temperature, longitudinal slope of the runway, aircraft engines, thrust settings, and runway conditions (dry/wet/icy/contaminated) per FAA AC 150/5325-4B, Runway Length Requirements for Airport Design.

[19] Weight limits mean that aircraft operate at less than their maximum payload. This is accomplished by reducing fuel, passengers, and/or baggage. Reducing the fuel on board limits the distance an aircraft can fly. Reducing passengers and baggage means that aircraft operate with empty seats.

Terminal Congestion - Existing Condition

2.2.3.1. Existing Terminal Deficiencies

A new terminal building of approximately 80,000 SF is needed to meet optimum IATA ADRM level of service. The existing building ("West Terminal") is outdated and severely undersized for near-term traffic growth. The existing terminal (built in 1980) was converted from a hangar and as such was never intended to be a passenger terminal. The terminal building can no longer comfortably accommodate passenger levels. The existing terminal was modified by adding temporary modular structures to accommodate the growth in operations and enplanements that began in November 2021. The existing terminal is cramped and layout flow path from check in to the gate is confusing for passengers and not efficient. Passengers arriving at the terminal enter a modular building to check in, then carry their luggage back outside, to re-enter the main terminal area to drop off their luggage for security screening and then proceed to the checkpoint.

Existing Undersized Hold Room with Insufficient Seating Does Not Meet Optimal Level of Service

Moreover, the existing terminal ("West Terminal") building abuts Tuttle Brook and is located in the 100-year floodplain and is prone to flooding during large storm events. Most recently, the existing terminal experienced flooding in 2019[20] and 2021[21] during storm events. The existing terminal was constructed without consideration of modern resiliency concepts and therefore terminal operations are at risk of severe disruption during future storm events. Consequently, the existing terminal cannot be expanded in the current location due to flood risk and lack of available space.

The new terminal would address concerns about flooding of the existing terminal and climate change by incorporating resiliency concepts into the final design of the terminal.

20 Tweed back in business after flooding forces temporary halt to commercial travel by Mark Zaretsky and Ben Lambert. July 23, 2019, accessed Oct. 20, 2021 <https://www.nhregister.com/news/article/Heavy-rains-flood-Tweed-Airport-terminal-tarmac-14115464.php#item-85307-tbla-5>.
21 Update: New Haven's Tweed Airport, Union Station Flooded by Ellyn Santiago, Patch Staff. Jul. 9, 2021, accessed Oct. 20, 2021 <https://patch.com/connecticut/newhaven/new-havens-tweed-airport-union-station-flooded-gov-en-route>.

Appendix E (PGAL Tweed Airport New Haven East Terminal Development) includes a programming level analysis of the terminal size requirements utilizing the following industry-wide airport terminal design standards and assumptions:

- IATA's ADRM, 11th Edition – Optimum[22]
- Airport Cooperative Research Board (ACRP) Report 25, *Airport Passenger Terminal Planning and Design*
- Estimated average daily departures (2031): 22
- Annual enplanements: approximately 1,200,000 (2031) (189 seats, 22 average daily departures week, assumed 85% load factor)

The existing terminal currently meets code; however, concessions are limited due to space constraints and the hold rooms are sized for the 50-80 seat aircraft that formerly served HVN, making them severely undersized to comfortably accommodate the number of passengers carried by aircraft currently serving the Airport.

With the proposed runway extension and the reduction of weight penalties, more seats would be allowed to be sold on each aircraft which would exacerbate the crowded terminal conditions currently experienced by passengers using HVN. Increased passenger volumes would need to be monitored to ensure that the existing terminal maintains code requirements. Passengers arriving by air at HVN would continue navigating a maze of hallways and corridors to retrieve their luggage. Additionally, there are extreme space limitations during extended flight delays which becomes a safety issue regarding the gate areas. Overall, the existing terminal is difficult to navigate and not intuitive and is operating as poorly as expected given the more than ten-fold increase in enplanements expected in 2022 when compared to 2019 enplanements.

Current projections anticipate an average of 22 daily departures and over 1-million annual enplanements in 2031 under both the No Action and Action scenarios. Nearly doubling the number of daily departures would worsen already overstressed terminal operations. Parking, queuing for ticketing and security screening, baggage screening and baggage claim would all be excessively long. It is likely that queue for certain terminal functions such as ticketing would require passengers to wait outside, exposed to the elements. Overall, the existing terminal would provide an unacceptable passenger experience. However, it is also expected that given a choice between traveling to a more distant airport and enduring the poor passenger experience at HVN passengers would continue to choose HVN due to the convenience of using a "close to home" airport offering direct flights to desirable destinations.

Furthermore, aircraft power and pre-conditioned air are not available at the existing terminal. Due to the numerous constraints with the existing terminal, the existing building cannot be upgraded effectively and is not practical from a financial standpoint. Therefore, aircraft are powered, and climate controlled on the ground by running their onboard auxiliary power unit[23]or ground power unit[24]. Although functional, use of auxiliary power unit, and ground power unit's is an inefficient method of powering critical aircraft systems during the boarding/de-boarding process, discharging air emissions and noise on nearby residents. The

[22] Optimum LOS is defined as: "Sufficient space to accommodate the necessary functions in a comfortable environment" and "acceptable waiting times." ADRM 11th edition.

[23] Auxiliary Power Unit (APU) is a mini jet engine installed in the tail of the aircraft that can power all essential electrical and electronic systems without requiring any external aid.

[24] Aircraft Ground Power Unit (AGPU) is a type of aircraft ground support equipment that supplies electrical power to the aircraft from ground when its jet engines are turned off. AGPU is generally used when the aircraft is parked at an aircraft stand.

noise from the auxiliary power unit, ground power unit, as well as from aircraft starting, push back from the boarding position, and taxiing permeates the close by residential neighborhood west of Burr Street, which includes residences less than 400 feet from the closest terminal parking position.

Moreover, even if the existing terminal could be upgraded, it would remain an inappropriate solution for the long-term demand because the existing location points of high vehicle traffic congestion, which is inefficient, increases delays and decreases capacity of the overall airport system. Parking is in short supply, requiring passengers to circulate through the lots seeking a parking space, leading to further congestion and unnecessary engine idling. Avports is actively exploring options to expand parking capacity; however, suitable sites are in short supply. HVN recently announced the availability of remote parking at a downtown New Haven site with shuttle service to the Airport to address the existing parking shortfall and is pursuing additional temporary on-site parking to solve the existing parking shortage. Passengers arriving at the Airport by ground generally travel from I-95, then South on Townsend Ave, then east on Fort Hale Road. Fort Hale Road is a treelined, narrow road that traverses an otherwise quiet residential area. Traffic calming measures have been implemented; however, the volume of traffic corresponding to the increase in enplanement activity is not compatible with the surrounding residential neighborhood. Addressing the access to HVN is critically important to the community.

The analysis shown in **Appendix E** demonstrates the need for an approximately 80,000 SF terminal building to accommodate forecast enplanements as an "Optimum" level of service, as defined by IATA's ADRM, 11th Edition. A summary of the terminal space requirements based on passengers need by 2031 is shown in the **Table 2-2**.

Table 2-2: Summary of Existing vs Required Space Allocation by Functional Area

Terminal Functional Area	Existing Provision (SF)	2031 Need (SF)	Deficiency (SF)
Number of Gates	3 Gates	4 Gates[25]	-1 Gate
Check-In/Ticketing	1,648	5,225	-3,577
Outbound Baggage Screening and Makeup	751	3,450	-2,699
Passenger Security Screening Checkpoint	1,356	11,615	-10,259
Secure Hold rooms	3,376	9,800	-6,424
Baggage Claim and Inbound Baggage Handling	7,769	8,785	-1,016
Concessions	1,090	10,175	-9,085
Other Functions/Employee Space/Tenants	5,810	30,775	-24,965
Temporary Modular - Offices	11,060	0	0
Total	32,860	79,825	**-46,965**

[25] The quantity of gates was determined using a projected 2031 flight schedule. The projections were developed through consultation with air carriers, aviation expertise, AVPORTS expertise, and economic probabilities. The projected daily flight schedule provides minute by minute departures and arrivals of planes which drives the necessary quantity of gates. In addition, the number of passenger enplanements (annually) are factored into the analysis. IATA was used to provide guidance on architectural programming when evaluating quantities of ticket counters, TSA inspections, hold rooms, and gates, based on peak passenger throughput periods each day.

2.2.3.2. New Apron

As described in **Appendix E**, approximately 468,000 SF of apron space is needed to serve the new East Terminal and safely accommodate Boeing 737 and Airbus A320 families of aircraft (Aircraft Design Group III), providing FAA standard clearances for aircraft and ground support equipment movements and maneuverability. The proposed apron addresses inefficiencies currently experienced at the existing West Terminal and lack of available apron space, which would alleviate aircraft / ground support equipment conflicts and provide an improved level of safety for ground crews and equipment operating in close proximity to parked and taxiing aircraft. A larger apron with drainage, pavement markings, signage, and lighting in accordance with FAA design and safety standards would improve personnel, equipment, and aircraft safety. Additional details on net changes in impervious area as a result of the Proposed Action are described in **Chapter 5**.

Avelo Airlines started service at HVN in November 2021 with Boeing 737-700 aircraft due to the airport's runway limitations and has designated the Airport as its East Coast base. Beginning in July 2022, the airline began operations at HVN using Boeing 737-800 with weight restriction limiting the aircraft to 162 seats maximum. The weight restriction would be significantly reduced with the runway extension, allowing the aircraft to operate at their full 189 seat capacity. The airline's operating model is that aircraft return to their base every night. This means there needs to be enough overnight parking spaces (remain overnight apron space) for all aircraft returning at the end of the day to be parked at the Airport overnight. There is an existing need for five (5) aircraft to RON at HVN in 2022. This need increases to seven (7) remain overnight aircraft within the planning period with one (1) spot for contingencies (e.g., maintenance issues or aircraft unexpectedly remaining overnight for other reasons) for a total of eight (8) aircraft spaces. As noted previously the RON spaces are configured for Aircraft Design Group III (ADG-III) and would accommodate commonly used single aisle aircraft such as Embraer E-Jet, Canadair Regional Jet, Boeing 737, and Airbus A320 families of aircraft. The existing apron on the West Ramp can accommodate five (5) aircraft, one stand not capable of serving the longest of the ADG-III aircraft such as the Boeing 737-800. The existing apron has limited capacity and does not fulfill the Airport the needs nor the rapidly increasing demand for seven (7) to eight (8) spaces. See **Table 2-3** below for a summary of apron parking position need.

Table 2-3: Terminal Aircraft Parking Needs

Parking Position	Existing Provision	2031 Need	Deficiency
Gate Positions	3	4	-1
RON	2[26]	3	-1
Contingency	0	1	-1
Total	5	8	**-3**

2.2.3.3. New Vehicle Parking

Approximately 1,128 automobile parking spaces are currently available on the West Side (including employee, rental car, and transportation network/ridesharing-taxi staging area). The existing on-airport parking supply is inadequate and approximately 4,000 new automobile parking spaces would be needed in 2031 to provide adequate parking capacity to accommodate the traveling public, airport and airline employees, concessionaires, and other airport users. The parking demand analysis conducted as part of

[26] One existing remain overnight (RON) parking position cannot accommodate existing fleet mix due to length.

this EA can be found in **Appendix E**. The existing parking spaces would no longer be utilized for passenger use; however, they would be available for airport staff parking and airport operations support.

2.2.3.4. New Airport Access and Improvements

Access to the existing West Terminal is predominantly via Townsend Avenue and Fort Hale Road. As described elsewhere, Fort Hale Road is a narrow residential street that is not compatible with its use as an airport access road. Additionally, during the preparation of the Master Plan Update, residents often reported that airport traffic often "stages" on Fort Hale Road and the surrounding residential neighborhood, occupying on-street parking that would otherwise be used by the residents, and idling for extended periods of time. Providing a more direct access route that avoids residential neighborhoods and is able to support the traffic to the Airport, is a key goal of the project. New access that favors compatible land use and safe and efficient routes between the terminal and I-95 is needed.

HVN needs a new airport access road that bypasses most residential areas and provides standard roadway sizing for the existing and expected peak hour demand and terminal location. The new access must provide guidance signage to and from the airport and comply with Connecticut Department of Transportation (CTDOT) safety and design standards.

2.3. SUMMARY

The Proposed Action is needed to accommodate current and forecasted passenger demand during peak hours, provide sufficient airfield capacity to the extent practicable, to accommodate existing and projected demands including adequate runway length, apron and taxilane space, provide a safe terminal space to comfortably accommodate passenger needs with sufficient gate and apron capacity that can efficiently manage existing and forecasted passenger demand and aircraft movement, ensure sufficient parking facilities, provide appropriate ground access, and ensure the Airport is financially self-sufficient.

Collectively, the proposed terminal and runway improvements would provide the necessary upgrades for the purpose of addressing the established needs of HVN as detailed in the conditionally approved Airport Layout Plan and 2021 Master Plan. Moreover, upon completion, this multiphase project would enhance the overall functionality of the Airport by supporting existing airport dependent users as well as providing opportunity to new clients.

3. ALTERNATIVES ANALYSIS

This chapter details the alternatives considered and the evaluation process to select the preferred alternative that appropriately addresses the needed facility improvements. FAA Order 1050.1f, Chapter 6, Section 6-2.1(d) states that there "is no requirement for a specific number of alternatives or a specific range of alternatives to be included in an EA. Each alternative considered in this EA, including No Action, was evaluated with the required degree of analysis to the Proposed Action and in accordance with the evaluation criteria described in Section 3.1.

3.1. EVALUATION CRITERIA FOR EA ALTERNATIVE ANALYSIS

Table 3-1 summarizes the reasonable criteria used to evaluate alternatives for the two (2) major elements of the Proposed Action (i.e., Runway 02-20 Extension and New East Terminal Development).

Table 3-1: Evaluation Criterial

Criteria	Runway 02-20 Extension	Terminal Development
Fulfills Purpose and Need	Does the alternative fulfill the project objectives as described in Sections 2.1 and 2.2.2?	Does the alternative fulfill the project objectives as described in Sections 2.1 and 2.2.3?
Land Use Compatibility	Is the alternative compatible with on and off-airport patterns of land use? Is the alternative consistent with FAA design criteria in terms of spacing and separations? Does the alternative require acquisition of off airport property for purposes of controlling airspace, or other FAA required safety standards?	Is the alternative compatible with on and off airport patterns of land use? Does the alternative require acquisition of property?
Flexibility to Accommodate Existing and Future Demand	Does the alternative accommodate existing and future demand in terms of types of aircraft utilizing HVN and existing and likely destinations?	Does the alternative accommodate existing and future passenger demand? Does the alternative provide flexibility to accommodate changes in traveler behavior, security, or other operational requirements? Does the alternative provide adequate parking and suitable, efficient roadway access to the terminal area?
Level of Service and Operational Efficiency	Does the alternative facilitate efficient movement of aircraft on the airport. Would the alternative result in delays or congestion on the airfield.	Does the alternative provide and optimum Level of Service? Does the alternative allow for efficient movement of passengers and luggage? Does the alternative facilitate safe and efficient aircraft movements between the terminal and the runway?

The preferred alternative is selected based on the alternative that fulfill the evaluation criteria, particularly the purpose and need with the least environmental impact.

3.2. MASTER PLAN ALTERNATIVES CONSIDERED AND DISMISSED

HVN initiated a comprehensive 20-year Master Plan update in Fall of 2019, which was completed in 2021 when the resulting Airport Layout Plan was signed by the FAA. The complete Master Plan Report and Airport Layout Plan Set are available for review at www.tweedmasterplan.com. The Master Plan identified and considered a multitude of constraints, including airspace constraints associated with Runway 02-20, various natural resources constraints, and incompatible land use surrounding the airport.

The Master Plan evaluated a broad range of alternatives to address near term and long term needs for the airport. HVN's desire to avoid impacting the relatively undisturbed wetlands around the perimeter of the airfield was a significant limitation on the alternatives. **Table 3-2** and **Table 3-3** summarize runway, terminal and airport alternatives from the Master Plan that were considered and dismissed. This EA builds upon the Alternatives Analysis that was completed in the Master Plan Update.

Table 3-2: Master Plan – Summary of Runway 02-20 Alternatives Considered and Dismissed

Master Plan Alternative # 1: Extension of Runway 20 (shift the Runway further north)			
Description: Extension of Runway 20, was evaluated and deemed infeasible. This alternative would require relocating Dodge Avenue and modifications to the FAA owned Navigation Aids (NAVAID) (i.e., Localizer), which lies just south of Dodge Avenue on airport property. The localizer provides horizontal guidance to aircraft approaching Runway 02. Extension of Runway 20 would require relocation of the localizer to provide the FAA required minimum 600-foot setback of the localizer from the Runway 20 end. Relocation of the localizer would require Dodge Avenue to be re-aligned so that it is behind (north of) the localizer antenna. The required realignment of Dodge Avenue would require acquisition and demolition of several residences. This alternative was dismissed from further consideration because it does not fulfill the Purpose and Need, and because of Land Use Compatibility concerns.			
Evaluation Criteria – Master Plan Alternative # 1			
Fulfills Purpose and Need: The alternative does not fulfill the Purpose and Need because it requires land acquisition.	**Land Use Compatibility:** This alternative was deemed incompatible with existing land use because of the need to relocate Dodge Avenue, the proximity of the extended Runway to nearby residences, and the need to acquire and demolish several residences, thereby creating land use impacts. Additionally, extension of Runway 20 would subject comparatively more residences to additional noise.	**Flexibility to Accommodate Future Demand:** This alternative would accommodate future demand.	**Level of Service and Operational Efficiency:** This alternative would address the operational needs of the Airport.
Master Plan Alternative # 2: Runway Extension with no EMAS (no land acquisition)			
Description: Without the presence of EMAS, operational flexibility would be limited. The lack of the EMAS does not provide the required 6,000-foot landing distance available making the runway significantly shorter during wind conditions favoring Runway 20. Land acquisition is not feasible at the Runway 20 end due the reasons listed in the previous alternative. This alternative was dismissed from further consideration because it does not fulfill the Purpose and Need, nor does it provide the desired level of operational efficiency and flexibility to accommodate future demand.			

Table 3-2: Master Plan – Summary of Runway 02-20 Alternatives Considered and Dismissed

Evaluation Criteria – Master Plan Alternative # 2			
Fulfills Purpose and Need: The alternative does not fulfill the Purpose and Need because it does not provide the desired 6,635 feet of usable runway.	**Land Use Compatibility:** This alternative is compatible with existing land use.	**Flexibility to Accommodate Future Demand:** The lack of the EMAS does not provide the required 6,000-foot landing distance available making the runway significantly shorter during wind conditions favoring Runway 20.This alternative does not provide the desired runway length to accommodate future demand.	**Level of Service and Operational Efficiency:** Due to the absence of EMAS limiting the landing distance, this alternative would impose operational limitations on existing and future users, reducing the operational efficiency of this alternative.

The Master Plan Alternatives were reviewed as part of the EA to evaluate if the Master Plan findings remain valid. Ultimately, all of these alternatives were dismissed because they were determined not to meet the Purpose and Need of the Proposed Action, potentially result in additional environmental impact or were otherwise found not to be feasible. Alternatives that would not meet FAA standards and were incompatible for achieving the necessary facility requirements were identified and dismissed.

Table 3-3 discussed the terminal and airport alternatives that were considered and dismissed.

Table 3-3: Master Plan – Summary of Terminal Area and Airport Alternatives Considered and Dismissed

Master Plan Alternative # 3: Renovate or construct new facilities on the West Side
Description: The Airport Master Plan considered redevelopment of the west side of the Airport, where the West Terminal currently exists; however, suitable building area available is very limited and restricted. Development on the West side is severely constrained by the Runway and building restriction line to the east, and residential land use on the west and north. Redevelopment of the west side would also be constrained by Tuttle Brook and adjacent tidal wetlands that bisect the west side. Aircraft at the West Ramp taking off or landing at Runway 02-20- need to cross the active runway. Due to safety concerns, runway crossings should be minimized. Additionally, with the runway extension and keeping the terminal on the west side does not alleviate the need for commercial aircraft to cross the active runway in some landing and takeoff conditions. Similarly, fuel trucks would continue crossing the RSA to service commercial aircraft. As shown in As shown in **Figure 3-1A** to **Figure 1C** (**West Terminal Overlays**), the west side redevelopment would require 1) acquisition of numerous residences west of the existing terminal, or 2) relocation of Runway 02-20, or some combination of both. Besides, this alternative would continue promoting airport traffic through residential areas and would result in greater impacts to wetlands and surface waters. Additionally, maintaining safe terminal operations during the construction or renovation of new facilities would be extremely challenging on this cramped site. Finally,

Table 3-3: Master Plan – Summary of Terminal Area and Airport Alternatives Considered and Dismissed

redevelopment of the west side would not address the well documented land use compatibility and access issues. Redevelopment of the west side was determined to be infeasible; therefore, terminal area development alternatives focused on the east side of Runway 02-20, specifically within the previously developed/disturbed area that formerly contained the eastern portion of Runway 14-32 and associated taxiways.

This alternative was dismissed from further consideration because it does not fulfill the Purpose and Need; does not address the existing Land Use Compatibility Issues, nor does it provide the desired flexibility to accommodate future demand and level of service.

Evaluation Criteria – Master Plan Alternative # 3			
Fulfills Purpose and Need: HVN does not currently possess sufficient land on the west side to construct terminal facilities with the desired capacity for the necessary level of service.	**Land Use Compatibility:** This alternative does not address the land use compatibility concerns included in the Purpose and Need. It is compatible with existing land use.	**Flexibility to Accommodate Future Demand:** This alternative does not provide the facilities necessary to accommodate future demand. Runway length to accommodate future demand.	**Level of Service and Operational Efficiency:** This alternative would impose operational limitations on existing and future users, reducing the operational efficiency of this alternative.

Master Plan Alternative # 4: Construction of a New Airport

Description: HVN is centrally located in a prime and growing area. From an air service perspective, the New Haven/Southern Connecticut Market is geographically well served by HVN's location. Providing convenient access for that market dictates that a new airport would need to be located within close proximity of New Haven. Construction of a new airport would require hundreds of acres, plus land use control for airspace purposes. A cursory review of recent publicly available aerial images of the region shows few undeveloped sites of that size due to the dense development prevalent in the area. Undeveloped large sites often have readily visible environmental constraints such as wetlands. Moving the Airport further afield from New Haven, would likely result in overlapping service with other airports in the region and would defeat the purpose of the Proposed Action. Constructing a new airport to serve the same catchment area would require higher wetland, park, and/or other environmental impacts; displacement of residences; further studies for approach surfaces, noise impacts, traffic study, and significant cost to construct new runway, taxiway, ramp/apron, terminal, automobile parking, fuel service, vehicle access and signage, among others.

This alternative was dismissed from further consideration because it does not fulfill the Purpose and Need and is infeasible. Additionally, practical considerations of finding a suitable site that provides the convenience of HVN is very unlikely.

Table 3-3: Master Plan – Summary of Terminal Area and Airport Alternatives Considered and Dismissed

Evaluation Criteria – Master Plan Alternative # 4			
Fulfills Purpose and Need: This alternative does not fulfill the Purpose and Need because it would require a large amount of land acquisition, creating potential for rezoning and land use impacts such as relocation of residential neighborhoods, and would not utilize the existing designated Airport land.	**Land Use Compatibility:** As noted previously, even a cursory review of current aerial imagery of the Southern Connecticut region shows a densely populated and developed area, with few large undeveloped sites. Dense residential development is prevalent throughout the area. These findings are confirmed by "windshield surveys" conducted in the New Haven area. Given the nature of development, it is extremely unlikely an alternative airport site to serve the Southern Connecticut market could be identified without extensive land use compatibility issues.	**Flexibility to Accommodate Future Demand:** In the unlikely event a suitable site could be found, it would be developed with the flexibility to meet future demand.	**Level of Service and Operational Efficiency:** Discovering a suitable location and size of a property necessary to accommodate development of a new airport for HVN's existing target market would be infeasible. If a site were identified, it is assumed it would developed so as to provide the desired Level of Service and operational efficiency. The existing HVN property has been designated for Airport use and provides better land utilization and does not require potential rezoning or land use impacts.

For more detailed information on the alternatives, see the 2021 Master Plan and the Airport Layout Plan which was conditionally approved by the FAA in September 2021. Airport Layout Plans are conditionally approved prior to NEPA completion.

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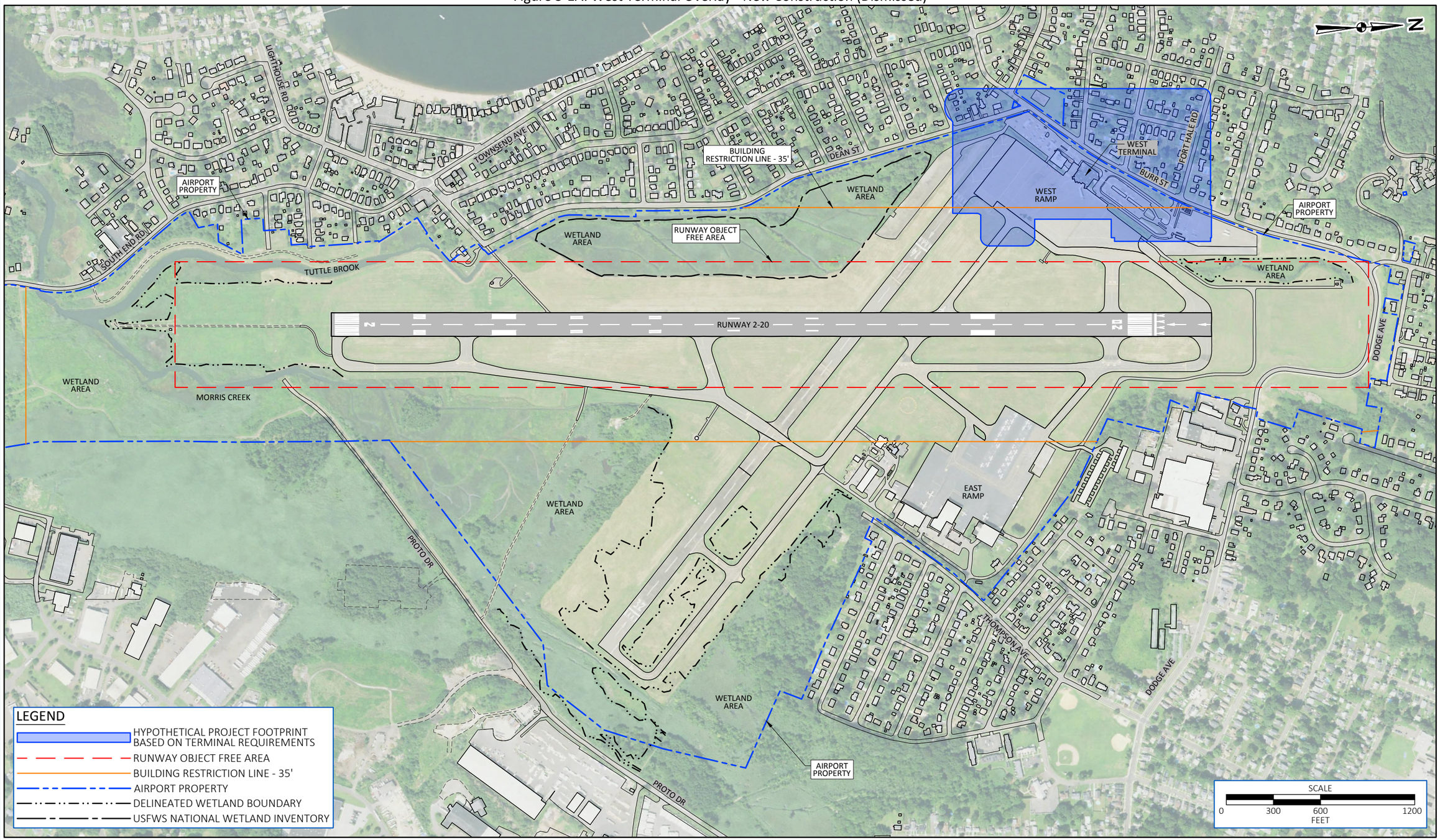
Figure 3-1A: West Terminal Overlay - New Construction (Dismissed)



K:\Tweed New Haven\T-18839.00 MPU EA\Draw\Drawings\Figures\ALT-TERM OVERLAY.dwg

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Figure 3-1B: West Terminal Overlay - New Construction (Dismissed)

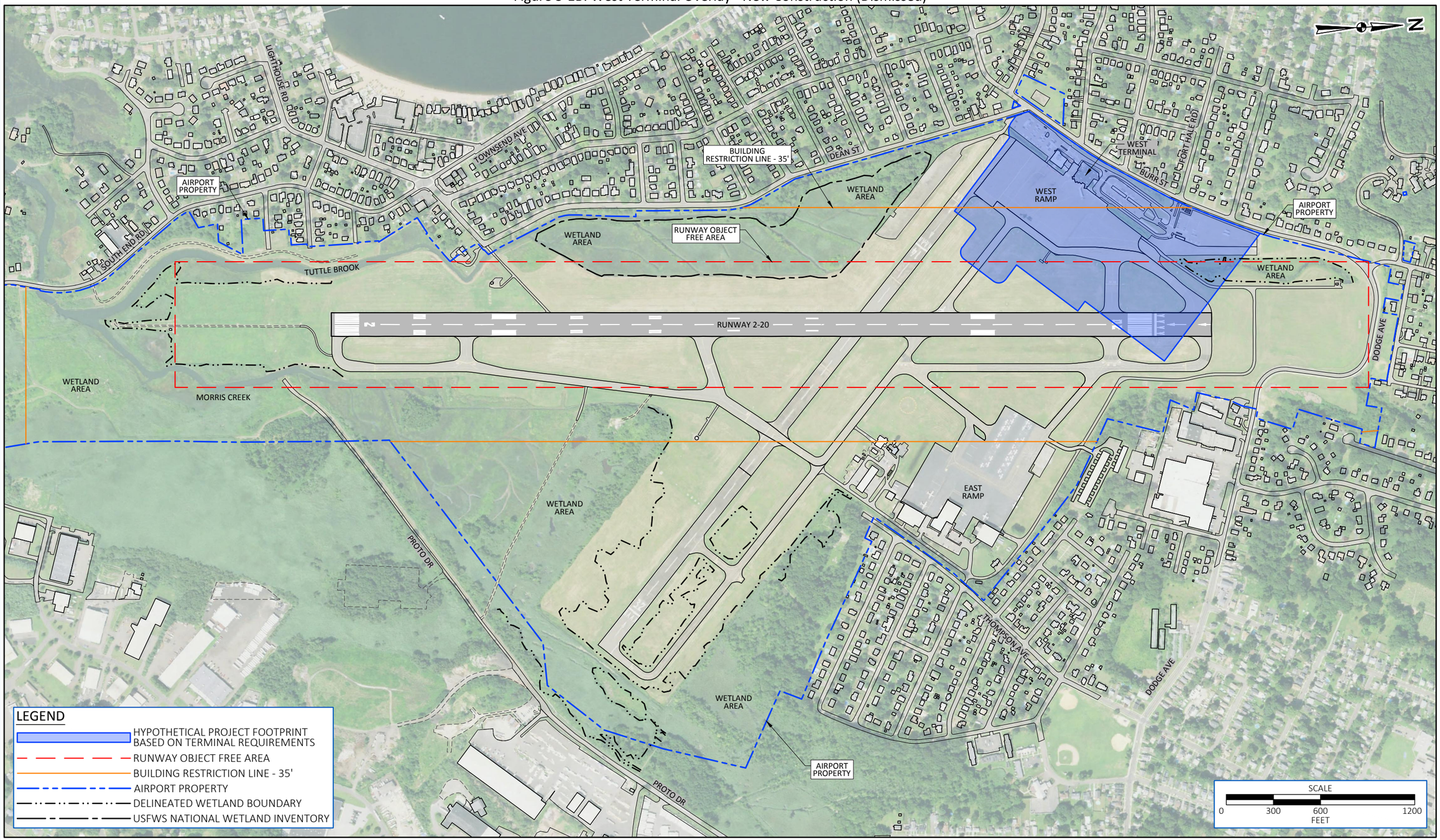

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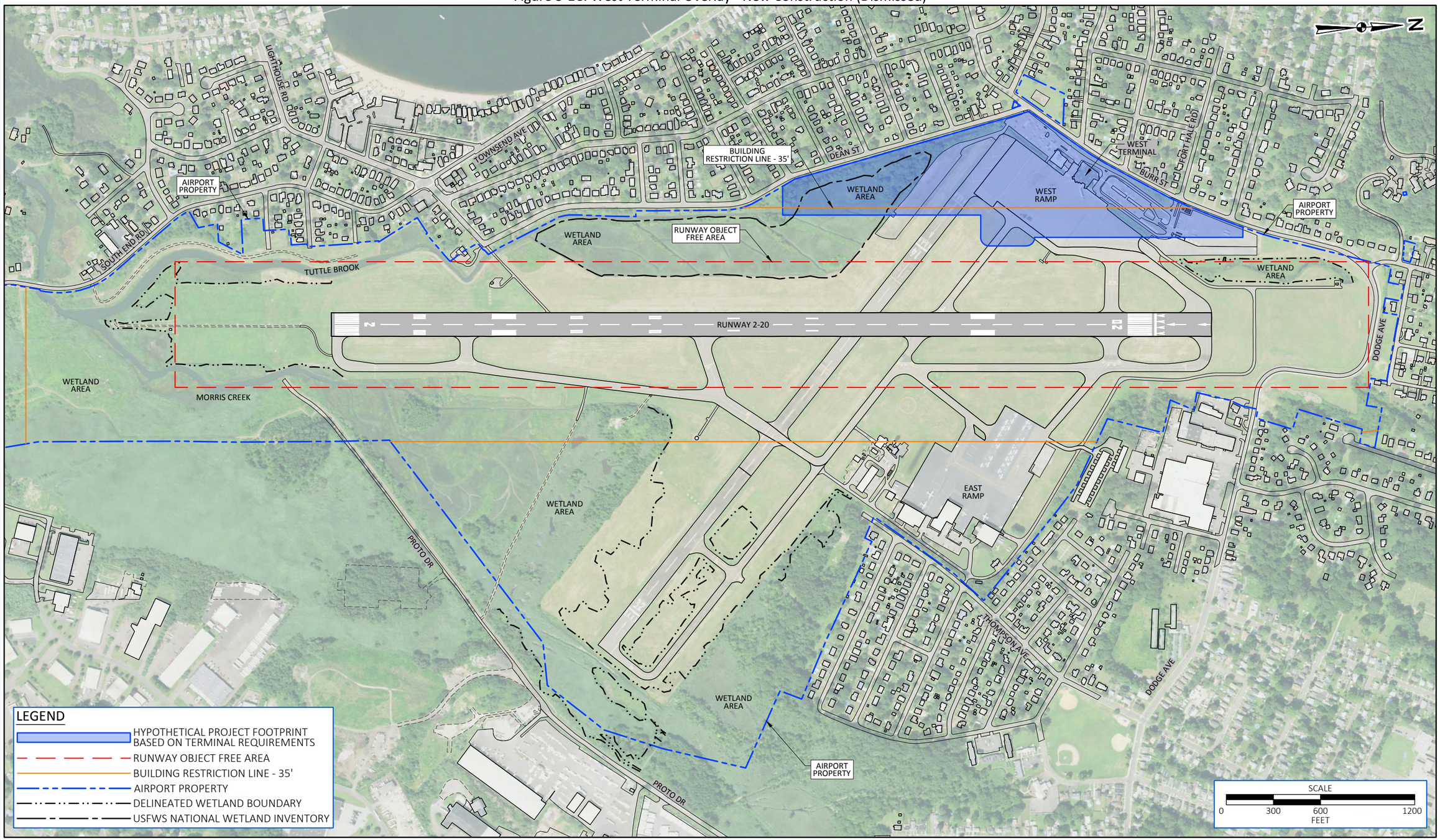
Figure 3-1C: West Terminal Overlay - New Construction (Dismissed)



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Project Components	Alternatives
Runway 02-20	Alternative 1: No Action
	Alternative 2: Runway 02-20 Extension
Terminal Area Development	Alternative 1: No Action
	Alternative 2: New East Terminal Area Development

3.3. EA ALTERNATIVES

For the purpose of this EA, **Table 3-4** shows a breakdown of the additional alternatives evaluated for the Runway 02-20 extension and new Terminal Area Development.

Table 3-4: EA Evaluated Alternatives

Project Components	Alternatives
Runway 02-20	Alternative 1: No Action
	Alternative 2: Runway 02-20 Extension
Terminal Area Development	Alternative 1: No Action
	Alternative 2: New East Terminal Area Development

The preferred alternative is compared to the No Action and selected based upon the evaluation of all the improvements and project elements associated to the proposed Runway 02-20 extension and Terminal Area Development that must be undertaken to address the immediate operational needs of HVN.

Following is discussed the various alternatives evaluated for the Proposed Action, including the No Action. The No Action (existing HVN Layout) is shown as **Figure 3-2.**

3.3.1. Runway 02-20 Alternatives

3.3.1.1. Runway 02-20 Alternative 1 – No Action

See **Figure 3-2** for No Action (Existing HVN Layout). **Runway 02-20 - Alternative 1** (No Action) was assessed against the four (4) evaluation factors. Description of the No Action alternative and results of the evaluation criteria are presented in the following table.

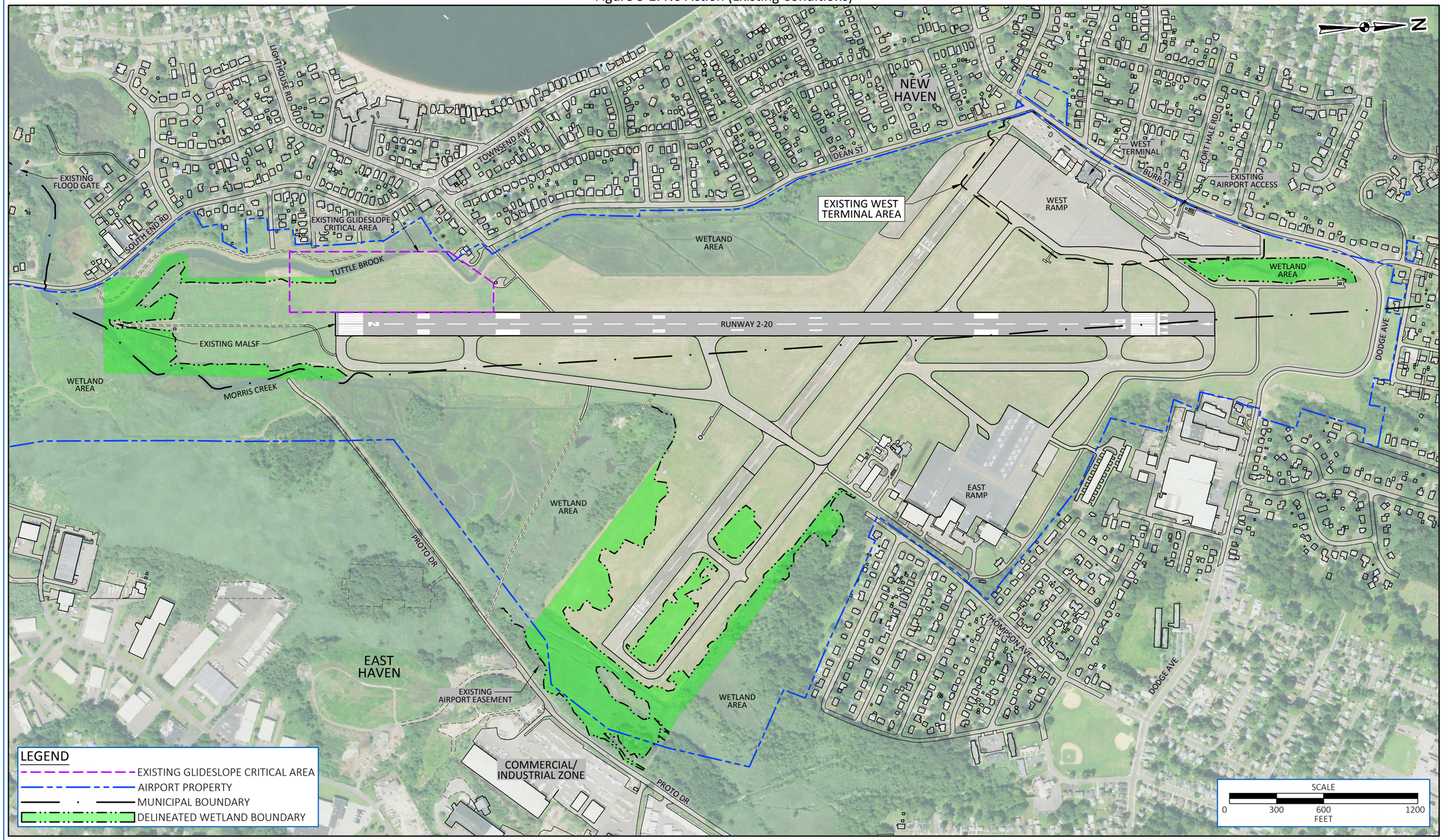
Table 3-5: Runway Alternative # 1 - No Action and Evaluation Criterial

Runway Alternative # 1: No Action
Description: As described in Chapter 1 and **Appendix A**, Runway 02-20 is inadequate to meet the needs of aircraft utilizing and expected to utilize HVN. For purposes of NEPA and the EA, the No Action Alternative refers to continuing with the present course of action. In accordance with CEQ requirements, the No Action Alternative is carried forward in this EA. See **Figure 3-2** for No Action (Existing HVN Layout). This alternative was dismissed from further consideration because it does not fulfill the Purpose and Need, and because of Land Use Compatibility concerns.

Table 3-5: Runway Alternative # 1 - No Action and Evaluation Criterial

Evaluation Criteria – Runway Alternative # 1			
Fulfills Purpose and Need: The No Action Alternative does not fulfill the project objectives as described in **Sections 2.1** and **2.2.2**. It does not address the existing limitations of the Runway 02-20. Therefore, the No Action does not meet the purpose and need.	**Land Use Compatibility:** The No Action Alternative does not propose changes to the existing Airport layout, nor does it change on and off airport patterns of land use. The alternative would maintain existing conditions in terms of consistency with FAA design criteria. No land acquisition is proposed for this alternative.	**Flexibility to Accommodate Future Demand:** This alternative does not meet the minimum acceptable runway length (i.e., 6,575 feet) needed for existing and forecasted general aviation and commercial service operations while complying with FAA standards and maintaining safety standards. See **Appendix A** (Runway 02-20 Length Eligibility Analysis) for detailed analysis. This alternative would require operators to continue to incur in weight penalties for existing and future operations.	**Level of Service and Operational Efficiency:** The No Action Alternative requires additional aircraft operations by smaller aircraft to accommodate expected passenger demand. As a result this alternative is inherently less efficient and more prone to airfield congestion and delays. The No Action does not address current weight penalties (empty seats or limited destinations) that aircraft are restricted by on the existing runway length.

Figure 3-2: No Action (Existing Conditions)



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3.3.1.2. Runway 02-20 Alternative 2 – Runway 02-20 Extension (Preferred Alternative)

The original Master Plan Updated concept for the Runway 02-20 extension considered a 699-foot extension with a 235-foot displaced threshold at the southern end of the runway (Runway 02 end), and a 336-foot extension with a 336-foot displaced threshold at the northern end of the runway (Runway 20 end). The originally proposed runway length took into consideration existing and proposed aircraft utilizing the Airport and FAA Advisory Circular 150/5300-13A design requirements.

During the internal scoping process of this EA, it was determined that the original conceptual design of this alternative would impact approximately 0.44 acre of tidal wetlands near the Runway 02 end. Therefore, various concepts were considered for this alternative. The final concept presented in **Table 3-6** prioritized in reducing the length of the proposed runway extension in an effort to avoid direct impacts to tidal wetlands. The latest concept of this alternative presented in **Figure 3-3** avoids extending the runway into the wetlands while maintaining the design intent of extending Runway 02-20.

Table 3-6: Runway Alternative 2 - Runway 02-20 Extension and Evaluation Criteria

Runway Alternative # 2: Runway 02-20 Extension (Preferred)
Description: For the proposed extension at the southern end of the runway (Runway 02 end), the proposed design would have approximate 639-foot extension with a 245-foot displaced threshold[27]. For the proposed extension at the northern end of the runway (Runway 20 end), the proposed design would have an approximate 336-foot extension with a 336-foot displaced runway end threshold. The total proposed runway length would be 6,575 feet, which results in a 60-foot reduction in length compared to the original proposal in the 2021 Master Plan Updated, and avoids direct impacts (0.44 acre) to tidal wetlands. The runway extension would accommodate existing and proposed aircraft utilizing the Airport and is designed to meet FAA Advisory Circular 150/5300-13B design requirements. The displaced threshold is necessary to meet FAA's Runway Safety Area dimension standards.

[27] A displaced threshold is a threshold located at a point on the runway other than the designated beginning of the runway. Displacement of a threshold reduces the length of runway available for landings in this direction only.

Table 3-6: Runway Alternative 2 - Runway 02-20 Extension and Evaluation Criteria

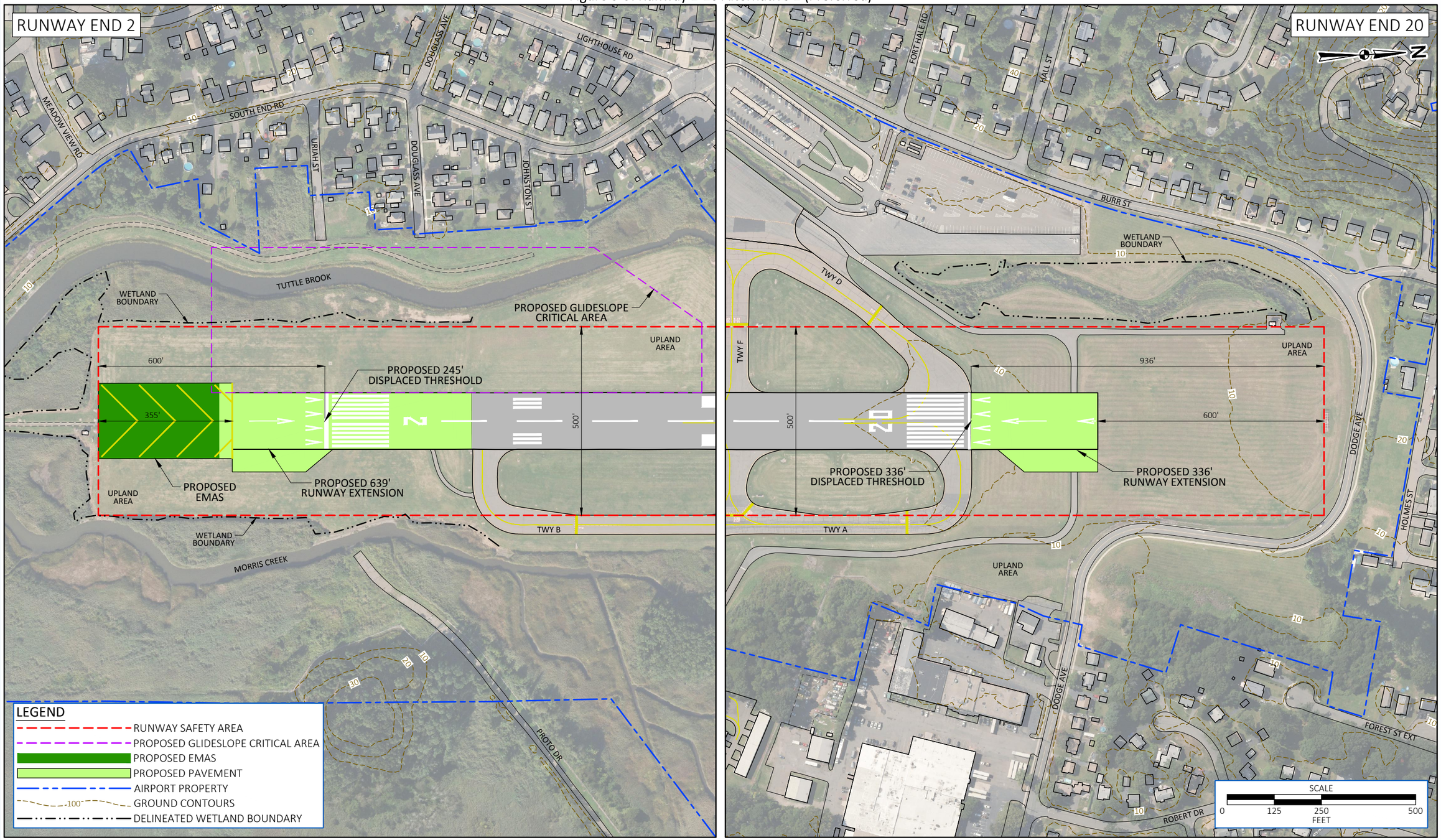
Evaluation Criteria – Runway Alternative # 2			
Fulfills Purpose and Need: This alternative fulfills the project objectives as described in **Sections 2.1** and **2.2.2**. It would provide additional runway length necessary to significantly reduce or eliminate weight penalties (aircraft dependent) and provide additional flexibility for aircraft to fly non-stop to more distant destinations.	**Land Use Compatibility:** This alternative is compatible with existing on and off airport land use, as no property or easement acquisition are required, or are any zoning changes required. The runway extension would be constructed in accordance with FAA standards.	**Flexibility to Accommodate Future Demand:** This alternative would provide the necessary runway extension to accommodate existing and proposed aircraft utilizing the HVN traveling to existing and reasonably foreseeable destinations. The Runway extension would be designed to meet FAA Advisory Circular 150/5300-13B design requirements. Alternative 2 provides excellent operational flexibility by allowing operators to utilize more of their aircraft capability, specifically by allowing weight restrictions (empty seats) to be minimized.	**Level of Service and Operational Efficiency:** This alleviates the current runway length constraints. This alternative would limit the need for weight restrictions (fewer empty seats) and would allow for the introduction of more 189 seat aircraft. As a result fewer total aircraft operations would be required to accommodate demand, which would inherently improve efficiency and improve Level of Service by reducing airfield congestion and delays.

In conjunction with the runway extension, a 355-foot by 200-foot EMAS (defined in Chapter 1) is proposed 35 feet offset from the Runway 02 end. Runway navigational aids would require relocation due to the extension to meet FAA standards for location and placement:

- the MALSF approach lights would be decommissioned; Runway end identifier lights (REILs) would be installed;
- the Precision Approach Path Indicators (PAPI) would be relocated at the Runway 02 end for the new threshold location; and
- the Visual Approach Slope Indicator (VASI) at the Runway 20 end would be replaced with a PAPI.

The Runway 02 MALSF equipment would be decommissioned and removed and REILs would be installed to assist pilots in identifying the runway end especially during low visibility conditions. Overall, this would create a smaller footprint. The approach lighting system (the Medium Intensity Approach Lighting System with Sequenced Flashers, a system of seven (7) rows of light bars) would be removed and replaced by another (Runway End Identifier Lights, just two (2) lights). Displaced thresholds achieve full standard Runway Safety Areas, in compliance with FAA design and safety standards and maximize the runway use within the constraints of the site. As revised, this alternative avoids extending the runway into wetlands while achieving the goals of the Purpose and Need of the Proposed Action.

Figure 3-3: Runway 2-20 Alternative 2 (Preferred)



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The results of the alternative comparison (**Table 3-7**) identified Alternative 2 of Runway 02-20 as the preferred alternative. Alternative 2 meets the Purpose and Need and addresses the existing runway deficiencies by providing runway length necessary to accommodate the existing and proposed aircraft fleet utilizing HVN. Alternative 2 would provide the minimum runway length to meet FAA design standards and remedy the current runway limitations and provide HVN the necessary infrastructure to accommodate the forecasted operational growth.

Table 3-7: Runway 02-20 Alternatives Comparison - Evaluation Criteria

Criteria	Runway Alternative 1 No Action	Runway Alternative 2 (Preferred)
Total Extension (feet)	None	975
Fulfills Purpose and Need	No	Yes
Land Use Compatibility	No change	No change
Flexibility to Accommodate Existing and Future Demand	None	Optimum
Level of Service and Operational Efficiency	Deficient	Improved

Source: McFarland Johnson, 2022

The results of the alternative comparison identified Alternative 2 of Runway 02-20 as the preferred alternative. Alternative 2 meets the Purpose and Need and addresses the existing runway deficiencies by providing runway length necessary to accommodate the existing and proposed aircraft fleet utilizing HVN. Alternative 2 would provide the minimum runway length to meet FAA design standards and remedy the current runway limitations and provide HVN the necessary infrastructure to accommodate the forecasted operational growth.

Implementation of Alternative 2 would reduce weight penalties for most destinations and allow the current and proposed fleet to fly to more distant destinations, allowing air carriers to accommodate growing demand at HVN. Finally, this alternative as refined avoids extending the runway into wetlands.

3.3.2. Terminal Area Development Alternatives

Two (2) additional alternatives were evaluated for the New East Terminal Area Development:

1) Terminal Area Alternative 1 - No Action
2) Terminal Area Alternative 2 – New East Terminal Development

The basis for exploring design alternatives to arrive at a preferred design solution begins with an analysis of facility requirements based on projected passenger growth, a review of the available funding sources to establish the project budget, and the local and regional environmental considerations. See **Appendix E** (PGAL Tweed Airport New Haven East Terminal Development) for additional information about design consideration, including size of the terminal building (e.g., square footage), site access, facility requirements, landside access requirements, parking, curbside, terminal building and space programing and concept planning. Access and parking are integral to the development of the new terminal.

Following is the discussion of the evaluated alternatives and sub alternatives for access and parking for the proposed new terminal.

3.3.2.1. Terminal Area Alternative 1 - No Action Alternative

Regardless of the runway extension, the No Action Alternative refers to continuing with the course of action with the existing West Terminal. See **Figure 3-2** for the No Action Alternative.

Table 3-8: Terminal Alternative # 1 - No Action and Evaluation Criterial

Terminal Alternative # 1: No Action			
Description: The existing West Terminal is outdated and severely undersized with limited capability to accommodate changes for near-term traffic growth. With the No Action Alternative the existing terminal would continue exceeding its useful life. The existing congestion within the West Terminal area roadways, chronic parking shortages, and long queues for terminal functions such as ticketing, security, baggage claim would worsen considerably as enplanements increase over time. The No Action Alternative suggests that a new terminal would not be constructed nor improvements would be taken to resolve the very poor conditions that passengers would continue to experience. Under this scenario, it is anticipated that the traveling public would continue to be subject to the poor level of service in ways that are difficult to predict and manage. The No Action alternative would provide an increasingly poor level of service and lengthy delays "processing" passengers from check in to departure. This alternative was dismissed from further consideration because it does not fulfill the Purpose and Need, and because of Land Use Compatibility concerns.			
Evaluation Criteria – Terminal Alternative # 1			
Fulfills Purpose and Need: The No Action Alternative does not fulfill the project objectives as described in **Sections 2.1** and **2.2.3**. It does not address the existing and future terminal deficiencies.	**Land Use Compatibility:** The No Action Alternative does not change off airport patterns of land use, therefore it does not address the land use incompatibility between the existing terminal/terminal access and nearby residential land use. No land or easement acquisition is required for this alternative.	**Flexibility to Accommodate Future Demand:** This alternative can accommodate existing and future demand at a very poor level of service. It does not provide suitable and efficient roadway access to the terminal area. The highly constrained existing terminal provides little flexibility to accommodate changes in traveler behavior, new security requirements, or other necessary operational changes.	**Level of Service and Operational Efficiency:** The No Action Alternative does not provide and optimum level of service. The existing terminal is inefficient in terms of how passengers and luggage move through the terminal. Departures from the Runway 02 end and arrivals on Runway 20 require aircraft to cross the Runway twice reducing the efficiency and safety of those movements and reducing safety margins.

Furthermore, given the high gate usage required to accommodate the expected demand under the no build scenario, delayed flights would likely require aircraft to hold on the airfield until a gate is available. Inbound

flights may be cancelled or held at their departure airport until the gate congestion is resolved. According to **Table 2-2** (Summary of Existing vs Required Space Allocation by Functional Area) presented in **Section 2.2.3.1**, the existing West Terminal has a deficiency of approximately 46,340 SF when considering current and future demand.

As described previously, the West Terminal is past its useful life, is undersized, and does not provide the desired level of service. Lastly, roadway access to the terminal building is via two (2) lane roads through residential neighborhoods, creating land use compatibility concerns.

3.3.2.2. Terminal Area Alternative 2 – New East Terminal Area Development (Preferred Alternative)

This alternative proposes the replacement of the aging terminal buildings that exist today on the west side of the Airport. Several concepts were considered for this alternative. The final concept presented herein prioritized focusing the terminal area development within a previously graded and disturbed area that was formerly occupied by the airfield east of Runway 02-20. The proposed East Terminal site is on a fill section created during the original construction of the airport. Since the original construction in 1929-1931, HVN has been subject to frequent and continuous land disturbance. Most of the airport land was historically filled during construction which converted all disturbed land into uplands. Land disturbances (e.g., excavation, fill, gadding, stormwater, and mowing) have included the former use as a runway and taxiway system. Since the decommissioning of Runway 14-32, land disturbances have included mowing, grading, and other typical airfield maintenance activities. This concept avoids physical land disturbance to the relatively undisturbed land and wetlands surrounding the former airfield, except for a proposed wetland/stream crossing for the new access road to Proto Drive.

Table 3-9: Terminal Alternative # 2 – New East Terminal Area Development

Terminal Alternative # 2: New East Terminal Area Development (Preferred)
Description: The proposed East Terminal building would be approximately 80,000 SF on two (2) levels (60,000 SF footprint) and would be constructed on piers, raising the finished flood elevation above the 100-year flood elevation. The space below the finished floor elevation would be left open to allow floodwater to pass. Access to the proposed terminal area would be provided along an existing Right of Way. The concept development for the access considered various means of crossing the stream and wetland complex located between the proposed terminal area and Proto Drive. Given the site constraints, it was determined that an approximately 270-foot-long bridge over the wetlands and stream would provide the optimum access within the existing site constraints. This alternative includes the development of the associated airfield and landside development, including circulation roadways, aircraft apron, taxilanes and other supporting facilities. The terminal aircraft apron would incorporate modern collection infrastructure for spent de-icing fluid. De-icing of commercial aircraft would occur on the terminal apron, rather than the existing de-icing apron. This alternative provides parking for approximately 4,000 vehicles. This alternative incorporates the Runway 02-20 Extension preferred alternative.

Table 3-9: Terminal Alternative # 2 – New East Terminal Area Development

Evaluation Criteria Terminal Alternative # 2			
Fulfills Purpose and Need: Alternative 2 fulfills the project objectives as described in **Sections 2.1** and **2.2.3**. It would address the terminal area deficiencies by providing the desired level of service.	**Land Use Compatibility:** No land or easement acquisition is required for this alternative. Land use patterns off airport property would remain unchanged. Although some residential land use is present north of the proposed terminal, surrounding land use around the proposed terminal is predominantly comprised of airport, undeveloped, industrial, or commercial property, This alternative would alleviate the existing West Terminal residential neighborhood access issues without imposing incompatible traffic uses in residential areas in the East, and noise levels associated with both the surface vehicular traffic and air traffic. This alternative provides for better utilization of available airport land.	**Flexibility to Accommodate Future Demand:** Alternative 2 would address existing chronic and severe passenger terminal area congestion and lack of comfort and services due to significantly undersized and outdated facilities. Alternative 2 provides adequate size to accommodate expected passenger volumes, including queue space, ticketing, hold rooms, concessions, other airport terminal functions. This alternative provides adequate parking and a roadway circulation system designed to accommodate expected vehicle traffic volumes. Alternative 2 would provide a streamlined approach with adequate space for the both the existing and future vehicle traffic and sufficient area for parking, which would minimize delays and congestion. This alternative provides flexibility necessary to adapt to changes in passenger behavior, security and other operational requirements.	**Level of Service and Operational Efficiency:** The alternative addresses the current terminal constraints. The proposed terminal would be sized to provide an optimum level of service for expected passenger volumes. The terminal would be configured to efficiently move passengers and luggage by providing appropriately sized spaces for expected passenger volumes. The new terminal location would enhance airfield operational efficiency and increase safety by eliminating runway crossings of commercial aircraft and eliminating fuel trucks crossing the Runway Safety Area to refuel commercial aircraft.

See **Figure 3-4** for New East Side Terminal Area Development – Alternative 2 and summarized in the **Table 3-10**.

Figure 3-4: Terminal Area Alternative 2 - New East Terminal Development (Preferred)

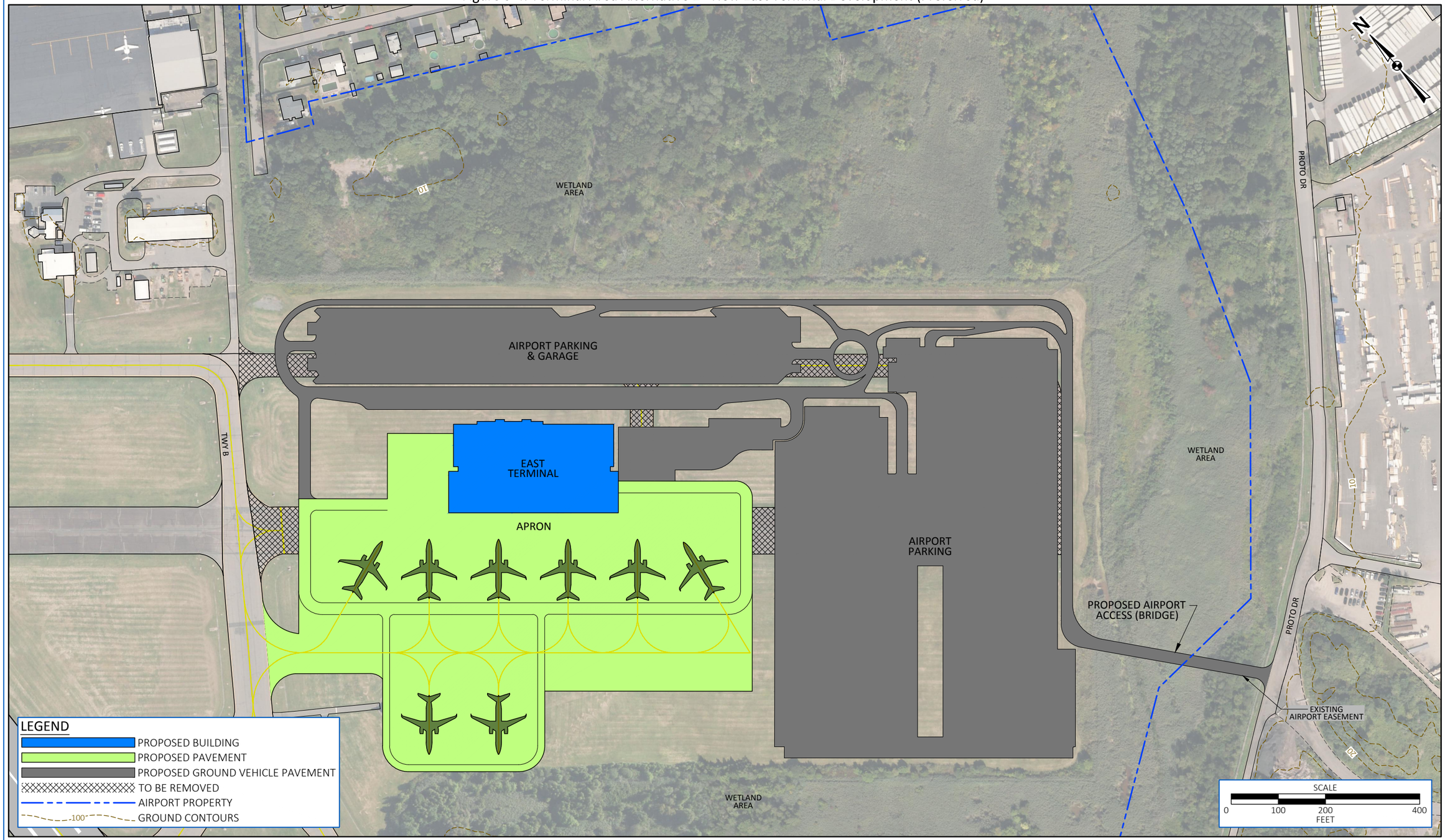

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Table 3-10: East Terminal Area Project Elements – Alternative 2

Alternative 2 - Project Elements	Impervious Footprint Area		Pervious Footprint Area	
	(SF)	(Acres)	(SF)	(Acres)
Terminal Building	60,000*	1.38	0	0
Terminal Apron	462,500	10.62	0	0
Taxiway	7,730	0.18	0	0
Stormwater Management Area	0	0	23,760	0.55
Vehicle Parking	816,887	18.75	0	0
Bridge	2,600	0.06	0	0
Total (Approx.)	**1,289,717**	**30.99**	**23,760**	**0.55**

*Note: Areas are approximate. Total building square footage is approximately 80,000 SF on two levels.
Source: PGAL; McFarland Johnson Analysis

The following below presents a comparison of the Terminal Alternatives based on evaluation criteria.

Table 3-11: Terminal Alternatives Comparison - Evaluation Criteria

Criteria	Alternative 1 - No Action	Alt. 2 - East Terminal Development
Terminal SF (gross)	≈32,860 (Includes temporary modifications implemented in 2021)	≈80,000
Fulfills Purpose and Need	No	Yes
Land Use Compatibility	No Change	Improves separation of terminal from nearby residential
Flexibility to Accommodate Existing and Future Demand	No	Optimum
Level of Service and Operational Efficiency	Deficient	Optimum

As discussed in **Chapter 2** (Purpose and Need, Table 2-2), the terminal space requires approximately 79,825 SF to address short and long term needs at HVN. As shown in **Table 3-11** above, the No Action alternative results in a deficit of approximately 46,965 SF, nor addresses the myriad deficiencies identified in the existing terminal. Therefore, Alternative 1 does not address the project Purpose and Need. Alternative 2 comprehensively addresses the existing terminal deficiencies.

3.3.3. Summary of Preferred Alternatives

Based on the analysis conducted in this Chapter, the preferred alternative for the Proposed Action consists of the following:

- Runway 02-20 Alternative 2 (Runway extension meeting FAA design standards and avoiding tidal wetlands)
- Terminal Area Development Alternative 2 (New East Terminal Area Development)

This combination of the preferred alternatives completely fulfills the Purpose and Need and provides the best combination of Land Use Compatibility, Flexibility to Accommodate Existing and Future Demand, and provides the desired Level of Service and Operational Efficiency. See Chapter 5 for Environmental Consequences.

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4. AFFECTED ENVIRONMENT

This section describes the environmental conditions of the project site. The characterization of the site is based on the information gathered from technical studies, on-site investigations, a review of available and published scientific information, agency correspondence, and discussions with Airport personnel and public officials. Field investigations were conducted during the summer and fall of 2021. 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.

4.1. GENERAL SITE DESCRIPTION

The study area for on-airport property is shown in **Figure 4-1**. The Proposed Action is shown in **Figure 1-3**. The study area varies subject to the different studies performed (e.g., wetlands, environmental justice, noise, cultural resources and traffic). As shown in **Figure 1-3**, the Proposed Action would mainly occur in the following distinct areas (project site), on-airport (HVN) property:

1. Runway 02-20
2. Eastern side of HVN property

Also, the new access road would be constructed within an airport dedicated easement connecting with existing Proto Drive. Limited construction is expected to occur within public right-of-way.

The project site exhibits a flat topography. A gradual downhill slope radiating outward from the airfield directs runoff into Morris Creek and Tuttle Brook to the southeast and southwest, respectively. See **Figure 1-3** for Location map over a USGS Topographic Map.

4.2. AIR QUALITY

Under the Clean Air Act the U.S. Environmental Protection Agency (EPA) designates areas with respect to the level of six criteria air pollutants within a specific area in the state. These criteria air pollutants are carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), sulfur dioxide (SO_2), and lead (Pb). Particulate matter is divided into two (2) particle size categories: coarse particles with a diameter less than 10 micrometers (PM_{10}) and fine particles with a diameter of less than 2.5 micrometers ($PM_{2.5}$). An area with measured pollutant concentrations that are below the National Ambient Air Quality Standards (NAAQS) is designated as “attainment”, and an area with pollutant concentrations that exceed the NAAQS is designated as “nonattainment”. After air pollutant concentrations in a nonattainment area are reduced to levels below the NAAQS, the EPA re-designates the area to be “maintenance”— a designation that is maintained for a period of 20 years. Finally, an area is designated as unclassifiable when there is a lack of sufficient data to determine the status of a pollutant. Connecticut Department of Energy and Environmental Protection (CT DEEP) prepares plans to attain and maintain compliance with these standards. These State Implementation Plans (https://portal.ct.gov/DEEP/Air/Planning/Air-Quality-Planning) include regulations to prevent, reduce and control air pollution. EPA has the authority to enforce the Connecticut air quality regulations incorporated into the State Implementation Plan. The CT DEEP also monitors air quality to protect public health and the environment under the Clean Air Act. The closest CT DEEP monitoring station is to the north of HVN at Criscuolo Park. **Table 4-1** provides the EPA latest designation of all criteria pollutants for New Haven County.

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Figure 4-1: Study Area

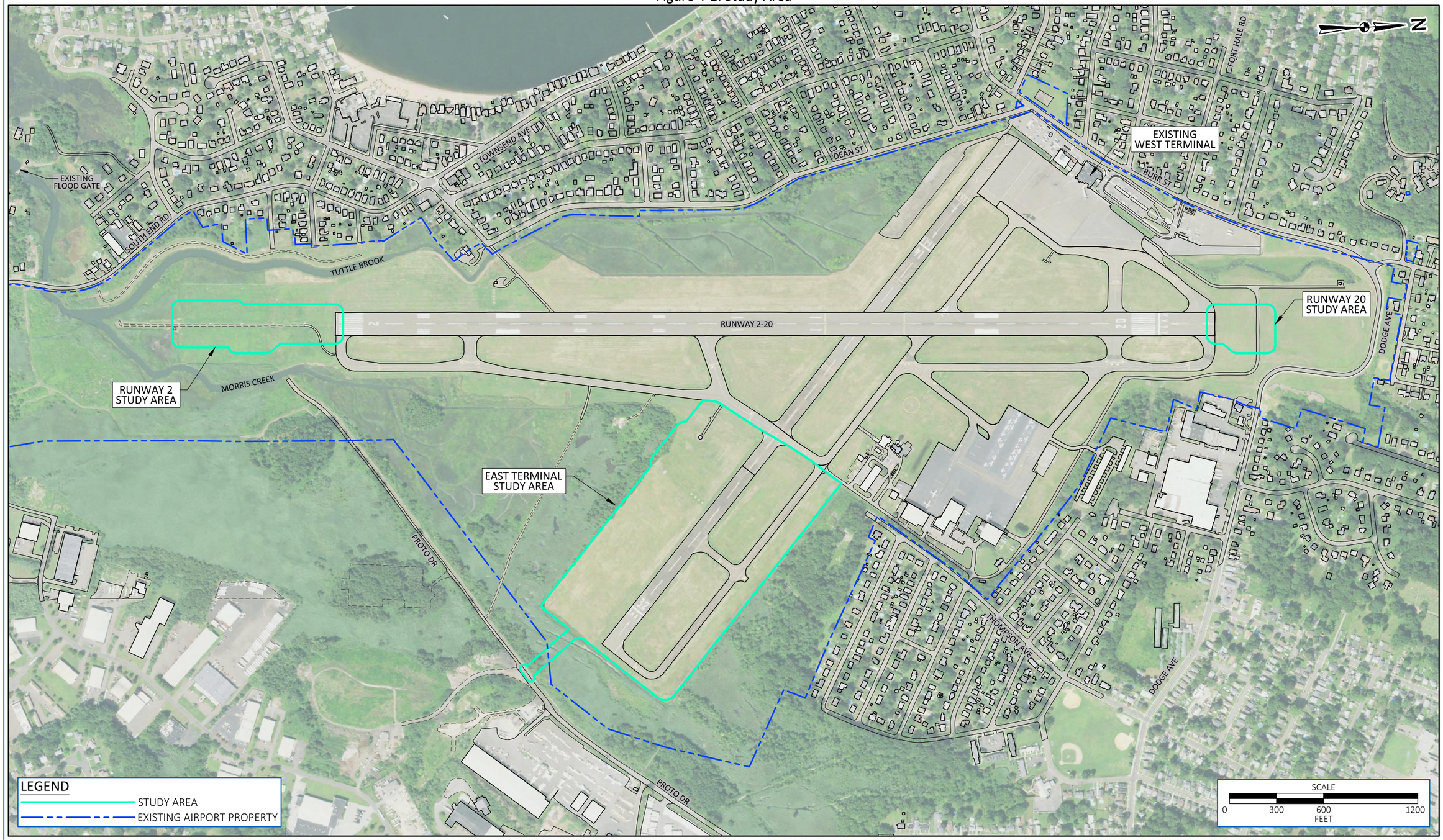

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Table 4-1: New Haven Nonattainment/Maintenance Status

Non-attainment	Attainment	Maintenance
8-Hour Ozone (2008) - Severe[28]	Sulfur Dioxide (SO_2)	Carbon Monoxide (CO)
8-Hour Ozone (2015) - Moderate	Lead (Pb)	Particulate Matter ($PM_{2.5}$)
	Nitrogen Dioxide (NO_2)	

Source: https://www3.epa.gov/airquality/greenbook/anayo_ct.html

4.3. BIOLOGICAL RESOURCES

Biotic resources refer to the various types of flora (i.e., plants) and fauna (e.g., fish, birds, reptiles, amphibians, mammals, etc.), including state and federally listed threatened and endangered species, in a particular area. The habitats, supporting the various flora and fauna, including rivers, lakes, wetlands, wooded areas, forests, and other ecological communities are also biotic resources. The study area for biological resources within the project site and immediate adjacent areas is shown on **Figure 1-3** (Proposed Action).

4.3.1. Ecological Communities and Wildlife

Most of the Airport and adjacent surrounding grounds, in particular the project site, have been mechanically disturbed by past construction and human activities, including the surrounding urban and rural developments. All ecological communities (i.e., habitats) within the project site have been previously altered. Wetland habitats are discussed in **Section 4.15.1** and additional details can be found in the Wetland Report included in **Appendix F**.

Habitats in the project site mainly consists of previously developed airport grounds committed to airfield operations, with the exception of adjacent areas in connection to the new access road the East Terminal. **Table 4-2** includes a breakdown of the vegetation assemblage distribution within the study areas and project site on Airport property and easement.

Table 4-2: Vegetation Assemblage Distribution in Project Site

Main Habitats	Acreages - Approximate			Total (Approx.)	Percentage
	Runway 02	Runway 20	East Terminal		
Developed (impervious)	0.44	0.38	6.79	7.61	15%
Airport Managed Grassland (regularly mowed)	6.57	2.49	24.40	33.46	64%
Upland Woodlands	0.00	0.00	0.19	0.19	<1%
Disturbed Wetlands (Airport Managed Grassland regularly mowed)	0.00	0.00	9.71	9.71	19%
Undisturbed Wetlands	0.05	0.00	1.19	1.24	2%
Total	**7.01**	**2.87**	**42.28**	**52.21**	**100%**

[28] It should be noted that EPA recently reclassified the New York City/Northern New Jersey/Long Island (NY-NJ-CT) area, including New Haven County for the 2008 ozone standard from serious to severe[28] effective 30-days after notice in the Federal Register, which was September 15, 2022.

Most of the Proposed Action would occur within managed grassland habitat consisting of maintained airport grounds regularly mowed by mechanical means. This type of habitat comprises the largest habitat type in the project sites. These managed grass areas are predominantly well-drained sandy soils comprised of both warm and cold season grasses with intermixed forbs. Small, landscaped areas are also present near some of the structures. Successional old field/successional shrubland can also be noted or present immediately adjacent to grassland areas which are dominated by forbs, grasses and shrubs occurring on disturbed sites that have been historically managed and then abandoned. This community occurs predominantly south of Runway 02. Plant species growing in this community include Common Reed (*Phragmites australis*), Goldenrods (*Solidago spp*.), Queen Ann's Lace (*Daucus carota*), Japanese Knotweed (*Reynoutria japonica*) and Switchgrass (*Panicum virgatum*) along with Multiflora Rose (*Rosa multiflora*) and Autumn Olive (*Elaeagnus umbellate*) shrubs.

Upland Woodlands consists of relatively small areas that are at a higher elevation than the surrounding wetlands. Typical vegetation in this community includes Red Oak (*Quercus rubra*), Gray Birch (*Betula populifolia*), Sassafras (*Sassafras alba*), White Oak (*Quercus alba*) and Tree of Heaven (*Ailanthus latissima*) trees and saplings along with Autumn Olive, Multiflora Rose and Staghorn Sumac (*Rhus typhina*) shrubs (Edwards and Kelcey, 2002).

Disturbed Wetlands encompass areas within the airfield and airport developed footprint that were historically filled (1930s) during the construction of the Airport that, particularly Runway 14- 32, Taxiway C and infrastructure, and are regularly mowed. These wetlands also include infield shallow drainage areas (man-made) between Runway 14-32 and Taxiway C that resemble palustrine emergent, nonpersistent, intermittently flooded/saturated (PEM2J) characteristics. This area includes Wetlands 4, 5 and 6A. See **Appendix F** (Wetland Report) for details.

Undisturbed Wetlands consist of moderate quality, scrub-shrub wetland habitat not previously filled or within the developed footprint of HVN. Wetland areas mainly consist of a palustrine forested broad-leaved deciduous, seasonally saturated, wetland (PFO1E), and bordering palustrine emergent wetlands (PEM2) containing nonpersistent, persistent and Phragmites-dominated subclasses. See **Appendix F** (Wetland Report) for details.

Refer to **Figure 4-2** for distribution of vegetation assemblages within the project site and the immediate vicinity. None of these vegetation assemblages self-sustain populations of threatened or endangered species of wildlife and none have been designated as critical habitats by the U.S. Fish and Wildlife Services (USFWS). Wildlife on the Airport are surveyed as part of the Airport's Wildlife Hazard Assessment program. According to the Airport's Wildlife Hazard Assessment Report (USDA, 2009), a total of 84 wildlife species have been documented during 43 site visits between December 5, 2007, and December 11, 2008. In addition, information in the Airport's Wildlife Observation Log from February 2020 to February 2022 were reviewed. The species documented in the Wildlife Hazard Assessment Report and recent Wildlife Observation Log are included in **Appendix F** (Environmental Background Information). Recorded species include birds, mammals, and reptiles. Although potential habitat exists in Morris Creek and Tuttle Brook (and their tributary channels), the Northern Diamondback Terrapin (*Malaclemys terrapin terrapin*), which is a state species of special concern under Connecticut's Endangered Species Act, has not been documented during previous field survey activities.

4.3.2. Federally Threatened and Endangered Species

No designated critical habitats exist in the project site. The potential occurrence of federally-listed threatened and endangered species was evaluated using the USFWS Information for Planning and Conservation (IPaC) online system; the study areas were reviewed for species. The IPaC official species list indicates the Northern Long-eared Bat (*Myotis septentrionalis*, federally threatened) should be considered in an effects analysis for the Project. No known Northern Long-eared Bat hibernacula are present in New Haven and East Haven[29]. The candidate species Monarch Butterfly (*Danaus plexippus*) was also included in the USFWS - IPaC report. However, candidate species have no current protections under the federal or state Endangered Species Act and does not need to be considered in an effects analysis. In addition, the mown grass and paved areas of the Airport do not provide Monarch Butterfly breeding and roosting habitat. See **Appendix C** (Agencies Correspondence) for USFWS Official Species List. The description of habitat preferences for the federally-listed species and their potential to occur in the project site are presented in **Appendix G** (Environmental Background Information). As concluded in **Appendix G**, these species are not likely to occur in the project site.

4.3.3. Essential Fish Habitat

According to the Essential Fish Habitat Mapper from National Marine Fisheries Service (NMFS), no Habitat Areas of Particular Concern were identified at the study area. An Essential Fish Habitat is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity". According to National Oceanic and Atmospheric Administration (NOAA) Essential Fish Habitat Mapper (NOAA, 2022), the study area is included in a larger grid area mapped by NMFS as Essential Fish Habitat for the following species:

- Winter Flounder (eggs, juvenile, larvae/adult)
- Little Skate (juvenile, adult)
- Atlantic Herring (juvenile, adult)
- Pollock (adult, juvenile)
- Red Hake (adult, eggs/larvae/juvenile)
- Windowpane Flounder (adult, larvae, eggs, juvenile)
- Winter Skate (adult, juvenile)
- Scup (larvae, eggs, juvenile, adult)
- Longfin Inshore Squid (juvenile, adult, eggs)
- Atlantic Mackerel (eggs, larvae, juvenile, adult)
- Bluefish (adult, juvenile)
- Atlantic Butterfish (eggs, larvae, adult)
- Summer Flounder (juvenile, adult)
- Black Sea Bass (juvenile)

Although the Essential Fish Habitat Mapper identified these species in the grid where the project occurs, no Essential Fish Habitat was identified within the project site. There is no work proposed in tidal creeks or tidal wetlands; all work would be within inland wetlands. See **Section 4.15.1** for a discussion of wetlands. The presence of an existing tide gate south of the airport may also restrict passage of federally managed species.

[29] https://portal.ct.gov/-/media/DEEP/endangered_species/images/nlebmappdf.pdf

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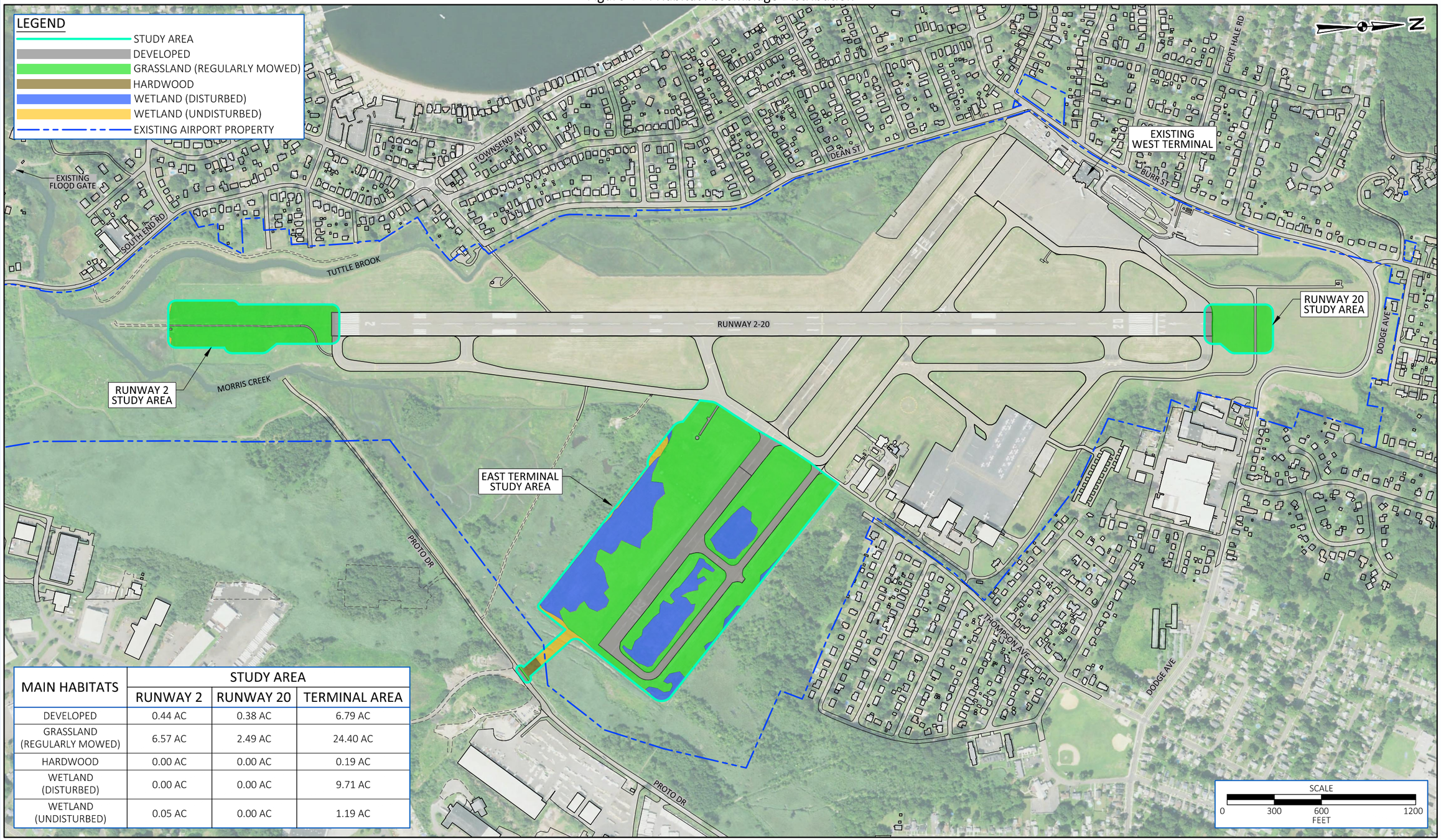
Figure 4-2: Habitat Assemblage Distribution



MAIN HABITATS	STUDY AREA		
	RUNWAY 2	RUNWAY 20	TERMINAL AREA
DEVELOPED	0.44 AC	0.38 AC	6.79 AC
GRASSLAND (REGULARLY MOWED)	6.57 AC	2.49 AC	24.40 AC
HARDWOOD	0.00 AC	0.00 AC	0.19 AC
WETLAND (DISTURBED)	0.00 AC	0.00 AC	9.71 AC
WETLAND (UNDISTURBED)	0.05 AC	0.00 AC	1.19 AC

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4.3.4. Migratory Birds

The IPaC query provides a list of 19 migratory bird[30] species that may occur on, or in the vicinity of, the study area. The birds listed by IPaC are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern list or warrant special attention. These migratory bird species include:

- American Oystercatcher (*Haematopus palliatus*)
- Bald Eagle (*Haliaeetus leucocephalus*)
- Black Skimmer (*Rynchops niger*)
- Black-billed Cuckoo (*Coccyzus erythropthalmus*)
- Blue-winged Warbler (*Vermivora pinus*)
- Bobolink (*Dolichonyx oryzivorus*)
- Canada Warbler (*Cardellina canadensis*)
- Golden Eagle (*Aquila chrysaetos*)
- Hudsonian Godwit (*Limosa haemastica*)
- Lesser Yellowlegs (*Tringa flavipes*)
- Long-earned Owl (*Asio otus*)
- Prairie Warbler (*Dendroica discolor*)
- Purple Sandpiper (*Calidris maritima*)
- Red-headed Woodpecker (*Melanerpes erythrocephalus*)
- Ruddy Turnstone (*Arenaria interpres morinella*)
- Rusty Blackbird (*Euphagus carolinus*)
- Short-billed Dowitcher (*Limnodromus griseus*)
- Willet (*Tringa semipalmata*)
- Wood Thrush (*Hylocichla mustelina*)

4.3.5. State Designated Threatened, Endangered or Special Status Species

The potential occurrence of State-listed threatened and endangered species on, and in the vicinity of, the study area was evaluated by review of CT DEEP Natural Diversity Data Base (NDDB) mapping, followed by coordination with the CT DEEP NDDB. The CT DEEP NDDB mapping for the Airport is included in **Appendix G** and **Figure 4-3**, and the CT DEEP response letter is included in **Appendix C**. Review of the current NDDB mapping indicates NDDB resources occur in the vicinity of the project site. The response letter from CT DEEP NDDB lists five (5) grassland bird species documented to occur in the vicinity of the project site. The habitat preferences for these State-listed species and their potential to occur in the project site are presented in **Appendix G**.

In addition to the State-listed species identified in the 2022 CT DEEP NDDB coordination, an additional four (4) State-listed bird species were identified in previous environmental studies and during the summer/fall fieldwork in 2021 (see **Appendix G**). The grass species Paspalum leave (state-threatened) and potentially Two-flowered Cynthia (*Krigia biflora*) were documented in the maintained grass areas area and within the East Terminal Development area. See **Section 4.15.1** (Wetlands) for additional information and **Figure 4-3** for Potential Threatened and Endangered Species – Natural Diversity Areas Location Map.

[30] Pursuant to the Migratory Bird Species Act (MBTA) of 1918 (16 U.S.C. §§703-712) it is unlawful, illegal to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid federal permit. The Bald and Golden Eagle Protection Act (16 U.S.C. §668-668c) prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald or golden eagles, including their parts, nests, or eggs.

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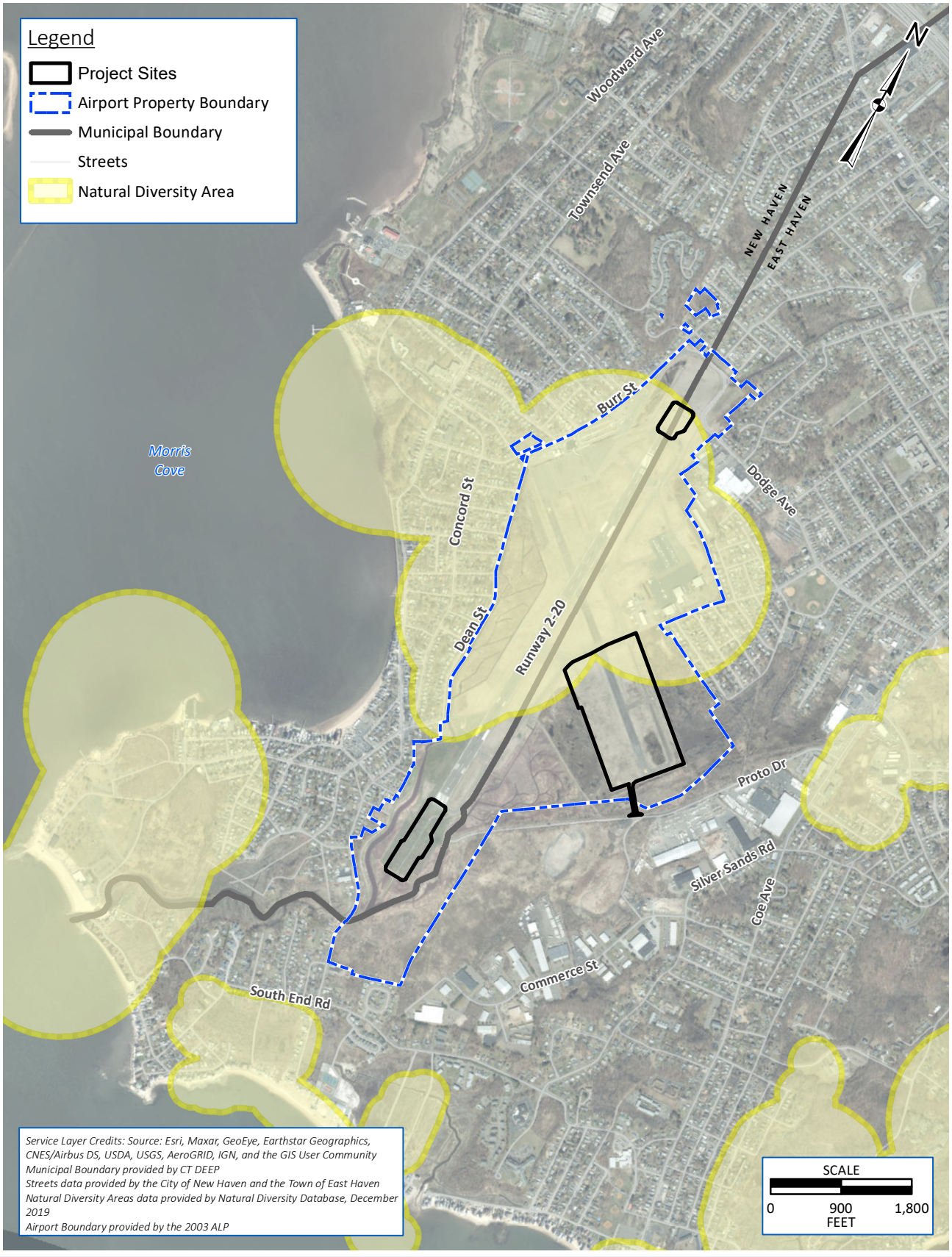
Figure 4-3: Potential Threatened and Endangered Species



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4.4. CLIMATE

The Intergovernmental Panel on Climate Change (2021) has concluded that it is unequivocal that human influence has warmed the atmosphere, ocean, and land and that human activities have caused concentrations of greenhouse gases (GHG) to increase since the mid-18th century. Climate change is a global phenomenon that can have local impacts. 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 GHG emissions in the atmosphere affect global climate. 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. 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. Aircraft jet engines, like other vehicle engines, produce CO_2, water (H_2O) vapor, N_2O, CO, oxides of sulfur, unburned or partially combusted hydrocarbons or VOCs, particulates, and other trace compounds.

In December 16, 2021, the Governor of Connecticut signed Executive Order No. 21-331 which calls for 23 actions, supporting recommendations proposed by the Governor's Council of Climate Change and directs State executive branch state agencies to take significant actions within their authority to reduce carbon emissions. Many of these actions implement recommendations of the Governor's Council on Climate Change Phase 1 Report[32] issued in January 2021. The 23 actions directed by the Executive Order cover the areas of buildings and infrastructure; clean transportation; community climate resilience; health, equity and environmental justice; economic development and jobs; and natural and working lands. See **Section 4.15.4** (Floodplains) for additional information about climate change and sea level rise.

4.4.1. Regulatory Background

Research has shown that there is a direct link between fuel combustion and GHG emissions. Therefore, sources that require fuel or power at an airport are the primary sources that would generate GHGs. Aircraft are probably the most often cited air pollutant source, but they produce the same types of emissions as cars. Per Aviation and Emissions: A Primer, "Aircraft jet engines, like many other vehicle engines, produce CO_2, H_2O vapor, N_2O, CO, oxides of sulfur, unburned or partially combusted hydrocarbons or volatile organic compound (VOC), particulates, and other trace compounds."[33] Researchers developed the Global Warming Potential indicator as a way to compare the global warming impacts of different gases, by converting each gas amount to a carbon dioxide equivalent (CO_2E). Global Warming Potentials provide a common unit of measure, which allows for consistency when estimating emissions of these different gases. CO_2 has a Global Warming Potential of one because it is the gas used as the reference point. CH_4 does not last as long in the atmosphere as CO2; however, it absorbs much more energy. In comparison, one ton of CH_4 has 28 times more heat-capturing potential than does one ton of CO_2. The amount of CH_4 emissions would be multiplied by 28 to determine its CO_2E value. Nitrogen oxides (NO_X) lasts in the atmosphere far longer than CO_2. The amount of nitrous oxides emissions would be multiplied by 298 to determine its CO_2E value.

[31] https://portal.ct.gov/-/media/ConnecticutClimateAction/NML_EO_21-3-_Website_Text_Actions.pdf

[32] https://portal.ct.gov/-/media/DEEP/climatechange/GC3/GC3_Phase1_Report_Jan2021.pdf

[33] 14 FAA, January 2005, Aviation and Emissions A Primer. What emissions come from aviation?

Although no federal standards have been set for GHG emissions, it is well established that GHG emissions can affect climate. Based on President Biden's recent Executive Order[34], the project impacts on GHG emissions and climate change should be documented in the Environmental Assessments. Furthermore, per FAA Order 1050.1F, the discussion of potential climate impacts should be documented in a separate section of the NEPA document, distinct from air quality[35]. Where the proposed action or alternative(s) would result in an increase in GHG emissions, the emissions should be assessed either qualitatively or quantitatively. 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.

4.4.2. Local Greenhouse Gas Emissions Inventory

The City of New Haven worked with Yale University to update its greenhouse gas inventory in 2019.[36]Information for the GHG 2019 emissions inventory was collected from various local utilities including United Illuminating and Southern Connecticut Gas, Connecticut Department of Transportation and Amtrack, Connecticut Department of Environmental Protection, Greater New Haven Water Pollution Control, and South Central Connecticut Regional Water Authority. Results of the inventory show that New Haven County produced approximately 1.422 million tons of CO_2e in 2019, which is slightly higher than the baseline 2015 inventory of 1.037 million tons of CO_2e. **Table 4-3** presents the breakdown of the GHG inventory for 2019 compared to 2015.

Table 4-3: City of New Haven GHG Emissions 2015 and 2019

	2015 ClearPath (tCO2e)	2019 ClearPath (tCO2e)
Stationary Energy	**678,330**	**1,102,653**
Residential	207,136	578,052
Commercial	314,826	319,168
Industrial	156,368	205,433
Transportation	**331,655**	**313,404**
Solid Waste	**18,744**	**418**
Water & Wastewater	**8,806**	**6,193**
TOTAL	**1,037,535**	**1,422,668**

Source: City of New Haven 2019 GHG Inventory

The City of New Haven 2019 GHG emissions were estimated at 1,422,668 tons of carbon dioxide equivalents (TCO_2e). Sources of GHG emissions for the project include emissions from construction operations including construction equipment, motor vehicles, and nonpoint sources[37], as well as operational emissions from aircraft emissions and ground support equipment. See **Section 5.3.2** for

[34] Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis." January 20, 2021.

[35] https://www.faa.gov/sites/faa.gov/files/about/office_org/headquarters_offices/apl/3-climate.pdf

[36] https://www.newhavenct.gov/civicax/filebank/blobdload.aspx?blobid=44074

[37] Nonpoint source pollution generally results from land runoff, precipitation, atmospheric deposition, drainage, seepage or hydrologic modification. (https://www.epa.gov/nps/basic-information-about-nonpoint-source-nps-pollution)

estimated annual greenhouse gas emissions from demolition and construction activities, and the operational emissions from existing and Proposed Action.

4.5. COASTAL RESOURCES

The Connecticut Coastal Management Act established standards and boundaries in accordance with the federal Coastal Zone Management Act of 1972. Lands within the coastal boundary fall under the purview of the Connecticut Coastal Management Act, which is administered by the CT DEEP Land and Water Resources Division. The entire Airport property, except for a small area at the far northern limit of the Airport in the vicinity of Dodge Avenue and Holmes Street, falls within the coastal boundary as established by Connecticut General Statutes Section 22A–94 (see **Figure 4-4**). Coastal resources as defined in the Connecticut General Statutes Section 22a-93(7) on and adjacent to the Airport are described in more detail in **Appendix G** and include:

- General Coastal Resources
- Coastal Hazard Areas
- Freshwater Wetlands and Watercourses
- Tidal Wetlands
- Shoreland

4.6. HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL AND CULTURAL RESOURCES

Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108 et seq.) requires federal agencies to consider the effects of their Proposed Actions (or undertakings) on properties that are listed in or determined eligible for listing in the National Register of Historic Places. Historic properties may include buildings, structures, sites, objects, and districts. An effect is considered to be adverse "when an undertaking (Proposed Action) may alter, directly or indirectly, any of the characteristics of the historic resource that qualify the property for inclusion in the National Register of Historic Places in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association" (36 CFR Section 800.5). Effects may be direct or indirect.

4.6.1. Area of Potential Effect

In accordance with Section 106 of the National Historic Preservation Act, an Area of Potential Effect was established for the Project in the Project Review Form, which was submitted to the CT State Historic Preservation Office (SHPO) on October 4, 2022. The SHPO acknowledged the Area of Potential Effect in their response, which was received on October 27, 2022 (See **Appendix H**, SHPO Project Review Package). The Area of Potential Effect includes the area within the Proposed Action 2031 day-night average sound level (DNL) contour (65-75 dB), reportable noise increases outside of the HVN property and foreseeable ground disturbance. See **Figure 4-5**. The Area of Potential Effect is the area within which a project may cause alterations in the character or use of historic properties. Effects may include physical destruction, damage, or alteration of a property; change in the character of the property's use or of physical features within its setting that contribute to its historic significance; and introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features (36 CFR 800.5(a)(2)). Historic Architectural Resources.

As indicated in the Project Notification Form (**Appendix H**) submitted to the SHPO in October 2022, no historic properties were identified within the Area of Potential Effect.

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Figure 4-4: Coastal Resources

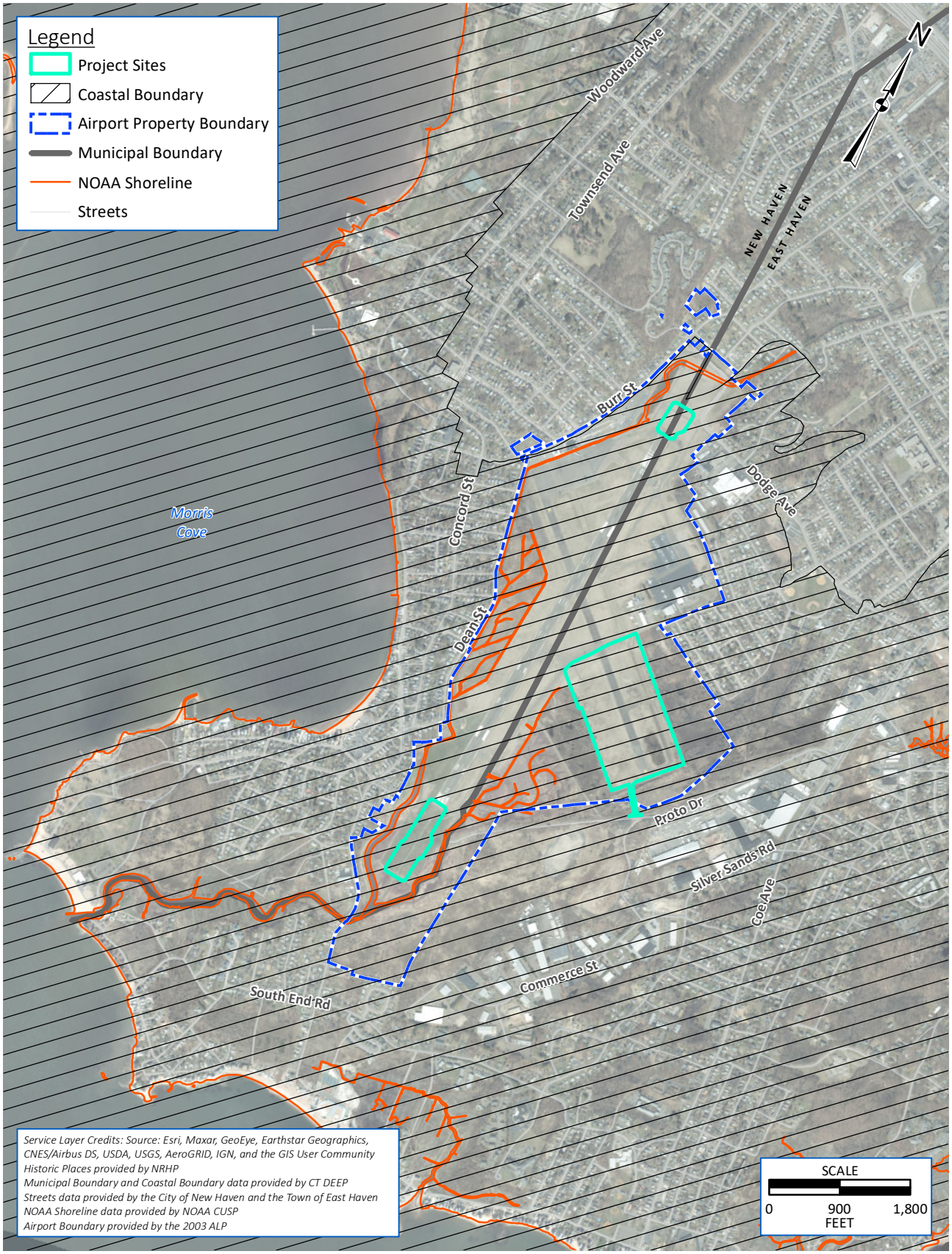

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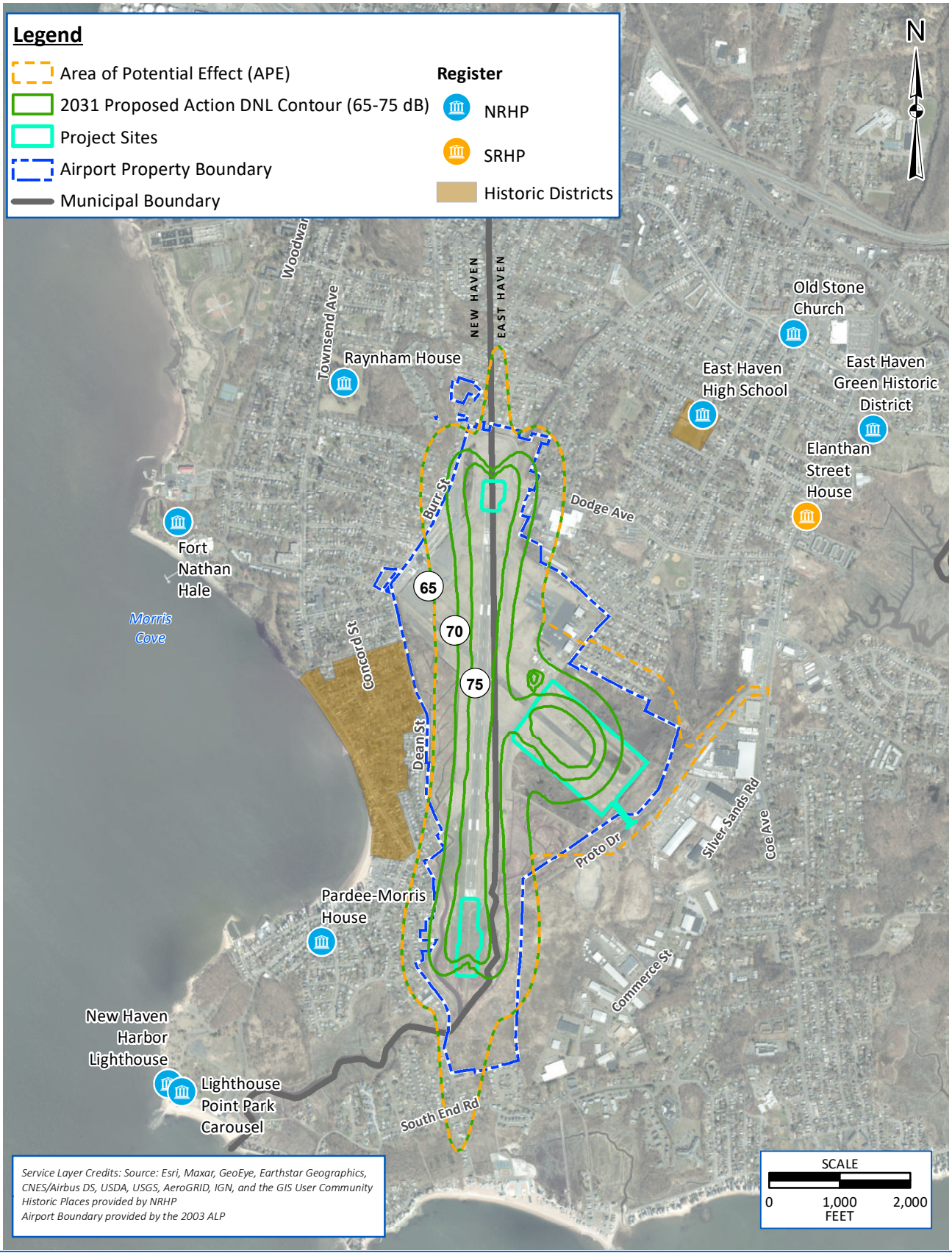
Figure 4-5: Cultural Resources



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4.6.2. Archaeological Resources

A review of archaeological resources within and near the Area of Potential Effect was performed pursuant to all pertinent cultural resource laws, regulations, and guidelines, including Section 106 of the National Historic Preservation Act of 1966, as amended, and the *Environmental Review Primer for Connecticut's Archaeological Resources*. The review identified known archaeological sites in the vicinity of the Airport; however, none of these sites are located within the Area of Potential Effect. This information was submitted to the CT SHPO as part of the Project Notification Form. As part of Section 106 consultation in the late 1990s, the SHPO noted extensive ground disturbance, and therefore a lack of integrity, within the Airport and the Morris Creek area.[38] That study area includes the Area of Potential Effect.

4.7. SECTION 4(F) AND SECTION 6(F) RESOURCES

Section 4(f) of the U.S. Department of Transportation Act of 1966 (49 U.S.C. §303) protects significant publicly owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. Section 4(f) prohibits the use of land from a publicly-owned park, recreational area, wildlife or waterfowl refuge, or public or private historic site for a federal transportation use unless it is determined that there is no feasible and prudent alternative to using the land, and that the project incorporates all possible planning to minimize harm to Section 4(f) resources; or that the use, including any measures to minimize harm, would have a minimal or insignificant adverse impact on the property. A use occurs when the property is permanently incorporated into the transportation project through a taking of land; when it is temporarily occupied; or when its significant features are substantially impaired such that its value as a 4(f) resource will be meaningfully diminished or lost. The latter is termed a constructive use.

Section 6(f) also regulates parkland and recreational resources. The Land and Water Conservation Fund Act of 1965 was enacted to preserve, develop, and assure accessibility to outdoor recreational resources. If a property was acquired or improved with Land and Water Conservation Fund Act money, the property cannot be converted to a use other than public outdoor recreation without the approval of the Secretary of the Interior. A Section 6(f) conversion may also occur as a result of a temporary use equal to or greater than six months in duration.

The study area for Section 4(f) resources encompasses an area within one-half (0.5) mile of the Airport as shown in **Figure 4-6** (Section 4f/6f Map). This area takes into consideration both potential physical and constructive uses, including the 65 decibels (dba) noise contours for both the No Action and Proposed Action, as discussed in **Section 4.11** (**Figure 4-10**), and areas adjacent to the Airport. The study area encompasses the Area of Potential Effect discussed in **Section 4.6.1**. The study area for Section 6(f) resources is identical to the study area for Section 4(f) resources, taking into consideration both the potential for short-term construction-period uses and long-term use of 6(f) lands.

There are four (4) National Register-listed historic properties in the Study Area, as shown in **Figure 4-6**, which all meet the criteria as Section 4(f) properties. Based on a review of the municipal open space and protected open space layers of the CT DEEP GIS, and the Plans of Conservation and Development for the City of New Haven and the Town of East Haven, there are eight (8) publicly owned parks, recreational areas, wildlife and waterfowl refuges within the study area which may qualify as Section 4(f) resources.

[38] Letter from Dawn Maddox, SHPO's Office, to Richard Dyment, Hoyle Tanner & Associates, Inc., March 28, 1996.

In addition, based on a review of the CT DEEP municipal open space GIS layer, there is one (1) school within the study area that could qualify as a Section 4(f) resource due to its potential public recreational space (see **Table 4-4**). There is one (1) Section 6(f) property in the study area which is Lighthouse Point Park located over 0.4-mile from the Airport.

Table 4-4: Potential Section 4(f) Properties within the Study Area

Property Name	Location
Cove Place Right-of-Way	New Haven
Former East Haven High School (National Register of Historic Places)	East Haven
Hill Street Playground	East Haven
Jerry Juliano Playground	New Haven
Lighthouse Point Park	New Haven
Maturo Drive Playground	New Haven
Memorial Field	East Haven
Morris Cove Historic District (National Register of Historic Places)	New Haven
Morris House (National Register of Historic Places)	New Haven
Nathan Hale School	New Haven
Old Town Landing (Morris Avenue)	East Haven
Pardee Parkway	New Haven
Raynham House (National Register of Historic Places)	New Haven

Source: CT DEEP GIS, accessed April 2022, East Haven POCD, 2019, and Heritage Consultants, 2022.

See **Figure 4-6** for Section 4(f)/6(f) Resources Map.

4.8. FARMLANDS

There are no farming activities within the project site or on HVN property. The Farmland Protection Policy Act of 1994 regulates federal actions with the potential to convert farmland to non-agricultural uses. For the purposes of the Farmland Protection Policy Act, farmland refers to soils classified as prime farmland, unique farmland, and land of statewide or local importance. The Farmland Protection Policy Act assures that to the extent possible, federal programs are administered to be compatible with state, local units of government, and private programs and policies to protect farmland. However, the Farmland Protection Policy Act does not apply to land already committed to urban development or water.

The Airport property has already been previously committed to current airport utilization and development; therefore, the area of impacts would not be subject to the Farmland Protection Policy Act, so no farmlands are proposed to be impacted by the project. **Figure 4-7** depicts the soils within the project site.

Figure 4-6: Section 4f/6f Map

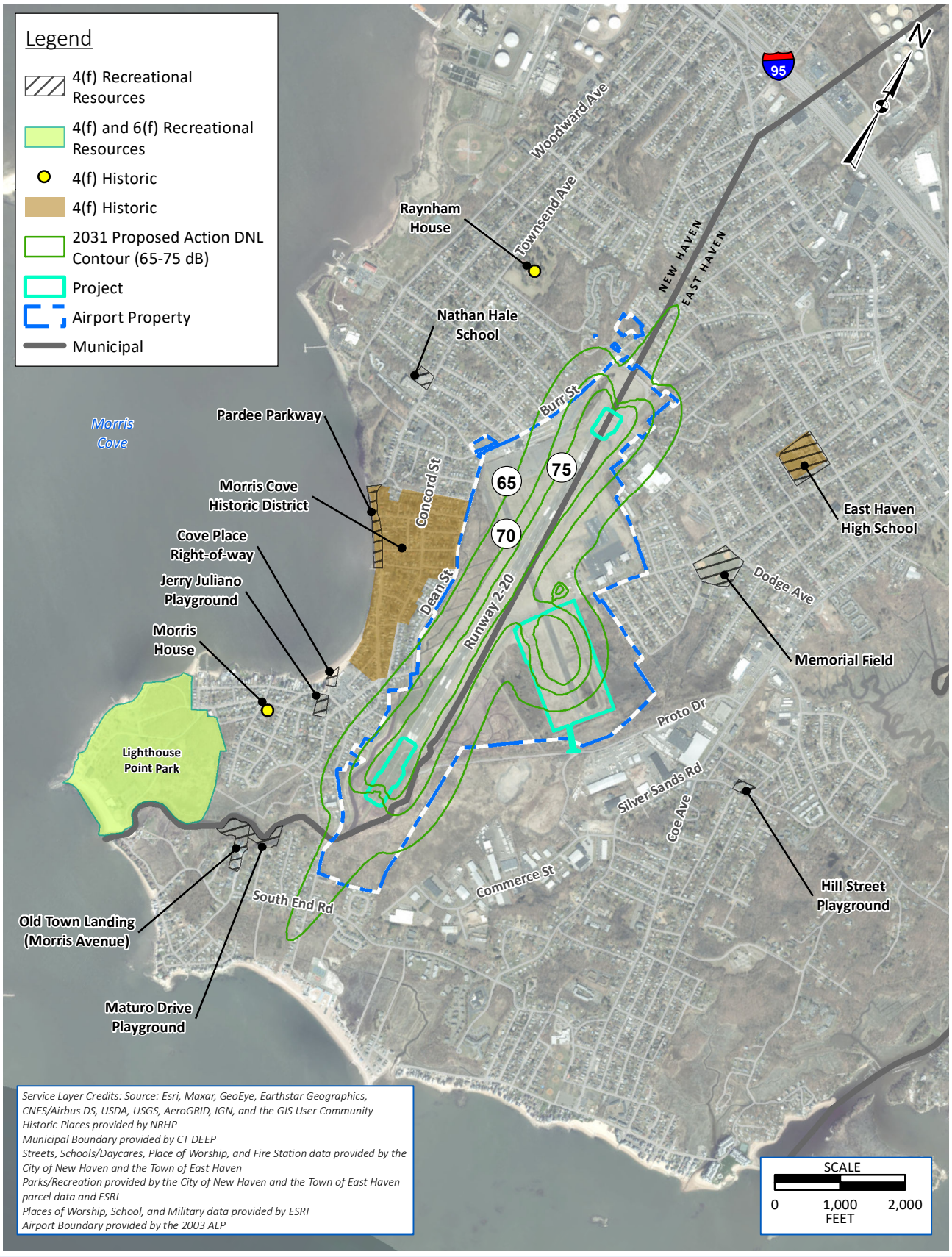

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Figure 4-7: Soils Map

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4.9. HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION

Based on EPA, CT DEEP and other data bases such as the Environmental Working Group – PFAS Contamination Map, there are no records of active or open contamination, abandoned, inactive, or uncontrolled hazardous waste sites reported within the project site, nor land use restrictions. The following databases or information were reviewed (as available) for the project site within HVN property boundary:

- EPA EnviroMapper[39]
- EPA National Priority List
- EPA Toxic Release Inventory Program[40]
- EPA Enforcement Compliance History Online[41]
- Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS)
- Hazardous Waste Land Disposal Notifiers (also known as Resource Conservation and Recovery Act (RCRA) Land Disposal Facilities or LDFs)
- CT DEEP State Superfund
- CT DEEP List of Contaminated or Potentially Contaminated Sites
- CT DEEP Underground Storage Tank Program[42]
- Connecticut Environmental Land Use Restrictions[43]
- Environmental Working Group – PFAS Contamination Map

Based in the EPA EnviroMapper and CT DEEP databases, there do not appear to be any CERCLIS sites; recorded historic spills; or leaking underground storage tanks within or immediately adject to the project sites. Furthermore, according to the EPA National Priority List and Superfund Alternative Sites, subject sites are not present within one (1) mile of HVN. The nearest such site is the Coppola Metals located at 201 Russel Street, New Haven, CT, approximately 1.5 miles north of the Project. As per the CT DEEP List of Contaminated or Potentially Contaminated Sites[44] in connection to hazardous waste facilities as defined by Section 22a-134f of the Connecticut General Statutes, the following site at HVN has been listed.

Site Name:	Site Address:	Site Description:	Status:
Tweed New Haven Airport	155 Burr Street	Leaking underground storage tanks	*Completed*

There are no regulatory records of ongoing remediation projects[45] at HVN according to available information from CT DEEP databases. However, the potential presence of PFAS (Per-and polyfluoroalkyl substances) is not discarded, as fire suppressing foams (that may have contained PFAS) have been used during FAA required equipment testing. The testing was performed outside the project site. Discharges of PFAS-containing fire suppressing foams for testing ceased in 2019, when HVN acquired then newly available testing equipment that did not require discharges. Perfluorooctanoic acid (PFOA) and perfluorooctane

[39] https://geopub.epa.gov/myem/efmap/index.html
[40] https://www.epa.gov/toxics-release-inventory-tri-program
[41] https://echo.epa.gov/facilities/facility-search/results
[42] https://portal.ct.gov/-/media/DEEP/site_clean_up/USTCleanUpAccount/USTPetroleumCleanupProgramSiteListpdf.pdf
[43] https://ctdeep.maps.arcgis.com/apps/webappviewer/index.html?id=d37eccb2a5c3491d8f0d389a96d9a912
[44] https://portal.ct.gov/-/media/DEEP/site_clean_up/sites/contaminatedsitesafpdf.pdf
[45] https://portal.ct.gov/DEEP/Remediation--Site-Clean-Up/Current-Projects

sulfonate (PFOS), collectively called PFAS, are two (2) man-made chemicals that were commonly used in household and industrial products, and historically in firefighting foams. Up until 2019 the Airport would have done at least 1 discharge for each in service ARFF vehicle for annual proportioning testing. On October 5, 2016, there was a discharge of AFFF on the East Ramp in conjunction with an emergency incident. In 2019 the Airport switched over to the Ecologic testing system.

As applicable, remediation of contamination and mitigation strategies would be determined in coordination with CT DEEP and their Remediation Standards Regulation[46] and taking into consideration The Connecticut Interagency PFAS Action Plan[47], independent of this NEPA evaluation. Any sampling and remediation (if encountered) would be done concurrently with the design development and/or construction phases of the new East Terminal Development.

Solid waste is collected at the Airport by Bozzuto Bros Refuse Services. The solid waste and recycling material is hauled to New Haven Solid Waste Management Transfer Station (260 Middletown Ave New Haven, CT 06513) for diversion of solid waste and then disposed at a permitted volume reduction plant, resource recovery facility and/or landfill. According to CT DEEP data base[48], there are several registered municipal transfer stations[49] and approximately 31 volume reduction plants[50], five (5) Resource Recovery Facilities[51], and 17 active landfills[52] in Connecticut. Solid waste management from the New Haven Solid Waste Management Transfer Station to the final disposal facilities could vary and subject to the New Haven Solid Waste and Recycling Authority. Based on the above information and the latest Connecticut Solid Waste Management Plan (*2016 Comprehensive Materials Management Strategy*)[53] adopted by CT DEEP to maintain system capacity, there is sufficient capability to continue managing recycling, processing and disposal of the waste generated by HVN.

4.10. LAND USE

The Airport is located partly in the City of New Haven and partly in the Town of East Haven, both located in New Haven County, Connecticut, as shown in **Figure 4-8**. The Airport property is identified for public services and utilities land use. The area surrounding HVN is generally residential in both communities. In New Haven, land abutting the west side of the Airport is predominately single family residential. A small pocket of commercial land is located at the south end of the Airport on the Runway 02 end. On the east side of the Airport, land uses in East Haven include single family, two family, and multi-family residential, commercial, industrial, and land for recreation and entertainment. A residential neighborhood is located east of the East Ramp and GA parking aprons. Further east off the Runway 32 end, industrial parcels buffer the Airport from additional residential areas to the east.

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[46] https://eregulations.ct.gov/eRegsPortal/Browse/RCSA/Title_22aSubtitle_22a-133k/

[47] https://portal.ct.gov/-/media/Office-of-the-Governor/News/20191101-CT-Interagency-PFAS-Task-Force-Action-Plan.pdf

[48] https://ctdeep.maps.arcgis.com/apps/webappviewer/index.html?id=d320b55589fe4a8cbafab7d19e434621

[49] https://portal.ct.gov/-/media/DEEP/waste_management_and_disposal/solid_waste/RegisteredMunicipalTransferStationspdf.pdf

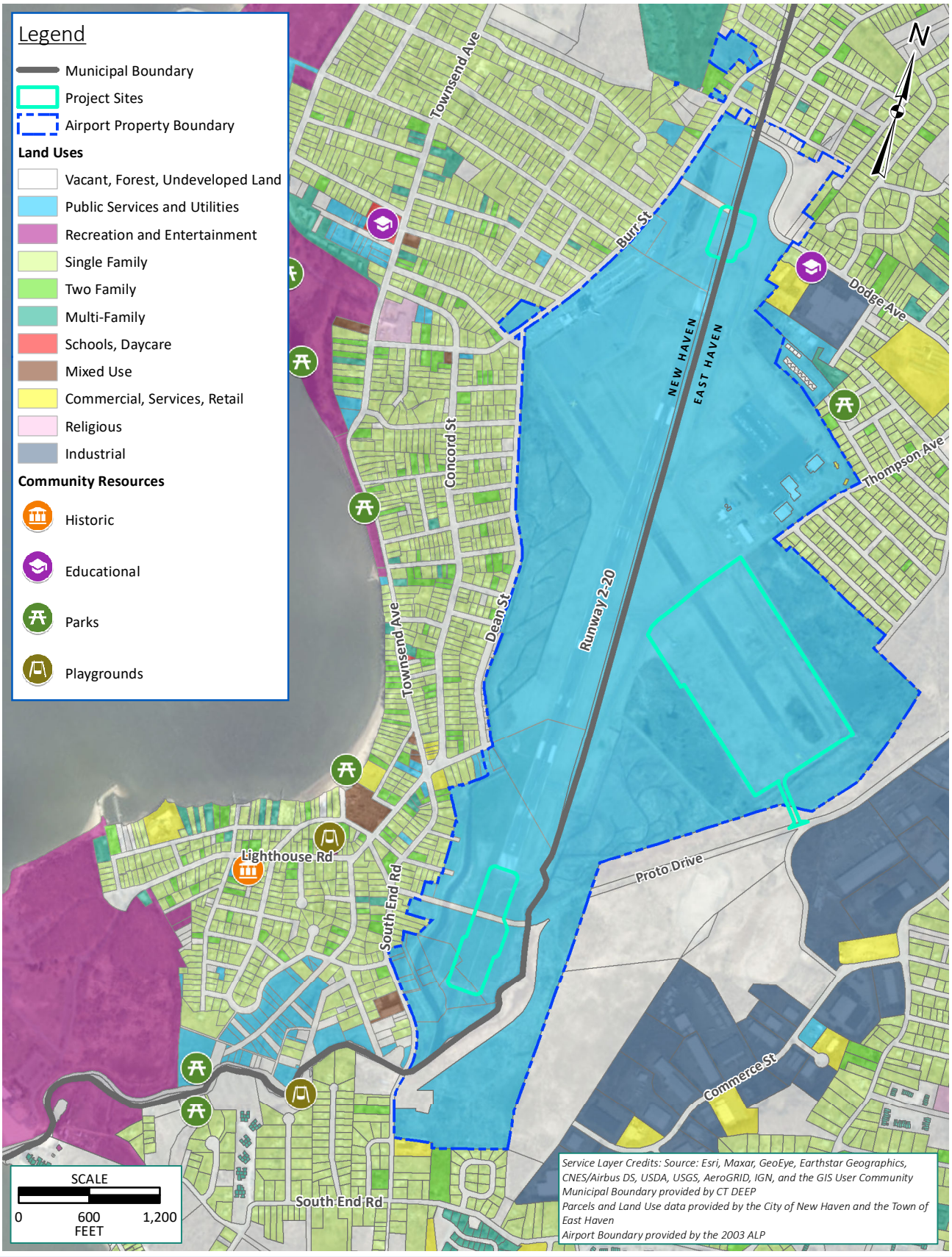
[50] https://portal.ct.gov/-/media/DEEP/reduce_reuse_recycle/Construction_and_Demolition/VolumeReductionPlantspdf.pdf

[51] https://portal.ct.gov/DEEP/Waste-Management-and-Disposal/Solid-Waste/Resources-Recovery-Facilities

[52] https://portal.ct.gov/DEEP/Waste-Management-and-Disposal/Solid-Waste/Active-Landfill-Sites

[53] https://portal.ct.gov/DEEP/Waste-Management-and-Disposal/Solid-Waste-Management-Plan/Solid-Waste-Management-Plan#:~:text=Current%20Comprehensive%20Materials%20Management%20Strategy%20%282016%29%20The%20Comprehensive,Management%20Plan%20called%20for%20by%20Public%20Act%2014-94.

Figure 4-8: Land Use Map



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4.10.1. Zoning

Although the Airport is owned by the City of New Haven, its location within the boundaries of two (2) political subdivisions provides both communities local land use control over the Airport. The Airport is currently zoned as an Airport District and General Business District in the City of New Haven and as a Light Industrial District in the Town of East Haven. A detailed Zoning Map for the area surrounding the Airport is provided in **Figure 4-9**.

The City of New Haven Zoning Ordinance, Article VI, §53 describes the Airport District as existing for the purpose of designating the area that has been and is being developed by the Airport. The Airport represents a distinct land use not easily classified in any other district and has unique needs for development as an integrated unit to serve the city and region. Airport District was established for the purpose of designating the area which has been and is being developed by the Airport. Permissible uses include municipal airport related development incidental thereto.

The following are the principal zoning districts present in the vicinity of the Airport within the City of New Haven:

- General Business
- General Single Family (RS-2)
- Mixed Use
- Planned Development Units and Planned Development Districts
- Park District

Airport property that is in East Haven is not classified by a unique Airport zoning district as is the case in New Haven. Rather, East Haven designates Airport property within the municipal boundaries in the Light Industrial, LI-3 District. Section 23.17 of the East Haven zoning ordinance states that LI-3 Districts are designed to provide spacious sites for heavy commercial and industrial development. These areas are often located near residential areas and applicable standards to assure high quality of construction and site plan review would be enforced. Site plan review also ensures adequate parking and traffic facilities, agreeable relationships with residential areas and coordination with the comprehensive plan of zoning.

The following are the principal zoning districts present in the vicinity of the Airport within the Town of East Haven:

- Light Industrial (LI-3)
- Light Industrial (LI-2)
- Light Industrial (LI-1)
- Commercial (CB-2)
- Planned Development (PDD)
- Residence (R-1)
- Residence (R-2)
- Residence (R-3)
- Residence (RA-1)
- Design Resident (DRA-1)

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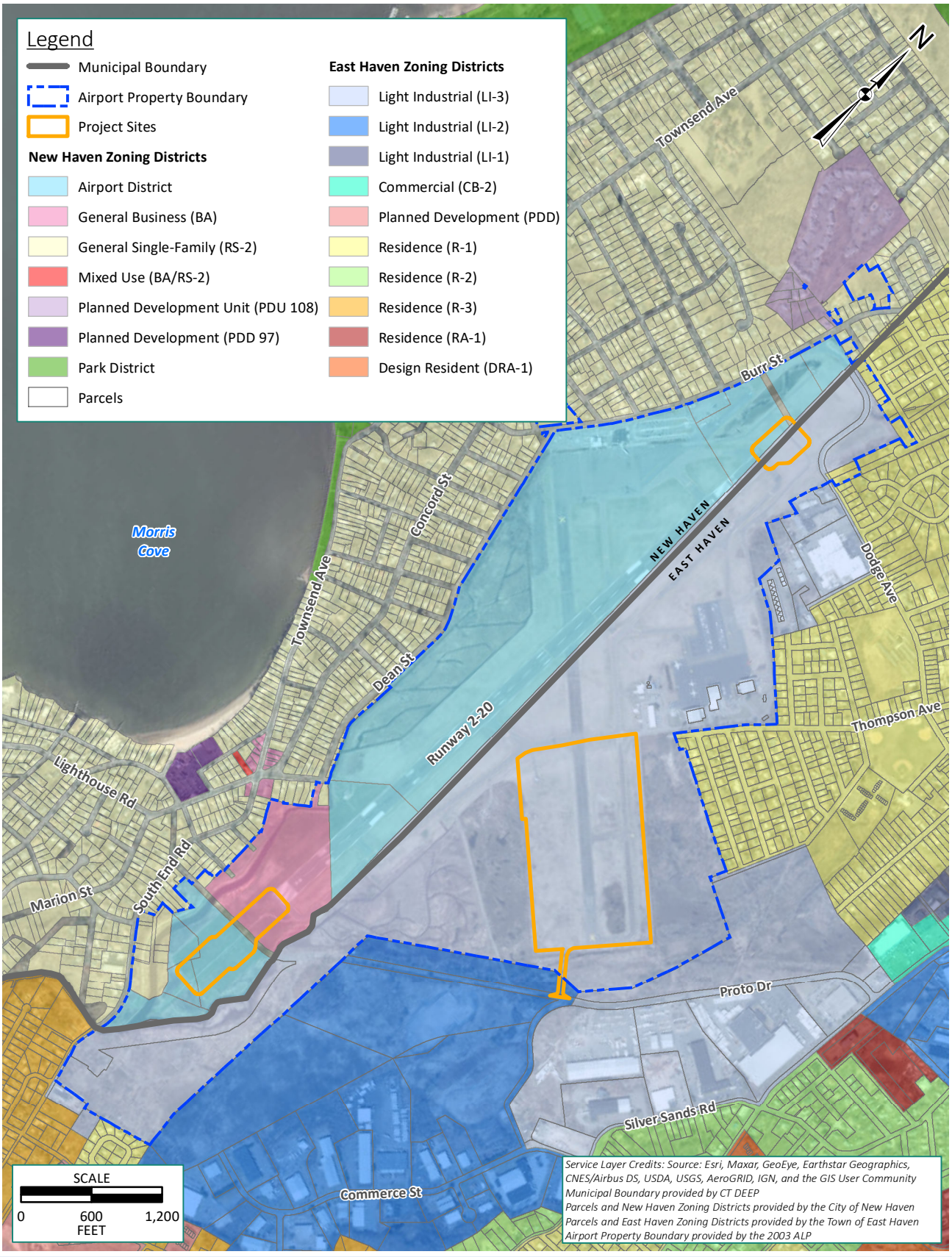
Figure 4-9: Zoning Map



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4.10.2. Industrial and Commercial Activities

While much of the surrounding area consists of residential development, commercial and industrial activities are present in the vicinity of the HVN. The highest concentration of commercial development in the vicinity of HVN is found along Coe Avenue to the east of the airport. Industrial and commercial properties within one (1) mile of HVN, include, but are not limited, to the following:

- The New Haven Companies, Inc.
- Special Events Screen Printing
- Del Monaco's Italian Market
- Krauszer's Food Store
- Schulz Electric
- Lansing Building Products
- Schneider Electric
- Viglione Heating and Cooling
- Universal Component Corporation
- Quality Mechanical Corporation
- Town Fair Tire

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

Nearby residential areas, schools, places of worship and publicly owned outdoor areas are located in the surrounding neighborhoods. The nearby residential areas are primarily single-family residential communities, although multifamily housing (e.g., apartment complexes, townhomes, duplexes, etc.) are also present. The area around the Airport is served by New Haven and East Haven Public Schools. The nearest school to the Airport is Nathan Hale School, approximately 0.25 mile to the west of the Runway 20 project site.

Other nearby schools include Grove J. Tuttle Elementary School, Overbrook School, and East Haven Academy. The nearest cemeteries are Independent Vilner Lodge Memorial Park located approximately 0.04 mile east of the Airport, and the Hebrew Burial and Free Loan Association of New Haven Cemetery approximately 0.24 mile east of the Airport. The nearest places of worship west and east of the Airport are St. Bernadette Church in New Haven and Church *Iglesia Dios Admirable* in East Haven, both approximately 0.20 mile of the Airport.

4.11. NOISE AND COMPATIBLE LAND USE

The compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of the airport's noise impacts. Airport development actions to accommodate fleet mix changes, the number of aircraft operations, or air traffic changes are examples of activities that can alter aviation related noise impacts and affected land uses subjected to those impacts.

For aviation noise analysis, 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) which is FAA's primary noise metric.

Title 14 CFR Part 150 (Appendix A, Table 1) provides federal compatible land use guidelines for several categories of land use as a function of DNL[54] values; those guidelines are reproduced as **Table 4-5**.

[54] DNL is a 24-hour time-weighted-average noise metric expressed in dBA which accounts for the noise levels of all individual aircraft events, the number of times those events occur, and the time of day which they occur. DNL has two time periods: daytime

Table 4-5: Title 14 CFR Part 150 – FAA Land Use Compatibility Guidelines as a Function of Yearly DNL

Land use	Yearly day-night average sound level (L_{dn}) in decibels					
	Below 65	65–70	70–75	75–80	80–85	Over 85
RESIDENTIAL						
Residential, other than mobile homes and transient lodgings ...	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
PUBLIC USE						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
COMMERCIAL USE						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail—building materials, hardware and farm equipment.	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade—general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
MANUFACTURING AND PRODUCTION						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
RECREATIONAL						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

Numbers in parentheses refer to notes.

Key to Table 4-6

SLUCM: Standard Land Use Coding Manual.

Y(Yes): Land use and related structures compatible without restrictions.

N(No): Land use and related structures are not compatible and should be prohibited.

NLR = Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

25, 30, or 35: Land use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dBA must be incorporated into design and construction of structure.

Notes for Table 4-6

The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

(7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.). In order to represent the added intrusiveness of sounds occurring during nighttime hours, DNL penalizes or weights events occurring during the nighttime periods by 10 dBA.

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor NLR of at least 25 dBA and 30 dBA should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dBA, thus, the reduction requirements are often stated as 5, 10, or 15 dBA over standard construction and normally assume mechanical ventilation and closed windows year-round. However, the use of NLR criteria will not eliminate outdoor noise problems.

(2) Measures to achieve NLR of 25 dBA must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.

(3) Measures to achieve NLR of 30 dBA must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(4) Measures to achieve NLR of 35 dBA must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.

(5) Land use compatible provided special sound reinforcement systems are installed.

(6) Residential buildings require an NLR of 25

(7) Residential buildings require an NLR of 30

(8) Residential buildings not permitted

Title 14 CFR Part 150 land use compatibility guidelines shown do not constitute a federal determination that a specific land use is acceptable or unacceptable under federal, state, or local laws. The responsibility for determining acceptable land uses rests with the local authorities through its zoning laws and ordinances.

The evaluation of the HVN noise environment and land use compatibility was conducted in accordance with FAA Order 1050.1F and FAA Order 5050.4B. See **Appendix I** for the Noise and Air Quality Technical Report. FAA's Aviation Environmental Design Tool (AEDT) was used to plot calculated noise levels for existing and forecast conditions. For the baseline conditions in this EA, approximately 8,760 total operations were input to the AEDT model for 2022. The AEDT calculates aircraft noise levels at ground level for a dense grid of points covering the noise study area.

The AEDT output includes noise contours, which are lines of equal loudness; the highest noise levels tend to be centered on the runway and directly under flight paths, with noise dropping off further from the airport. Details on the noise modeling methodology and on aircraft noise terminology are included in **Appendix I.** All noise model inputs are provided in **Appendix I** as well. Average daily noise exposure resulting from airport operations in 2022 at HVN is depicted as DNL contours of 65 dB, 70 dB, and 75 dB in **Figure 4-10** (Existing (2022) Conditions Noise Contour Map), superimposed over land use map.

See **Chapter 5** (Environmental Consequences), **Section 5.9** for forecast analysis results.

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

For the purposes of this evaluation, Census Block groups located south of Interstate-95, bordered by the New Haven Harbor to the west and the East Haven Marsh Wildlife Area to the east were included in the study area. The study area assumes that users of the airport would access the Airport via I-95 and the local roadway system from the highway. Therefore, I-95 is used as the northern boundary. The harbor and marsh place natural limitations to the movement of people and transportation of goods to the east, west, and south.

The study area for socioeconomics, environmental justice, and children's health and safety risks was also established to be consistent with those areas with the highest potential for experiencing direct or indirect effects from traffic, noise, or air quality (including during construction). **Figure 4-11** displays the study area.

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Figure 4-10: Existing Noise Contour Map 2022

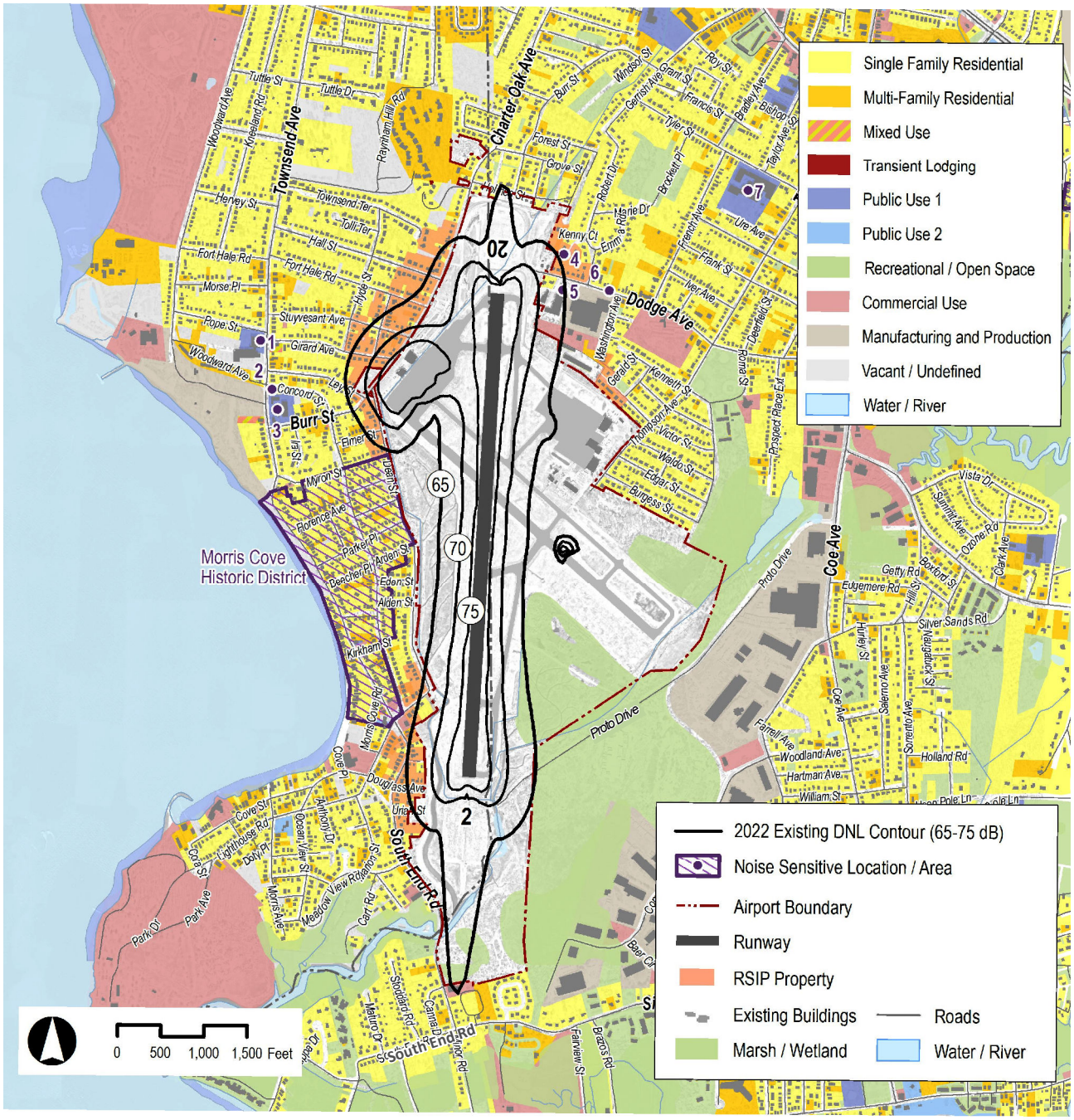

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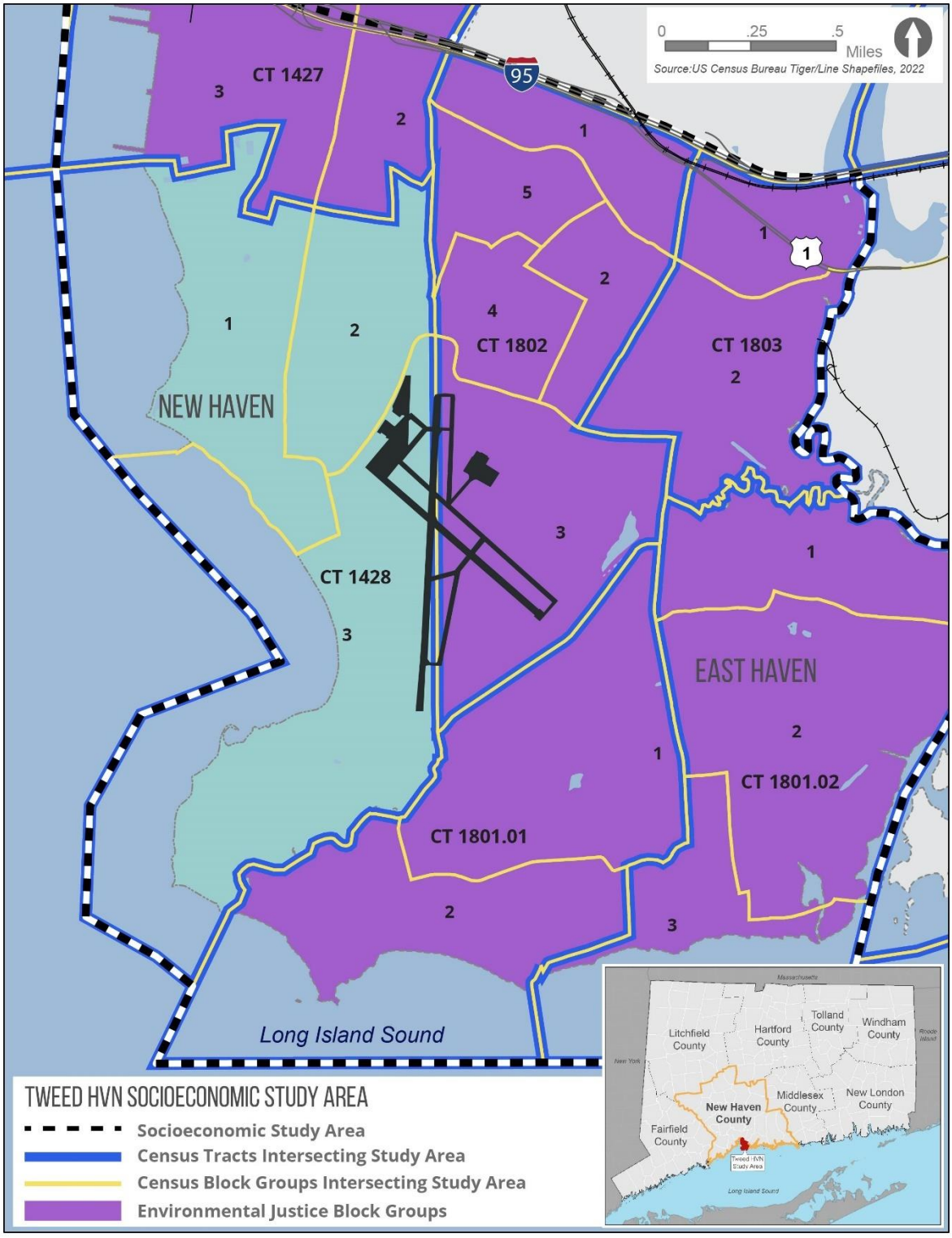
Figure 4-11: Socioeconomic, Environmental Justice, and Children's Health and Safety Risks Study Area



Source: U.S. Census Bureau Tiger/Line Shapefiles 2022

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4.12.1. Socioeconomics

This section presents a discussion of the social, economic, and demographic characteristics surrounding the Airport.

4.12.2. Population and Housing

The total population of the study area's Census Tracts is estimated to be 25,522 persons, comprising 9,908 households. Population density in the study area is approximately 2,478 persons per square mile, which is more densely settled than the Town of East Haven (2,138 persons per square mile), but less dense than the City of New Haven (6,423 persons per square mile). Table 4-6 provides an overview of the study area population, including total populations, households, and population density per square mile within the study area as compared to the Town of East Haven, City of New Haven, New Haven County, and the State of Connecticut as a whole.

Table 4-6: Study Area Population

Geography	Total Population	Households	Population Density Per Square Mile
Study Area	25,522	9,908	2,774
Town of East Haven	28,054	10,764	2,280
City of New Haven	133,874	50,264	7,159
New Haven County	864,751	336,400	1,429
State of Connecticut	3,605,330	1,397,324	744

Source: U.S. Census Bureau 2021 American Community Survey 5-Year Estimate, Tables S0101, DP02, and ESRI World Streetmap. Note data is available at the Census Tract level for this data.

Housing characteristics are presented in Table 4-7. This includes number of housing units, percent owner/renter occupied, percent vacant, average household size, and median household income in the study area, as compared with the Town of East Haven, City of New Haven, and New Haven County. The study area housing characteristics are similar to those of East Haven and New Haven County.

As shown in Table 4-7, there are more owner-occupied housing units in the study area than in the City of New Haven as a whole, but fewer owner-occupied units than found in the Town of East Haven. Study area vacancy rates are higher than in East Haven as a whole, lower than the vacancy rate of the City of New Haven, and close to that of New Haven County. Average household size is similar to each of the comparison geographies. Median household income is lower in the study area than in East Haven as whole and New Haven County, but it is higher than that of the City of New Haven.

Table 4-7: Household Characteristics

Geography	Total Housing Units	Percent Owner Occupied	Percent Renter Occupied	Percent Vacant	Average Household Size	Median Household Income
Study Area	10,940	59%	41%	9.4%	2.54	$63,686
Town of East Haven	11,463	74.2%	25.8%	6.1%	2.58	$74,238
City of New Haven	56,806	28%	72%	11.5%	2.48	$48,973
New Haven County	368,720	62.1%	37.9%	8.8%	2.49	$75,043

Source: U.S. Census Bureau 2021 American Community Survey 5-Year Estimate, Tables DP02, DP04, and S1901. Note data is available at the Census Tract level for this data.

4.12.2.1. Employment

4.12.2.1.1. Existing Labor Force

AdvanceCT and the CT Data Collaborative 2021 Town Profiles show that in East Haven the businesses/industry sectors providing the greatest number of jobs were retail/trade (1,356), health care/social assistance (1,078), local government (857), accommodation/food services (634), and construction (396). Major employers in 2021 included East Haven Builders Supply, Stop and Shop, Regalcare at New Haven, Shoprite, and Town Fair Tire.

In New Haven, the businesses/industry sectors providing the greatest number of jobs were health care/social assistance (22,399), educational services (18,681), local government (6,002), accommodation and food services (5,302), and administrative and support and waste management (5,078). Major employers in 2021 included Yale University, Yale-New Haven Health, Assa Abloy Inc., Southern Connecticut State University, and Chubb Group of Insurance Co.

Existing labor force and unemployment data was not available at the study area level. Unemployment rates for the Town of East Haven, City of New Haven, and New Haven County were slightly higher than the unemployment rate of Connecticut as a whole (5%). The poverty rate of the Study Area (12%) is above that of East Haven (8.9%), but below that of the City of New Haven (25.2%). **Table 4-8** displays the total employed labor force, unemployment rates, and poverty rates for the discussed geographies.

Table 4-8: Existing Labor Force and Unemployment

Geography	Total Employed	Percent Unemployed	Percent Poverty
Study Area	NA	NA	12.%
Town of East Haven	16,054	5.3%	8.9%
City of New Haven	66,203	5.4%	25.2%
New Haven County	460,061	5.1%	11.2%
State of Connecticut	1,875,900	5%	9.8%

Source: Connecticut Department of Labor, February 2022, Labor Market Information, accessed on April 6th at Labor Market Information – Most Recent Labor Force Data for Connecticut Towns (state.ct.us)

4.12.3. Environmental Justice

Executive Order No. 12898, issued February 11, 1994, requires that each federal agency incorporate Environmental Justice (EJ) into its mission. This is to be accomplished "by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low income populations." The EPA defines 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.[55] Note that EJ focuses upon a different categorization of population than addressed by Title VI of the Civil Rights Act, which requires that no person, on the ground of race, color, or national origin, is excluded from participation in, denied the benefits of, or subject to discrimination under any program or activity receiving federal financial assistance. However, for some individuals and neighborhoods, these areas of federal interest overlap. Therefore, EJ principles are incorporated into the processes and products of federally funded regional transportation planning. As guidance, the USDOT [56]outlines the following three (3) principles to guide EJ evaluations:

- Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority and low-income populations
- Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process
- Prevent the denial of the reduction in, or the significant delay in, the receipt of benefits by minority and low-income populations

The EPA and the Center for Disease Control and Prevention (CDC) provide screening and mapping tools for planning level analysis that identify Environmental Justice indicators via EPA's EJScreen[57] and CDC's Environmental Justice Index (EJI)[58]. These tools utilize data to identify places that may have higher environmental burdens and vulnerable populations.

The EJScreen reports provide Environmental Justice and supplemental indexes that are a combination of environmental and socioeconomic information. The EJScreen results show similar State and U.S. Environmental Justice Index percentiles when comparing the study area and New Haven County. For example, indexes are provided for air quality variables including Particulate Matter 2.5, Ozone, Diesel Particulate Matter, Air Toxics Cancer Risk, and Air Toxics Respiratory Hazard Index. These Environmental Justice Index State percentiles[59] range from zero to 73 for the study area and the county, with several indexes higher for the study area and several higher for New Haven County, but with a difference in percentile of no more than five (5) between the two (2) except for Air Toxics Cancer Risk, where the New Haven County percentile difference is greater than five (5).

The CDC EJI tool provides rankings by Census Tract for environmental, social, and health factors, including an overall environmental burden ranking. The EJI tool shows a moderate to high environmental burden

[55] https://www.epa.gov/environmentaljustice/learn-about-environmental-justice
[56] https://www.transportation.gov/transportation-policy/environmental-justice/environmental-justice-strategy
[57] https://www.epa.gov/ejscreen
[58] https://www.atsdr.cdc.gov/placeandhealth/eji/index.html
[59] EPA EJScreen notes that percentiles are a way to see how a community compares to the rest of the state, EPA region and nation. For example, the national percentile tells you what percent of the US population *has an equal or lower value*, meaning less potential for exposure/ risk/ proximity to certain facilities, or a lower percent minority.

rank in the study area, adjacent areas, and some parts of New Haven County. The EJI tool also provides category summaries (referenced as domains) that represent aspects of the social vulnerability and environmental burden. For example, the percentile rank for the air pollution category across New Haven County is approximately 0.5 and for the study area Census Tracts it is approximately 0.6. This means that about 50% of Census Tracts in the nation are likely to experience less severe environmental burden or social vulnerability attributable to air pollution than New Haven County, while about 40% of Census Tracts in the nation are likely to experience a less severe burden than the study area.

The standard reports produced by the EPA EJScreen for the study area and New Haven County along with the CDC map and category (domain) summaries are provided in Appendix J. The Environmental Justice Interagency Working Group Promising Practices for EJ Methodologies in NEPA Reviews (2016) was also reviewed for additional guidance on implementing environmental justice analyses. In addition to these screenings, more detailed analysis was conducted as described below.

Pursuant to CEQ guidance, minority populations exist where: "(a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis"[60].

Per Section 22a-20a of the Connecticut General Statutes [61], Connecticut has also defined EJ communities as follows:

- Distressed Municipalities, as defined by the Department of Economic and Community Development, are the state's most fiscally and economically distressed municipalities and are used by state agencies to target funds for needs which may include housing, insurance, open space, brownfield remediation and economic development programs, among others.[62]
- Census Block Groups not in Distressed Municipalities in which 30% or more of the population lives below 200% of the Federal Poverty Level (FPL).

The Town of East Haven is ranked 17th out of 169 municipalities on the Department of Economic and Community Development Distressed Municipalities List for 2022[63] and is thereby an EJ community per the State definition. Additionally, per the definition above, the Connecticut 2022 EJ Communities Map[64] shows that there are two (2) block groups that are wholly or partially located within the project site in New Haven that are also considered EJ communities because more than 30 percent of the population is below 200 percent of the FPL. These Census Block Groups include:

- Census Tract 1427, Block Groups 2 and 3

All other Census Block Groups located wholly or partially within the study area are not considered Environmental Justice Communities per the state definition.

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[60] Council on Environmental Quality, Environmental Justice: Guidance Under the National Environmental Policy Act. 1997.

[61] https://law.justia.com/codes/connecticut/2012/title-22a/chapter-439/section-22a-20a

[62] https://portal.ct.gov/DECD/Content/About_DECD/Research-and-Publications/02_Review_Publications/Distressed-Municipalities

[63] https://portal.ct.gov/DEEP/Environmental-Justice/Environmental-Justice-Communities

[64] https://ctdeep.maps.arcgis.com/apps/webappviewer/index.html?id=d04ec429d0a4477b9526689dc7809ffe

To supplement the information above and for the purposes of NEPA, information regarding low-income and minority populations in the study area and New Haven County was obtained from the U.S. Census Bureau.[65]

In reference to CEQ guidance, New Haven County[66] was used as the reference area. The total minority population of the reference area of New Haven County is 39.2 percent[67]; therefore, to comply with the definition of meaningfully greater, minority populations in study area block groups would need to be greater than 39.2 percent.

From FAA Order 1050.1F, per DOT Order 5610.2(a), low-income population is determined by considering the percentage of individuals in the study area whose median household income is at or below the Department of Health and Human Services poverty guidelines.[68] According to Department of Health and Human Services, the best approximation for the number of people below the Department of Health and Human Services poverty guidelines in a particular area would be the number of persons below the Census Bureau poverty thresholds in that area.[69] In New Haven County, 11.5 percent[70] of the population lives below the federally defined poverty level.

Demographic and economic data from the U.S. Census Bureau's American Community Survey 2017-2021 Five-Year Estimates was used to estimate the percentage of low-income and/or minority population within each census block group. As shown in **Table 4-9**, if a census block group's percent minority population exceeded 39.2 percent or the percent low-income exceeded 11.5 percent, it was determined the census block group contained an environmental justice population. Additionally, the census block groups identified by the Connecticut 2022 EJ Communities Map[71] as described above have also been identified as environmental justice populations, even if they do not meet the CEQ thresholds set forth in this evaluation.

Table 4-9: Minority and Low-income Population Analysis

Census Block Group	Total Population	Percentage of Population that is Low Income Population[72]	Percentage of Population that is Minority Population	Environmental Justice Population?
Total for All Block Groups in Study Area	***20,580***	***9.6%***	***32.2%***	--
Block Group 2, Tract 1427	1,071	14.8%	71.1%	Yes
Block Group 3, Tract 1427	1,062	52.4%	59.7%	Yes
Block Group 1, Tract 1428	581	0%	36.0%	No
Block Group 2, Tract 1428	1,629	4.7%	11.2%	No
Block Group 3, Tract 1428	1,692	9.1%	27.9%	No
Block Group 1, Tract 1801.01	964	12.1%	8.9%	Yes

[65] U.S. Census Bureau American Community Surveys 5-Year Estimates, 2017-2021.
[66] New Haven County Map: https://connecticut.hometownlocator.com/maps/countymap,cfips,009,c,new%20haven.cfm
[67] U.S. Census Bureau American Community Surveys 5-Year Estimates, 2017-2021.
[68] http://aspe.hhs.gov/poverty/index.cfm
[69] https://aspe.hhs.gov/frequently-asked-questions-related-poverty-guidelines-and-poverty#many
70 U.S. Census Bureau American Community Surveys 5-Year Estimates, 2017-2021.
[71] https://ctdeep.maps.arcgis.com/apps/webappviewer/index.html?id=d04ec429d0a4477b9526689dc7809ffe
[72] Low-income populations were identified based on the U.S. Census Bureau data for populations with income in the past 12 months below poverty level. This was determined by dividing the Income in the past 12 months below poverty level column with the survey's specific total population count and recorded as a percent.

Census Block Group	Total Population	Percentage of Population that is Low Income Population[72]	Percentage of Population that is Minority Population	Environmental Justice Population?
Block Group 2, Tract 1801.01	1,073	0%	22.7%	Yes*
Block Group 1, Tract 1801.02	2,344	7.9%	30.2%	Yes*
Block Group 2, Tract 1801.02	1,619	8.2%	17.2%	Yes*
Block Group 3, Tract 1801.02	1,000	0%	22.5%	Yes*
Block Group 1, Tract 1802	829	8.1%	46.9%	Yes
Block Group 2, Tract 1802	1,600	14.6%	49.7%	Yes
Block Group 3, Tract 1802	738	0%	17.2%	Yes*
Block Group 4, Tract 1802	835	1.8%	0%	Yes*
Block Group 5, Tract 1802	1,102	3.1%	53.2%	Yes
Block Group 1, Tract 1803	718	25.2%	15.5%	Yes
Block Group 2, Tract 1803	1,723	3.5%	48.0%	Yes

**These census block groups do not meet federal criteria for environmental justice; however they have been identified as Environmental Justice communities by the State of Connecticut. Therefore, for the purposes of this evaluation, they will be considered Environmental Justice communities.*
Source: U.S. Census Bureau 2021 American Community Survey 2017-2021 5-Year Estimate, Tables B03002 and B17021.

As presented in **Table 4-9**, of the 17 study area block groups, 14 contain environmental justice populations per the methodology outlined above. **Figure 4-11** shows the location of the environmental justice block groups in the study area.

4.12.4. Children's Health and Safety

Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, directs federal agencies to identify environmental health and safety risks that could disproportionally affect children. These risks result from products or substances that a child may ingest or be exposed to, such as food, drinking or recreational waters, air, soil, or products they might be exposed to.

The total population of New Haven County is 864,751, including 175,495 children. Within the study area there are approximately 4,600 children, of which 822are under age five (5)[73]. The surrounding area of HVN is residential that includes the housing of children, placements of parks/playgrounds and schools (K-12) around the immediate area. See **Figure 4-8** for Land Use, Historic Places, and Community Resources, which shows the locations of these parks, playgrounds, schools and residential areas).

To get to the terminal, vehicular traffic from I-95 is currently routed south on Townsend Avenue. Some drivers may also take Woodward Avenue, which runs parallel to Townsend Avenue. Both Woodward and Townsend are located on the West side of the Airport. East Shore Park, East Shore Field, Little League Field, Hannah's Dream Playground a few of many locations where children who live in this residential area gather and require safe pedestrian access. From Route 1, Townsend Avenue has sidewalks on both sides of the street to Frost Street, and then only intermittently on the east side to Burr St. Woodward Avenue has sidewalks on the west side from Route 1 to East Shore Park, with intermittent sidewalks on the east side. Sidewalks on Woodward Avenue are provided in the vicinity of Fort Nathan Hale Park. Sidewalks are

[73] U.S. Census Bureau American Community Surveys 5-Year Estimates, 2017-2021.

provided on both sides of High and Main Streets and at least one side of Hemingway Avenue from Route 1 to Coe Avenue. There is a sidewalk on the west side of Coe Avenue.

As noted in **Section 4.9** on Hazardous Materials, Solid Waste, and Pollution Prevention, there is only one (1) confirmed CT DEEP List of Contaminated or Potentially Contaminated Sites[74] in connection to hazardous waste facilities as defined by Section 22a-134f of the Connecticut General Statutes on the airport property. It is located at the office/rental car building; this release is associated with past leaking underground storage tank.

See **Section 4.10.3** for locations of residential land uses, schools, daycare facilities, parks and recreation facilities, and other places frequented by children and **Section 4.2** for air quality information. **Section 4.11** and **Appendix J** describe sensitive receptors to noise exposure and note that Ms. Shaina's Neighbor School, a daycare located in a residential home that has been sound insulated, is located within the Proposed Action 65 DNL contour.

4.13. TRAFFIC

The roadway network surrounding the airport links the neighborhoods, retail, commercial and industrial uses and land for recreation and entertainment. The affected environment for the traffic evaluation includes intersections that could potentially be impacted by implementation of the proposed project. See **Appendix K** for Traffic Study completed for the Proposed Action as part of the EA and NEPA process.

Traffic conditions are measured by level of service and 95th percentile queue lengths. The level of service is a qualitative measure of how well an intersection functions. In general terms, the level of service is a function of vehicle delay through an intersection. It is an indication of driver discomfort, frustration, fuel consumption, and lost time. The level of service is defined by an index from A representing best operating conditions (free flow) to F representing the worst conditions (long delays). Standard traffic engineering practice considers level of service E or F unacceptable for urban areas.

The level of service is determined slightly differently for signalized and unsignalized (stop sign controlled) intersections. This is due primarily to driver expectations and behavior. For signalized intersections, the level of service is a measure of driver discomfort and frustration, and lost travel time for all movements through an intersection. For unsignalized intersections, delay is measured only for the street that is stopped and waiting to turn in to or across the unstopped road.

Table 4-10 summarizes the level of service criteria.

[74] https://portal.ct.gov/-/media/DEEP/site_clean_up/sites/contaminatedsitesafpdf.pdf

Table 4-10: Level of Service Criteria

	Description of Condition	Level of Service (LOS)	Intersection Control Delay	
			Signalized (seconds/vehicle)	Unsignalized (seconds/vehicle)
Delay meets standards	Few delays at intersection	A	<10	<10
	Slight level of delay	B	>10 and 20	>10 and 15
	Fair level of delay	C	>20 and 35	>15 and 25
	Noticeable delay	D	>35 and 55	>25 and 35
Delay exceeds standards	Signal cycles frequently fail	E	>55 and 80	>35 and 50
	Over capacity	F	>80	>50

Source: 2010 Highway Capacity Manual (Special Report 209)

The 95th percentile queue is the probable furthest distance from the stop bar to the back of the last vehicle waiting at an intersection. The 95th percentile queue is computed based on the line of cars that arrive at an intersection when the signal is red combined with vehicles that did not clear the intersection during the previous green light. Comparing the length of this line of vehicles to lane lengths available at each intersection provides a measure of how well an intersection is functioning.

4.13.1. Roadways and Traffic

The vicinity of the airport is within two municipal communities, the City of New Haven and the Town of East Haven. Regional transportation access to the airport is provided by Interstate 95 (I-95). I-95 is the highway that traverses along the coastline of the state. It is signed as a north-south highway but traverses in an east-west compass direction near the study area. The east side of the Airport can be accessed from I-95 northbound with its interchange at Exit 51 (Frontage Road) which connects to the Saltonstall Parkway, Hemingway Avenue, and Proto Drive. Travelers from I-95 southbound would utilize its interchange at Exit 52 (High Street) to Main Street, Hemingway Avenue, and Proto Drive. From US Route 1 northbound, travelers would access the east side of the Airport from Hemingway Avenue to Proto Drive. Hemingway Avenue is a four-lane undivided roadway (two-lanes in each direction). Posted speeds within the study area range between 25 to 35 miles per hour.

An evaluation of intersections that could potentially be impacted by implementation of the proposed project was conducted. These intersections were identified and selected in coordination with the CTDOT based on expected travel route patterns to and from the proposed terminal as part of the Proposed Action. The 11 study area intersections are identified and shown in **Figure 4-12.** Turning movement count data was collected during a weekday between 6:30 am and 7:30 pm to establish the baseline traffic condition. For purposes of the roadway and traffic evaluation, the morning peak hour between 9:15 am and 10:15 am and the midday peak hour between 2:15 pm and 3:15 pm were identified as the peak hours that represent the highest commuter and level of activity for the Airport.

Airport trip generation for the existing condition was modeled in accordance with the existing flight schedule and assumptions as noted in the appendix. This model takes into account general mode split by passenger, average group size, and travel patterns prior to departing flights and following arrival flights. This model finds that during the morning peak hour, a total of approximately 186 vehicle trips are generated in the existing condition. Of the total morning peak hour trips, approximately 95 vehicle trips arrive to the Airport and 91 vehicle trips leave from the Airport. During the midday peak hour, the model finds that

approximately 457 vehicle trips travel to/from the Airport. Of the total midday peak hour trips, approximately 172 vehicle trips arrive to the Airport and 285 vehicle trips depart from the Airport.

4.13.2. Existing Traffic Operations

In general, traffic flows well in the area. Heavy traffic demand can be associated with limited access to I-95 northbound within the I-95 corridor contributing to congestion at nearby intersections. As shown in the table below, the intersection of High Street with the I-95 northbound on ramp currently operates at an acceptable level during the morning peak hour and operates at level of service E during the midday peak hour. All remaining intersections operate at level of service D or better under existing conditions. Additionally, two (2) intersections, the intersection of High Street with Kimberly Avenue and the intersection of Hemingway Avenue with Main Street, do each operate with two (2) critical movements at level of service E during the midday peak hour.

Table 4-11: Existing Level of Service Summary

ID	Intersection	Control Type	Morning Peak Hour	Midday Peak Hour
1	High Street (Rte 100) & I-95 SB Off Ramp (Exit 52)	Signal	B	C
2	High Street (Rte 100) & I-95 NB On Ramp (Exit 52)	Signal	C	E
3	High Street (Rte 100) & Kimberly Avenue (Rte 735)	Signal	B	D*
4	High Street (Rte 100) & Messina Drive	Signal	B	B
5	Main Street & Messina Drive	Signal	B	B
6	High Street (Rte 100) & Main Street (Rte 100)	Signal	C	C
7	Hemingway Avenue (Rte 142) & Saltonstall Parkway (Rte 1)	Signal	B	C
8	Hemingway Avenue (Rte 142) & Main Street (Rte 100)	Signal	C	D*
9	Hemingway Avenue (Rte 142) & Dodge Avenue	Signal	A	B
10	Coe Avenue (Rte 337) & Proto Drive	TWSC	C	C
11	Thompson Avenue & Dodge Avenue	AWSC	A	A

Notes: TWSC: Two-way Stop Controlled – LOS Reports average side street delay. AWSC: All-way Stop Controlled. * Indicates intersection may have one or more individual movements which operate at LOS E or LOS F. However, the overall intersection may operate at LOS D or better due to the computed average of delay of all intersection movements.

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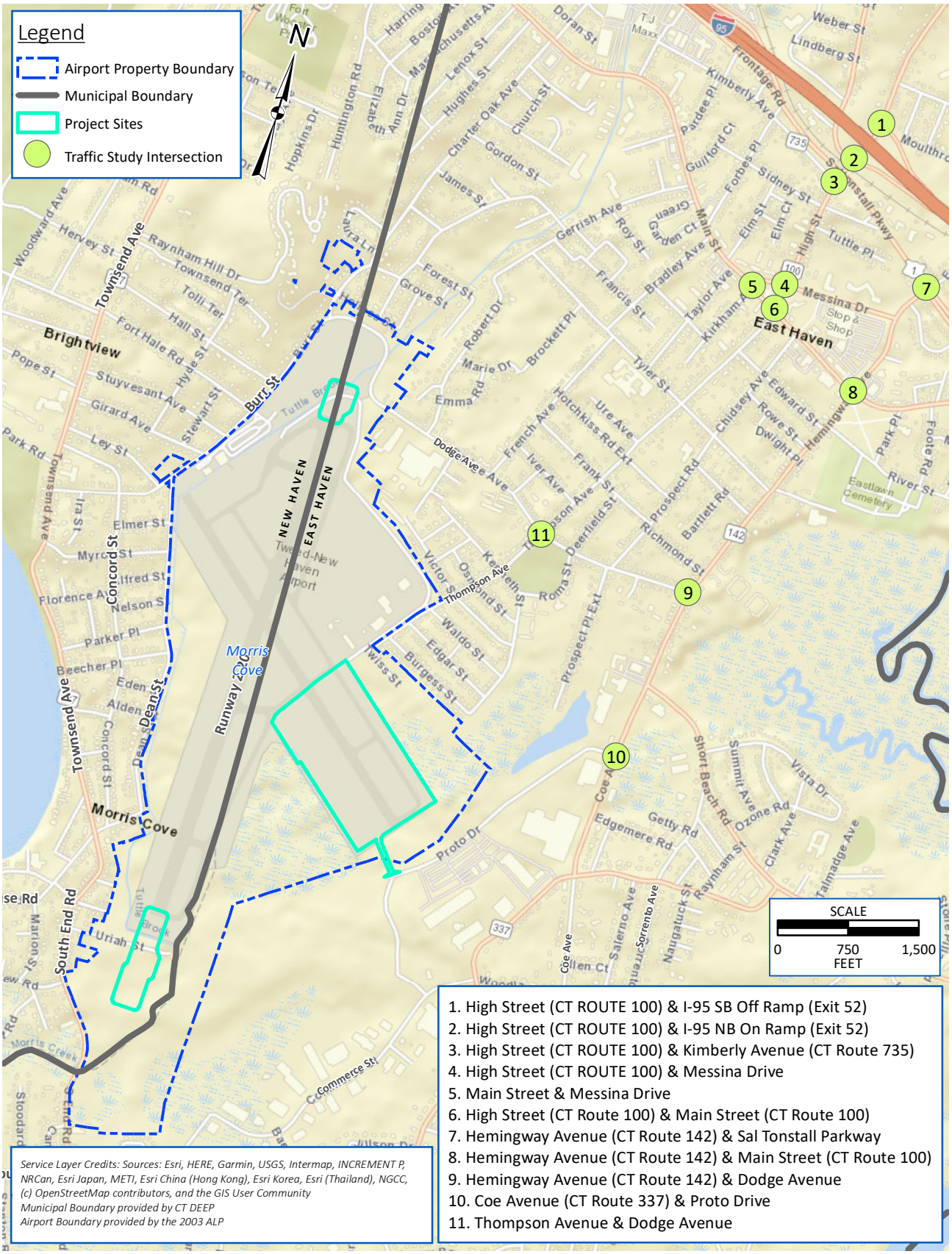
Figure 4-12: Traffic Study Intersections



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Queues are currently experienced at the intersection of High Street with the I-95 northbound on-ramp. Travel demand in the northbound through-right lane extend beyond the available storage and impact operations at the intersection of High Street with Kimberly Avenue.

4.13.3. Parking

The Airport currently provides a limited capacity of approximately 1,128 automobile parking spaces on the West Side (including rental car and transportation network/ridesharing-taxi staging area). A remote parking with shuttle is offered as overflow area at State Street Garage (270 State Street) approximately four (4) miles from the Airport, as an initiative to address current parking needs at the Airport.

4.13.4. Alternative Modes

There are existing pedestrian facilities in the study area. In the immediate vicinity of the airport, Burr Street has a continuous sidewalk along the west side from Dean Street to Fort Hale Road. Dodge Avenue, Thompson Avenue, Hemingway Avenue, and Coe Avenue also have sidewalks, with some portions on both sides of the roadway. There are no bicycle facilities in the area. Public transportation within this region is provided by CT Transit. The Airport area is served by Route 206, East Chapel Street which provides service between downtown New Haven and Lighthouse Park. Stops at the airport are only provided by request through their customer service. Additionally, Route 204M provides service between downtown New Haven and Momauguim Beach in East Haven.

4.14. VISUAL EFFECTS

HVN is situated on flat land with one- and two-story homes to the north and west; tidal wetlands and homes to the south; and tidal wetlands and industrial buildings to the east. The topography remains flat off Airport property to the west, south, and east. The land rises, approximately 100 feet, northwest of Burr Street. Further to the south and west is Morris Cove and Long Island Sound. Morris Cove and Long Island Sound cannot be seen from the Airport property, while on the ground; however, views of these waterbodies are visible from airborne aircraft.

The visual landscape, for viewer groups on the ground, is dominated by airport land uses, including the wide swaths of turf, the terminal building and airport administration building on the west side of the north-south running runway (Runway 02-20), and hangars, on the east side of Runway 02-20. Each of these Airport buildings are of greater height and mass than any of the other surrounding structures. The visual setting on Airport property also the creeks that traverse the perimeter of the Airport property on the northwest, and south/southeast, runway and taxiway pavement. The visuals setting includes surface parking areas, particularly to the north of the terminal east of Burr Street, and south of the administration building. Pavement and concrete associated with roadways and accompanying sidewalks, as well as perimeter fencing, encircle much of the Airport (Burr Street, Dodge Avenue, Dean Street, South End Road, Uriah Street) except to the south, where there are emergent tidal wetlands. Views are intermittently obstructed by mature street trees growing between the roadways and Airport property.

HVN is located within a densely developed area with well-lit residential, commercial, and industrial land use nearby. Lighting on the Airport property dominates the nighttime visual setting. Lighting is employed for aircraft safety reasons, to provide critical information to pilots in take-offs and landings. The MALSF approach lights consists of a series of steady burning green lights at the runway threshold and a series of seven (7) steady burning white lights spaced approximately 200 feet apart. The final three (3) stations furthest from the runway threshold include sequenced flashing lights. The existing flashing portion of the

MALSF approach lights are approximately 350 feet from the nearest residence. Existing terminal area lighting, on the west side of the Airport property, is comparable to nearby commercial and industrial development.

4.15. WATER RESOURCES

4.15.1. Wetlands

According to the USFWS National Wetland Inventory, CT DEEP GIS wetland mapping and previous field delineations (i.e., 2013 and 2017), wetlands were not identified within the project site, as most these were historically filled since the 1930s and converted to uplands. See **Figure 4-13** for the **USFWS National Wetland Inventory Map**. Therefore, some of the recently (2021) delineated inland wetland areas within the East Terminal project site appear to be related to constructed (man-made) drainage features.

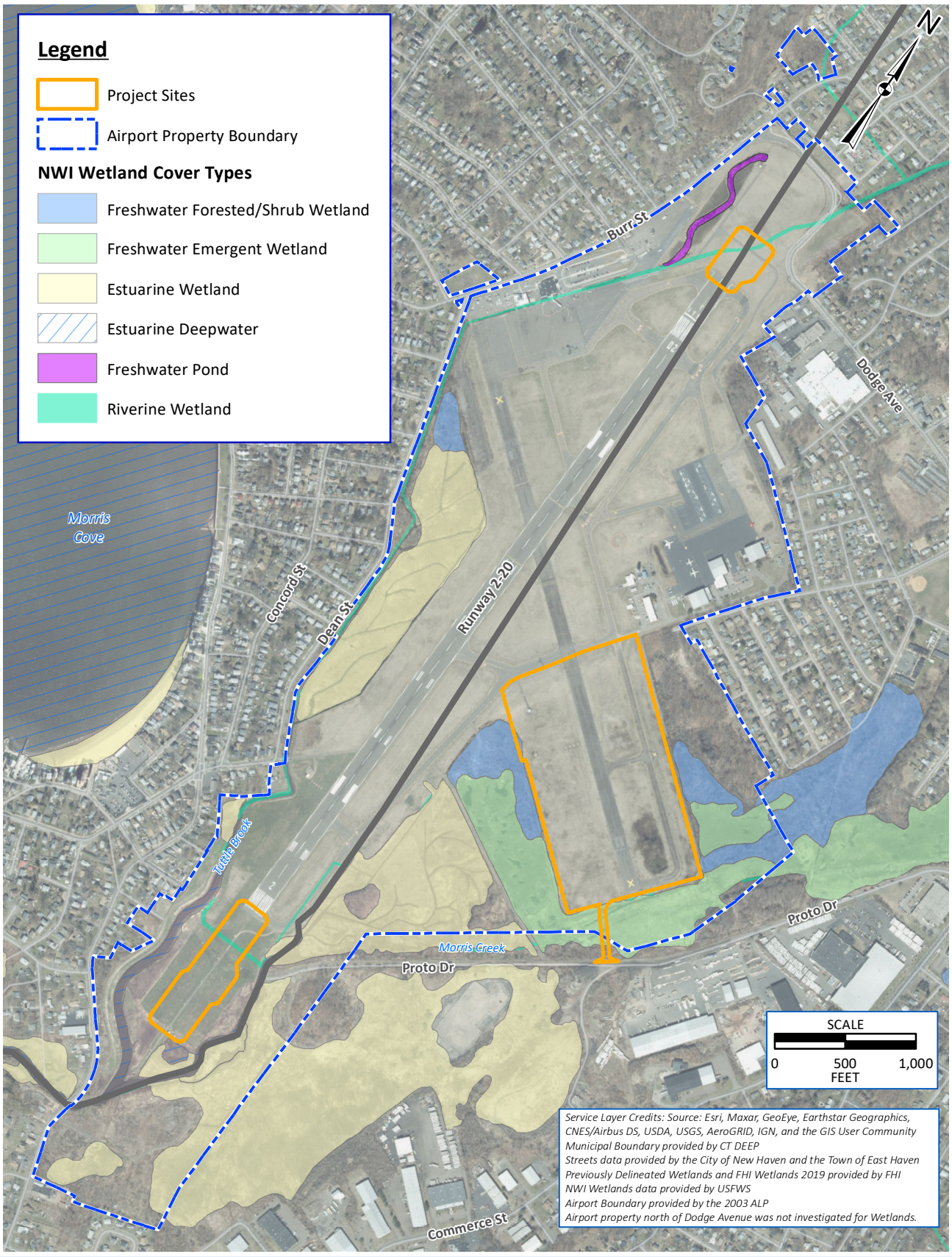
Field wetland delineations were completed in 2021 within the project site over several site visits between August and October in 2021. Tidal wetlands were delineated in the vicinity of Runway 02-20, in accordance with the State of Connecticut General Statutes Section 22a-29 (Tidal Wetlands). As per Connecticut General Statutes Section 22a-39, the identification of Connecticut-regulated inland wetlands in the vicinity of the East Terminal project site was determined by the limit of any of the soil types designated as poorly drained, very poorly drained, alluvial, or floodplain as defined by the National Cooperative Soils Survey of the Natural Resources Conservation Service (NRCS) under the U.S. Department of Agriculture (USDA) (§22a-38-15). The Wetland Delineation Report (**Appendix F**) was submitted to CT DEEP on January 27, 2022, for their review. On March 02, 2022, CT DEEP accepted wetlands delineation.

Identification of watercourses, as regulated by Connecticut, was based upon the definitions contained in Section 22a-38 of Chapter 440 of the Connecticut General Statutes; including the following hydrological systems under the term "watercourse":

- Rivers
- Streams
- Brooks
- Waterways
- Lakes
- Ponds
- Marshes
- Swamps
- Bogs
- All other bodies of water, natural or artificial, vernal or intermittent, public or private.

Federal wetlands, both tidal and inland, were delineated based on the United States Army Corps of Engineers (USACE) 1987 *Wetland Delineation Manual* and the USACE 2012 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region – Version 2.0.* The Wetland Delineation Report (**Appendix F**) was submitted for USACE review on January 27, 2022. The USACE assumed and confirmed jurisdiction of delineated wetlands via email communication on March 10, 2022.

Figure 4-13: USFWS NWI Wetlands Map



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The delineated wetland systems are numbered 1 to 7. Wetlands 2 and 3 are within Airport property but not adjacent to project site. See **Figure 4-14.** Wetlands 1 through 6 are inland wetlands and Wetland 7 is a tidal wetland. All wetlands ultimately drain to the southwest, to Long Island Sound via Morris Creek. Wetland 1 and a portion of Wetland 7 drain to the west to Tuttle Brook, a tributary stream to Morris Creek. Wetlands 4-6 drain to the southeast into Morris Creek. An existing tide gate is located in the southeast portion of the airport, which affects hydrology within wetland areas upstream of the structure. The Wetland Delineation Report, with detailed wetland descriptions, is included within **Appendix F**.

Table 4-12: Summary of Wetland Areas Delineated in the Immediate Vicinity of Project Site

Wetland ID	Project Site Location	Wetland Classification	Wetland Characterization / Principal Functions and Values	Acreage	CT DEEP Regulated	USACE Regulated
W01*	Northwest to Runway 20	R2UB2/4, PEM1/5	Inland: Sediment/Toxicant Retention; Nutrient Removal; Production Export	3.04	Yes	Yes
W02*	East of Runway 20	PEM1/5	Inland: Sediment/Toxicant Retention; Nutrient Removal	0.72	Yes	Isolated
W03*	Northwest of East Terminal Area	PEM2J	Inland (man-made): Sediment/Toxicant Retention	0.25	Yes	Yes
W04	East Terminal	PEM2J	Inland (man-made): Sediment/Toxicant Retention	1.32	Yes	Yes
W05	East Terminal	PEM2J	Inland (man-made): Sediment/Toxicant Retention; Production Export	2.45	Yes	Yes
W06A	East Terminal	PFO1E, PEM2	Inland: Sediment/Toxicant Retention	5.37	Yes	Yes
WO6B	East Terminal	PFO1E, PEM2	Inland: Sediment/Toxicant Retention	9.59	Yes	Yes
W07	Adjacent to Runway 02	E2EM1/5P, E1UBL	Tidal: Floodflow Alteration; Fish & Shellfish Habitat; Wildlife Habitat; Uniqueness/Heritage	6.76	Yes	Yes
			Total Wetland Area*	**29.50**	**29.50**	**28.78**

*Wetlands W01, W02 and W03 are outside of project boundaries.
R3UB2/4- Riverine lower perennial unconsolidated bottom (sand/mud) watercourse
PFO1E- Palustrine Forested Broad-leaved Deciduous seasonally flooded/saturated wetland
PEM1/5- Palustrine Emergent seasonally flooded, wet meadows, shallow marshes, deep marshes, open water
PEM5H- Palustrine Emergent Phragmites australis- dominated permanently flooded wetland
PEM2- Palustrine Emergent, non-persistent wetland
PEM2J- Palustrine Emergent, non-persistent intermittently-flooded wetland
E2EM1/5P- Estuarine intertidal emergent, persistent/Phragmites australis, irregularly flooded wetland
E1UBL- Estuarine subtidal, unconsolidated bottom, subtidal deepwater habitat

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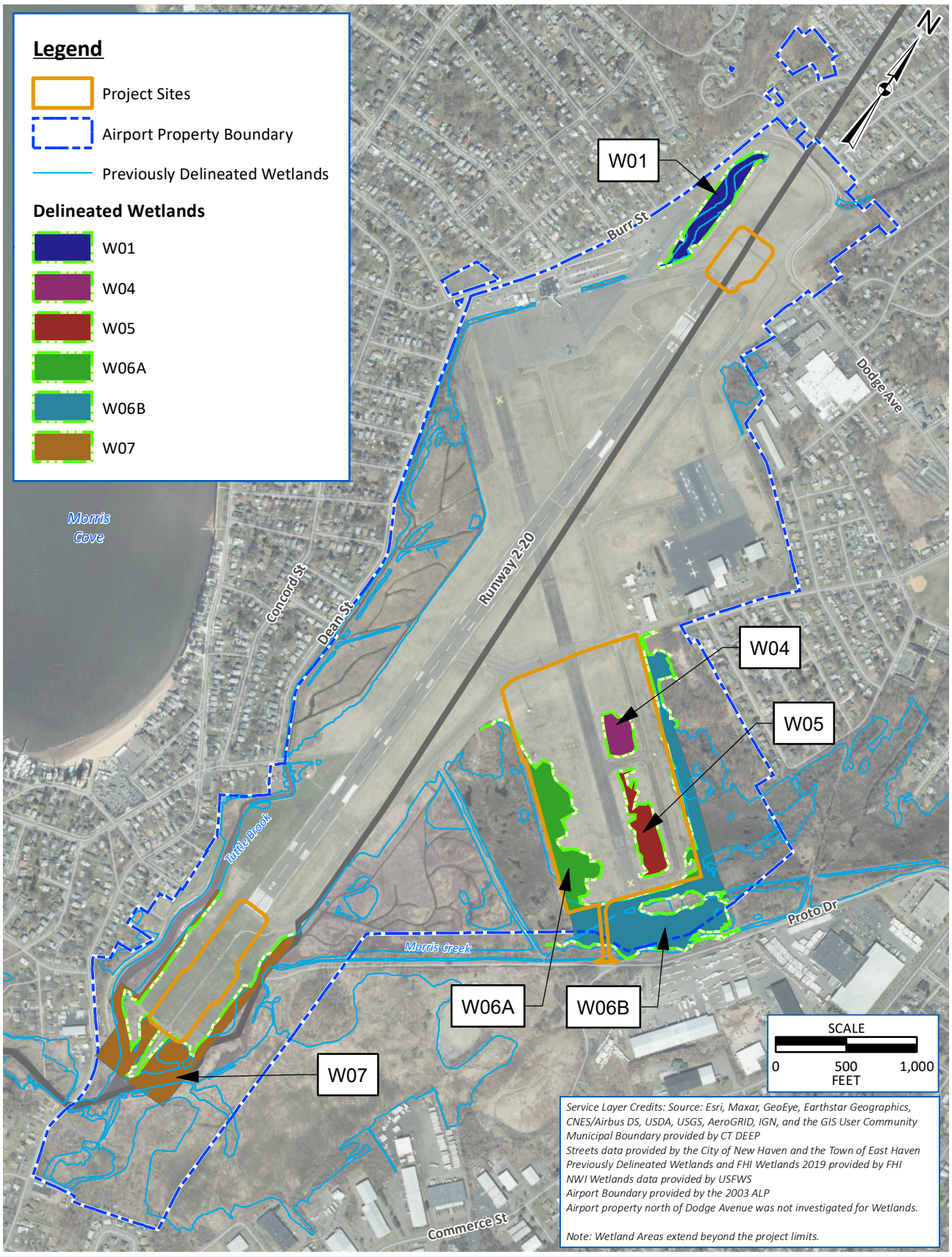
Figure 4-14: Delineated Wetlands Map



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4.15.2. Surface Waters

There are no natural streams within the project site. Water bodies adjacent to the project site include Tuttle Brook and Morris Creek. Tuttle Brook flows south through the Airport property, approximately parallel and very close to its western property boundary. An unnamed tributary to Morris Creek flows at the eastern edge and through the HVN property. Surface waters in the vicinity of the project site are shown on **Figure 4-14**.

Review of the January 2020 EA for Taxiway and Drainage Improvement Project revealed that "the Coastal Junction Line for the wetland within the Tweed Airport boundary above the tide gate on Morris Creek is 3.5' National Geodetic Vertical Datum (NGVD). All wetlands below this elevation for the purpose of the project are considered tidal, and they are therefore under the jurisdiction of CT DEEP." This regulatory elevation would be verified with CT DEEP for future activities. This watercourse becomes Morris Creek at the East Haven-New Haven boundary, on the southern portion of the Airport property. Near the southern boundary of the Airport, Morris Creek turns west and flows through a tide gate and tidal wetland area before it discharges into New Haven Harbor at Lighthouse Point Park. Tuttle Brook and Morris Creek lie within the Southcentral Coast Major Basin No. 5, regional basin 50 and subregional basin 5000 and ultimately drain to Long Island Sound via Morris Creek.

Tuttle Brook has a Surface Water Quality Classification "A", while Morris Creek has a Surface Water Quality Classification "SA". Class "A" surface waters are designated for: habitat for fish and other aquatic life and wildlife; potential drinking water supplies; recreation; navigation; and water supply for industry and agriculture. Class "SA" surface waters are designated for: habitat for marine fish, other aquatic life and wildlife; shellfish harvesting for direct human consumption; recreation; industrial water supply; and navigation. There are no public surface water supplies or reservoirs in the vicinity of HVN, which is supplied with public water via a municipal water distribution system. HVN, like the overall area, is connected to the local sewer system, with sewage pumped to the East Shore Water Pollution Abatement Facility located on the east shore of New Haven Harbor, approximately 1.2 miles northwest of the Airport.

4.15.2.1. Existing Stormwater Pollution Prevention

The only discharges made to surface waters from HVN are non-point discharges from stormwater runoff to Morris Creek. HVN is registered under the CT DEEP's General Permit program pursuant to the National Pollutant Discharge Elimination System (NPDES), and currently operates under a stormwater discharge permit from CT DEEP. The NPDES permit conditions require HVN to take routine surface water samples and report the results to the CT DEEP, with samples taken from Morris Creek at the south end of the Airport which are then sent to an independent laboratory for requisite testing. Sampling results have routinely been within acceptable ranges for the NPDES Permit.

4.15.3. Groundwater

The Airport is located within an area mapped as Groundwater Classification "GB". This designation is assigned to "ground water within a historically highly urbanized area or an area of intense industrial activity and where public water supply service is available. Such ground water may not be suitable for human consumption without treatment due to waste discharges, spills or leaks of chemicals or land use impacts". Class "GB" groundwaters are designated for: Industrial process water and cooling waters; baseflow for hydraulically connected surface water bodies; and presumed not suitable for human consumption without treatment. Groundwater underlying the site is anticipated to likely flow to wetlands surrounding the site to the south, east, and west.

There are no public water supply wells in the vicinity of the Airport, and presumably the Airport and most of the surrounding area are supplied by public water.

4.15.4. Floodplains and Sea Level Rise

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) under the National Flood Insurance Act of 1968, 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). According to the FIRM, Panel 09009c0444J, the project study areas are located in a special flood hazard area, Zone AE. Flood Zone AE, with a base flood elevation of 12 feet, extends over the entire HVN property and the proposed project site. The flood zone boundaries in the vicinity of HVN are depicted on **Figure 4-15**.

4.15.4.1. Sea Level Rise

Per the 2021 Master Plan Update[75], HVN lies in a coastal setting, surrounded by wetlands and low-lying areas. As such, the Airport is susceptible to tidal flooding and sea level rise flooding. According the information presented in the Governor's Council on Climate Change Phase 1 Report[76] the mean sea level in Long Island Sound could be up to 20 inches above the National Tidal Datum Epoch (1983-2001) by2050 O'Donnell, 2018). Using the NOAA Sea Level Rise Viewer, it can be seen if the sea level rises two (2) feet or more, the majority of the Airport south of Runway 02-20 is expected to be more vulnerable and subject to frequent flooding. Images taken from the NOAA Sea Level Rise Viewer can be seen in Appendix E of the Master Plan Update. Morris Creek lies to the south of the Airport and drains into Long Island Sound.

Tide gates have been installed adjacent to Airport property to protect against coastal flooding. Airport employees are trained in the proper operation of the tide gates to ensure the storm protection function of the tide gates be maintained at all times. As such, a Memorandum of Understanding is in place between the City of New Haven and the Airport wherein Airport staff are responsible for the electronic operation of the tide gates, regular inspections, and initial emergency response in the event of an indicated failure. The City of New Haven is responsible for ensuring unobstructed water flow through the tide gates, as well as ongoing maintenance.

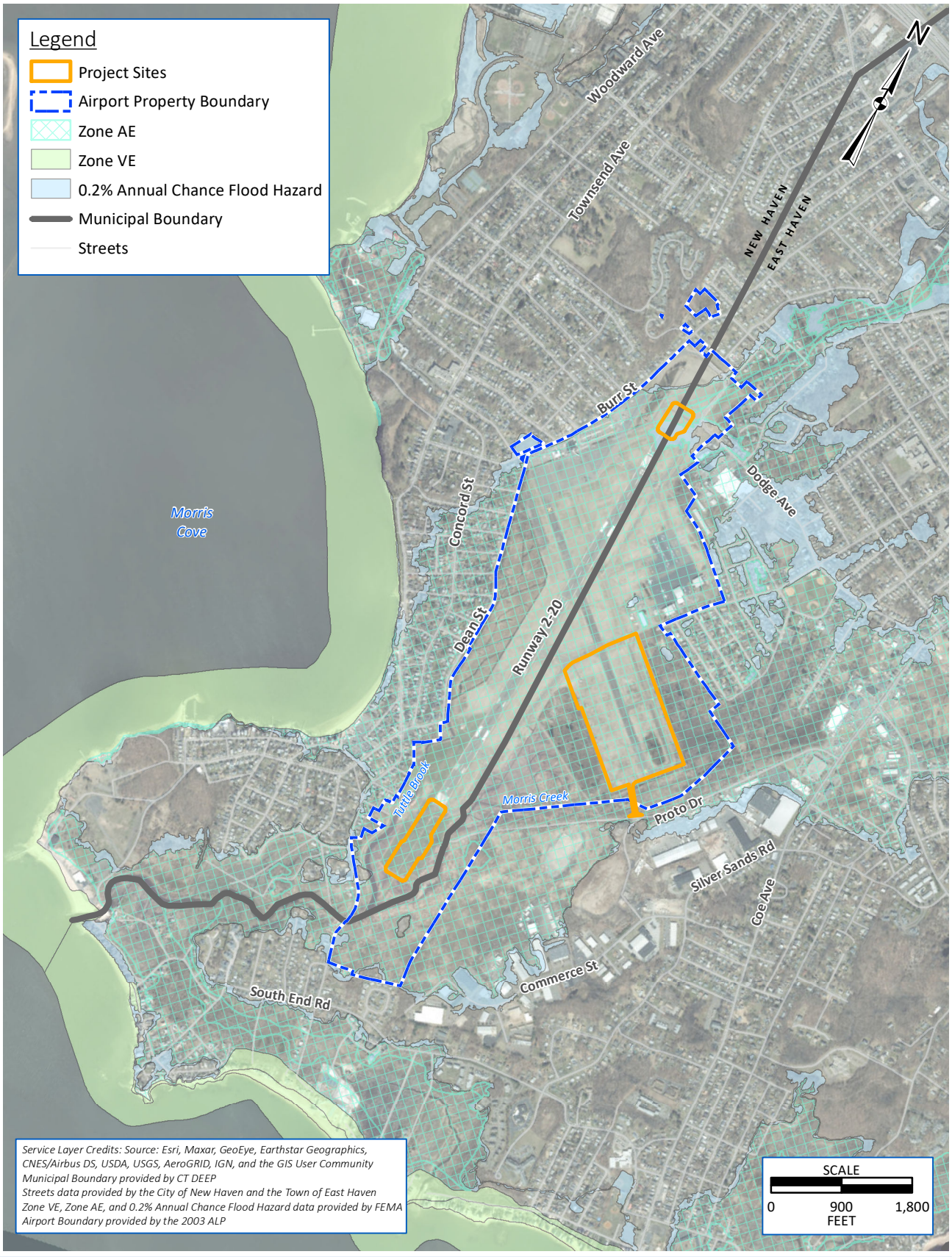
4.15.5. National and State Forests, Wilderness Areas, and Wild and Scenic Rivers

According to the U.S. National Wild and Scenic Rivers System[77], no designated rivers are present in the immediate vicinity of HVN. Areas designated as national or state forest, wilderness areas, or wild and scenic rivers are not present on HVN property or immediately adjacent. The nearest designated rivers are located over 30 miles away from the project are:

- Eightmile River Wild and Scenic Watershed
- West Branch Farmington River

[75] https://www.tweedmasterplan.com/master-plan-documents
[76] https://portal.ct.gov/-/media/DEEP/climatechange/GC3/GC3_Phase1_Report_Jan2021.pdf
[77] https://www.rivers.gov/documents/nwsrs-map.pdf

Figure 4-15: FEMA Floodplain Map



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5. ENVIRONMENTAL CONSEQUENCES

This chapter describes the foreseeable environmental, social, and economic consequences of the Proposed Action. Information pertaining to the environmental consequences was obtained through an alternatives analysis, evaluation of conceptual plans, on-site investigations, review of published information, agency correspondence, and discussions with the Airport personnel and public officials. The schematic and conceptual design, including various alternatives developed, are the result of a cohesive and integrated planning effort which minimizes impacts in the post-development condition.

The Proposed Action incorporates the Runway 02-20 Extension (Alternative 2) and the East Side Terminal Development (Alternative 2). The No Build / No Action alternative does not meet nor address the needs of the Airport. The No Action alternative assumes that the Proposed Action is not implemented, and the existing operations would grow consistent with the forecast for the No Action scenario. 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. Section 5.15.4 presents, in a comparative and collective form, the level of environmental consequences per resources category for each alternative taking into consideration existing and future conditions, as applicable.

Using the data collected as part of the environmental planning process and comparing the Proposed Action analysis results to the No Action alternative, limited environmental impacts were revealed (below the Significance Impact Thresholds[78] established in FAA Order 1050.1F), due to the nature and location of the Project. Necessary measures and BMPs would be established to further minimize and mitigate foreseeable environmental impacts the Proposed Action may have. The potential impacts from the Proposed Action are discussed in the following sections and quantified to the maximum extent possible. In areas where quantitative measures cannot be provided, qualitative assessments are provided. The following resources are not present within the project site; therefore, these resources are not evaluated further:

- Essential Fish Habitat / Habitat Areas of Particular Concern (including submerged aquatic vegetation or federally-managed fish species);
- Farmlands;
- Wilderness Areas; and
- Scenic Rivers

The Project takes into consideration the importance of minimizing the construction footprint impacts and compliance with environmental regulations and policies. The main commitment is to keep project activities within the developed footprint of the Airport's airfield and authorized limits for construction.

[78] The FAA uses thresholds that serve as specific indicators of significant impact for some environmental impact categories. FAA proposed actions that would result in impacts at or above these thresholds require the preparation of an EIS, unless impacts can be reduced below threshold levels. Quantitative significance thresholds do not exist for all impact categories; however, consistent with the CEQ Regulations, the FAA has identified factors that should be considered in evaluating the context and intensity of potential environmental impacts. If these factors exist, there is not necessarily a significant impact. Some impact categories may have both a significance threshold and significance factors to consider.

5.1. AIR QUALITY

An air quality analysis for construction and operational emissions was performed for the Project in accordance with FAA guidelines. Operational aircraft emissions were estimated using FAA's AEDT, version 3d. The complete air quality analysis is included in **Appendix I** (Noise and Air Quality Technical Report).

The air quality analysis found that potential air emissions from the construction, forecasted operations, and changes in vehicle trips associated with the Proposed Action are not expected to exceed the NAAQS. Therefore, expected construction and operational emissions would be less than significant, would not contribute to a violation of the NAAQS, and further analysis is not warranted.

Potential air quality impacts associated with construction and demolition under the Proposed Action are discussed in this section. Foreseeable effects of the project that were inventoried and evaluated include both changes in aircraft operational emissions and changes in vehicle trips and parking spaces. In addition to airport-related activities associated with the Proposed Action, other foreseeable air quality impacts from vehicular traffic at nearby signalized intersections were also evaluated for both the temporary increase in construction traffic as well as for the forecast changes in ground traffic as a result of the Proposed Action. Please refer to the Air Quality Technical Appendix for more details on the air quality and climate analysis.

5.1.1. Methodology

An action would cause a significant air quality impact if pollutant concentrations would exceed one or more of the NAAQS established by the EPA under the Clean Air Act, for any of the time periods analyzed, or would increase the frequency or severity of any such existing violations. Additionally, the Clean Air Act requires federal agencies such as the FAA to ensure their actions conform to the appropriate State Implementation Plan. Conformity requires that a project or action adheres to the State Implementation Plan's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards.

As a result, estimates of construction and demolition-related emissions were developed for the Proposed Action using standard industry methodologies and techniques. Construction activities associated with the Proposed Action are anticipated to begin in 2024 and to be completed in 2026.

Airport operational emissions inventories were developed for the Existing Conditions (2022), and for future years (2026 and 2031) for those activities associated with the Proposed Action where additional emissions are expected over the No Action.

Both construction emissions and also direct and indirect operational emissions were inventoried and compared to appropriate EPA *de minimis* thresholds for determining significant impacts and whether a Conformity Determination is required for this Project.

5.1.2. Demolition and Construction Activities

The demolition and construction associated with the Proposed Action would result in short-term changes in air emissions from sources such as exhaust from nonroad construction equipment. Since detailed

construction data was not available for this analysis for each activity, the ACRP's Airport Construction Emissions Inventory Tool (ACEIT)[79] model was used to estimate construction schedules for each activity.

The EPA MOVES (Version MOVES3.0.2) which includes the latest version of the NONROAD model was used to develop on-road and nonroad emission factors. These emission factors were applied to estimates of vehicle miles traveled and construction equipment (hours, horsepower, load factor), respectively, as generated in ACEIT for each construction activity and year. In addition, vehicle trips associated with truck trips bringing additional fill to the site were included as part of the runway extension and partial reconstruction.

Fugitive dust emissions from site preparation, land clearing, equipment movement on unpaved areas, and material handling, along with evaporative emissions from asphalt paving activities using EPA emission factors were also estimated.

5.1.3. Direct and Indirect Operational Emissions

Both direct and indirect operational emissions were evaluated for the Proposed Action. Direct emissions include changes in aircraft operational activities, while indirect emissions include changes associated with ground access vehicles and parking that would be expected to occur under the Proposed Action. Operational emissions were estimated for the Existing Conditions (2022) and for future years 2026 and 2031. The net change in emissions from the Proposed Action compared to the No Action were compared to the EPA *de minimis* thresholds for significance under General Conformity and NEPA.

5.1.3.1. Aircraft Operational Activities

As discussed above, and as discussed in greater detail in **Appendix I**, implementation of the Proposed Action would reduce the number of aircraft operations and related equipment compared to the No Action alternative due to the expected change in the fleet mix: some 737-700W flights would be replaced by 737-800W aircraft with greater passenger capacity. Aircraft operational emissions were estimated for 2026 and 2031 for each alternative, as well as for the 2022 existing conditions. The AEDT model estimated emissions for all five scenarios using the same set of model inputs and forecast operations that were used for the noise calculations. In addition, the aircraft operational emissions estimates include emissions from the ground support equipment and auxiliary power units associated with the Proposed Action and No Action, assuming AEDT default taxi times, AEDT default ground support equipment, and AEDT default auxiliary power unit times.

5.1.3.2. New Heating/Cooling Operations

The proposed heating / cooling strategy for the new terminal in the Proposed Action would be electric heating and cooling pumps, which would not use any natural gas or diesel fuel. Therefore, emissions from the proposed system are not anticipated and thus are not included in the operational emission inventory.

[79] ACRP, 2014 https://crp.trb.org/acrp0267/acrp-report-102-guidance-for-estimating-airport-construction-emissions/

5.1.3.3. Additional Ground Access Vehicles and Parking Areas

Since the Proposed Action would result in a slight increase in vehicle trips above the No Action Alternative along the new access road, emissions associated with the additional vehicle trips was estimated (see **Section 5.11** for Traffic Analysis).

The Proposed Action Alternative also considers potential emissions associated with vehicles using other alternate parking areas available. Under the No Action Alternative, the Airport would use existing parking lots in the New Haven area, such as the State Street Garage that currently provides shuttle services.

5.1.4. Significance Thresholds

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 EPA under the Clean Air Act, for any of the time periods analyzed, or would increase the frequency or severity of any such existing violations. Additionally, the Clean Air Act requires federal agencies such as the FAA to ensure that any actions not occurring in an area in attainment with Clean Air Act standards "conform" to the appropriate State Implementation Plan. The Clean Air Act General Conformity Rule requires that a project or action adheres to the State Implementation Plan's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards.

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 State Implementation Plan(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.[80] 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 alternatives 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."

As stated in **Section 4.2**, Tweed New Haven Airport is located in New Haven County, which the EPA has designated as follows for the six criteria NAAQS pollutants:

- "attainment" for nitrogen oxides, sulfur dioxide, and coarse particulate matter (PM_{10})
- "non-attainment" for the 2008 and 2015 8-hour ozone standard, and
- "maintenance" for carbon monoxide (CO) and fine particulate matter ($PM_{2.5}$)

As a result, the General Conformity Rule applies to the Proposed Action for the 2008 and 2015 8-hour ozone standard, CO, and $PM_{2.5}$. As noted in **Section 4.2**, EPA has recently classified New Haven county as "Severe"[81] with the 2008 ozone standards, therefore, the *de minimis* thresholds associated with Severe was used for the ozone conformity analysis.

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

[81] Redesignated from Serious to Severe by EPA on September 15, 2022. https://www.epa.gov/system/files/documents/2022-09/Fact%20Sheet%20NFRM%202008%20Ozone%20Determinations%20final_1.pdf

The current Federal EPA *de minimis* emission thresholds for maintenance and nonattainment areas relevant to New Haven County are listed in Table 5-1. As described in further detail below, because the Project would not exceed any of the Conformity Rule *de minimis* thresholds, it can be reasonably inferred that the Project also would not exceed any of the NAAQS. However, as noted in the table, pollutants designated as attainment do not have EPA *de minimis* thresholds, therefore as a conservative assumption, the maintenance *de minimis* thresholds were used to determine significant impacts under NEPA for attainment pollutants.

Table 5-1: General Conformity EPA *De Minimis* Pollutant Emission Thresholds[2]

Pollutants	Attainment Status (Severity)	Pollutants	Threshold (tons Per Year)
Carbon Monoxide (CO)	Maintenance	CO	100
Nitrogen Dioxide (NO_2)	Attainment[3]	NO_2	100
Ozone (O_3) [1]	Severe[4]	Nitrogen Oxides (NO_X)	25
		Volatile Organic Compounds (VOC)	25
Course Particulate Matter (PM_{10})	Attainment[3]	PM10	100
Fine Particulate Matter ($PM_{2.5}$)	Maintenance	$PM_{2.5}$	100
Sulfur Dioxide (SO_2)	Attainment[3]	SO_2	100

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.
2. https://www.epa.gov/general-conformity/de-minimis-tables
3. SO_2, NOx, and PM_{10} are designated as attainment and no *de minimis* threshold exists for attainment pollutants. As a conservative approach, the *de minimis* threshold for maintenance was assumed to determine significant impacts.
4. New Haven County was reclassified as Severe for the 2008 ozone standard on September 15, 2022. The lower threshold of 25 tons per year (tpy) for NOx and VOC corresponding to the Severe designation was used for determining significance for ozone under General Conformity and NEPA regulations.

Source: HMMH, 2022

5.1.4.1. Construction and Operational Impacts

Table 5-2 presents the total emissions associated with demolition and construction of the Proposed Action for each year of the construction period (2024 through 2026) along with the net operational change in emissions (aircraft, ground access vehicles, and net new parking facilities) from the implementation of the Proposed action (as compared to the No Action) for the operational forecast analysis years 2026 and 2031. The table also includes comparisons of the net change in emissions with the appropriate EPA *de minimis* thresholds.

Table 5-2: Construction and Net Operational Emission Changes Compared to De Minimis Thresholds

Year	Relevant Criteria Pollutant Emissions (tons per year)					
	CO	VOC	NOx	SO_2	PM_{10}	$PM_{2.5}$
2024						
Total Emissions of Construction and Demolition	4.72	0.22	2.09	0.009	0.26	0.11
EPA De Minimis Threshold	*100*	*25*	*25*	*100*	*100*	*100*
Emissions below de minimis thresholds?	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
2025						
Total Emissions of Construction and Demolition	22.05	1.56	7.48	0.074	3.15	0.41
EPA De Minimis Threshold	*100*	*25*	*25*	*100*	*100*	*100*
Emissions below de minimis thresholds?	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
2026						
Total Emissions of Construction and Demolition plus Changes in Aircraft Operational Emissions [1]	-1.01	-0.11	8.98	-1.17	1.33	0.06
EPA De Minimis Threshold	*100*	*25*	*25*	*100*	*100*	*100*
Emissions below de minimis thresholds?	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
2031						
2031 Net Change in Aircraft Operational Emissions of the Proposed Action	**-17.0**	**-1.8**	**+19.3**	**-2.1**	**-0.1**	**-0.1**
2031 Net Change in Ground Access Vehicle Emissions	+0.87	+0.009	+0.005	+0.001	+0.001	+0.001
2031 Net Change in Parking Area Emissions	+4.05	+0.018	-2.28	+0.001	-0.001	-0.001
Total Operational Net Emissions (TPY)	-12.08	-1.77	+17.03	-2.10	-0.1	-0.1
EPA De Minimis Threshold	***100***	***25***	***25***	***100***	***100***	***100***
Emissions below de minimis thresholds?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Source: HMMH, 2022

Notes: 1. 2026 emissions includes both construction/demolition and the aircraft emissions for comparison to *de minimis* thresholds

Table 5-2 shows that the total net Project emissions for the construction years and the future 2031 buildout year would be below established *de minimis* thresholds (as denoted in the light blue shading) for all relevant pollutants. Per the FAA 1050.F Desk Reference, if a project's net emissions are less than the *de minimis* levels, then the federal action is considered to be too small to adversely affect the air quality status of the area and is considered to conform with the applicable State Implementation Plan, therefore the General

Conformity requirements have been complied with and the process is complete[82]. In that case, a General Conformity determination is not required for the construction activities associated with the Proposed Action or for the net change in operational emissions from the Proposed Action compared to the No Action. In addition, although the same number of passengers is expected for either alternative, the number of forecast operations decreases for the Proposed Action with the replacement of the 737-700W to the larger 737-800W aircraft. As a result, operational emissions are expected to decrease for the Proposed Action, as compared to the No Action alternative, for all of the listed pollutants except NOx, which shows an increase in emissions. The NOx increase is attributed to the higher emission factors associated with the 737-800 engines as compared to the 737-700 engines.

In summary, project-related emissions are within prescribed numerical thresholds (i.e. *de minimis* levels) therefore, violations of the NAAQS are not expected to result from construction and operation of the Proposed Action.

5.1.5. Best Management Practices and Minimization Measures – Air Quality

As necessary and applicable, the following best management practices and reasonably available control measures would be implemented:

- Construction sequencing or phasing
- Promote the use of equipment that meets Tier IV emission standards
- Minimization of exposed soils at any given time during construction activities
- Water spray for dust suppression and preventing fugitive dust from becoming airborne from construction vehicles
- Suspending or adjusting intensity of earthwork during periods of sustained high wind speeds (e.g., 30 mph and over), as defined by the Occupational Safety and Health Administration (OSHA)
- Maintaining construction vehicles in good working condition
- Limiting construction vehicle engine idling by turning off engines after three (3) to five (5) minutes of inactivity
- Decreasing vehicle speed limits while onsite to reduce fugitive dust generation and obeying posted vehicle speed limits while off-site
- Requiring construction contractors to use properly maintained and operated construction equipment
- Not overloading construction trucks beyond their maximum hauling capacity with fill borrow material or construction debris
- Using tarp covers on construction trucks transporting construction materials and construction debris to and from the site
- Re-vegetating exposed soils following completion of construction activities in designated areas

82 https://www.faa.gov/about/office_org/headquarters_offices/apl/environ_policy_guidance/policy/faa_nepa_order/desk_ref/media/desk-ref.pdf

5.1.5.1. Signalized Intersections

The air quality analysis also included a review of signalized intersections in the study area which could be affected by the Proposed Action. The analysis identified the worst-case locations for assessment for carbon monoxide and particulate matter impacts from additional vehicles associated with construction activities for 2026 and with the Proposed Action for 2031. The project area is designated as a maintenance area for CO and $PM_{2.5}$, therefore, potential impacts for CO and $PM_{2.5}$ were analyzed for affected signalized intersections impacted by the Proposed Action. The analyses were conducted based on the traffic analysis conducted by FHI Studio.

The microscale analyses were conducted using the EPA emission model (MOVES3) and dispersion model (CAL3QHC) to estimate worst-case CO and $PM_{2.5}$ concentrations at individual receptor (i.e., receiver) locations. Peak CO and $PM_{2.5}$ concentrations modeled for each location were then added to the appropriate CO and $PM_{2.5}$ background concentrations (as specified in the CT DEEP CO and $PM_{2.5}$ design values for 2018) to determine the worst-case CO and $PM_{2.5}$ impacts at each location. The results were then compared to the 1-hour and 8-hour CO NAAQS and the 24-hour and annual $PM_{2.5}$ NAAQS to show compliance.

Table 5-3 presents the results of the 1-hour and 8-hour CO and 24-hour and annual $PM_{2.5}$ hot-spot analysis for the three worst-case intersection locations for the 2026 construction and 2031 Proposed Action and No Action conditions. The concentrations in **Table 5-3** also include the appropriate 1-hour and 8-hour background concentrations of 2.0 ppm and 1.2 ppm[83], respectively, for comparison to the CO NAAQS, and the 19 ug/m3 and 6.8 ug/m3 background values for 24-hour and annual $PM_{2.5}$, respectively.

Table 5-3: CAL3QHC CO and $PM_{2.5}$ Modeling Results for the Worst-Case Intersections

Intersection	Pollutant	Averaging Period	2026[1,2] Construction	2031[1,2]		NAAQS
				No Action	Proposed Action	
			Peak Midday	Peak Midday	Peak Midday	
High Street Route 100 & I95 NB On Ramp (Exit 52)	CO	1-hour (ppm)	2.8	2.6	2.6	35 ppm
		8-hour (ppm)	1.8	1.6	1.6	9ppm
	$PM_{2.5}$	24-hour (ug/m^3)	19.2	19.2	19.2	35 ug/m^3
		Annual (ug/m^3)	6.9	6.84	6.84	12 ug/m^3
Hemingway Avenue Route 142 & Main Street Route 100	CO	1-hour (ppm)	**3.0**	**2.6**	**2.6**	35 ppm
		8-hour (ppm)	**1.9**	**1.6**	**1.6**	9ppm
	$PM_{2.5}$	24-hour (ug/m^3)	**19.24**	**19.2**	**19.2**	35 ug/m^3
		Annual (ug/m^3)	**6.90**	**6.84**	**6.84**	12 ug/^{3}
High Street Route 100 & Kimberly Avenue	CO	1-hour (ppm)	2.7	2.5	2.5	35 ppm
		8-hour (ppm)	1.6	1.5	1.5	9ppm
	$PM_{2.5}$	24-hour (ug/m^3)	19.2	19.16	19.16	35 ug/m^3
		Annual (ug/m^3)	6.8	6.84	6.84	12 ug/m^3

Notes:
1. CAL3i concentrations included modeled concentrations plus monitored background for comparison to the NAAQS.
2. Bold Concentrations denote overall maximum modeled concentrations for each year and condition.

Source: HMMH 2022

[83] http://www.ct.gov/deep/cwp/view.asp?a=2684&q=421150&deepNav_GID=1619

These results demonstrate that the three (3) worst-case intersections identified for the Construction Year 2026 and for the 2031 Proposed Action and No Action would not cause or contribute to a violation of the CO or $PM_{2.5}$ NAAQS within the study corridor, and thereby satisfy all NEPA and Clean Air Act requirements pertaining to CO and $PM_{2.5}$ at the signalized intersections of the study. It is assumed that if these intersections show peak ground level CO and $PM_{2.5}$ concentrations below the NAAQS, then all other signalized intersections in the traffic study area would also be below the CO and $PM_{2.5}$ NAAQS.

5.1.6. No Action - Air Quality

The No-Action alternative assumes that the Proposed Action is not implemented. The No Action would limit the flexibility to use higher seat capacity aircraft (737-800W) resulting in higher number of operations under the No Action compared to the Proposed Action. As result, emissions are expected to be higher under the No Action when compared to the Proposed Action, for all of the listed pollutants except NO_X. See **Table 5-3.** The only additional air quality impacts that would occur as a result of choosing the No-Action alternative are related to the satellite parking at Long Wharf and associated shuttle bus trips to and from the airport. **Table 5-2** accounts for those impacts.

5.2. BIOLOGICAL RESOURCES

A variety of low value and fragmented habitats subject to human and airport activities occur within the Project footprint. Most of the Airport and adjacent surrounding grounds, in particular the project site, have been subjected to substantial mechanical disturbance by past construction and human activities, including the surrounding urban and rural developments.

The areas (north and south end) where the runway extensions are proposed are entirely within the upland ecological community classified as “Airport Managed Grassland” (maintained grounds). This habitat type is comprised of maintained grass areas regularly mowed by HVN and adjacent to the airport runway, taxiway and structures. The majority of the area where the new East Terminal is proposed is also classified as “Airport Managed Grassland” (maintained grounds) that is regularly mowed. The proposed entrance road from Proto Drive to the new terminal traverses successional shrub/woodlands and emergent wetlands.

Wildlife habitat within HVN is managed to deter wildlife usage and reduce the potential for wildlife/bird strikes.[84] The main vegetation assemblages to be impacted by the Project footprint can be found in the **Table 5-4**.

[84] FAA Advisory Circular, Hazardous Wildlife Attractants on or near Airports, February 21, 2020.

Table 5-4: Vegetation Assemblage Distribution and Estimated Footprint Impacts

Main Habitats	Approximate Footprint Impacts - Acres			Total Acres (Approx.)	Percentage Distribution
	Runway 02	Runway 20	East Terminal		
Developed (impervious)	0.4	0.4	6.8	**7.61**	**15%**
Airport Managed Grassland (regularly mowed)	6.6	2.5	24.4	**33.46**	**66%**
Upland Woodlands	0.0	0.0	0.19	0.19	<1%
Disturbed Wetlands (Airport Managed Grassland regularly mowed)	0.0	0.0	8.97	8.97	18%
Undisturbed Wetlands	0.0	0.0	0.1	0.1	<1%
Total	7.0	2.9	40.46	50.33	100%

Approximately 80% of the areas to be impacted by the Proposed Action consist of previously disturbed grounds by the construction of Runway 02-20, Runway 14-32 and associated taxiways and are subject to periodic mowing to deter wildlife usage. Of the regularly mowed area, approximately 15 percent is classified as disturbed herbaceous wetlands. The Proposed Action would not result in the loss of naturally vegetated habitats. For wetland impacts see **Section 5.15**.

5.2.1. Federal and State Listed Threatened and Endangered Species

5.2.1.1. Federal Listed Species

Based on the USFWS - IPaC, there are no critical habitats within the project site (see **Appendix C** for Agency Correspondence). However, forested habitats are presented in the vicinity of the Airport which may serve as Northern Long-eared Bat habitat. The only tree cutting associated with the Proposed Action is by the new entrance to the East Terminal where the proposed bridge would connect with Proto Drive. While limited tree clearing may occur outside of the recommended seasonal work window, using the key for the Northern Long-eared Bat within the IPaC system, USFWS determined the Proposed Action is consistent with activities analyzed in the Service's January 5, 2016, Programmatic Biological Opinion[85].

The Proposed Action may affect but not expected to adversely affect or jeopardize the Northern Long-eared Bat population Any take that may occur in connection to the Proposed Action is not prohibited under the Endangered Species Act, Section 4(d) rule adopted for this species at 50 CFR Part 17.40(o). This determination relies on the verification letter (dated March 15, 2022) issued by the USFWS under the January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions which fulfill its Section 7(a)(2) consultation obligation (see **Appendix C** for the USFWS Verification Letters received). On November 30, 2022, the USFWS published a final rule to reclassify the Northern Long-eared Bat as endangered under the Endangered Species Act (Federal Register, November 30, 2022). The Verification Letter is valid for one year and would be revisited during the permitting process taking into consideration any new USFWS guidance.

[85] https://www.fws.gov/media/programmatic-biological-opinion-final-4d-rule-northern-long-eared-bat-and-activities-excepted

5.2.1.2. State Listed Species

It is expected there would be minimal temporary disturbance on patterns from avian species that transit within the project site with the Proposed Action. The Proposed Action is primarily located in portions of the Airport that are currently maintained grass[86] or paved surfaces. However, Project would adhere to the conservation recommendations for grassland birds in the CT DEEP NDDB Preliminary Determination letter dated March 3, 2022. See **Appendix C** for Agency Correspondence. The State-listed plants Field Beadgrass (*Paspalum laeve*) and potentially Two-flower Cynthia (*Krigia biflora*) have been documented within the airport managed grasslands, particularly in the vicinity of the East Terminal Development. CT DEEP periodically updates the State-listed species list and associated permitting requirements. The activities in these areas may impact these plant species due to ground disturbance during construction. Species relocation or any other mitigation action would be coordinated with CT DEEP.

5.2.2. Proposed Action - Construction Phase – Biological Resources

The construction of the Project is estimated to require around 50 acres of civil site work (e.g., clearing, grubbing, grading, etc.), on mostly previously disturbed land. As shown in **Table 5-4** (**Section 5.2**), approximately 0.1 acre of direct disturbance within undisturbed wetlands and upland woodlands is proposed for the construction of a new bridge and airport access road. The remainder of the disturbance is within existing paved or airport managed grassland (mowed as per FAA requirements and CERTALERT No. 06-07). Disturbed herbaceous wetlands that are also managed by the Airport would be impacted, as discussed in **Section 5.14.1**. The reduction of these maintained grass habitats on HVN would reduce the potential for wildlife/bird strikes by reducing wildlife attractants, thereby improving airport safety.

The construction of the Proposed Action would be carried out mainly over the Airport's managed grasslands and previously disturbed grounds; therefore, this is not expected to affect local or regional populations of wildlife species. Wildlife species on the Airport are mobile and adaptable to transition in adjacent habitats. As a result, no adverse impacts are anticipated. Furthermore, the Project would adhere applicable conservation recommendations from CT DEEP as per their NDDB Preliminary Determination letter dated March 3, 2022 (see **Appendix C**).

5.2.3. Proposed Action - Airport Operations – Biological Resources

No additional impacts on biological resources are expected during the operational phase of the Project. Habitats and species will continue to be managed the same as under the No Action. Wildlife hazard management would continue to be implemented to avoid or minimize the potential for air strikes with avian species.

5.2.4. Best Management Practices and Minimization Measures – Biological Resources

To ensure impacts remain at or below less-than-significant adverse levels, the effects on biological resources would be further minimized and reduced through the implementation of best management practices and available control measures, such as:

- Maintain a buffer between the wetland areas not to be impacted and construction zone

[86] Areas are being currently mowed as per FAA requirements. CERTALERT No. 06-07.

- Land clearing and grubbing would be performed in such a manner as to minimize damage outside the project footprint
- Maintain construction activities within authorized project boundaries, construction staging areas and clearing limits
- A Stormwater Pollution Prevention Plan (SWPPP) and NPDES Permit in accordance with CT DEEP regulations would be developed and implemented for the Project
- Coordination with CT DEEP, during the design and permitting phase, to determine appropriate mitigation measures (e.g., relocation) for impacts to State-listed plant species
- A Plant Protection Plan would be incorporated into the construction documents for the project and to be followed by the contractor in accordance with CT DEEP requirements
- A Plan of Conservation and Protection developed by the Airport in coordination with the CT DEEP would be incorporated into construction plans to ensure the safety of State-listed animal species before, during and after construction
- The Project would adhere as applicable to the recommendations provided by CT DEEP in their NDDB Preliminary Determination letter dated March 3, 2022 (see Appendix C)

5.2.5. Significant Impact Threshold – Biological Resources

The Proposed Action does not exceed the Significant Impact Threshold as per the FAA Order 1050.1F, and does not have the potential for:

- Long-term or permanent loss of unlisted plant or wildlife species from a large project area
- Adverse impacts to special status species, such as 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

The majority of the proposed work is located in areas of actively maintained grasslands, which are mowed on a regular basis. Since wildlife habitat is of low value in these areas, and it is already highly fragmented, these impacts are not considered to be significant based on the criteria. It is not likely the Project would negatively affect populations of existing wildlife species.

5.2.6. No Action – Biological Resources

Under the No Action alternative, HVN would continue operating within the same footprint. Similar to the Proposed Action, impacts to biological resources would be less than significant. The Airport would continue implementing their Wildlife Management Plan as per FAA guidelines, including regularly mowing grass areas within the airfield.

5.3. CLIMATE

Climate change is a global phenomenon that can have local impacts.[87] 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 GHG emissions in the atmosphere affect global climate.[88,89] GHG emissions result from anthropogenic sources, including the combustion of fossil fuels. GHGs include CO_2, methane (CH_4), N_2O, O_3, and fluorinated gases.[90] 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.

GHG are gases that trap heat in the earth's atmosphere. Both naturally occurring and man-made GHGs primarily include water vapor, carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Activities that require fuel or power are the primary stationary sources of GHGs at airports. Aircraft and ground access vehicles, which are not under the control of an airport, typically generate more GHG emissions than airport-controlled sources.

Research has shown there is a direct correlation between fuel combustion and GHG emissions. In terms of U.S. contribution, the Government Accountability Office reports that "domestic aviation contributes about three percent of total carbon dioxide emissions, according to EPA data," and compares that with other industrial sources, including the remainder of the transportation sector (20%) and power generation (41%). The ICAO estimates that GHG emissions from aircraft account for roughly two (2) percent of all anthropogenic GHG emissions globally.[91] Climate change due to GHG emissions is a global phenomenon; therefore, the affected environment is the global climate.

5.3.1. Climate Change Adaptation

HVN lies in a coastal setting, surrounded by wetlands and low-lying areas. As such, the Airport is susceptible to tidal flooding and sea level rise flooding. Using the NOAA Sea Level Rise Viewer, it can be seen if the sea level rises two (2) feet or more, the majority of the Airport south of the existing Runway 02-20 is expected to be more vulnerable and subject to frequent flooding. The State of Connecticut is forecasting a gradual 20-inch rise in sea level by the year 2050. In consideration of the reasonably foreseeable effects of climate change and taking into account NEPA Guidance On-Consideration of GHG and Climate Change[92], the Proposed Action would raise the runway ends by approximately 3-6 feet to address potential flooding, well above the State-projected sea level rise. The Airport would address the potential effects of sea level rise

[87] As explained by the EPA, "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).

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

[89] 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).

[90] U.S. Environmental Protection Agency, Overview of Greenhouse Gases, http://www3.epa.gov/climatechange/ghgemissions/gases.html (accessed February 10, 2022).

[91] https://www.icao.int/environmental-protection/Documents/EnvironmentalReports/2019/ENVReport2019_pg111-115.pdf

[92] https://www.federalregister.gov/documents/2023/01/09/2023-00158/national-environmental-policy-act-guidance-on-consideration-of-greenhouse-gas-emissions-and-climate

on the center portion of the runway through life cycle management, which would involve periodic maintenance and upgrades to the runway to offset the impact of sea level rise.

The new terminal would be constructed with a finished floor elevation at or above 13 feet above mean sea level (MSL) base flood elevation, or approximately 8 feet above existing grade. Key mechanical systems (e.g., electrical, HVAC, IT, security) would be placed above the 13 feet base flood elevation, which would help to assure that the terminal remains functional during major storm events.

See **Section 5.14.3** for additional information about floodplains and sea level rise adaptation.

5.3.2. Greenhouse Gas Emissions

Table 5-5 presents the annual greenhouse gas emissions for demolition and construction activities while **Table 5-6** presents the GHG operational emissions associated with the 2022 existing and future Proposed Action and No Action for 2026 and 2031.

Table 5-5: GHG Emissions Associated with Construction for the Proposed Action

Year	Greenhouse Gases (metric tons/year)			CO_2e (metric tons/year) [2]
	CO_2	CH_4	N_2O	
Construction[1]				
2024	2,273	0.014	0.003	2,274
2025	10,208	0.059	0.013	10,214
2026	4,526	0.025	0.006	4,528

Notes: 1. Construction emissions derived from ACEIT and EPA MOVES3.
2. Emissions are reported as metric tons of carbon dioxide equivalents to present a normalized unit of greenhouse gas emissions based on the global warming potential of each gas. CO_2e is a combination of CO2 emissions with the CO2-equivalent emissions of other greenhouse gases.

Source: HMMH, 2022

Table 5-6: GHG Emissions Associated with Existing Conditions, Proposed Action and No Action

Year	Aircraft Operations Scenario	Aircraft Fuel Usage (tons)	Greenhouse Gases (metric tons/year)			CO_2e (metric tons/year) [2]
			CO_2	CH_4	N_2O	
2022	Existing Conditions[1]	9,741	30,732	N/A	N/A	30,732
2026	No Action[1]	12,747	40,216	N/A	N/A	40,216
	Proposed Action[1]	11,789	37,193	N/A	N/A	37,193
2031	No Action[1]	21,340	67,327	N/A	N/A	67,327
	Proposed Action[1]	19,599	61,833	N/A	N/A	61,833
	Net Change in Ground Access Vehicles GHGs	N/A	94	0.07	0.15	94
	Net Change in Additional Parking GHGs	N/A	-240	-0.141	-0.01	-240

Notes: 1. GHG emissions are derived by AEDT for each condition.
2. Emissions are reported as metric tons of carbon dioxide equivalents to present a normalized unit of greenhouse gas emissions based on the global warming potential of each gas. CO_2e is a combination of CO2 emissions with the CO2-equivalent emissions of other greenhouse gases.
N/A = Not applicable; AEDT does not estimate CH4 and N20 emissions. N/A under the aircraft fuel usage indicates non-aircraft source

Source: HMMH, 2022

5.3.3. Best Management Practices and Minimization Measures - Climate

In addition to the measures listed in Section 5.1.5 (Air Quality), the following best management practices and minimization measures would be considered during the design phase:

- Integration of low-cost energy efficiency measures
- Design of mechanical, electrical and plumbing systems to minimize operating costs while providing the highest level of control over the interior environment of the building
- Climate change resilient design of the proposed terminal building
- Inclusion of "smart" and energy efficient building elements as part of the design, such as natural lighting, LED luminaries and variable shading among others
- Reduce energy consumption by monitoring the efficiency of heating, ventilation, and cooling systems

5.3.4. Significant Impact Threshold – Climate

There are no defined significance thresholds for aviation GHG emissions, nor has FAA identified any factors to consider in making a significance determination for GHG emissions. GHGs associated with the Proposed Action have been estimated in accordance with the latest FAA guidelines (1050.1F) for climate impacts in a NEPA document. As discussed in Section 5.1 (Air Quality), construction and operational emissions under the Proposed Action would not result in a significant impact.

In the 1050.1F Desk Reference, the FAA notes, "it is not currently useful for the NEPA analysis to attempt to link specific climatological changes, or the environmental impacts thereof, to the particular project or emissions, as such direct linkage is difficult to isolate and to understand." As per the 1050.1F Desk Reference, accordingly, it is not useful to attempt to determine the significance of such impacts. There is a considerable amount of ongoing scientific research to improve understanding of global climate change and FAA guidance will evolve as new federal requirements are established. The analysis in this document shows that the Proposed Action is anticipated to result in less fuel burn and thus less GHG emissions when compared to the No Action alternative for both 2026 and 2031. As discussed in Section 5.1.4.1, although the same number of passengers is expected for either alternative, the number of forecast operations decreases for the Proposed Action with the replacement of the 737-700W by the larger 737-800W aircraft. There would be a small increase in GHG emissions associated with the construction activity necessary for implementation of the Proposed Action; however, the construction would be short-term and the associated GHG emissions are expected to be very small compared to community levels Additional GHG mitigation measures for the Proposed Action are discussed above in Section 5.3.3.

5.3.5. No Action – Climate

The No-Action alternative assumes that the Proposed Action is not implemented, and greenhouse gases from aircraft operations would remain unchanged for 2026 and 2031. The No Action would limit the flexibility to use higher seat capacity aircraft (737-800W) resulting in higher number of operations under the No Action compared to the Proposed Action. As result, CO_2e emissions and fuel usage are expected to be higher under the No Action when compared to the Proposed Action, see Table 5-7. The only additional GHG impacts that would occur as a result of choosing the No-Action alternative are related to the satellite

parking at Long Wharf and associated shuttle bus trips to and from the airport. Table 5-7 accounts for those impacts.

5.4. COASTAL RESOURCES

The Project is not expected to result in impacts on coastal resources, nor would it cause unacceptable risk to human safety or property within the coastal boundary. HVN is located approximately 0.15 mile east of Morris Cove. As depicted on the coastal boundary map of New Haven and East Haven[93], the entire Airport property, except for a small corner between Dodge Avenue and Holmes Street and at the extreme eastern limit of the Airport at the terminus of Thompson Avenue, falls within the coastal boundary as established by the Connecticut General Statutes Section 22A – 94. Other than impacts to freshwater wetlands, which would be mitigated (see Section 5.14.1), the Proposed Action is not anticipated to result in adverse impacts to tidal wetlands, coastal flooding, coastal circulation patterns, drainage patterns, patterns of shoreline erosion and accretion, visual quality, water quality, and wildlife/finfish/shellfish habitat. It is anticipated that the construction phase and operation of the Proposed Action would be deemed consistent with the applicable enforceable policies under the Connecticut Coastal Management Act. Actions must also incorporate all reasonable measures mitigating any adverse impacts of such actions on coastal resources as codified in the Connecticut General Statutes (Sec. 22a-90 - 22a-112, inclusive).

According to coordination with CT DEEP and communication dated January 17, 2023, the Coastal Consistency Review and Determination would be made during their agency review of the state permit application. Applicable state and federal permits may not be issued until a finding of consistency is achieved. A copy of the CT DEEP correspondence is included within Appendix C. Similar to the other applicable permits, information required for the coastal management consistency review requires an advanced and detailed level of design that is typically completed after the NEPA process is complete. CT DEEP would make a formal consistency determination during the permitting phase of the Project.

5.4.1. Significant Impact Threshold – Coastal Resources

In consideration of the scope of work, potential project-related effects on coastal resources as discussed in Section 5.4 would be less than significant. The Proposed Action does not exceed the Significant Impact Threshold as per the FAA Order 1050.1F, and does not have the potential for:

- Being inconsistent with Connecticut's enforceable policies
- Impacting a coastal barrier resources system unit
- Posing an impact to coral reef ecosystems Causing an unacceptable risk to human safety or property
- Causing adverse impacts to the coastal environment that cannot be satisfactorily mitigated

5.4.2. No Action – Coastal Resources

The No Action assumes that the existing Airport footprint would remain unchanged. Therefore, similar to the Proposed Action, no impacts on coastal resources would occur.

[93] http://cteco.uconn.edu/maps/town/Coastal_Boundary/cstlbnd_EAST_HAVEN.pdf

5.5. HISTORICAL, ARCHITECTURAL, ARCHEOLOGICAL, AND CULTURAL RESOURCES

As described in **Section 4.6**, there are no historic resources within the Area of Potential Effect and therefore no historical, architectural, archeological or cultural resources would be affected by the Proposed Action. The SHPO issued a finding on October 27, 2022, indicating that no historic properties would be affected by the Proposed Action. See **Appendix C** for Agencies Correspondence and **Appendix H** for SHPO Project Review Package. Appendix I also contains a copy of prior letter from SHPO, dated March 26, 1996, indicating that "extensive ground disturbance exists within the Tweed-Hew Haven Airport and Morris Creek areas and as such, the proposed project site does not possess archaeological integrity or sensitivity" (emphasis in original). The 1996 letter from the CT-SHPO also stated that "the existing structures at Tweed-Hew Haven Airport and the adjacent residential neighborhood lack historical and architectural importance." The no effect finding takes into consideration proposed noise contours discussed in **Section 5.9**.

5.5.1. No Action – Historic / Architectural / Archaeological / Cultural

The No Action assumes that the existing Airport footprint would remain unchanged. Under the No Action alternative, air traffic would continue to increase and noise levels at a portion of the Morris Cove Historic District, which abuts the western limits of the Area of Potential Effect, would exceed 65 dB. See **Section 5.9** (Noise and Compatible Land Use).

5.6. SECTION 4(F) AND SECTION 6(F) RESOURCES

The Proposed Action is not expected to result in a use under Section 4(f) of the U.S. Department of Transportation Act, nor would it require a conversion under Section 6(f) of the Land and Water Conservation Fund Act. Refer to Chapter 4, **Figure 4-5** (Section 4f/6f Map) for Section 4(f) and Section 6(f) resources relative to the study area. Taking into consideration projected noise contours from Proposed Action, as discussed in **Section 5.9**, it has been determined that no Section 4(f) or Section 6(f) resources would be impacted.

Additionally, any proximity impacts resulting from the increased traffic flow would not substantially impair or interfere with activities, features or attributes that qualify resources for Section 4(f) or Section 6(f) protection. See **Section 5.11** for Traffic Impact Analysis.

According to Section 4(f) of the U.S. Department of Transportation Act, a use occurs when the property is permanently incorporated into the transportation project through a taking of land; when it is temporarily occupied[94]; or when its features are substantially impaired such that its value as a 4(f) resource will be meaningfully diminished or lost (termed a constructive use). A constructive use may result from noise, vibration, aesthetic changes, restricted access, or ecological intrusion.[95] Impact on a Section 6(f) property

[94] A temporary occupancy may not be considered a use when certain conditions are met: the duration of occupancy is less than the time needed for construction of the project and there is no change in ownership of land; the scope of work is minor; there are no anticipated permanent adverse physical impacts; the land being used is fully restored; and there is documented agreement of the official(s) with jurisdiction over the Section 4(f) resource regarding these conditions.

[95] According to CFR Part 774.15, a constructive use occurs when the projected noise level increase attributable to the project substantially interferes with the use and enjoyment of a noise sensitive property; the proximity of the project substantially impairs aesthetic features or attributes of a protected property; the project results in a restriction in access which substantially diminishes the utility of the property; the vibration impact from the construction or operation of the project substantially impairs the use of a Section 4(f) property; the ecological intrusion of the project substantially diminishes the value of wildlife habitat in a wildlife or waterfowl refuge, substantially interferes with access to a refuge when access is necessary for established wildlife migration, or substantially reduces wildlife use of a wildlife or waterfowl refuge.

occurs when the property is converted to a use other than public outdoor recreational space through permanent acquisition or as a result of a temporary occupancy equal to or greater than six (6) months in duration.

According to FAA Order 1050.1F, a significant action involves more than a minimal physical use of a Section 4(f) resource or constitutes a "constructive use" based on an FAA determination that the aviation project would substantially impair the Section 4(f) resource.

5.6.1. No Action – Section 4(f) and Section 6(f) Resources

The No Action assumes that the existing Airport footprint would remain unchanged. Different from the Proposed Action, under the No Action alternative noise levels would continue to increase on the west side of the Airport including buildings in the Morris Cove Historic District, a Section 4(f) resource. Because of this, impacts within the Morris Cove Historic District would occur under the No Action Alternative. These impacts would be avoided with the Proposed Action. See Section 5.9 (Noise and Compatible Land Use).

5.7. HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION

The FAA 1050.1F Desk Reference states that the EA should describe anticipated waste to be 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 site or in the immediate vicinity.

According to available information discussed in Section 4.9 (Chapter 4), there are no records of active or open contamination, abandoned, inactive, or uncontrolled hazardous waste sites reported within the project sites, nor land use restrictions. Therefore, the Proposed Action does not interfere with known contamination sites or remediation. If unexpected hazardous wastes are encountered during construction, the findings and remediation of those unexpected conditions would be conducted in accordance with applicable regulations.

Implementation of the Proposed Action would comply with applicable federal, State, and local regulations regarding hazardous materials, hazardous waste management, solid waste, and pollution prevention.

5.7.1. Proposed Action - Construction Phase – Hazardous Materials / Solid Waste

Construction-related activities under the Proposed Action have the potential to generate non-hazardous and hazardous construction waste. The Project includes minimal demolition, consisting primarily of removal of existing pavements and vegetation clearing. With the proposed runway extension, the existing profile needs to be modified; therefore, the entire Runway 02-20 pavement (approximately 843,345 square feet) is required to be removed prior de reconstruction and resurfacing. Also, approximately 34,758 square feet of existing Runway 14-32 pavement would be removed for the construction of the East Terminal Development Area. To the extent practical, demolished materials would be recycled or re-used on site. Excavated soils would be reutilized on-site to the maximum extent possible and in accordance with site-specific design specifications. Excess clean soils may also be reutilized at other areas within HVN, if practical. Vegetative debris would be generated from the land clearing and site preparation. The contractor would be responsible for chipping vegetative debris, as applicable. Therefore, the volume of demolition waste that would be exported off site is expected to be minimal.

Hazardous waste[96] would mainly consists of leftover paints and varnish, resins, adhesives, batteries, vehicle fluids, oils, fuel and lubricants, including other petroleum-based products used for maintenance of construction equipment. However, solid waste generated during construction is anticipated to be temporary and a minor contributor to overall solid waste generated in the region and would not result in adverse impacts. The solid waste and recycling material would be hauled by a licensed contractor to the New Haven Solid Waste Management Transfer Station (260 Middletown Ave New Haven, CT 06513) for diversion of solid waste and then disposed at a permitted volume reduction plant, resource recovery facility and/or landfill.

Based on the latest Connecticut Solid Waste Management Plan (*2016 Comprehensive Materials Management Strategy*) adopted by CT DEEP to maintain system capacity, there is sufficient capability to continue managing recycling, processing and disposal of the waste generated by HVN. See Section 4.9 for additional information. Following construction, the proposed improvements are expected to result in less than significant increase in solid waste. Staging, operation, and maintenance of construction equipment always have the potential for accidental releases of vehicle fluids. Proper vehicle maintenance and inspection would reduce this potential, and adverse impacts are not anticipated.

5.7.2. Proposed Action – Airport Operations – Hazardous Materials / Solid Waste

Taking into consideration the scope of the Project and the estimated number of passengers would be similar between the No Action and Proposed Action alternatives, no significant increase is expected in terms of solid waste generation. During the operational phase, similar direct, long-term and less-than-significant adverse impact on solid waste and hazardous materials are expected to remain or continue at HVN. The Proposed Action would continue to generate a consistent and manageable quantity of solid waste on a routine basis. Solid waste generally consists of routine office waste and other domestic items left behind by airport users, passengers and container waste associated with aircraft and activities at the proposed East Terminal. Solid waste would continue to be collected weekly in designated dumpsters and transferred to an appropriate municipal solid waste transfer station and/or licensed landfill.

Hazardous materials would continue to be stored per applicable regulations. Typically, hazardous materials would include batteries, electronics, vehicle fluids, oils, fuel, lubricants and Aqueous Film Forming Foam (AFFF), among others. A qualified private contractor would provide disposal services of routinely generated used oils. Spent vehicle batteries would be exchanged and recycled. Anticipated future hazardous material and solid waste generation would be a minor contributor to overall solid waste generation in the area and would not result in significant adverse impacts associated with solid waste quantities or management. AFFF foam would continue to be tested with a closed loop system and not released under normal circumstances. For additional best management practices and minimization measures refer to Section 5.7.3.

5.7.3. Pollution Prevention, Best Management Practices and Minimization Measures – Hazardous Materials / Solid Waste

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

[96] A waste is determined to be a hazardous waste if it is specifically listed on one of four lists (the F, K, P and U lists) found in title 40 of the Code of Federal Regulations (CFR) in part 261. https://www.epa.gov/hw/defining-hazardous-waste-listed-characteristic-and-mixed-radiological-wastes

- 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
- Perform construction vehicle maintenance and inspections to reduce the risk for accidental spills
- Perform proper airport's equipment/vehicle maintenance and routine inspections to reduce the risk for incidental releases of 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
- Implementing a Spill Prevention Control and Countermeasure (SPCC) Plan

5.7.4. Significant Impact Threshold – Hazardous Materials / Solid Waste

Taking into consideration the scope of work, potential effects would be less than significant. The Proposed Action does not exceed the Significant Impact Threshold as per the FAA Order 1050.1F, and does not have the potential to:

- Violate applicable federal, state, tribal, or local laws or regulations regarding hazardous materials and/or solid waste management
- Involve a contaminated site (including, but not limited to, a site listed on the NPL)
- 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
- Adversely affect human health and the environment

Additionally, the Proposed Action would promote more adequate space and good practices for storing, staging, recycling, and managing hazardous material and solid waste.

5.7.5. No Action – Hazardous Material / Solid Waste

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. Similar to the Proposed Action, HVN would continue generating a consistent quantity and type of solid waste on a routine basis. The No Action does not provide additional adequate space and would result in limited capability for storing, staging, recycling and managing hazardous material and solid waste. As a result, the No Action alternative impacts would be negative.

5.8. LAND USE

The construction of the Proposed Action is within the boundaries of HVN, compatible with current land uses, and in accordance with the 2021 Airport Master Plan. Refer to Chapter 4, **Figure 4-7** for Land Use Map. The implementation of the Proposed Action does not require amendment of current Land Use or Zoning Maps and would have no impact or promote changes with regard to land use designations, nor prevent use of adjacent off-airport properties. In fact, the Proposed Action may facilitate development of business opportunities in the East Haven Industrial Park and other surrounding industrial land. Consequently, no significant impact on land use compatibility is anticipated with implementation of the Proposed Action. Furthermore, the Proposed Action complies with the rules and regulations of the New Haven City Plan Commission and Town of East Haven.

5.8.1. Significant Impact Threshold – Land Use

There are no specific independent factors to consider for Land Use. The determination that significant impacts exist in the Land Use impact category is normally dependent on the significance of other impacts.

In consideration of the scope of work, its location, and no property acquisition, potential adverse effects on land use would be less than significant. Noise impacts would be mitigated. See **Section 5.9** for Noise and Compatible Land Use.

5.8.2. No Action – Land Use

The No Action assumes that the existing Airport footprint would remain unchanged. Neither the No Action nor the Proposed Action alternative promote changes in regard to land use designations, and neither prevent use of adjacent areas. However, the No Action does not support better utilization of available land (on-airport property) and limits the ability to recruit new business, maintain revenue, nor promote efficient operations.

5.9. NOISE AND COMPATIBLE LAND USE

The Master Plan Update completed in 2021 included a detailed noise analysis. That analysis evaluated noise in 2019 and 2040. The analysis was performed based on existing and forecast conditions at that time. As result of the introduction of service by Avelo, enplanements, air carrier fleet mix and air carrier operations differ from what was assumed in the Master Plan Update. Given the changes, a new noise analysis was completed for this EA. The Master Plan noise study is available at www.tweedmasterplan.com. The DNL contours are the primary mechanism for evaluating airport noise in this EA. The study team conducted an analysis of the potential noise effects that the Proposed Action would have on the Airport and its surrounding environs.

See **Appendix I** for the detailed analysis of noise and compatible land use. The Proposed Action would develop additional areas on airport property as described in **Chapter 1**. This section discusses construction noise and aircraft operations noise. To evaluate the expected noise environment under the Proposed Action alternative, DNL contours were developed for aircraft noise levels of 65 - 75 dBA for the two forecast years, 2026 and 2031.

HVN has an ongoing Residential Sound Insulation Program based on the 2012 Part 150 study[97]. Homes that have participated in the voluntary Residential Sound Insulation Program are shown in the Figures in Appendix I and are considered compatible with aircraft noise.

5.9.1. Proposed Action – Construction Phase – Noise

As a result of the operation of heavy equipment, truck traffic, and other construction activities, temporary increases in noise levels may be noticed in areas in immediately adjacent to the Project. The existing runway and taxiways would remain operational throughout the duration of the construction phase; however, some operations may be reduced or limited temporarily.

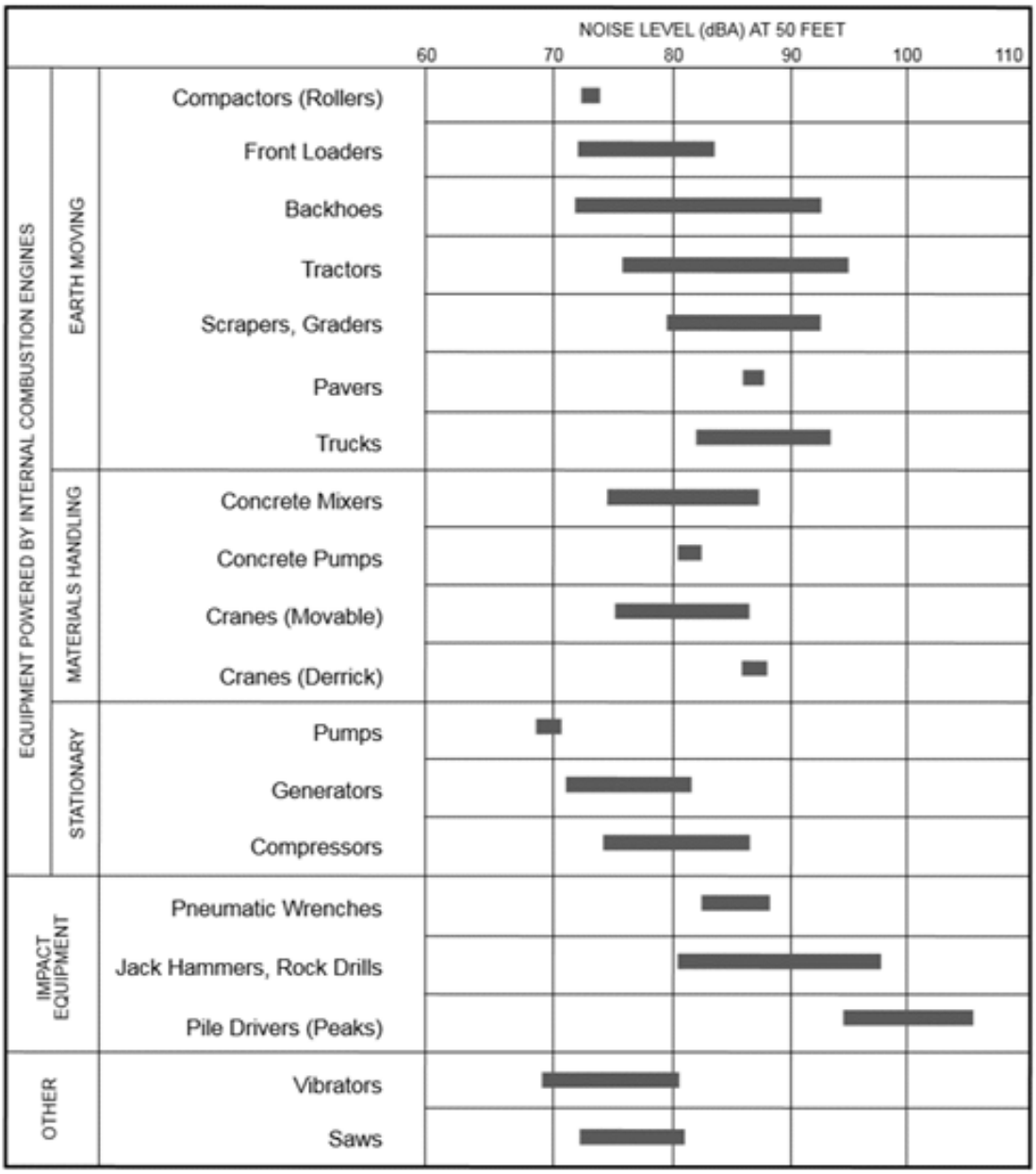
Runway construction is likely to require short-term reductions in available runway length for defined periods of time. The reduction in runway length may limit some of the operators' ability to conduct some operations at HVN during those times. Construction activities may be audible from nearby residences or businesses. However, the effects are considered to be short-term, temporary, intermittent, and depend upon the nature of the activities occurring at a particular moment. Construction noise would be also dependent on the location and functions of the equipment. Noise levels 50 feet away from typical construction equipment are provided in Table 5-7.

As per the CT DEEP noise ordinance[98] and applicable, construction equipment would be operated outdoor between hours of 7:00 am and 10:00 pm on Mondays through Saturdays, and 9:00 am to 9:00 pm on Sundays. In the event that the operation of construction equipment is required outside of these construction work window, coordination would be made with building official or director of public work. Construction equipment would be operated in compliance with OSHA standards. Construction contract documents would require construction equipment to be properly equipped and maintained in order to minimize off-site construction noise. The distance between the East Terminal Development Area and the nearest noise-sensitive area (i.e., residence) is approximately 600 feet. The runway is a greater distance from the residential area. The distances are deemed far enough that the temporary noise from the construction of the Project would not result in significant adverse noise impacts. The East Terminal Development area has an existing wooded buffer area between the proposed construction location and the nearest receptor.

[97] The term Part 150 refers to the FAA's voluntary program for airport noise compatibility planning formally known as 14 CFR Part 150. The program exists in two parts: a Noise Exposure Map (NEM) and a Noise Compatibility Program (NCP). HVN has a set of measures in place in its existing NCP to address noise/land use non-compatibilities shown on its Noise Exposure Map.

[98] https://portal.ct.gov/-/media/DEEP/air/noise/ordinances/NewHavenNoiseOrdinancepdf.pdf

Table 5-7: Noise Levels of Typical Construction Equipment



Source: EPA "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances," NTID 300-1.

5.9.2. Proposed Action - Operation Phase – Noise

The noise effect of the Proposed Action is determined by comparing the noise model results for each of the Proposed Action scenarios (the 2026 target year and the 2031 conditions representing five years beyond the target design year) to the No Action Alternative scenarios for each of the forecast years, respectively. **Figure 5-1** (Noise Contour Map – 2026 Proposed Action) and **Figure 5-2** (Noise Contour Map – 2031 Proposed Action) portray the DNL contours for the Proposed Action. Seven noise sensitive sites and a historic district were identified within the study area described in **Appendix I** (Noise and Air Quality Report). Each of the contour maps shows the seven sites. The Morris Cove Historic District is immediately west of the Airport, and is marked on the contour maps with cross-hatching.

As explained in the Noise and Air Quality Report (Appendix J), FAA generally considers all land uses to be compatible with aircraft-related DNL below 65 dB, including residential, hotels, retirement homes, intermediate care facilities, hospitals, nursing homes, schools, preschools, and libraries. Schools are not compatible above 65 DNL without mitigation. For each of the five noise analysis scenarios, the calculated DNL interval for each site is indicated in **Table 5-8**. Cells shaded in light gray indicated that the predicted DNL value is between 60 and 65 DNL; the darker shading indicates that the site falls in the 65 to 70 DNL interval.

Table 5-8: Noise Analysis Results for Noise Sensitive Sites

Noise Analysis Scenarios	1 *Nathan Hale School*	2 *East Shore Senior Center*	3 *St. Bernadette Church*	4 *Ms. Shaina's Neighbor School**	5 *East Haven Adult Education*	6 *Little Bear's Day Care*	7 *East Haven High School*	*Morris Cove Historic District*
Existing Conditions (2022)	< 60 DNL	< 60 DNL	< 60 DNL	***60-65 DNL***	***65-70 DNL***	< 60 DNL	< 60 DNL	***60-65 DNL***
No-Action Alternative (2026)	< 60 DNL	< 60 DNL	< 60 DNL	***65-70 DNL***	***65-70 DNL***	< 60 DNL	< 60 DNL	***60-65 DNL***
Proposed Action Alternative (2026)	< 60 DNL	< 60 DNL	< 60 DNL	***65-70 DNL***	***65-70 DNL***	***60-65 DNL***	< 60 DNL	***60-65 DNL***
No-Action Alternative (2031)	< 60 DNL	< 60 DNL	< 60 DNL	***65-70 DNL***	***65-70 DNL***	< 60 DNL	< 60 DNL	***65-70 DNL***
Proposed Action Alternative (2031)	< 60 DNL	< 60 DNL	< 60 DNL	***65-70 DNL***	***65-70 DNL***	***60-65 DNL***	< 60 DNL	***60-65 DNL***

**Notes: The Existing Conditions noise contour map is included in Chapter 4 of this document*
Site 4 is a daycare which is located in a residential home that has been sound insulated.

Source: HMMH, 2022

5.9.3. Best Management Practices and Minimization Measures – Noise

To further minimize possible construction temporary noise impacts, various measures would be put in place such as:

- Use of noise attenuation devices in construction equipment
- Maintain heavy machinery in optimal operating conditions to control noise
- Maintain mufflers and sound shielding on construction equipment
- Provide routine maintenance to equipment according to the manufacturer's specifications
- Minimize equipment idling and shut down construction equipment when not in use

Regarding noise from aircraft operations, the Airport would extend its ongoing Residential Sound Insulation Program to include homes that have not yet participated in the program and that are within the five-year forecast 65 DNL contour for the chosen Alternative. The Airport would continue to implement measures developed as part of the 2012 Part 150[99] study and would likely update the Part 150 once the Proposed Action is completed.

[99] The term Part 150 refers to the FAA's voluntary program for airport noise compatibility planning formally known as 14 CFR Part 150. The program exists in two parts: a Noise Exposure Map (NEM) and a Noise Compatibility Program (NCP). HVN has a set of measures in place in its existing NCP to address noise/land use non-compatibilities shown on its Noise Exposure Map.

Figure 5-1: Noise Contour Map - 2026 Proposed Action

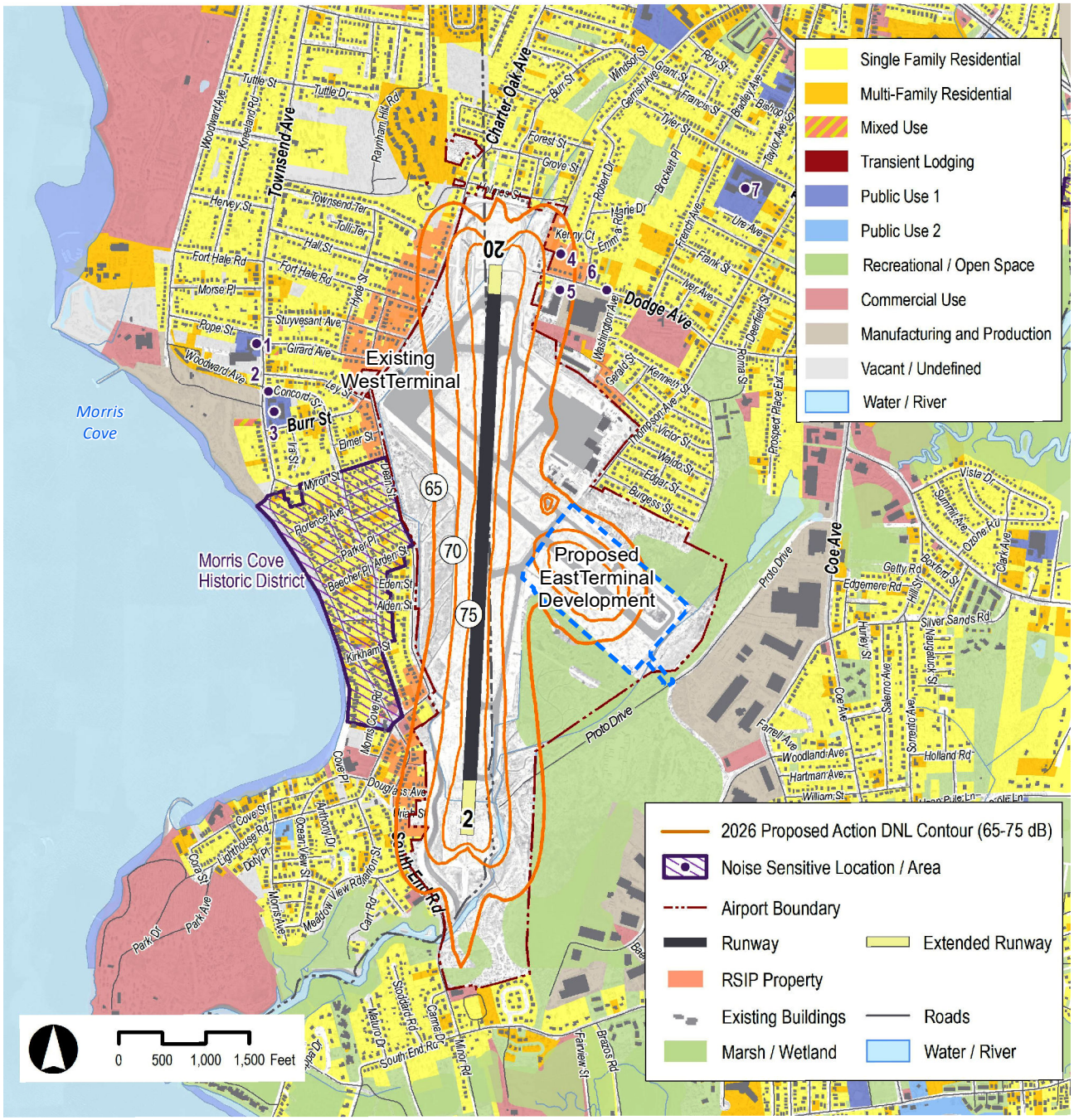


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Figure 5-2: Noise Contour Map - 2031 Proposed Action

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5.9.4. Significant Impact Threshold – Noise

Table 5-9 defines the significance thresholds for changes in noise in accordance with FAA Order 1050.1F and lists FAA-defined reportable[100] changes of noise levels. When an action (compared to the No-Action alternative for the same timeframe) would cause noise-sensitive areas to have a DNL greater than or equal to 65 dB and experience a noise increase of at least 1.5 dB, the impact would be considered significant. Reportable changes are defined as less than significant; the specific parameters are indicated in the table. Figures 17 and 18 in Appendix I provide grid point analysis maps indicating areas of DNL changes that correspond to the FAA thresholds.

Table 5-9: FAA Thresholds for Significant or Reportable Changes in Noise

	65 DNL or Greater	Greater than or equal to 60 DNL but less than 65 DNL	Greater than or equal to 45 DNL but less than 60 DNL
Minimum Change in DNL with Alternative	1.5 dB	3.0 dB	5.0 dB
Level of Impact	Significant	Reportable	Reportable

Source: FAA Order 1050.1F Desk Reference, Chapter 11

5.9.5. No Action – Noise

Figure 5-3 presents a comparison of the No Action and the Proposed Action alternatives for the forecast year 2026. Figure 5-4 presents a comparison of the No Action and the Proposed Action alternatives for the forecast year 2031.

For both the 2026 and 2031 scenarios, at the north end of the Airport, the No Action scenario DNL 65 contour extends farther northward along the extended runway centerline than does the corresponding Proposed Action scenario DNL 65 contour. No Action would limit the flexibility to use higher seat capacity 869 aircraft (737-800W) resulting in higher number of operations under the No Action. Therefore, a greater number of air carrier operations are modeled under the No Action alternative. Also, as described in Section 1.3.1 of the Noise and Air Quality Technical Report (Appendix I), arrival aircraft landing on Runway 20 under the Proposed Action assumptions would use a 336-foot displaced threshold, which would place the touch-down point at the same location as under the No Action assumptions. Aircraft departing northward from Runway 02 would have greater altitude when overflying the area immediately to the north of the airport, due to the extension of the southern end of the runway.

To either side of the extended runway centerline, the DNL 65 contour has a rounded "shoulder" shape that is the result of start-of-takeoff-roll noise emanating from jet aircraft departing southward from Runway 20. Those "shoulders" extend farther northward for the Proposed Action alternative than for the No Action alternative because the proposed runway extension would relocate the point at which aircraft begin takeoff roll.

At the south end of the Airport, the 2026 No Action scenario DNL 65 contour extends slightly farther southward along the extended runway centerline than does the corresponding Proposed Action scenario

[100] The terms "significant" and "reportable" indicate that the areas should be identified as is done in Figures 17 and 18 in Appendix I (Noise and Air Quality Technical Report), and do not imply reporting to any agency.

DNL 65 contour. The 2031 No Action and Proposed Action contours extend to approximately the same point along runway centerline. Because the proposed runway extension on the southern end would result in a shift of the touch-down point for aircaft landing on Runway 02 to 464 feet south of its current location, the extended-centerline contour difference between altenatives is less pronounced at the south end than at the north end.

On the west side of the airport, the No Action alternative DNL contours surrounding the location of the existing passenger terminal represent the noise from air carrier aircraft engines as they idle briefly upon arriving and departing from the terminal apron. On the east side of the airport, the Proposed Action alternative DNL contours include a similar shape as a result of the terminal relocation. Because the proposed new terminal would be located more centrally on airport property, the DNL 65 contours do not extend into neighboring residential areas.

As described in the Noise and Air Quality Report (Appendix I), Table 21 (Comparison of Noise Exposure in terms of Population and Acreage), in both the 2026 and the 2031 comparison, fewer housing units and thus lower population would be within the bounds of the Proposed Action 65 DNL contour as compared to the corresponding No Action contour. Table 22 (Mitigation Status of Noise Exposed Residential Units) of the Noise and Air Quality Report (Appendix I) presents counts of the identified residential properties within each contour interval, categorized as previously sound-insulated or as not having been sound-insulated, and indicating whether the property is in New Haven or in East Haven. For the year 2031 analysis, the number of residential units with noise exposure of 65 DNL or greater is 287 under the No Action alternative and 238 under the Proposed Action.

In addition, as also described in Appendix I, most of the residential housing units that may be exposed to a significant noise impact (1.5 dB increase or more where the Proposed Action noise exposure is 65 DNL or greater) have already been mitigated by the Airport through its Residential Sound Insulation Program. The remainder of those homes in the significant impact area would be evaluated for inclusion in the established Residential Sound Insulation Program. Initial estimates shown on Figures 15 and 16 of the Noise and Air Quality Report (Appendix I) indicate 25 such properties for forecast year 2026 and 54 for forecast year 2031. The Airport would consider updating its Noise Exposure Map under the Part 150 program once the Proposed Action (if selected) is completed.

Figure 5-3: Noise Contour Map - 2026 Proposed Action vs No Action

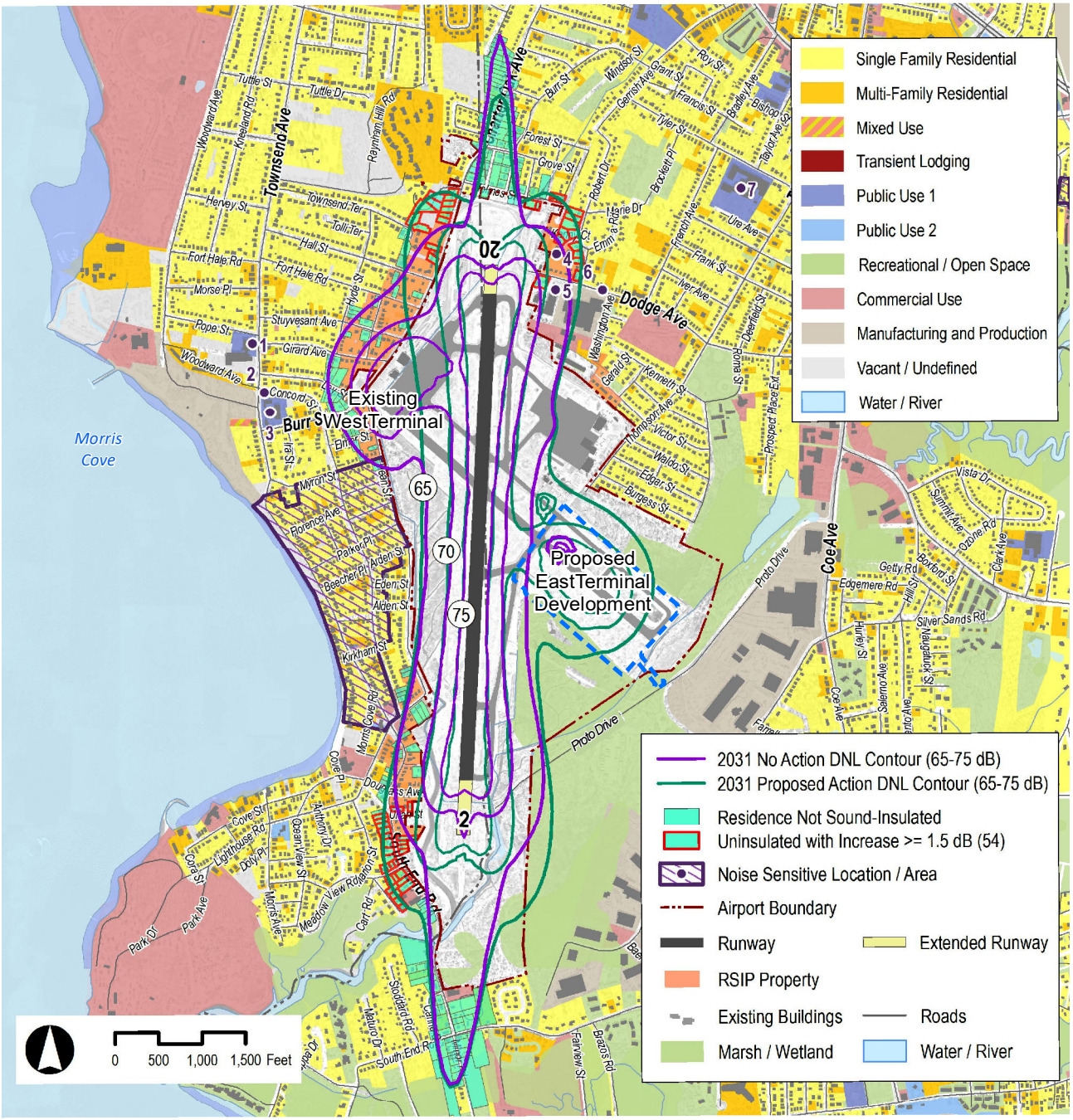

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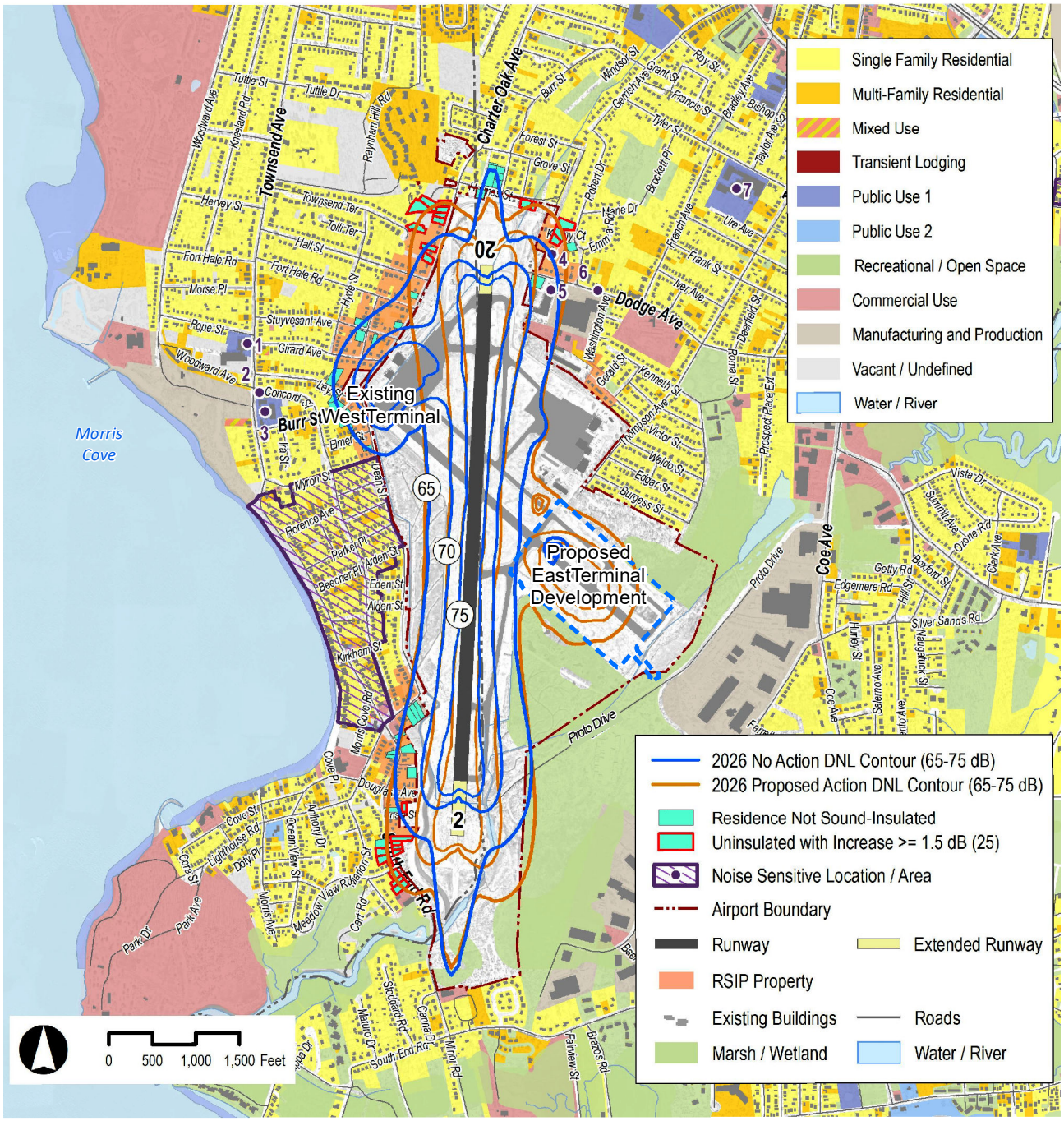
Figure 5-4: Noise Contour Map - 2031 Proposed Action vs No Action



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

The goal of the Proposed Action is to ensure that HVN can meet current and future aviation needs, promote the economic growth of the Greater New Haven region, increase revenue and improve airside and landside operations, in line with the 2021 Master Plan signed by the FAA.

The scope of the Project would not result in a negative or adverse regional impact and would not trigger shifts in land use, rapid population growth, high public service demands; or negative pressure over business and economic activity, displacement of established neighborhoods, uncontrolled urban proliferation, or incompatible changes on transportation or traffic patterns. The Proposed Action would not adversely affect public services including education and utility services or businesses.

5.10.1. Proposed Action – Industry, Employment and Income

HVN plays a vital role in the regional transportation system for accommodating aviation activity and airline passenger travel in Connecticut. The Proposed Action would improve operational flexibility resulting in a more efficient and sustainable airport and addressing the +$1.8 million annual State and City subsidy. With the Proposed Action, HVN would continue to support existing jobs, local economy, and accessibility of low-cost fares. Additionally, during the construction phase, temporary jobs would be created, as well as supporting an estimated increase to the local economy of direct jobs.

According to the job creation formula provided by the U.S. White House under the American Recovery and Reinvestment Act (ARRA), the following is used to estimate potential jobs that may be created as result of the construction (i.e., development phase) of 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 of around $165 million, the Proposed Action has the potential to create the following jobs (cumulative) for the development phase:

- Up to 1,793 jobs
    - Approximate Direct and Indirect: 1,147
    - Approximate Induced effect: 646

5.10.2. Proposed Action – Community Tax Base

No significant changes are expected between pre-development and post-development conditions. The Project does not require acquisition and is not anticipated to negatively affect property owners or business; therefore, is not expected to produce a decrease in the community tax base. HVN would continue making important economic contribution to the region. Although no specific proposals are known for 2022, the Proposed Action may create additional economic development opportunities that would enhance the Community Tax Base. The Proposed Action supports socioeconomic prosperity of the region and the ability for HVN to continue playing a key role in aviation.

5.10.3. Proposed Action – Environmental Justice

No disproportional and adverse effects on Environmental Justice populations are expected from the Proposed Action. An Environmental Justice Analysis was conducted in accordance with Executive Order 12898, USDOT Order 5610.2(b), and FAA Order 1050.1F. USDOT Order 5610.2(b) states that NEPA documents should clearly describe the methodology used to determine if there are adverse impacts that disproportionately affect environmental justice populations. This includes providing results of analysis to determine if a low income or minority population using a resource sustains more of the impact than any other population segment. USDOT Order 5610.2(b) indicates that mitigation and enhancement measures, offsetting benefits, and the relevant number of similar existing system elements in non-minority and non-low income areas, can be taken into consideration when determining if there are disproportionately high and adverse effects from a project.

Per the evaluation provided in Section 4.10, there are Environmental Justice communities in the vicinity of the Airport, primarily to the east in East Haven, and several to the northwest in New Haven (as shown on Figure 4-11). The majority of the Proposed Action construction footprint would occur within HVN property and dedicated airport easement without disrupting or dividing the physical arrangement of an established community and would not require the acquisition of and/or relocation or displacement of any residential properties or community businesses with the replacement of the West Terminal and relocating airport access along Proto Drive.

The construction and operation of the Proposed Action would not result in off-airport impacts to floodplains. Air quality emissions would be below established *de minimis* thresholds for all pollutants and would not result in exceedances of NAAQS. For both of these resources, no disproportionately high or adverse impacts would occur as any impacts would be the same across Environmental Justice and non-Environmental Justice communities.

Temporary increases in noise during construction are anticipated to residences within Environmental Justice communities and non-Environmental Justice communities. The new terminal would be located in Census Tract 1801.01, Block Group 3, which has an identified environmental justice population. The distance between the new terminal facility and the nearest noise-sensitive area (i.e., residence) is approximately 600 feet and the land between the proposed terminal and the nearest residential receptor is wooded. The runway extension is a greater distance from the adjacent residential areas, which include both Environmental Justice and non-Environmental Justice communities. The potential noise impact associated with the operation of on-site machinery would be temporary and would be reduced using construction timing and staging. To further minimize potential noise, construction equipment would be maintained to meet manufacturers' operating specifications. The distances between noise-sensitive areas are deemed far enough that the temporary noise from the construction of the Project would not result in significant adverse noise impacts. There would not be a disproportionately high and adverse impact on Environmental Justice communities due to noise during construction.

Changes in noise exposure from the runway extensions and the relocation of the passenger terminal are documented in Section 5.9 and Appendix I (Figure 18 and Table 22). There would be off-airport areas located within the Proposed Action 65 DNL contour at either end of the runway that are expected to experience an increase in noise levels as a result of the Proposed Action and these areas include Environmental Justice populations on the north side of the Airport in Census Tract 1802, Block Group 4 and non-Environmental Justice populations in Census Tract 1428, Block Group 2. On the south side of the airport, these areas are located in Census Tract 1428 Block Group 3 (not an identified Environmental Justice

population) and Census Tract 1801.01, Block Group 1 (an identified Environmental Justice population); however, there are no residential structures located in the "shoulder" area of the contour in this Census Block Group. Many of the housing units in these areas have already been mitigated as part of the airport's ongoing Residential Sound Insulation Program. The Airport would extend its Residential Sound Insulation Program to include residences that are within the Proposed Action 65 DNL contour that have not participated in the program. Once insulated, those properties would be considered compatible with aircraft noise. While the Proposed Action would likely cause an impact to some members of Environmental Justice communities, there would be fewer total housing units affected in Environmental Justice Census Block Groups than in non-Environmental Justice Census Block Groups. As described in Section 5.9.4 and Appendix I, there are an estimated 238 housing units within the Proposed Action 65 DNL contour; 150-within non-Environmental Justice Census Block Groups and 88 within Environmental Justice Census Block Groups. An estimated 54 of the total housing units that may be exposed to a 1.5 dB increase or more where the Proposed Action noise exposure is 65 DNL or greater have not already been mitigated for noise; 40 within non-Environmental Justice Census Block Groups and 14 within Environmental Justice Census Block Groups. As referenced above, these residences would be evaluated for inclusion in the established Residential Sound Insulation Program. Therefore, the Proposed Action would not have a disproportionately high and adverse impact on low-income and minority populations.

As discussed in Section 5.11, a temporary increase in truck traffic is expected to occur during the construction phase. Roadway and traffic operations during construction would be almost identical to existing conditions except for the intersection of Proto Drive and Coe Avenue, which would operate at level of service F due to the increased demand of construction vehicles turning left from Proto Drive onto Coe Avenue. This intersection is in an Environmental Justice community. However, while temporary vehicle delays would increase on Proto Drive, the project would implement a Maintenance of Traffic Plan and a Traffic Control Plan during construction. The Maintenance of Traffic and Traffic Control Plans are prepared during the design phase to address lengthy delays. Therefore, the Project is not expected to generate permanent disproportionately and adverse impact on Environmental Justice communities due to traffic during construction.

The Proposed Action would route traffic from I-95 along Hemingway Avenue to Proto Drive. As discussed in the traffic impact analysis (see Section 5.11), additional traffic impacts over those expected under the No Action alternative are anticipated with the operation of the Proposed Action during the morning and/or midday peak hour, including: one (1) additional intersection that would operate at a level of service F; longer queues along two (2) roadway segments; and one (1) additional intersection that would operate at an overall acceptable level of service (D or better) but have critical movements at level of service E or F. All of these intersections are located in the Town of East Haven, an identified Environmental Justice community. However, the traffic impacts with the proposed mitigation at Proto Drive and Coe Avenue would improve or maintain overall intersection levels of service at study area intersections compared to the No Action alternative. Taking into consideration the scope of work and improvements at Proto Drive and Coe Avenue (see Section 5.11), it has been concluded that the Proposed Action would not significantly impact traffic operations at the study area intersections. Therefore, disproportionately high and adverse impacts to Environmental Justice communities are not anticipated due to traffic operations.

5.10.4. Proposed Action – Children's Health and Safety Risks

No significant changes are expected between pre-development and post-development conditions regarding health and safety risks. As discussed in Section 5.1 (Air Quality), the analysis found that potential impacts on air quality resulting from the Project would be less than significant when compared to the No

Action alternative. Emissions are not expected to exceed regulatory limits established in the NAAQS. The net change in operational emissions (aircraft, ground access vehicles, and net new parking facilities) would be below established de minimis thresholds for all pollutants. Compared to the No Action alternative, no disproportionately high or adverse impacts to children's health and safety would occur from the noise related to implementation of the Proposed Action. Section 5.9.2 identifies sensitive noise sites within the study area. One daycare, Ms. Shaina's Neighborhood School, would be located within the Proposed Action DNL Contour (65-75 dB). It is in a residential home that has already been sound insulated. Many of the housing units in Proposed Action DNL Contour have already been mitigated as part of the airport's ongoing Residential Sound Insulation Program. The Airport would extend its Residential Sound Insulation Program to include residences that are within the Proposed Action 65 DNL contour that have not participated in the program. Once insulated, those properties would be considered compatible with the calculated aircraft noise levels.

The Proposed Action would comply with applicable water quality regulations. The Project would result in direct and indirect benefits by integrating new environmental controls and addressing any unknown regulated contaminants (if discovered) during the design and construction phases, independent of this NEPA evaluation. As applicable, remediation of contamination and mitigation strategies would be determined in coordination with CT DEEP and their Remediation Standards Regulation[101] and taking into consideration The Connecticut Interagency PFAS Action Plan[102.] Expected hazardous material to be stored and waste to be generated by the Project is discussed in Section 5.7 of this EA. HVN would observe federal and state regulations for proper handling, use, and disposing of hazardous materials to avoid adverse impacts from these risks to people and the environment; thus, no disproportionate impacts are anticipated on children's health and safety.

Also, under the Proposed Action, by relocating the existing terminal to the east side of the HVN airfield, the traffic from I-95 would be routed from US Route 1 or High Street to Hemingway Avenue. The land use along Hemingway Avenue is more commercial than Townsend or Woodward Avenues or the other local roads on the west side of HVN that encompasses residential neighborhoods. This new airport access has potentially fewer conflicts with children to be walking to, such as parks and playgrounds. Construction activities would be undertaken primarily within the Airport boundary and right of way easement, and would not occur immediately adjacent to schools, playgrounds, parks or healthcare centers. There is a residential neighborhood to the north of the proposed terminal that is located beyond a wooded buffer area and construction best management practices would be utilized as described in this EA.

5.10.5. Significant Impact Threshold

The FAA has not established significance thresholds for socioeconomics; however, FAA Order 1050.1F provides factors to consider for socioeconomics. Based on those factors listed below, potential socioeconomic effects would be less than significant. The Proposed Action does not involve or would not have the potential to:

- Induce offsite developments through establishing projects in undeveloped area
- Disrupt or divide the physical arrangement of an established community
- Result in disproportionate impacts on children's health and safety

[101] https://eregulations.ct.gov/eRegsPortal/Browse/RCSA/Title_22aSubtitle_22a-133k/

[102] https://portal.ct.gov/-/media/Office-of-the-Governor/News/20191101-CT-Interagency-PFAS-Task-Force-Action-Plan.pdf

- Cause housing relocation
- Cause relocation of community businesses that would cause severe economic hardship for the community
- Permanent disruption of local vehicular traffic patterns and/or substantial reduction in the level of service of roads serving the Airport and its surrounding community
- Produce a substantial change in the community tax base

FAA Order 1050.1F does not provide significance thresholds related to Environmental Justice. However, FAA Order 1050.1F provides factors that should be considered when making a significance determination, as described below:

- If an underlying impact to the natural and physical environment that has the potential to lead to a disproportionately high and adverse impact to an environmental justice population is itself deemed significant, this may suggest that the environmental justice impact is also significant.
- An underlying impact that is not significant, may lead to a significant environmental justice impact if the action disproportionately impacts an environmental justice population and the underlying impact affects the environmental justice population in a unique way. Consultation with FAA and other environmental resource agencies may be required to determine if such impacts rise to a level of significance.

Based on the evaluation provided above, it can be concluded that the Proposed Action would not result in significant impacts to Environmental Justice communities, socioeconomics, or children's health and safety.

5.10.6. No Action – Socioeconomic, Environmental Justice, and Children's Health and Safety

The No Action alternative assumes that the Proposed Action is not implemented. The No Action has the potential to result in negative socioeconomic impacts, limiting the ability of HVN to support existing tenants, airport users, recruit new businesses, and restricts the ability to maintain revenue and improve airport operations. The alternative does not address the +$1.8 million annual State and City subsidy, nor promote the economic stability of HVN. In addition, the No Action alternative does not support or increase job creation within the community.

As discussed in Section 5.1 (Air Quality) the No Action would limit the flexibility to use higher seat capacity aircraft (737-800W) resulting in higher number of operations under the No Action. As result, emissions are expected to be higher when compared to the Proposed Action, for all of the listed pollutants except NOx. Furthermore, the No Action assumes that the existing Airport footprint would remain unchanged without addressing the deficiencies of the existing airport layout, nor promoting improvements to level of service, or addressing current operational issues. The No Action Alternative would continue promoting unnecessary vehicle idling and queue time due to maneuverability issues from aircraft and ground support equipment at the existing Terminal. The No Action Alternative does not consider integration of a low-cost energy efficient Terminal, nor promote minimization of GHG emissions.

Moreover, as per Section 5.9, at the north end of the Airport, the No Action scenario DNL 65 contour extends farther northward along the extended runway centerline than does the corresponding Proposed Action scenario DNL 65 contour for either of the forecast years. To either side of the extended runway centerline, the DNL 65 contour has a rounded "shoulder" shape that is the result of start-of-takeoff-roll noise emanating from jet aircraft departing southward from Runway 20. Those "shoulders" extend farther

northward for the No Action alternative than for the Proposed Action alternative because the proposed runway extension would relocate the point at which aircraft begin takeoff roll. Therefore, the No Acton alternative impacts are considered to be negative.

5.11. TRAFFIC

The Project would result in a change in travel demand and patterns to access the proposed terminal. Taking into consideration the scope of work and improvements recommended, the Proposed Action would not significantly impact traffic operations at the study area intersections.

A detailed methodology, assumptions, and analysis results are provided in the Traffic Study for New Terminal Building in Appendix K. The appendix outlines the findings and conclusions of the traffic analysis for the construction year 2025 and the Project design year for 2031.

5.11.1. Proposed Action – Construction Phase – Roadways and Traffic

Existing traffic would be temporarily affected by the Proposed Action during construction. These impacts are considered short-term and less than significant compared to background traffic levels.

The Proposed Action would generate temporary on-road activity from construction employees and material deliveries during construction phase. It is estimated that there would be up to 655 round trips to-and-from the Airport per day during the highest volume of construction activity over the three-year construction period. Construction employees would commute in during the morning and return during the midday peak hour. Material deliveries would be made over the course of an 8-hour construction time period.

During the construction period, the intersection of High Street with I-95 northbound on ramp would operate at level of service E during the midday peak hour, similar to existing conditions. This is attributed to the existing regional travel demand and access issues along the I-95 corridor. The westbound approach on Proto Drive at its intersection with Coe Drive would operate at level of service F. This is attributed to the demand of temporary construction vehicles turning left from Proto Drive onto Coe Drive at the stop-controlled intersection.

Roadway and traffic operations during construction would be expected to be almost identical to existing operations, with the exception of the intersection of Coe Avenue with Proto Drive. While temporary vehicle delays would increase on Proto Drive, lengthy delays on side streets that intersect with a major roadway during peak hours are usually typical and acceptable during construction activity.

The project would implement a Maintenance of Traffic Plan and a Traffic Control Plan during construction. The Maintenance of Traffic and Traffic Control Plan are prepared during the design phase.

Table 5-10: Overall Intersection Level of Service Summary
Existing and Proposed Action – Construction Phase (2025) Conditions

ID	INTERSECTIONS	Existing (2022)	Proposed Action – Construction Phase (2025^)
		Midday Peak Hour	Midday Peak Hour
1	High Street (Rte 100) & I-95 SB Off Ramp (Exit 52)	C	C
2	High Street (Rte 100) & I-95 NB On Ramp (Exit 52)	E	E
3	High Street (Rte 100) & Kimberly Avenue (Rte 735)	D*	D*
4	High Street (Rte 100) & Messina Drive	B	B
5	Main Street & Messina Drive	B	B
6	High Street (Rte 100) & Main Street (Rte 100)	C	C
7	Hemingway Avenue (Rte 142) & Saltonstall Parkway (Rte 1)	C	C
8	Hemingway Avenue (Rte 142) & Main Street (Rte 100)	D*	D*
9	Hemingway Avenue (Rte 142) & Dodge Avenue	B	B
10	Coe Avenue (Rte 337) & Proto Drive*	C	F
11	Thompson Avenue & Dodge Avenue	A	A

Notes:
* - Indicates intersection may have one or more individual movements which operate at LOS E or LOS F. However, the overall intersection may operate at LOS D or better due to the computed average of delay of all intersection movements.
^ The highest level of construction activity would occur during the year 2025. Therefore, it is assumed that traffic operations would be the same or better during other construction years.

5.11.2. Proposed Action – Airport Operations – Roadways and Traffic

The Proposed Action condition represents the future design year with normal traffic growth that naturally occurs over time plus estimated trips generated by future operations of the Airport. It also considers runway improvements and terminal relocation with new access off Proto Drive. Parking under the Proposed Action would be provided at two locations.

1. Proposed East Terminal Development: Parking would be provided for all passengers, rental car customers, and for transportation network/ridesharing-taxi staging. Parking for a limited number of employees would also be provided there.

2. Existing West Terminal: Location would provide parking for the majority of employees with a shuttle service provided between this area and the new East Terminal Development via Dodge Avenue.

Future airport operations consider the number of passengers and employees arriving and departing the Airport during the morning and midday peak hours. It is projected that during the morning peak hour, a total of approximately 672 vehicle trips would be generated. This is approximately 48 additional vehicle trips compared to the 2031 No Action condition. Of the total morning peak hour trips, approximately 345 vehicle trips would arrive to the Airport and 327 vehicle trips would leave from the Airport. During the midday peak hour, it is projected that an approximately 948 vehicle trips would travel to/from the Airport. This is approximately 28 additional vehicle trips compared to the 2031 No Action condition. Of the total midday peak hour trips, approximately 363 vehicle trips would arrive to the Airport and 585 vehicle trips would depart from the Airport.

During the morning and midday peak hours, traffic operations at one (1) additional intersection (compared to the No Action condition) would worsen to an unacceptable level of service (E or F) as a result of the Proposed Action. The level of service at the intersection of Coe Avenue with Proto Drive would change from level of service C to F during the morning and midday peak hours.

One additional location (compared to the No Action condition), the intersection of Hemingway Avenue with Saltonstall Parkway (Route 1) would operate at an overall acceptable level of service (D or better) but have critical movements at level of service E or F during the morning and/or midday peak hour.

The intersection of Hemingway Avenue with Main Street may see a decline in level of service during the morning peak hour due to the shift in traffic patterns from the relocated terminal; however, the intersection would still operate within acceptable limits (level of service D or better). Longer queues compared to the No Action condition would be experienced along the roadway segments of Main Street westbound from Hemingway Avenue to High Street and Hemingway Avenue northbound from Edward Street to Main Street.

To address and reduce traffic-related impacts in the transportation environment, TNHAA would coordinate with the Town of East Haven and the CTDOT the following mitigation measure:

- Intersection of Coe Avenue with Proto Drive: This intersection is currently stop-signed controlled. Intersection improvements such as a roundabout and signalization were evaluated. Findings from the roundabout analysis indicate both environmental and property impacts; thus, a roundabout was dismissed for consideration. Conditions for signalization are warranted based on MUTCD's guidelines. It is recommended that a signal be installed to improve operations to acceptable level of service (D or better). The westbound approach (Proto Drive) would require widening to accommodate a two-lane approach that would be comprised of a 200 feet exclusive left-turn lane and a shared left-right turn lane. No changes to the northbound or southbound approaches of Coe Avenue would be needed.

The expected level of service is summarized in Table 5-11. The traffic simulation models were created for the following three (3) scenarios: No Action without considering any roadway improvements, Proposed Action without considering any roadway improvements, and Proposed Action considering the improvement at the intersection of Coe Avenue with Proto Drive .

Table 5-11: Overall Intersection Level of Service Summary
Future No Action and Proposed Action Conditions

ID	Intersections	No Action (2031)**		Proposed Action No Improvements (2031)**		Proposed Action With Improvement at Coe Avenue with Proto Drive (2031)**	
		Morning Peak Hour	Midday Peak Hour	Morning Peak Hour	Midday Peak Hour	Morning Peak Hour	Midday Peak Hour
1	High Street (Rte 100) & I-95 SB Off Ramp (Exit 52)	B	C	B	C	B	C
2	**High Street (Rte 100) & I-95 NB On Ramp (Exit 52)**	C	**F**	C	**F**	C	**F**
3	**High Street (Rte 100) & Kimberly Avenue (Rte 735)**	B	**E**	B	**E**	B	**E**
4	High Street (Rte 100) & Messina Drive	B	B	B	B	B	B
5	Main Street & Messina Drive	B	B	B	B	B	B
6	High Street (Rte 100) & Main Street (Rte 100)	C	C	C	C	C	C
7	**Hemingway Avenue (Rte 142) & Saltonstall Parkway (Rte 1)**	**C**	**C**	**C**	**C***	C	**C***
8	**Hemingway Avenue (Rte 142) & Main Street (Rte 100)**	C	**D***	**D***	**D***	**D***	**D***
9	Hemingway Avenue (Rte 142) & Dodge Avenue	B	B	B	B	B	B
10	**Coe Avenue (Rte 337) & Proto Drive***	C	C	**F**	**F**	B	B
11	Thompson Avenue & Dodge Avenue	A	B	A	A	A	A

Notes:
* Indicates intersection may have one or more individual movements which operate at LOS E or LOS F. However, the overall intersection may operate at LOS D or better due to the computed average of delay of all intersection movements.
** Analysis results were generated for a Project design year of 2029. Analysis results are anticipated to be the same for the current Project design year of 2031, also referenced in Appendix K.
Intersections with unacceptable LOS are highlighted in bold. This is defined as an overall intersection or a critical movement in that intersection operating at LOS E or LOS F in at least one (1) analysis period.

It is expected that the Connecticut Department of Transportation Office of State Traffic Administration (OSTA) would consider the Project a Major Traffic Generator and would require a permit application. During the permitting process, OSTA would evaluate the need for mitigation or traffic safety measures on impacted state roadways, including Proto Drive at Coe Avenue. If OSTA determines that additional mitigation or traffic safety measures are necessary, OSTA would require further coordination with CTDOT and the Town of East Haven and implementation of those measures at the applicant's expense.

Such mitigation or traffic safety measures could potentially include the following:

- **Study Area Signalized intersections:** Monitor intersection performance by CTDOT and Town of East Haven to optimize signal timing operations at signalized intersections owned and operated under their authority in the study area to adjust to the future travel demand.
- **I-95 Interchange with High Street**: A regional I-95 study or interchange improvement traffic study should be considered by CTDOT to evaluate and assess transportation improvement measures that would further improve access to/from I-95 in this area along the corridor.
- **Intersections of High Street with Kimberly Avenue and I-95 NB On Ramp (Exit 52):** Future travel demand resulting from passengers and employees departing the Airport during the midday peak hour represent a small fraction of the total travel demand accessing I-95 northbound. Vehicle delays and queuing are currently experienced as a result of existing regional access and infrastructure constraints to I-95 northbound in this area of the I-95 corridor. CTDOT should consider prohibiting left-turns on High Street to Kimberly Avenue with signal phasing changes and updated signage.
- **Intersection of Hemingway Avenue with Main Street:** The surrounding environment is very developed with residential, commercial, and recreation land uses. Physical constraints and property impacts limit the types of improvements that can be implemented to improve traffic operations. Therefore, it is recommended that CTDOT monitors intersection operations over time and adjusts signal timings to adjust to the future travel demand.
- **Intersection of Main Street with High Steet**: To reduce queuing, it is recommended that CTDOT change the lane configuration and signage on the westbound approach of Main Street to a shared through-left turn lane and an exclusive right-turn lane.

5.11.3. Significant Impact Threshold – Traffic

The FAA has not established significance thresholds for traffic; however, traffic impacts of the Proposed Action were determined by comparing the No Action analysis to the Proposed Action analysis. Taking into consideration the scope of work and anticipated improvements as shown in **Table 5-11,** the Proposed Action would not significantly decrease the level of service operations at study area intersections. Thus, the Proposed Action would not significantly impact traffic operations at the study area intersections.

5.11.4. No Action – Traffic

The No Action alternative assumes that the Proposed Action is not implemented, and no improvements would be made. The No Action Alternative represents normal traffic growth that naturally occurs over time plus estimated trips generated by future operations of the Airport but without any terminal or runway improvements or without any roadway or traffic operational improvements.

Also, passengers and employees would be able to utilize the parking at the Airport or use off-site parking located approximately three (3) miles (by car) west of HVN and be shuttled to the Airport. Based on traffic volume trends, existing traffic volumes were projected to the 2031 design year using a 1.0 percent per year growth factor to account for normal traffic growth in the study area.

Future airport operations consider the number of passengers and employees arriving and departing the Airport during the morning and midday peak hours. It is projected that during the morning peak hour, approximately 624 vehicle trips would be generated. This is approximately 438 additional vehicle trips compared to the existing condition. Of the morning peak hour trips, approximately 308 vehicle trips would

arrive to the airport and 316 vehicle trips would leave from the airport. During the midday peak hour, it is projected that approximately 920 vehicle trips would travel to/from the airport. This is approximately 463 additional vehicle trips compared to the 2022 existing condition. Of the total midday peak hour trips, 346 vehicle trips would arrive to the airport and 576 vehicle trips would depart from the airport.

Two (2) intersections would continue to operate at level of service E or F during the midday peak hour. These intersections are:

- High Street with I-95 northbound on ramp (midday peak hour)
- High Street with Kimberly Avenue (midday peak hour)

One (1) intersection would continue to operate at an overall acceptable level of service (D or better) but would have critical movements at level of service E or F during the midday peak hour. This intersection is:

- Hemingway Avenue with Main Street (midday peak hour)

Longer queues would continue to be experienced at the intersection of High Street with the I-95 northbound on-ramp and at the intersection of Hemingway Avenue with Main Street. This is primarily attributed to the heavy traffic demand associated with limited access to I-95 northbound within the I-95 corridor contributing to congestion at nearby intersections.

Traffic impacts of the No Action alternative were determined by comparing the No Action analysis to the existing conditions analysis. Traffic operations from the No Action alternative are not expected to cause a significant increase in delay to study area intersections; thus, traffic impacts from the No Action are considered to be less than significant.

5.12. NATURAL RESOURCES AND ENERGY SUPPLY

HVN currently uses electricity, fossil fuels, and other sources of energy for lighting, heating, air conditioning, and building climate control; airfield lighting (locational, directional, and safety); powering computers, printers, servers, switchboards, modems, radios, television monitors, passenger ticketing stations, parking pay stations, and other technology; aircraft; and ground vehicles and equipment, including vehicle lifts, bobcats, plow trucks, and lawn mowers.

The Proposed Action would use readily available natural resources for its construction. The Project would use a relatively small amount of readily available resources for the Proposed Action. The new mechanical, electrical and plumbing systems would be designed to minimize operating costs and energy consumption while providing a higher level of control over the interior environment of the new terminal. Utility savings would be realized by using high efficiency heating and cooling equipment and the latest technology to control the systems. The new and more modern electrical system that would serve proposed East Terminal Development is expected to have fewer line losses and reduces the voltage drop for the given power flow to the facility.

5.12.1. Proposed Action – Construction Phase – Natural Resources and Energy Supply

Use of natural resources and energy supply demand during construction and operation phase is expected to be negligible for this region as construction activities does not require a significant use of natural resources or significant demand of energy supply. Most of the construction equipment to be used is self-powered and not depending on local public infrastructure. However, if additional sources of power or

electricity are needed, it would be provided by the existing HVN infrastructure and through portable power generators.

5.12.2. Proposed Action – Airport Operations – Natural Resources and Energy Supply

HVN would continue using readily available natural resources for the operation of the Proposed Action.

5.12.3. Significant Impact Threshold – Natural Resources and Energy Supply

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. 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:

- Whether the action would have the potential to cause demand to exceed available or future supplies of these resources

The Proposed Action is not expected to cause an exceedance of available or future supplies. The proposed HVAC and power hookups would be high efficiency heating and cooling equipment and the latest technology to control the systems. The proposed East Terminal development would be built to current standards, building codes and therefore be more energy efficient than the existing structures.

5.12.4. No Action – Natural Resources and Energy Supply

The No Action assumes that the existing Airport footprint remain unchanged without addressing the needs of the HVN. This alternative does not promote the integration of energy efficient systems and the adoption of more efficient technology to reduce energy losses or consumption. The existing West Terminal was constructed in 1929 and has been subject to various renovations and is in numerous stages of disrepair including the HVAC, plumbing, roofing, windows and finishes, among others. Also, the existing terminal building is heated and air conditioned with outdated and inefficient equipment that uses older and less environmentally friendly refrigerants. Therefore, the No Action alternative would consume comparatively more natural resources and energy when evaluated on a square foot basis compared to the Action alternative.

5.13. LIGHT EMISSIONS AND VISUAL EFFECTS

For purposes of this analysis, light emissions and visual effects are grouped into two (2) categories:

1) Airfield, including runways and taxiways
2) Proposed Terminal area including the east terminal, parking facilities, roadways and associated facilities.

5.13.1. Airfield Improvements

The proposed runway extension would include typical airfield lighting, primarily consisting of extending the existing Medium Intensity Runway Lights and lighted signage. The lights and signs are ground mounted and would be consistent in appearance with the existing airfield lights and signs. The existing MALSF approach lights located on the approach end of Runway 02 (southern end) would be decommissioned and removed as part of the runway extension. The MALSF approach lights consist of a series of steady burning green lights at the runway threshold and a series of seven (7) steady burning white lights spaced approximately

200 feet apart. The final three (3) stations furthest from the runway threshold include sequenced flashing lights. The MALSF approach lights would be replaced with REILs. REILs are comprised of two (2) synchronized unidirectional flashing white lights positioned at each corner of the landing threshold. They face the approach area and are typically aimed up at an angle of 10-15 degrees. The aiming makes the REILs visible to pilots while minimizing annoyance of the flashing lights to people on the ground. Overall light emissions associated with de-commissioning of the MALSF approach lights and installation of the REILs are expected to be reduced at the Runway 02 end. The REILs would located approximately 400 feet from the nearest residence. The existing flashing portion of the MALSF approach lights is approximately 350 feet from the nearest residence. The runway extension is consistent with the existing visual conditions and is not a significant change compared to existing. The change in light emissions associated with the runway extension is expected to be minor, with some benefits to surrounding residences by moving the flashing lights further away from the closest residences. The visual effects and light emissions associated with the airfield improvements are less than significant.

5.13.2. Proposed Terminal Area

The new terminal building would be located on what was formerly the eastern portion Runway 14-32 and associated taxiway. From a visual perspective, the prominent vertical features of the proposed action include construction of a two-story terminal that would be constructed on piles with a finished floor elevation of approximately 13 feet above MSL. Overall, the peak of the terminal building would be approximately 20 feet above existing grade, but below the obstacle clearing zone. Also, six (6) story parking garage is proposed, with a peak approximately 76 feet above existing grade. Other developments in the terminal area would be constructed at approximately existing ground level. Visually, the "flat" improvements such as surface parking and roadways would change an existing on-airport mowed grassy area with abandoned pavements to a network of parking and roadways with landscaping.

As shown in **Figure 4-1** (Study Area), immediately surrounding the proposed terminal area development is a complex of shrubby and forested areas (including wetlands) on the north, south, and east sides. The western edge of the terminal development abuts the airfield (Taxiways B and E and Runway 02-20). Immediately beyond Airport property to the southeast is well lit industrial and commercial development. Residential land use and the Morris Cove Historic District are located approximately 0.5 mile west of the proposed terminal area. The eastern boundary of the Historic District (Dean Street) has a mostly unimpeded view across the airfield to the proposed terminal area development. Those areas also have virtually unimpeded view of the existing terminal area under existing conditions.

A residential neighborhood is located north of the proposed terminal development and east of Thompson Avenue. The residences, along Burgess Street are approximately 600-800 feet from the closest portion of the terminal area development. The Burgess Street neighborhood is a typical residential neighborhood without notable or unique visual character. The residences on Burgess Street are visually separated from the terminal area by a forested buffer that ranges from approximately 200-800 feet wide. The terminal area would include an array of lighting strategies to allow for safe, secure, and efficient air and landside operations during nighttime conditions. The lighting design would be tailored to the specific needs of a functional area and would be based on OSHA requirements and other applicable lighting design standards (e.g., building code).

5.13.2.1. Terminal Area Light Emissions

HVN is located within a densely developed area with well-lit residential, commercial, and industrial land use nearby. Terminal area lighting would be comparable to nearby commercial and industrial development. Terminal area lighting would be most noticeable from the residential area along Burgess Street, especially during the winter month when the forested buffer is generally leaf free. The lighting design would consider the proximity of the neighbors and measures such as an evergreen vegetated buffer, privacy fence, shielded lights, and minimizing the use of high mast lighting to minimize fugitive light emissions would be considered during the design phase.

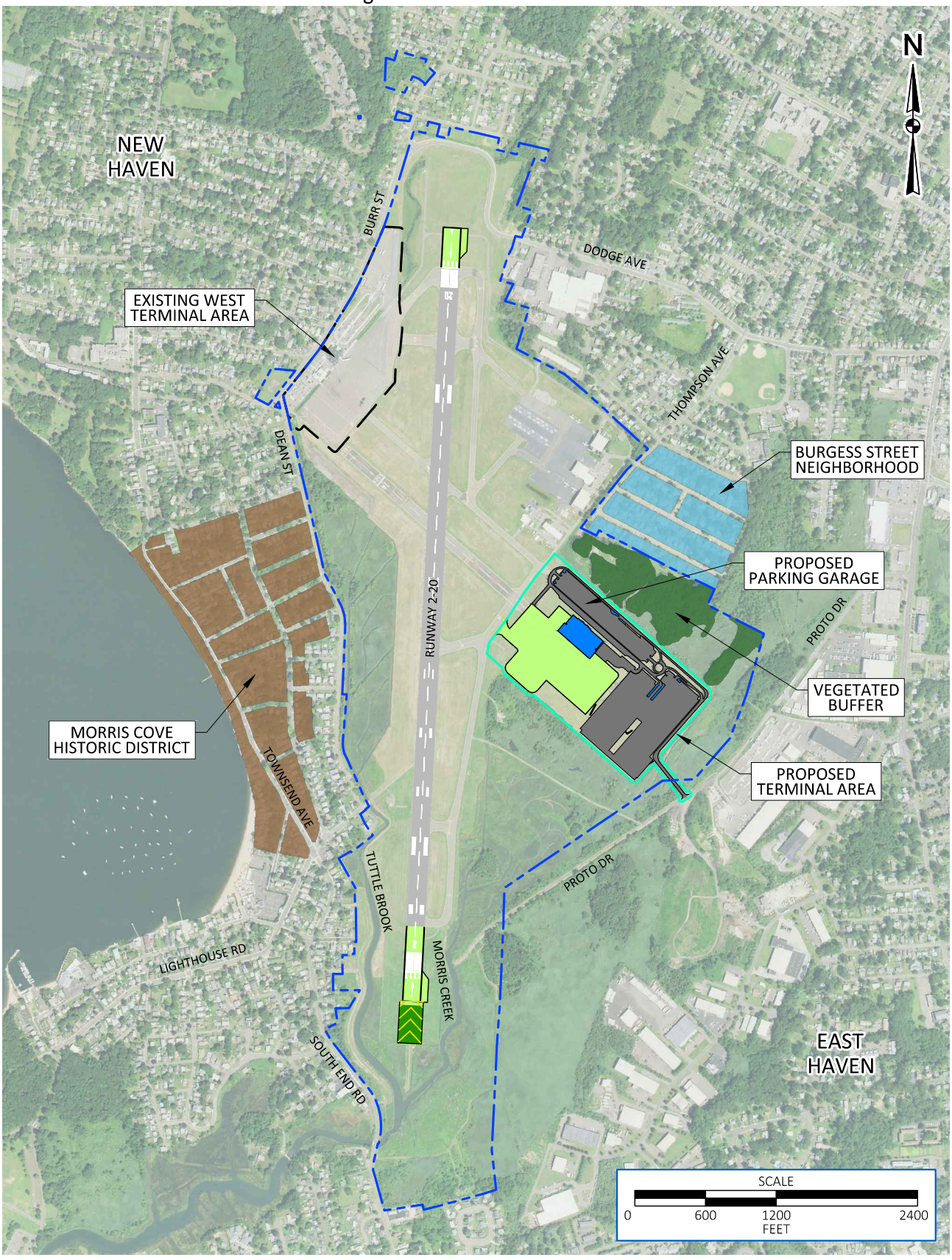
As noted previously, the terminal area would be visible from Dean Street, along the western airport property boundary. Viewed from Dean Street, the background behind the terminal area is well lit commercial and industrial. Given the distance of the proposed terminal from Dean Street and the industrial commercial background, light emissions are not a significant concern from this view point. Reductions in lighting needs and light emissions on the west side of the Airport are expected to decrease as terminal operations would be moved to the eastern side.

5.13.2.2. Terminal Area Visual Effects

Visually, the most prominent features would be the terminal and parking garage. The terminal and parking garage, as well as the terminal apron would be visible from distant (>0.5 mile away) residences south and west of the airport. Residents and those locations currently have a view of the existing terminal and airside activities. The perspective of distant residents south and west would change; however, the view would not be notably different compared to existing conditions. As noted, east of the proposed terminal is a commercial industrial area. At ground level, the existing view of the proposed terminal area is obscured by tall weeds and shrubs and the perimeter fence from Airport. The ground level view would likely remain obscured, except in the location of the new access road and bridge. The new access road and bridge would provide a view corridor of the proposed terminal area; however, it would likely be viewed as a continuation of the adjacent commercial industrial area.

The view from the Burgess Street neighborhood, would be largely obscured at the ground level during the summer months, when the vegetated buffer is leafed out. The terminal area would be more visible during winter months. Based on parking garage schematic, the proposed parking garage would be taller than the tallest trees in the vegetated buffer and the top levels would be visible year-round. The parking garage would obscure the view of the terminal and terminal apron and associated lighting from the Burgess Street neighborhood. Visual resources are depicted on Figure 5-5.

Figure 5-5: Visual Resources



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5.13.3. Best Management Practices and Minimization Measures – Light Emission and Visual Effects

The following measures would be considered to reduce and minimize fugitive light emissions and visual effects:

- Use of aesthetically pleasing materials for building exteriors, landscaping, and other applicable measures
- Provide a lighting design that minimizes fugitive light emissions, including measures such as shielded and downcast lighting, bollard or ground level lighting where appropriate, and visual barriers such as privacy fence and vegetated buffers
- Incorporate energy efficient technologies, and wherever feasible the use natural lighting.
- Apron box shield/downward facing lighting similar to existing apron lighting
- Lighting would be attached to the sides, roof line, or other parts of buildings and directed down with box shielded fixtures onto the apron, and ramps, stair exits, or other areas on the airside for workers and users of the new facilities
- Airport access road box shield/downward facing lighting similar to the existing airport access road lighting
- Taxiway lighting for new taxiways and aprons similar of existing lighting

5.13.4. Significant Impact Threshold – Light Emission and Visual Effects

There are no federal special purpose laws or requirements specific to light emissions and visual effects and FAA has not established significance thresholds for Light Emissions and Visual Resources. According to FAA Order 1050.1F, factors to consider for Light Emissions are:

- The degree to which the action would have the potential to:
    - Create annoyance or interfere with the normal activities from light emissions
    - Affect the visual character of the area due to light emissions, including the importance, uniqueness and aesthetic value of the affected visual resources

Considering the criteria above, the terminal area lighting is expected to be consistent with nearby commercial and industrial properties and does not represent a significant change from those nearby properties. There are no resources that provide important, unique, or unique aesthetic value notably unique. The lighting design would consider the nearby location of the Burgess Street neighborhood and strategies to reduce fugitive light emissions in this area would be implemented. These include minimization of high mast lighting, providing visual barriers, use of shielded lights, and other applicable measures. With implementation of these design measures, the potential for annoyance or interference of the nearby neighbors would be minimized.

Factors to consider for Visual Resources include potential to:

- Affect the nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources
- Contrast with the visual resources and or visual character in the study area

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

The Proposed Action is located on-airport property and is airport compatible development. The surrounding area contains land uses with visual characteristics that are common in this area of Connecticut. The Proposed Action is consistent with the visual character of the area. There are no notable visual resources that would be obscured by the Proposed Action.

Taking into consideration the scope of work and location of the Proposed Action, light emissions and visual effects would be less than significant. The Proposed Action does not exceed the considerations as per the FAA Order 1050.1F, and 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

5.13.5. No Action – Light Emissions / Visual Effects

Under the No Action alternative, the proposed action would not progress and no changes to the terminal or airfield would occur. Nearby residences to the existing west terminal and associated facilities would continue to be subject to the same light emissions as existing conditions and trend. The No Action alternative does not incorporate energy efficient technologies, nor are shielded and downcast lighting that reduces fugitive light emissions in use. Light emission from the No Action alternative is expected to continue as to date; therefore, light emissions from the No Action alternative would be less than significant.

5.14. WATER RESOURCES

5.14.1. Wetlands and Surface Waters

5.14.1.1. Proposed Action - Construction Phase – Wetlands and Surface Waters

The Proposed Action minimizes dredge and fill impacts to regulated (jurisdictional) wetlands and avoids direct impacts to surface waters when compared to the alternatives that were considered but dismissed. Through avoidance and minimization measures, wetland impacts would only take place within the area of the proposed East Terminal Development, including the bridge proposed for new airport access. The Runway 02-20 extension avoids direct impacts to water resources. An upper reach of Morris Creek bisects Wetland 6B east of Runway 32, and a bridge is proposed for the new airport access to span this watercourse, so no foreseeable watercourse impacts (e.g., dredge and fill) are anticipated. There are no other surface waters located within the other areas of activity.

As described in the Alternatives section, the terminal area plans emphasized avoiding impacts to the less disturbed wetlands around the perimeter of the airfield. Most of the wetland areas to be impacted during the construction phase consist of low-quality shallow depressions found on the Airport maintained grasslands (regularly mowed) and previously filled in the early 1930s with the construction of Runway 14-

32 and used as drainage features to address runoff from impervious areas ("disturbed wetlands"). See **Appendix F** for Wetland Delineation Report.

Generally, the potentially impacted wetlands are considered relatively low-value and are dominated by phragmites and maintained grass areas within the HVN airfield. Functions and values impacted by the Proposed Action would include Sediment/Toxicant Retention and some minor Production Export for the wetlands, which have been historically altered by human actions. Therefore, the natural function, value and quality is low for the disturbed wetlands subject to project impacts. The sediment/toxicant retention functions would be maintained in this area with the stormwater management improvements and approaches associated with the Proposed Action. During the engineering design phase, exact wetland impacts would be defined, and mitigation actions would continue to be developed to satisfy applicable regulations from USACE and CT DEEP. Additionally, prior to construction, HVN would submit permit applications to the USACE and CT DEEP for federal and state approval. Wetland areas to be impacted are summarized in **Table 5-12** and shown in **Figure 5-6**.

Table 5-12: Summary of Wetland Impacts – Proposed Action

Wetlands ID	HVN Area Location	Wetland Characterization	Wetland Acreage	Project Footprint (Direct Impacts) Acres	Description of Project Footprint / Impacts	Principal Functions & Values Impacts
W01	NW Rwy 20	Inland	3.04	0.00	**Avoided**	N/A - No impacts
W02	East Rwy 20	Inland	0.72	0.00	**Avoided**	N/A - No impacts
W03	NW Rwy 14-32	Inland; Man-made drainage feature	0.25	0.00	**Avoided**	N/A - No impacts
W04	Infield Rwy 14-32	Inland; Man-made drainage feature (Disturbed Wetland)	1.32	1.32	Terminal Area Development	Sediment/Toxicant Retention
W05	Infield Rwy 14-32	Inland; Man-made drainage feature (Disturbed Wetland)	2.45	2.45	Terminal Area Development	Sediment/Toxicant Retention & Production Export
W06A	Rwy 14-32 airfield	Inland (Disturbed Wetland)	5.37	5.37	Terminal Area Development	Sediment/Toxicant Retention
W06B	Adjacent Rwy 14-32 airfield	Inland	9.59	0.14	**Minimized** New Bridge for Terminal Area Access	Sediment/Toxicant Retention
W07	Adjacent Rwy 02	Tidal	6.76	0.00	**Avoided**	N/A - No impacts
		Total	29.50	9.28	--	--

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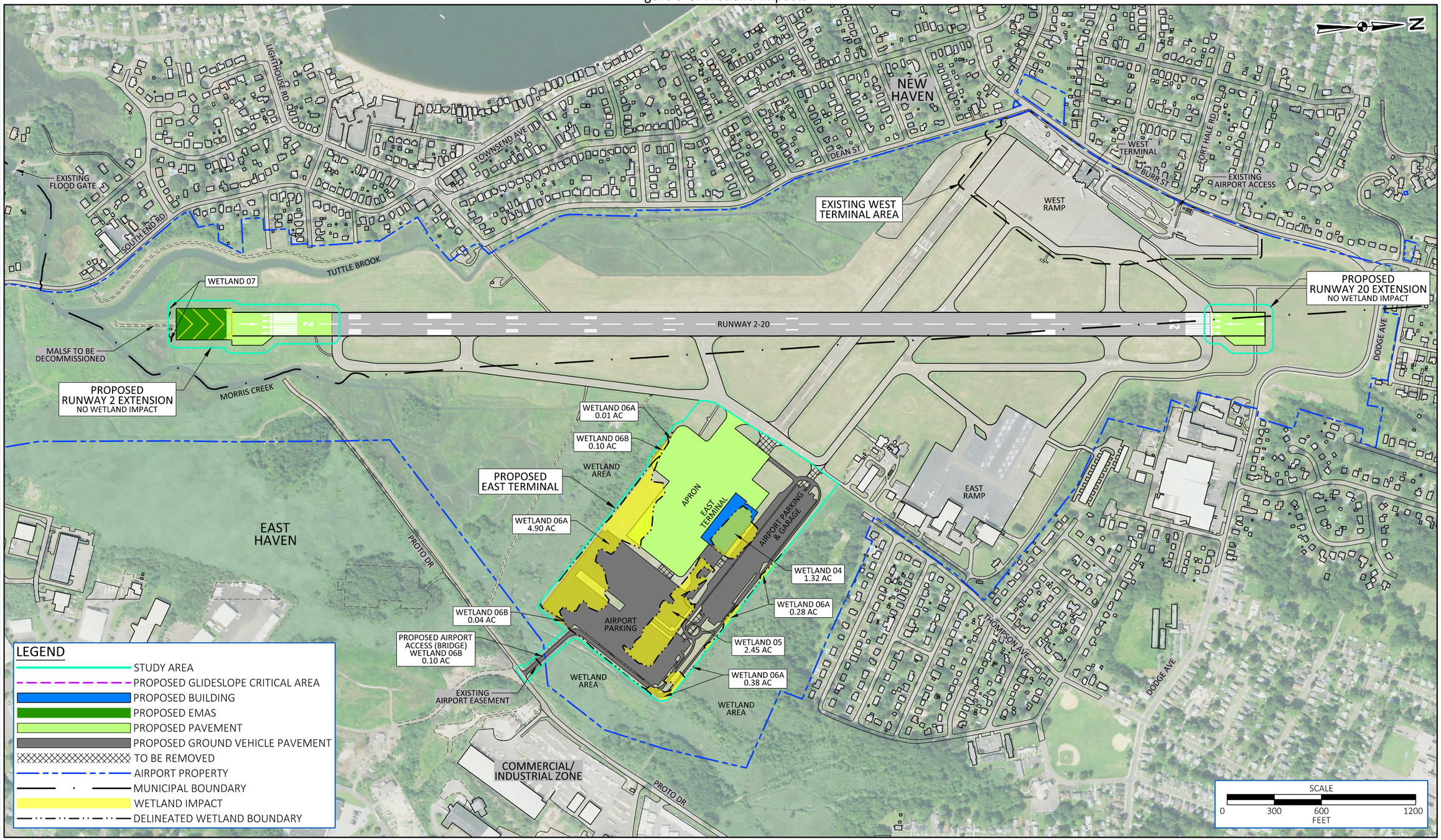
Figure 5-6: Wetland Impacts



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5.14.1.2. Proposed Action – Airport Operations – Wetlands and Surface Waters

There would be some removal of pavement on the southern end of Runway 02; however, the construction of the terminal building and paved areas would cause a net increase in impervious surfaces. The existing impervious surfaces in the terminal and runway expansion areas are approximately 290,493 SF and the proposed impervious surfaces in the terminal and runway expansion areas would be approximately 1,232,415 SF. The Proposed Action would result in an increase in impervious surfaces of approximately 941,922 SF.

The proposed terminal site would include stormwater detention systems to allow for a controlled release of stormwater from the site, on-site improvement of water quality, and elements of infiltration where possible. The site design would allow for some infiltration and filtering of stormwater to recharge groundwater and minimize the amount of stormwater that enters surface waters and adjacent wetlands; however, infiltration opportunities are somewhat limited due to the high groundwater levels at the proposed terminal location. Detention and treatment would be provided for stormwater that cannot be infiltrated. The Connecticut 2004 Stormwater Quality Manual would guide the design of the terminal site and the stormwater management system would be further developed in the permitting phase of the project. Stormwater best management practices, controls, and management systems would be approved through the CT DEEP Construction Stormwater General Permit that would be obtained for the Project.

5.14.1.3. Best Management Practices and Minimization Measures – Wetlands and Surface Waters

The Proposed Action was designed to minimize potential impacts to regulated wetlands and avoid direct impacts to surface waters when compared to the alternatives discussed in Chapter 3. As described in the Alternatives section, the terminal area plans emphasized avoiding impacts to the less disturbed wetlands around the perimeter of the airfield. The overall design of the Proposed Action was dictated by avoiding wetland disturbance to the extent possible.

Compensatory mitigation would be implemented for all wetland impacts to achieve the overall policy goal of "no net loss" according to their ecological functions and values. As per mitigation coordination meetings with CT DEEP[103] and USACE[104], the compensatory wetland mitigation would involve off-site permittee responsible mitigation in addition to payment into the Connecticut In Lieu Fee Program. The wetland impacts can be appropriately mitigated to ensure "no-net-loss" of regulated wetlands. Proper permitting would be obtained in accordance with applicable regulations. Additionally, impacts would be minimized through the use of best management practices including appropriate erosion and sedimentation control measures tailored to specific site conditions.

Furthermore, HVN met with the CT DEEP and USACE in September 2021 and January, February, and April 2022, to discuss wetland mitigation approaches and options to mitigate for the unavoidable project impacts. Several potential mitigation sites have been preliminarily identified within two (2) miles from the Airport and within the same watershed (i.e., South Central Shoreline and Farm River local basin subregions). Based on these discussions, both inland and tidal wetland mitigation could be potential options for the Project. Preliminarily, two (2) sites were favored by CT DEEP as potential wetland mitigation sites subject

[103] CT DEEP wetlands and mitigation coordination meetings held on January 10, 2022; February 28, 2022; October 12, 2022.

[104] USACE wetlands and mitigation coordination meetings held on January 10, 2022, February 28, 2022; May 11, 2022; October 12, 2022.

to additional studies and evaluation during design and permitting phase. During the design phase and permitting process coordination with CT DEEP would continue for the preparation of a Compensatory Wetland Mitigation Plan that may include a combination of creation, enhancement, restoration, and/or contributing to a Preservation / Conservation Benefit Project within or in the vicinity of the watershed.

To satisfy federal requirements, compensatory mitigation for wetland impacts would be satisfied via the Connecticut In-Lieu Fee Program as discussed with the USACE (Mr. Alex Kostra) during pre-application meeting (case no. NAE-2022-00290) and follow up mitigation meeting held on May 11, 2022. The payment would be determined based on the acreage and type of wetlands impacted by the project.[105] The current credit cost per square foot in the South-central Coastal service area is $7.45 per square foot of impact. Further coordination with CT DEEP and USACE would continue, and decisions would be finalized in the subsequent design and permitting phase. This approach is consistent with the current New England District Compensatory Mitigation Guidance, and 33 CFR 332 (Compensatory Mitigation for Losses of Aquatic Resources.

5.14.1.4. Significant Impact Threshold – Wetlands and Surface Water Resources

Taking into consideration the scope of work, its location, minimization of impacts within wetlands (see **Appendix F** for Wetland Function and Value Assessment) and compensatory mitigation to be negotiated at the permitting phase with CT DEEP and USACE (potential effects would be less than significant. See **Chapter 6** for agency coordination. The Proposed Action does not exceed the Significant Impact Threshold as per the FAA Order 1050.1F, and does not have the potential to:

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

5.14.2. Groundwater

The Project would be designed to meet water quality standards; therefore, groundwater impacts are not anticipated or proposed. Additionally, the Project would result in direct and indirect benefits by integrating

[105] https://www.nae.usace.army.mil/portals/74/docs/regulatory/Mitigation/2016_New_England_Compensatory_Mitigation_Guidance.pdf

new environmental controls and addressing unknown regulated contaminants (if discovered) during the construction phases, independent of this NEPA evaluation. The Proposed Action does not include installation of wells or stormwater injection wells. The Airport is located within an area mapped as Groundwater Classification "GB". This designation is assigned to "ground water within a historically highly urbanized area or an area of intense industrial activity and where public water supply service is available. Such ground water may not be suitable for human consumption without treatment due to waste discharges, spills or leaks of chemicals or land use impacts".

5.14.2.1. Best Management Practices and Minimization Measures - Groundwater

Although impervious surfaces would be increased as part of the Proposed Action, additional stormwater treatment would be included in the new terminal design including stormwater detention and infiltration systems. Best management practices would be implemented during the construction and operational phases, including updating the Airport's SPCC Plan to avoid and minimize unforeseen impacts to groundwater.

The Airport currently tests AFFF via closed loop system uses. "No-Foam" for routine FAA required firefighting drills and equipment testing, eliminated discharges to the environment. In an actual emergency, when foam is spent, the Airport would follow emergency cleanup operations and contact their on-call service provider for spill response, as needed, and in accordance with appropriate regulations.

5.14.2.2. Significant Impact Threshold – Groundwater

Taking into consideration the scope of work, potential effects would be less than significant. The Proposed Action would also provide for better aircraft deicing practices, hazardous materials management, and solid waste handling. The Proposed Action does not exceed the Significant Impact Threshold as per the FAA Order 1050.1F, and does not have the potential to:

- Adversely affect natural and beneficial groundwater values to a degree that substantially diminishes or destroys such values
- Adversely affect groundwater quantities such that the beneficial uses and values of such groundwater are appreciably diminished or can no longer be maintained, and such impairment cannot be avoided or satisfactorily mitigated
- Present difficulties based on water quality impacts when obtaining a permit or authorization

5.14.3. Floodplains and Sea Level Rise

As described in **Section 4.15.4**, all but a small portion of the Runway 20 extension area is located in Flood Zone AE, indicating that the project site has "at least a 1% annual chance of being flooded, but where wave heights are less than three (3) feet."[106] Refer to Chapter 4 for **Figure 4-14** for FEMA Floodplain Map. Also, the State of Connecticut is forecasting a gradual 20-inch rise in sea level by the year 2050.

Under the preferred alternative for Runway 02-20, approximately 50,000 cubic yards (CY) of fill would be required. The fill material for the Proposed Action would be provided by the appropriate licensed facility such as quarry or borrow site. The fill would result from correcting (raising) the runway pavement profile

[106] https://www.fema.gov/flood-maps/coastal/insurance-rate-maps

at both ends to comply with FAA Runway design standards as well as construction of the runway extensions and Runway Safety Area improvements. The profile of approximately 1,325 feet of the existing Runway 20 end would be raised vertically by 0-4 feet, depending on location. Up to six (6) feet of additional fill would be required to construct the Runway 20 extension and provide a Runway Safety Area compliant with FAA design standards. The profile of approximately 960 feet of existing Runway 02 would be raised vertically by 0-3 feet to correct the non-standard Runway profile. The runway extension and safety area would be raised by 3-6 feet to provide a runway profile that meets FAA design standards and accommodate the EMAS, above the State-projected sea level rise for year 2050. The Airport would address the potential effects of sea level rise on the center portion of the runway through life cycle management, which would involve periodic maintenance and upgrades to the runway to offset the potential impact of sea level rise.

Paved sections in the terminal area including roadways, parking, aircraft apron, taxiways, and taxi lanes would be constructed at or close to existing grade. The site would be graded to allow for proper drainage. When final engineering plans are developed, cuts and fills would be scrutinized with a goal minimizing fill in the floodplain. The terminal would be constructed with a finished floor elevation at or above 13 feet above MSL base flood elevation, or approximately 8 feet above existing grade. Key mechanical systems (e.g., electrical, HVAC, IT, security) would be placed above the 13 feet base flood elevation, which would help to assure that the terminal remains functional during major storm events. Underground systems such as grease interceptors and utility chases would be dry-proofed to assure these also remain operational during storm events. The terminal would largely be constructed on columns with a crawlspace under the terminal. This design approach minimizes the amount of fill that would be required to construct the terminal and minimizes the impedance of floodwaters flowing across the site. Some raised areas would be required to assure drainage and meet the requirements of National Fire Protection Association 415 requirements regarding fueling of aircraft. NFPA 415 establishes drainage design requirements for control of spilled fuel on an aircraft apron. Approximately 2,700 CY of floodplain fill is anticipated for construction of the proposed terminal. The proposed terminal would incorporate modern resiliency features such as those described above. As a result, the proposed terminal would be far more flood resistant than the existing terminal.

The proposed parking garage would include construction of the ground level pad, columns, ramps, and other miscellaneous items between the existing ground level and 13 feet base flood elevation. A total of approximately 8,600 CY of fill would be placed in the floodplain. Table 5-13 provides a summary of floodplain fill volumes:

Table 5-13: Summary of Approximate Floodplain Fill Volumes

Project Activity	Associated Fill Volume (between +/- 5 feet MSL and 13 feet MSL) (CY)
Runway Profile and Safety Area Improvements	50,000
East Terminal and Site Grading	2,700
Parking Garage	8,600
Total	61,300

Under Connecticut General Statues Sections 25-68b through 25-68h, the Connecticut Flood Management Program requires certification or an exemption for all state actions within or affecting floodplains. HVN is not considered a state entity, therefore activities in the floodplain are regulated under floodplain ordnances in the City of New Haven and Town of East Haven.

The proposed terminal area development and small section of the grading associated with the Runway 20 extension lies within the municipal boundaries of the Town of East Haven and would be subject to East Haven's Code of Ordinances Chapter 9 Flood Damage Prevention and Control, which regulates floodplain development in the Town[107]. Section 9-69 of the Code of Ordinance establishes permit application procedures for construction or development to be undertaken in special flood hazard areas. Sec. 9-76 establishes general standards for construction in a Special Flood Hazard Area. The Runway 20 extension and the Terminal Area Development are located in the Special Flood Hazard Area as defined by the Town of East Haven. East Haven's Code of Ordinances Chapter 9 identifies building code requirements such as anchoring systems and dry flood proofing requirements, among other. The Ordinance requires that the water holding capacity of the floodplain shall not be reduced. Filling in the floodplain is compensated by deepening and/or widening of the floodplain. In other words, floodplain fill must be offset by a corresponding amount of cut. Section 9 requires certification by a registered professional engineer demonstrated with supporting hydrologic and hydraulic analyses that encroachments in the floodplain shall not result in any increase in flood levels (base flood elevation).

The Runway 02 extension lies within the City of New Haven and would be subject the Code of the City of New Haven Title IV Flood Damage Prevention[108]. Title IV – Section 5 provides general standards for construction in the Special Flood Hazard Area. Title IV also includes provisions requiring demonstration that the proposed improvements would not result in an increase in flood levels and compensating for lost flood storage volume.

5.14.3.1. Significant Impact Threshold – Floodplains

According to FAA Order 1050.1F a floodplain impact is significant if it would cause notable adverse impacts on natural and beneficial floodplain values. Natural and beneficial floodplain values are defined in Paragraph 4.k of USDOT Order 5650.2, *Floodplain Management and Protection*. They include natural moderation of floods, water quality maintenance, groundwater recharge, fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, and forestry.

The floodplain areas that would be disturbed during construction consist of historically disturbed areas that are maintained by mowing, grading, other maintenance activities to the present time. These disturbed areas do not provide notable habitat for fish and wildlife and the high-water table provides little opportunity for groundwater recharge. The site is located on an active airport and is therefore not suitable for outdoor recreation, agriculture, and aquaculture. The moderation of flood value would be maintained by providing offsetting cuts within the floodplain to the proposed fill. Based on preliminary analysis the Proposed Action would result in approximately 61,300 CY of fill in the FEMA mapped floodplain. The proposed fill would be mitigated by a corresponding cut within the floodplain ("zero net fill"). The cuts would be accomplished in undeveloped upland areas such as along the shoulders of the runway where Runway Safety Area grades are able to be adjusted while still meeting FAA design and safety standards. According to this preliminary analysis, the volume surface cut available within airport property is up to 90,000 CY In addition, wetland impacted for the Proposed Action will be replaced to offset the loss of flood retention and the increase in impervious surface from the Project will be mitigated by providing additional stormwater controls. Therefore, no adverse impacts on natural and beneficial floodplain values are anticipated.

[107] https://library.municode.com/ct/east_haven/codes/code_of_ordinances?nodeId=PTIICOOR_CH9FLDAPRCO
[108] https://library.municode.com/ct/new_haven/codes/code_of_ordinances?nodeId=TEOR

5.14.4. No Action

The No Action alternative assumes that existing conditions would remain unchanged within the project site and airport operations would continue in a similar way as to-date. Wetlands impacts would not occur and compensatory mitigation is not required.

Under the No Action alternative, the existing terminal would remain operational. However, the existing terminal is prone to flooding by Tuttle Brook during storm events Tuttle Brook enters airport property via a culvert north of Burr Street, then is conveyed by a series of open channel and culverts through the terminal area until it enters a wetland area west of Runway 02-20. Tuttle Brook exits airport property at South End Road where it eventually enters Long Island Sound. Portions of Tuttle Brook are immediately adjacent to the southwest face of the existing terminal. During peak storm events, Tuttle Brook overflows onto the airfield and into the terminal building. As a result, and as described in Chapters 1 and 2, the terminal operations are forced to cease, or are severely curtailed until the floodwater recedes, and cleanup and repair activities are completed. Under the No Action alternative, no fill would be placed in the floodplain however the existing terminal would remain flood prone with continued periodic and unpredictable disruptions to terminal operations during large storm events.

No changes to the airfield would occur under the No Action alternative. No alteration of floodplain functions would occur; therefore, impacts from the No Action alternative on water resources are not considered to be significant.

5.15. CUMULATIVE IMPACTS

Based on the technical analysis and information discussed in previous sections, 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 foreseeable impacts of all project components (connected actions[109]) were cumulatively evaluated in this EA as applicable (e.g., noise / air traffic for 2022 existing conditions, 2024-2026 construction, 2026 proposed conditions and 2031 proposed conditions). As discussed throughout Chapter 5, the Proposed Action does not exceed the Significant Impact Thresholds[110] nor is conflicting with the factors considered in evaluating the context and intensity of foreseeable environmental impacts as per the FAA Order 1050.1F.

CEQ regulations, 40 CFR § 1508.1 Implementing Regulations (May 20, 2022), define cumulative effects as the effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or

[109] FAA Order 1050.1F: Connected actions are closely related actions that: (a) automatically trigger other actions; (b) cannot or will not proceed unless other actions are taken previously or simultaneously; or (c) are interdependent parts of a larger action and depend on the larger action for their justification (see 40 CFR § 1508.25(a)(1), CEQ Regulations). Connected actions and other proposed actions or parts of proposed actions that are related to each other closely enough to be, in effect, a single course of action must be evaluated in the same EA or EIS (see 40 CFR §§ 1502.4(a) and 1508.25(a)(1), CEQ Regulations). A proposed action cannot be segmented by breaking it down into small component parts to attempt to reduce impacts (see 40 CFR § 1508.27(b)(7), CEQ Regulations).

[110] The FAA uses thresholds that serve as specific indicators of significant impact for some environmental impact categories. FAA proposed actions that would result in impacts at or above these thresholds require the preparation of an EIS, unless impacts can be reduced below threshold levels. Quantitative significance thresholds do not exist for all impact categories; however, consistent with the CEQ Regulations, the FAA has identified factors that should be considered in evaluating the context and intensity of potential environmental impacts. If these factors exist, there is not necessarily a significant impact. Some impact categories may have both a significance threshold and significance factors to consider.

non-Federal) or person undertakes such other actions. CEQ regulations also states that cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

The cumulative impact analysis is intended to highlight the past, present or forceable actions in the near future that are closely related either in time or location of the project being considered. In general, the geographic area of concern for this analysis is the Airport property. For some resources (e.g., cultural and historic, Section 4(f) / 6(f)) or environmental impact categories (i.e., noise, air quality, traffic, environmental justice and socioeconomics) the cumulative impact analysis extends beyond Airport property. However, as per EPA guidance for cumulative impacts under NEPA, the geographic boundaries should not be extended to the point that the analysis becomes unwieldy and useless for decision-making and should focus on the natural units or environmental impact category that constitute the resources of concern. The evaluation of cumulative impacts considered reasonably foreseeable future projects proposed in combination with past and present actions at the Airport. These actions have been implemented, are under current planning, or are anticipated in the near future to maintain the Airport in compliance with federal design standards, improve safety of Airport operations, and improve the facility's infrastructure. The time period for cumulative effects analysis is the cycle during which a project is expected to affect a resource, ecosystem, or human community, if that is the case. The analysis also considers unrelated projects in surrounding environs.

Previous completed HVN projects did not result in significant impacts and are summarized in Table 5-14.

Table 5-14: Previous Projects at HVN

Projects	Project Summary
Wildlife Deterrent Fence	Shift the airport wildlife deterrent fence according to property boundary and comply with FAA requirements that the airport remain fully enclosed.
Acquire Snow Removal Equipment	Equipment purchase
Noise Mitigation Measures for Residences within the 65-69 DNL	Mitigation measures
Reconfigure Existing Taxiway A, F and G and Drainage Ditch Maintenance	Within the existing taxiway system and existing drainage
Rehabilitate West Terminal Ramp and RON Parking	Within existing pavement
Runway Rehabilitation	Within existing runway pavement
Update Airport Master Plan Study	Planning study
West Terminal Building Renovations and Improvements	Within existing terminal
Runway 02-20 Safety Area Improvements	Reconstruction, realignment, and southerly extension of Taxiway B in the southeast quadrant of the airport. and environmental mitigation

Source: Airport records

These projects are independent actions (single and complete) to the Proposed Action.

5.15.1. On-Airport Future Projects

Future projects within the next (5) years are summarized in **Table 5-15**. These future projects are independent, not related or triggered by the Proposed Action. Most of these projects listed in this table are separate course of actions that would be required to undergo their own independent environmental review under NEPA and may be subject to separate state and/or federal environmental regulations. It is expected that these projects would be designed to minimize environmental impacts to avoid exceeding Significant Thresholds for the applicable environmental impact categories defined in FAA Order 1050.1F.

Table 5-15: Future Projects at HVN

Projects	Project Summary
Fuel Farm Expansion	Located on Airport within existing previously disturbed area.
Miscellaneous maintenance and improvement projects to NAVAIDs, pavement, buildings, etc.	Maintenance Project to existing facilities with no anticipated environmental impacts.
Noise Mitigation Measures	Mitigation measures consisting of providing sound insulation for existing eligible structures. No anticipated impacts.
Miscellaneous Obstruction Removal	No environmental impacts anticipated.
Taxiway Reconfiguration	Various taxiway improvements shown on the Airport Layout Plan, which are not included in the Proposed Action. These improvements are shown on the Airport Layout Plan for long range planning purposes. Based on existing and forecast conditions, the taxiway improvements are not expected to be considered for implementation within the next five (5) years. If those projects are advanced, they would be subject to a separate NEPA action.

Source: ACIP-HVN

No other significant improvements are currently expected to occur within the next five (5) years, but any additional improvements (single and complete actions) would undergo an EA to assist in determining whether potential impacts are significant, or a Categorical Exclusion determination where there is no potential for significant impacts, as appropriate. Due to the minor nature of environmental impacts, best management practices to be implemented and applicable mitigation measures to offset the impacts from the Proposed Action, cumulative impacts are not a significant issue for the Proposed Action.

5.15.2. Off-Airport Projects

Based on readily available information from the Town of East Haven[111] and City of New Haven[112], following is presented a summary of projections contained on their adopted general plans or capital improvement programs. These projects are not airport related nor proposed in conjunction with the Proposed Action.

[111] https://www.townofeasthavenct.org/bids-rfps/pages/23-11-invitation-bid-39-laurel-street; https://www.nhregister.com/metro/article/6-development-projects-to-watch-in-East-Haven-in-16776960.php - dated January 2022

[112] https://www.newhavenct.gov/government/departments-divisions/city-plan/plans-projects

These projects do not coincide with the Proposed Action. It is assumed that some degree of environment impacts would be generated by these projects. However, the status or likelihood of these projects being approved, constructed and completed is unknown. These projects were or would be subject to their own independent environmental review and separate permitting process.

- Town of East Haven | D.C. Moore School: The D.C. Moore School shut its doors at the end of the 2016-17 school year, and the plan was to sell the property to a developer. That sale was approved in August 2019. Some residents, however, wanted the parcel to become open space rather than be sold to a private developer. As of September 2021, the town was evaluating the potential effects of development of the site but also considering what would need to be done to properly convert the 10 acres to open space.
- Town of East Haven | Shoreline Greenway Trail: Expansion of the Shoreline Greenway Trail to connect the trail to Cosey Beach Avenue using sidewalks and shared bike lanes was set to begin construction in Spring 2022. The expansion entails 1.85 miles from Elliot Street to the intersection of Coe Avenue to Cosey Beach Avenue, ending near the existing parking lot by the beach. On Austin Avenue, the curb line is shifted, and the street width is reduced to 28 feet to avoid utility poles or private properties.
- Town of East Haven | Sperry Lane Housing: Housing project with a years-long history, the Sperry Lane project can move forward after a stipulation was signed by the Planning and Zoning Commission and The Bluffs LLC in June 2021. In 2020, The Bluffs LLC appealed the decision previously made by the commission to deny an application to create a new affordable housing district that would permit the developer to place 504 units that fall under state statute 8-30g on a property located at 31 and 100 Sperry Lane and 161 Foxon Road. The signed stipulation allows the developer to construct four multi-unit buildings for a total of 380 units. Three of the buildings will be age-restricted for a total of 260 units and the other building will have 120 assisted living units.
- Town of East Haven | Strong Street Housing: The town has been embroiled in appeals and court cases for a proposed housing development on Strong Street for roughly a decade. In 2007, the town's Planning and Zoning Commission approved a planned elderly facilities district for the property for 51 age-restricted units on 14 acres, including a stormwater drainage system designed by the applicant's engineer. In 2012, the developer applied to rezone the project to include 105 units, removing the age restriction and reserving units as affordable housing under state statute 8-30g. This began the appeals process in the courts, for this plan and another submitted by the developer. Court cases continued until recently, with the commission considering a stipulation for judgement in relation to a 2016 appeal. If agreed upon, a revised zoning regulation amendment for a Planned Unit Development District would be adopted and replace the current regulation labeling the property as a mixed-income housing development.
- City of New Haven | 2015 Comprehensive Plan – Vision 2025: New Haven Vision 2025 is the city's 10 year update to the 2003 Comprehensive Plan. It is a blue print of the city's vision for the future. The plan responds to regional housing, economic, and transportation needs. Near, medium and long term recommendations are summarized in the executive summary of the plan: https://www.newhavenct.gov/home/showpublisheddocument/3510/637746690923730000.

In addition major projects[113] from CTDOT in the New Haven and East Haven areas include:

[113] https://portal.ct.gov/DOT/Office-of-Construction/Project-Pages/Major-Projects-Weblink

- Heroes Tunnel Project, Route 15, New Haven
- I-95 West River Bridge, New Haven
- I-95 Pearl Harbor Memorial Bridge (Q Bridge), New Haven
- CTDOT Maintenance Resurfacing Program Summary

5.15.3. Cumulative Benefits of the Proposed Action

The Proposed Action would result in cumulative environmental benefits (positive impacts) such as:

- Increased safety for passengers, crews, and the surrounding community
- Opportunity for increased employment and economic growth in the area
- More efficient and environmentally oriented airside operations (reduced noise and air emissions compared to the no action alternative)
- More resilient and energy efficient terminal
- Enhanced local and regional economy
- Provide streamlined access corridor to HVN
- Better utilization of previously developed "on-Airport" land
- Improved resiliency and sustainability

5.15.4. Summary of Cumulative Impacts Assessment

Table 5-16 presents, in a comparative and collective form, the level of environmental consequences per resources category for each alternative taking into consideration existing and future conditions, as applicable.

Table 5-16: Summary of Environmental Consequences and Cumulative Impacts Assessment

ENVIRONMENTAL CONSEQUENCES BY RESOURCES CATEGORY		Level of Foreseeable Consequences Among Alternatives			Cumulative Impact Assessment
		Alternative 1	Alternative 2 (Proposed Action) – Preferred		
		No Build / No Action	Runway Extension	East Terminal	
	MEET PURPOSE AND NEED	NO	YES	YES	
CULTURAL RESOURCES	Archeological (See Section 4.6)	Not Present	Not Present	Not Present	Implementation of the Proposed Action, when combined with the implementation of one or more of the past, present, and reasonably foreseeable future actions, would not result in a cumulative impact. Foreseeable future projects would be required to adhere to measures to avoid, minimize, and provide mitigation as applicable.
	Historic Properties (See Section 5.5)	Potential Adverse Effect due Noise Increase	No Effect	No Effect	Implementation of the Proposed Action, when combined with the implementation of one or more of the past, present, and reasonably foreseeable future actions, would not result in a cumulative impact. Foreseeable future projects would be required to adhere to measures to avoid, minimize, and provide mitigation as applicable.
	Section 4(f) (See Section 5.6)	No Change	No Adverse Effect	No Adverse Effect	Implementation of the Proposed Action, when combined with the implementation of one or more of the past, present, and reasonably foreseeable future actions, would not result in a cumulative impact. Foreseeable future projects would be required to adhere to measures to avoid, minimize, and provide mitigation as applicable.
	Section 6(f) (See Section 5.6)	No Change	No Adverse Effect	No Adverse Effect	Implementation of the Proposed Action, when combined with the implementation of one or more of the past, present, and reasonably foreseeable future actions, would not result in a cumulative impact. Foreseeable future projects would be required to adhere to measures to avoid, minimize, and provide mitigation as applicable.
NATURAL ENVIRONMENT	Biological Resources (e.g., Flora and Fauna) (See Section 5.2)	No Change	Does Not Exceed Significant Thresholds	Does Not Exceed Significant Thresholds	Implementation of the Proposed Action, when combined with the implementation of one or more of the past, present, and reasonably foreseeable future actions, would not result in a cumulative impact. Foreseeable future projects would be required to adhere similar BMPs and measures to avoid, minimize, and provide mitigation as applicable.
	Protected species (See Section 5.2.1)	No Change	Does Not Exceed Significant Thresholds	Does Not Exceed Significant Thresholds	Any potential impacts to protected species would be mitigated via coordination with CT DEEP. Project would adhere as applicable to the recommendations provided by CT DEEP in their NDDB Preliminary Determination letter dated March 3, 2022. Furthermore, BMPs and Plant Protection Plan would be implemented as applicable. Therefore, implementation of the Proposed Action, when combined with the implementation of one or more of the past, present, and reasonably foreseeable future actions, would not result in a cumulative impact. Additionally, foreseeable future projects would be required to adhere to applicable regulations and incorporate measures to avoid, minimize, and provide mitigation as applicable.
	Jurisdictional Wetlands (See Section 5.14.1)	No Change	0.0 acre impact No Change	+/- 9.28 acres Impacts To be Mitigated	Compensatory mitigation would be implemented for all wetland impacts to achieve the overall policy goal of “no net loss” according to their ecological functions and values. As per mitigation coordination meetings with CT DEEP and USACE, the compensatory wetland mitigation would involve off-site permittee responsible mitigation in addition to payment into the Connecticut In Lieu Fee Program. Therefore, implementation of the Proposed Action, when combined with the implementation of one or more of the past, present, and reasonably foreseeable future actions, would not result in a cumulative impact. Additionally, foreseeable future projects would be required to adhere to

ENVIRONMENTAL CONSEQUENCES BY RESOURCES CATEGORY		Level of Foreseeable Consequences Among Alternatives			Cumulative Impact Assessment
		Alternative 1	Alternative 2 (Proposed Action) – Preferred		
		No Build / No Action	Runway Extension	East Terminal	
	MEET PURPOSE AND NEED	NO	YES	YES	
					applicable regulations and incorporate measures to avoid, minimize, and provide mitigation as applicable.
	Regulated Surface Waters (See Section 5.14.1)	No Change	0.0 acre impact (No Change)	0.0 acre impact (No Change)	Implementation of the Proposed Action, when combined with the implementation of one or more of the past, present, and reasonably foreseeable future actions, would not result in a cumulative impact. Additionally, foreseeable future projects would be required to adhere to applicable regulations, including implementation of a SWPPP as protection measure to surface waters, and provide other mitigations as applicable.
	Groundwater (See Section 5.14.2)	No Change	No Change	No Change	Implementation of the Proposed Action, when combined with the implementation of one or more of the past, present, and reasonably foreseeable future actions, would not result in a cumulative impact.
	Floodplains (See Section 5.14.3)	No Change	Does Not Exceed Significant Thresholds	Does Not Exceed Significant Thresholds	The moderation of flood value would be maintained by providing offsetting cuts within the floodplain to the proposed fill. Based on preliminary analysis the Proposed Action would result in approximately 61,300 CY of fill in the FEMA mapped floodplain. The proposed fill would be mitigated by a corresponding cut within the floodplain ("zero net fill"). According to this preliminary analysis, the volume surface cut available within airport property is up to 90,000 cubic yards In addition, wetland impacted for the Proposed Action will be replaced to offset the loss of flood retention and the increase in impervious surface from the Project will be mitigated by providing additional stormwater controls. Therefore, no cumulative impact to natural and beneficial floodplain values are anticipated. Additionally, City of New Haven and Town of East Haven have "zero net fill" requirements for floodplain development.
	Coastal Resources, Barriers and Sanctuaries (See Section 5.4)	No Change	No Change	No Change	Implementation of the Proposed Action, when combined with the implementation of one or more of the past, present, and reasonably foreseeable future actions, would not result in a cumulative impact. Foreseeable future projects would be subject to CT DEEP Coastal Consistency review.
	Wild and Scenic Rivers (See Section 4.15.5)	Not Present	Not Present	Not Present	Implementation of the Proposed Action, when combined with the implementation of one or more of the past, present, and reasonably foreseeable future actions, would not result in a cumulative impact.
	Natural Resources and Energy Supply (See Section 5.12)	Increase over time	Does Not Exceed Significant Thresholds	Does Not Exceed Significant Thresholds	Implementation of the Proposed Action, when combined with the implementation of one or more of the past, present, and reasonably foreseeable future actions, would not result in a cumulative impact.
HUMAN E NVIRONMENT	Air Quality (See Section 5.1)	Increase over time	Does Not Exceed Significant Thresholds / NAAQS	Does Not Exceed Significant Thresholds / NAAQS	Emissions are expected to be higher under the No Action when compared to the Proposed Action, for all of the listed pollutants except NOx. Implementation of the Proposed Action, when combined with the implementation of one or more of the past, present, and reasonably foreseeable future actions, would not exceed NAAQS; therefore would not result in a cumulative impact.
	Land use (See Section 5.8)	No Change	Less Than Significant	Less Than Significant	Implementation of the Proposed Action, when combined with the implementation of one or more of the past, present, and reasonably foreseeable future actions, would not result in a cumulative impact.
	Farmlands (See Section 4.8)	Not Present	Not Present	Not Present	Implementation of the Proposed Action, when combined with the implementation of one or more of the past, present, and reasonably foreseeable future actions, would not result in a cumulative impact.
	Noise (See Section 5.9)	Increase over time	Less than significant	Less than significant	The 65 DNL contour is smaller under the Proposed Action compared to the No Action. Airport would extend its ongoing Residential Sound Insulation Program to

ENVIRONMENTAL CONSEQUENCES BY RESOURCES CATEGORY		Level of Foreseeable Consequences Among Alternatives			Cumulative Impact Assessment
		Alternative 1	Alternative 2 (Proposed Action) – Preferred		
		No Build / No Action	Runway Extension	East Terminal	
	MEET PURPOSE AND NEED	NO	YES	YES	
					include homes that have not yet participated in the program and that are within the five-year forecast 65 DNL contour. The Airport would continue to implement measures developed as part of the 2012 Part 150 study and would likely update the Part 150 once the Proposed Action is completed. Therefore, implementation of the Proposed Action, when combined with the implementation of one or more of the past, present, and reasonably foreseeable future actions, would not result in a cumulative impact.
	Hazardous Materials, Solid Waste and Pollution Prevention (See Section 5.7)	Increase over time	Does Not Exceed Significant Thresholds	Does Not Exceed Significant Thresholds	Implementation of the Proposed Action, when combined with the implementation of one or more of the past, present, and reasonably foreseeable future actions, would not result in a cumulative impact.
	Socioeconomic, Environmental Justice, and Children's Health and Safety Risks (See Section 5.10)	No Change	Less than significant	Less than significant	Implementation of the Proposed Action, when combined with the implementation of one or more of the past, present, and reasonably foreseeable future actions, would not result in a cumulative impact.
	Traffic and Surface Transportation (See Section 5.11)	Level of Service Decrease	Less than significant	Less than significant	It is expected that the Connecticut Department of Transportation Office of State Traffic Administration (OSTA) would consider the Project a Major Traffic Generator and would require a permit application. During the permitting process, OSTA would evaluate the need for mitigation or traffic safety measures on impacted state roadways, including Proto Drive at Coe Avenue. If OSTA determines that additional mitigation or traffic safety measures are necessary, OSTA would require further coordination with CTDOT and the Town of East Haven and implementation of those measures. Therefore, taking into consideration that mitigation measure would be implemented, with the Proposed Action when combined with the implementation of one or more of the past, present, and reasonably foreseeable future actions would not result in a cumulative impact. Furthermore, foreseeable future projects would be subject to traffic review, as applicable.
	Light Emission and Visual Impacts (See Section 5.13)	No Change	Less than significant	Less than significant	Implementation of the Proposed Action, when combined with the implementation of one or more of the past, present, and reasonably foreseeable future actions, would not interfere or affect the visual character of the area (e.g., uniqueness and aesthetic value). Therefore, no cumulative impact.

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6. LIST OF PREPARERS

This Draft EA was prepared by McFarland-Johnson, Inc., with support from FHI Studio and HMMH, and integrating information provided by HVN (Avports). The Draft EA was prepared in collaboration with the FAA. The following personnel participated in preparation of the document:

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Table 6-1: List of Preparers – Technical Team

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APENDICES

Appendices Volume 1:

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