

Appendix: I
Noise and Air Quality Technical Report

McFarland Johnson



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Tweed New Haven Airport Proposed Improvements Environmental Assessment Noise and Air Quality Technical Report

HMMH Report No. 312830

February 15, 2023

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Noise and Air Quality Analyses

Harris Miller Miller & Hanson Inc. (HMMH) is assisting McFarland Johnson (MJ) in the Environmental Assessment (EA) of the proposed improvements at Tweed-New Haven Airport (HVN) by preparing the noise and air quality analyses and supporting documentation. This technical report provides detailed information for both analyses including the input data and assumptions based on the information provided by the airline (Avelo), Avports and HVN. The computed results are reported with a discussion of the conclusions in relation to federal and state environmental regulations.

The noise analysis uses the Federal Aviation Administration's (FAA's) Aviation Environmental Design Tool (AEDT) to develop the Existing Conditions, Forecast No Action, and Proposed Action Day-Night Average Sound Level (DNL) noise exposure contours. The air quality analysis includes comparison of the emissions from aircraft operations under the No Action alternative to those from the Proposed Action alternative. The AEDT is used to calculate emissions as well as noise, using the same aircraft operations inputs for each scenario. Additional emissions analyses consider the contribution of demolition and construction activities to air quality conditions.

The body of this document is prepared in two sections; the first focuses on the noise evaluation, and the second discusses the air quality and climate assessment. Appendices provide background information on airport noise terminology as well as source data and pertinent project correspondence.

1. Noise Analysis

For a National Environmental Policy Act (NEPA) noise analysis, the FAA requires the use of the DNL metric. The 24-hour analysis period must represent the average annual day (AAD), meaning average daily aircraft operations over a 365-day period. Section 1.1 outlines the regulatory requirements governing noise analyses for an environmental assessment and Section 1.2 defines the study area. HMMH prepared and circulated a detailed memorandum containing detailed noise model inputs for Avports and FAA review and concurrence. The study team[1] revised and refined the inputs multiple times[2] throughout the analysis process. Section 1.3.contains the final noise modeling approach, input data, and assumptions used in the preparation of the DNL contours. The resulting DNL contour figures and associated noise impact assessments are included as Section 1.4. An explanation of the acoustical terminology is provided in Appendix A. The noise analysis for this EA includes an Existing Conditions[3] scenario and No-Action and Proposed Action scenarios for 2026 and 2031, for a total of five modeling scenarios:

1. Existing Conditions (2022)
2. Design year 2026 No-Action Alternative
3. Design year 2026 Proposed Action Alternative
4. Forecast year 2031 No-Action Alternative
5. Forecast year 2031 Proposed Action Alternative

The Proposed Action for this EA is the 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, in East Haven, Connecticut (CT). Runway 02-20 would be extended at both ends to allow longer-distance flights to operate out of the Airport. The new runway length would be approximately 6,575 feet.

1.1 Regulatory Requirements

HMMH conducted the noise analysis for this EA in accordance with FAA Order 5050.4B, Order 1050.1F, and its associated Environmental Desk Reference. These documents specify several requirements for evaluating noise impacts, including:

- Acceptable noise models to be used and the circumstances under which their use is required.

[1] References to "the study team" in this memo include HMMH and MJ in consultation with Avports

[2] The study team prepared and reviewed analysis data input memos dated December 15, 2021; January 21, 2022; and April 28, 2022. FAA was provided a copy for review dated June 1, 2022, a revised version dated August 11, 2022, and two internal drafts of this full report including analysis results, dated October 3, 2022, and December 19, 2022.

[3] The modeled Existing Conditions represent the aircraft operations levels during summer 2022, approximately nine months after the commencement of Avelo service at HVN.

- The metrics to be used for characterizing the noise environment and quantifying impacts; and
- Thresholds of significance for determining whether the effects of an action would constitute a significant impact under NEPA.

FAA Orders 1050.1F and 5050.4B determine a significant noise impact to be a DNL increase of 1.5 dB or more at a noise-sensitive location with a DNL of 65 dB or higher. For example, an increase in DNL at a residential location from 63.5 dB to 65.0 dB DNL within the same timeframe due to the Proposed Action would be considered a significant impact. If a noise increase is determined to be a significant impact to any of the surrounding noise sensitive properties, as defined in FAA Order 1050.1F, mitigation would be required.

Most aircraft noise studies focus on DNL, the metric adopted by FAA and Environmental Protection Agency (EPA) as the most appropriate long-term measure of aircraft noise exposure. DNL is determined by adding up the noise energy from all modeled aircraft activity at every individual point of a large array of grid points around an airport. In the DNL calculation, a 10-decibel weighting is applied to nighttime operations. Nighttime or "night" is defined as 10 pm to 7 am, local time. The noise terminology definitions in Appendix A include details of how DNL is calculated.

Computer-generated estimates of DNL are often depicted as noise contours reflecting lines of equal exposure around an airport (much as topographic maps indicate contours of equal elevation). The contours usually reflect long-term (annual average) operating conditions, accounting for the average flights per day, how often each runway is used throughout the year, and where the aircraft normally fly over the surrounding communities.

The FAA requires that the following information must be disclosed for each modeled scenario that is analyzed:

- Mapping of land use data, noise contours, and flight tracks for each scenario;
- The number of residences or people residing in areas exposed to DNL between 65 dB and 70 dB, 70 dB and 75 dB and greater than or equal to 75 dB, and the net increase or decrease in the number of people or residences exposed to those levels of noise;
- The location and number of non-residential noise sensitive sites (e.g., schools, hospitals, parks, recreation areas) exposed to 65 DNL or greater;
- Discussion of the noise impact on noise sensitive areas exposed to DNL of at least 65 dB because of the Proposed Action; and
- If 1.5 dB DNL increases are predicted at noise sensitive areas with DNL of at least 65 dB, identification of noise sensitive areas exposed to DNL greater than or equal to 60 dB which may experience a DNL increase of 3 dB or more because of the Proposed Action.

NEPA requires the review of land uses located in the airport environs to understand the relationship between those land uses and the noise exposure associated with aircraft activity. This includes delineation of land uses within the 65 DNL and higher aircraft noise exposure contours on the noise contour exhibits and identification of noise sensitive uses that may be

noncompatible with that level of noise exposure. Identification of a noise sensitive use within the 65 DNL contour does not necessarily mean that the use is either considered noncompatible or that it is eligible for mitigation. Rather, identification merely indicates that the use is generally considered noncompatible but requires further investigation. Factors that influence compatibility and/or eligibility may include but are not limited to previous sound reduction treatments, current interior noise levels, structure condition, ambient and self-generated noise levels, whether a given use is considered temporary or permanent, and the timeframe within which a given structure was constructed.

1.1.1 Land Use Compatibility Guidelines

The objective of airport noise compatibility planning is to promote compatible land use in communities surrounding airports.

The FAA has published land use compatibility designations, as set forth in Part 150, Appendix A, Table 1 (reproduced here as **Table 1**).[4] As the table indicates, the 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. Institutional or Public land use land use consists of schools, hospitals, nursing homes, churches, auditoriums, concert halls, governmental services, transportation, and parking. While all these uses are compatible with aircraft related DNL below 65 dB, schools are not compatible above 65 DNL without mitigation.

Table 1. Part 150 Land Use Compatibility with Yearly Day-Night Average Sound Levels

Source: FAA Part 150, Appendix A, Table 1, 2007

Land Use	Yearly Day-Night Average Sound Level [DNL] in Decibels (Key and notes on following page)					
	<65	65-70	70-75	75-80	80-85	>85
Residential Use						
Residential other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home park	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						

[4] Appendix A, Part 150 Table 1 can be found in 14 CFR Part 150, Airport Noise Compatibility Planning https://www.ecfr.gov/current/title-14/chapter-I/subchapter-I/part-150/appendix-Appendix%20A%20to%20Part%20150?msclkid=cba3d6bfa60d11ec83ea1e9ed3e3b966

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
Source: FAA Part 150, Appendix A, Table 1, 2007						

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 (NLR) (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 dBA, 30 dBA, or 35 dBA must be incorporated into design and construction of structure.

Notes for Table 1

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.

(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 dBA, 10 dBA, 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 dBA.
(7) Residential buildings require an NLR of 30 dBA.
(8) Residential buildings not permitted.

1.2 Study Area

To adequately capture the effects of aircraft noise, the noise study area must include not only the immediate airport environs, where aircraft flight paths are aligned with the runways, but also other potentially affected areas over which aircraft would fly as they follow any modified flight corridors that join the surrounding airspace. The study area was developed to encompass an area that would contain at least the lateral extent of the estimated 60 DNL contour resulting from aircraft flight and ground operations contemplated under either the No Action or the Proposed Action alternative, with an adequate buffer to accommodate potential changes in the contour between the No Action and the Proposed Action alternatives. **Figure 1** displays the study area on the land use map. The study area is a square with side length of approximately 3.5 nautical miles (9,942 acres), centered on the airport.

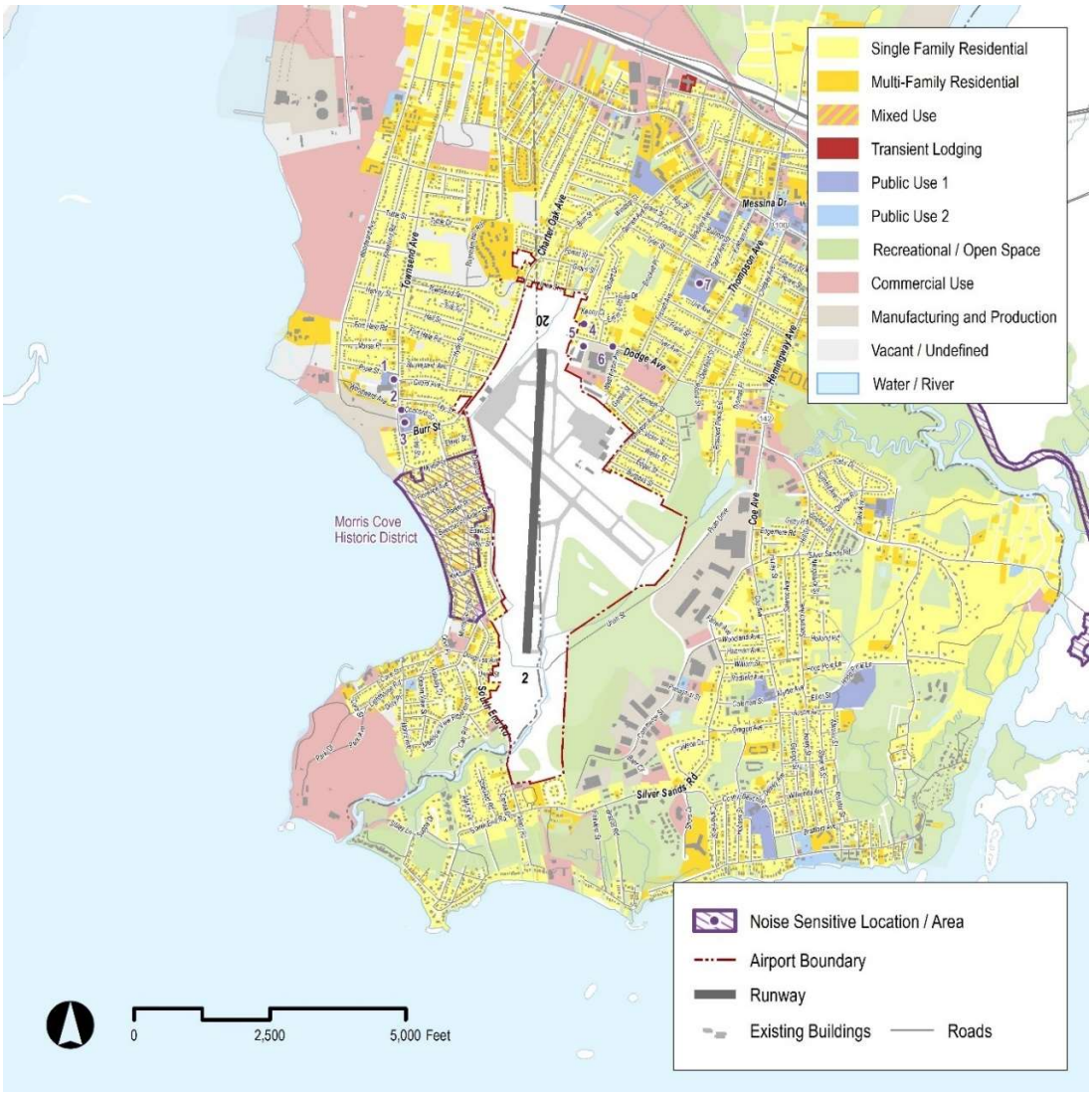


Figure 1. Land Use and Noise Study Area

1.2.1 Existing Land Use

HVN is located on about 437 acres between the cities of New Haven and East Haven, Connecticut. Existing land use in the study area consists of the HVN property, residential uses, commercial, and industrial land uses, as shown on **Figure 1**. HVN is surrounded on the northern, western, and southern sides by residential areas consisting mostly of single-family residences. To the east and southeast of the airport, industrial land uses are closest to the airport. The Morris Cove Historic District is located to the west of the airport between the airport and the harbor and is marked on **Figure 1** with cross-hatching. The coastline of New Haven Harbor is approximately 0.3 miles to the west of the airport and Long Island Sound is 0.6 miles to the south of the airport.

All noise sensitive sites such as schools, nursing homes, hospitals and places of worship within the study area have been identified and are shown on **Figure 1**. The seven sites are assigned numbers that correspond to the point labels:

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. Former East Haven High School

Any potential noncompatible land use and the noise sensitive sites within the study area are evaluated in Section 1.4.

1.3 Noise Modeling Methodology and Inputs

This section addresses the noise modeling input data for the AEDT. FAA guidance on use of the AEDT specifies using the most recent version of the model that is available at the time the project commences. In this case, it is AEDT Version 3d.[5] All AEDT modeling conducted for this study adheres to "*Guidance on Using the AEDT to Conduct Environmental Modeling for FAA Actions Subject to NEPA*".[6]

AEDT inputs are developed under the following categories:

- Physical description of the airport layout
- Aircraft noise and performance characteristics
- Aircraft flight operations
- Aircraft maintenance runup activity
- Runway utilization
- Flight track geometry and usage
- Meteorological conditions
- Terrain data

[5] Released March 29, 2021 https://aedt.faa.gov/3d_information.aspx

[6] Published October 27, 2017

Sections 1.3.1 through 1.3.8 address the noise model inputs for each of these categories, respectively. **Table 2** lists each category of AEDT input data, the source(s) of the data used in this study, and the differences between the various modeled scenarios. The complete set of noise model inputs documented here was provided to Avports and to FAA for their review before finalizing this noise study.

Table 2. Data Sources/Needs for Noise Model Inputs

AEDT Input Category	Data Source(s)	Differences Between Existing Conditions, No Action and Proposed Action Alternatives
Physical description of the airfield layout	**Existing:** FAA 5010 data, FAA Airport Diagram, HVN **Forecast:** HVN Airport Master Plan Update, Avports	**No Action** forecast scenarios will apply **Existing Conditions** airfield layout parameters, with approach parameter modifications on Runway 20. **Proposed Action** forecast scenarios will apply runway extensions and new terminal location with specified aircraft parking locations.
Aircraft noise and performance characteristics	**Existing and Forecast:** AEDT database flight profiles, Avelo Technical Memorandum Support letter dated 2/15/2022	No differences between scenarios. For air carrier departures: Avelo 737-700s are modeled as AEDT aircraft 737700 derated to 22,000 pounds of thrust per the specific engines installed on Avelo's aircraft (5% less than AEDT standard profile); Avelo 737-800s are modeled as AEDT aircraft 737800 with standard profiles.[1]
Aircraft flight operations by category	**Existing and Forecast:** McFarland Johnson, HVN Master Plan, Avelo schedule letter, Avports	Air carrier operations derived from Avelo schedule with input from Avports. Air taxi, GA, and military operations scaled to match Master Plan growth rates.
Detailed flight operations by aircraft type, including day/night split and stage length	**Existing:** HVN Master Plan Update operational data, with modifications as indicated by MJ, Avports **Forecast:** Avports and Avelo schedule for air carrier operations; non-air carrier operations scaled up proportionally by category, with fleet modernization assumptions	Air carrier operations fleet mix, day night splits and stage lengths derived from Avelo schedule with input from Avports. Air taxi, GA, and military operations assume same day night splits and stage lengths as modeled for Master Plan Update noise analysis, with no changes between **No Action** and **Proposed Action** scenarios.
Detailed ground operations (aircraft engine runup, idling, and/or APU use)	**Existing:** MJ, Avports **Forecast:** MJ and HMMH – operations derived from Avelo schedule with Avports input	Idling "operations" at parking/RON locations varies according to Avelo schedule: for **Existing** & **No Action** at existing west terminal, for **Proposed Action** at new east terminal. GA runups modeled as for Master Plan for **Existing** & **No Action** scenarios; relocated for **Proposed Action**.
Runway utilization rates	**Existing:** HVN Master Plan Update AEDT runway use inputs (developed by HMMH using FAA radar track data[1] from the FAA NOP) applied to non-air carrier operations; air carrier percentages assumed same as larger jets **Forecast:** modifications to air carrier runway use as indicated by MJ, Avports	Given that the majority of air carrier flights would have southern destinations, the majority south flow departure runway usage from the **Existing Conditions** was maintained. The arrival runway use estimates were adjusted to more south flow in both the **No Action** scenarios and the **Proposed Action** scenarios.

AEDT Input Category	Data Source(s)	Differences Between Existing Conditions, No Action and Proposed Action Alternatives
Flight track geometry and utilization rates	**Existing:** HVN Master Plan Update AEDT flight track inputs (developed by HMMH using FAA radar track data[2] from the FAA NOP) **Forecast:** modifications to usage rates to reflect destination changes	Since the Runway extension would allow mid-west or west-coast destinations, **Proposed Action** scenarios include increase in percentage of westbound flight tracks, corresponding decrease in percentage of southbound flight tracks.
Meteorological conditions	AEDT database	No differences between scenarios.
Terrain data	USGS National Elevation Dataset (NED) TIFF	No differences between scenarios.

1. Variable reduced thrust settings for departures are used routinely, depending on weather conditions, but the study team and FAA concur that the more conservative assumption of full takeoff thrust is appropriate for this study. Details for the derate and reduced thrust profiles are provided in memorandum requesting FAA approval for non-standard modeling methodology dated February 28, 2022, included in Appendix B.
2. FAA flight track and aircraft identification data from January 1, 2019, to December 31, 2019, formed the basis of the noise analysis for the Master Plan Update, some elements of which are carried over to this study.

1.3.1 Physical Description of the Airport Layout

The Existing Conditions airfield layout is shown in **Figure 2**. The one operational runway, Runway 2/20, is 5,600 feet long and 150 feet wide. The passenger terminal is on the northwest side of the runway. Helicopter activity is modeled departing from and arriving to a "helipad" location (H) defined on the east ramp. The GA runup location (A) is defined on the former crosswind runway near the intersection of taxiways B and C.

Table 3 provides the modeled physical parameters for the Existing Conditions. The forecast No Action alternative assumes no changes to runway end locatons, but the displaced landing threshold for Runway 20 would be removed, and the the glide slope and threshold crossing height for that runway would change slightly.

Table 4 shows the modeled physical parameters for the No Action scenarios. For the Existing Conditions and No Action alternative, the three commercial aircraft parking spots on the apron adjacent to the existing terminal (P1 through P3) indicate where passengers board and disembark and where aircraft park overnight. The locations labeled P4 and P5 are expected to be used as additional overnight parking, as needed. **Figure 3** shows the existing terminal area, with the aircraft overnight locations indicated.

Table 3. HVN Airfield Layout Details for Existing Conditions

Runway	Latitude (degrees)	Longitude (degrees)	Elevation (feet, MSL)	Displaced Landing Threshold (ft)	Glide Slope (degrees)	Threshold Crossing Height (ft)	Magnetic Orientation (degrees)	True Heading (degrees)
2	41.256050	-72.888246	6.5	0	3	50	16	3
20	41.271400	-72.887212	12.6	352	4	57	196	183
PAD_H	41.267259	-72.885026	12	"Helipad" location – start/end of modeled helicopter flight tracks				
RUNUP (A)	41.263278	-72.884644	5	GA Engine Maintenance Runup location			320	307
P1	41.268349	-72.891265	12	Commercial aircraft engine parking locations on apron adjacent to west side (existing) terminal			324	311
P2	41.268722	-72.890827	12				324	311
P3	41.269172	-72.890287	12				324	311
P4	41.269819	-72.889440	12				54	41
P5	41.269402	-72.889404	12				54	41

Notes: NASR data retrieved from https://www.faa.gov/airports/airport_safety/airportdata_5010/ on April 21, 2020
Magnetic variation from https://www.airnav.com/airport/KHVN accessed 11/17/20

Table 4. HVN Airfield Layout Details for No Action Alternative

Sources: FAA National Airspace System Resources (NASR) and HVN

Runway	Latitude (degrees)	Longitude (degrees)	Elevation (feet, MSL)	Displaced Landing Threshold (ft)	Glide Slope (degrees)	Threshold Crossing Height (ft)	Magnetic Orientation (degrees)	True Heading (degrees)
2	41.256050	-72.888246	6.5	0	3	50	16	3
20	41.271400	-72.887212	12.6	0	3.5	57.4	196	183
PAD_H	41.267259	-72.885026	12	"Helipad" location – start/end of modeled helicopter flight tracks				
RUNUP (A)	41.263278	-72.884644	5	GA Engine Maintenance Runup location			320	307
P1	41.268349	-72.891265	12	Commercial aircraft engine parking locations on apron adjacent to west side (existing) terminal			324	311
P2	41.268722	-72.890827	12				324	311
P3	41.269172	-72.890287	12				324	311
P4	41.269819	-72.889440	12				54	41
P5	41.269402	-72.889404	12				54	41

Notes: NASR data retrieved from https://www.faa.gov/airports/airport_safety/airportdata_5010/ on April 21, 2020
Magnetic variation from https://www.airnav.com/airport/KHVN accessed 11/17/20
The outlined cells indicate the only changes to airfield layout from the Existing Conditions; at the time of the preparation of this EA, the FAA was implementing a new approach to Runway 20 which allowed for the removal of the existing displaced threshold. There was a separate NEPA action for this change.

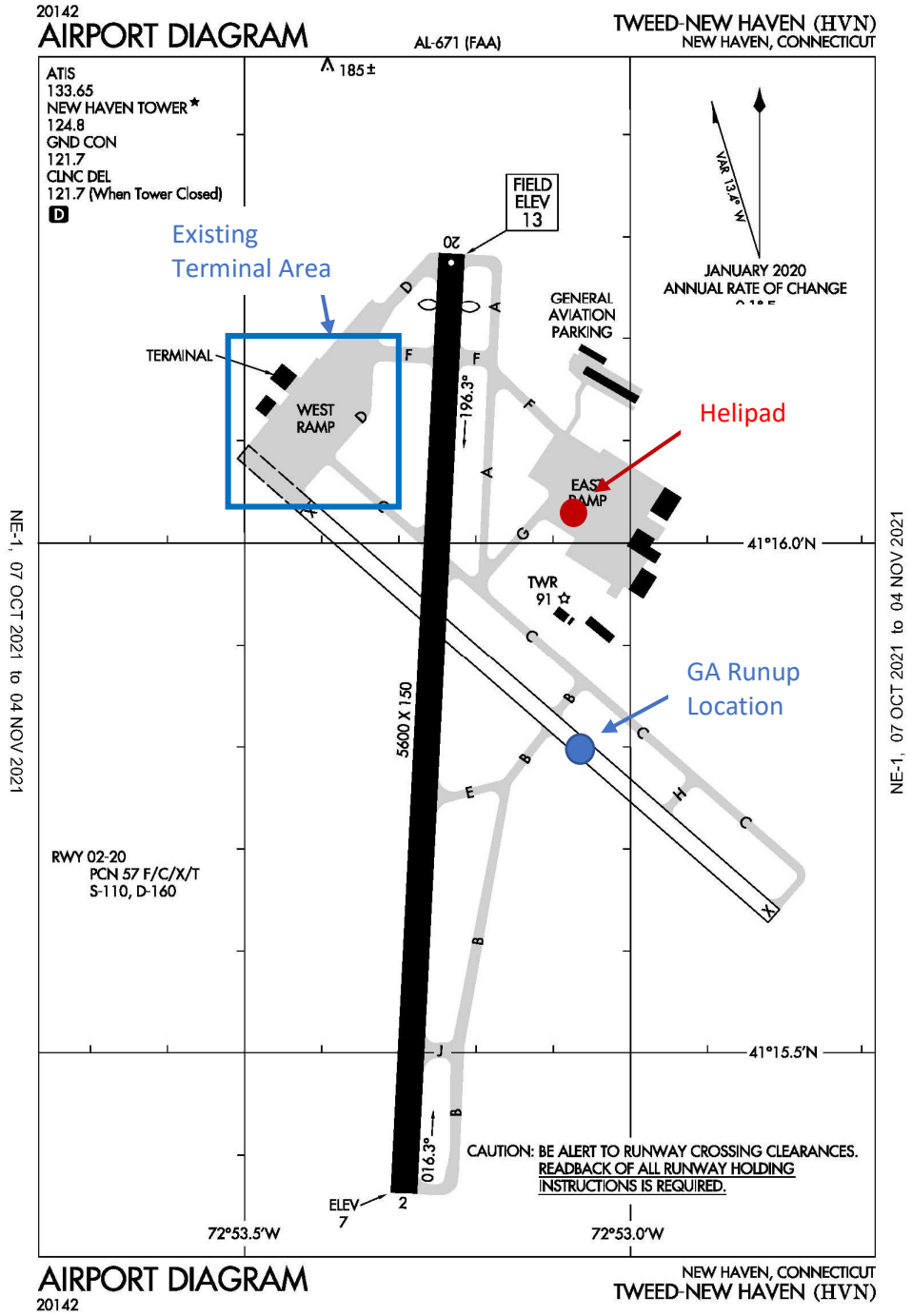


Figure 2. Existing Airport Layout: Annotated HVN Airport Diagram

with helipad (red) and runup/engine idling locations (blue)
Sources: FAA, HMMH

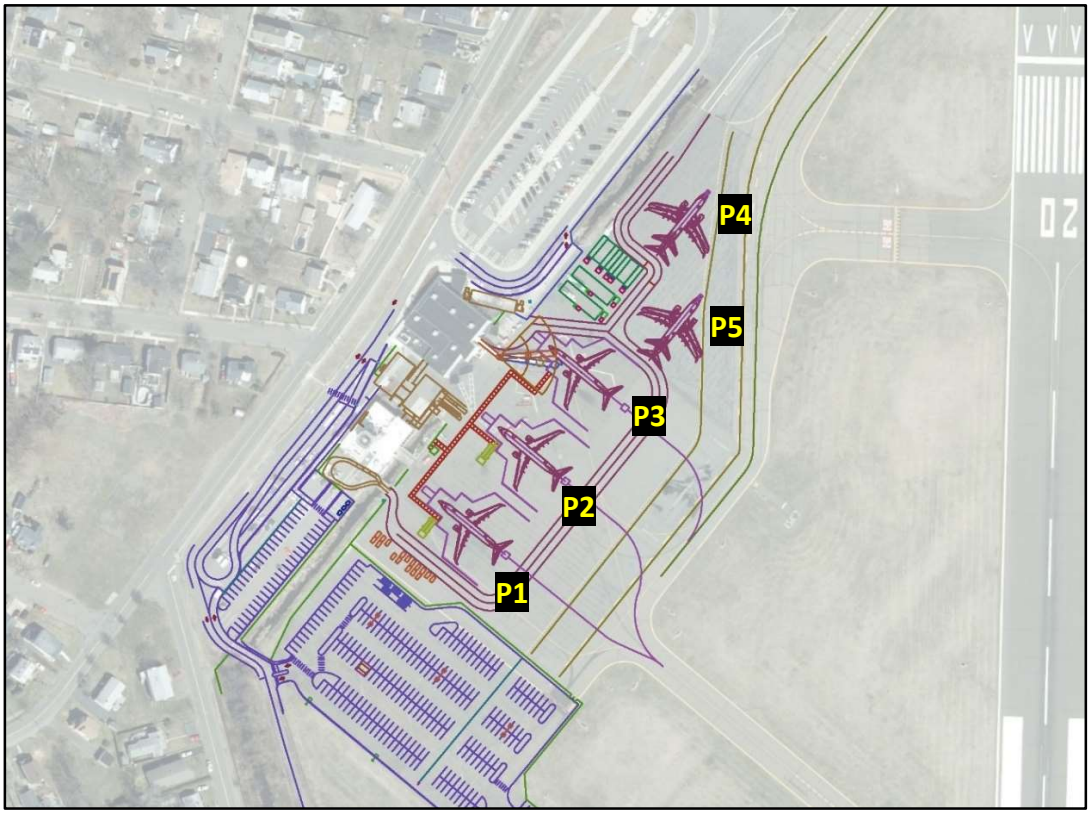


Figure 3. Existing (West) Terminal Area

Source: McFarland Johnson

The forecast Proposed Action alternative includes completed Runway 02-20 extensions with Engineered Material Arresting System (EMAS) installation, and relocation of the passenger terminal to the east side of the airfield. Thus, the physical runway ends for flight operations are adjusted to the locations given by **Table 5**. In the Proposed Action scenarios, the Runway 02 end (denoted "2 ext" in the table) is modeled approximately 639 feet south of its current location, and the Runway 20 end (denoted "20 ext" in the table) is 336 feet north of its current placement. The new runway operating length would be 6,575 feet for departures.

Figure 4 presents the proposed airfield layout. The helipad defined in the Existing Conditions modeling is assumed to be unchanged for the Proposed Action scenarios. The GA runup location is relocated slightly. The Proposed Action plans include displaced landing thresholds at each end of the runway. At the southern end, Runway 02 arrivals would use a 245-foot displaced threshold, which would place the touch-down point 464 south of its current location. At the northern end, Runway 20 arrivals would use a 336-foot displaced threshold, which would place the touch-down point at the current physical runway end (352 feet north of the current touch-down point).

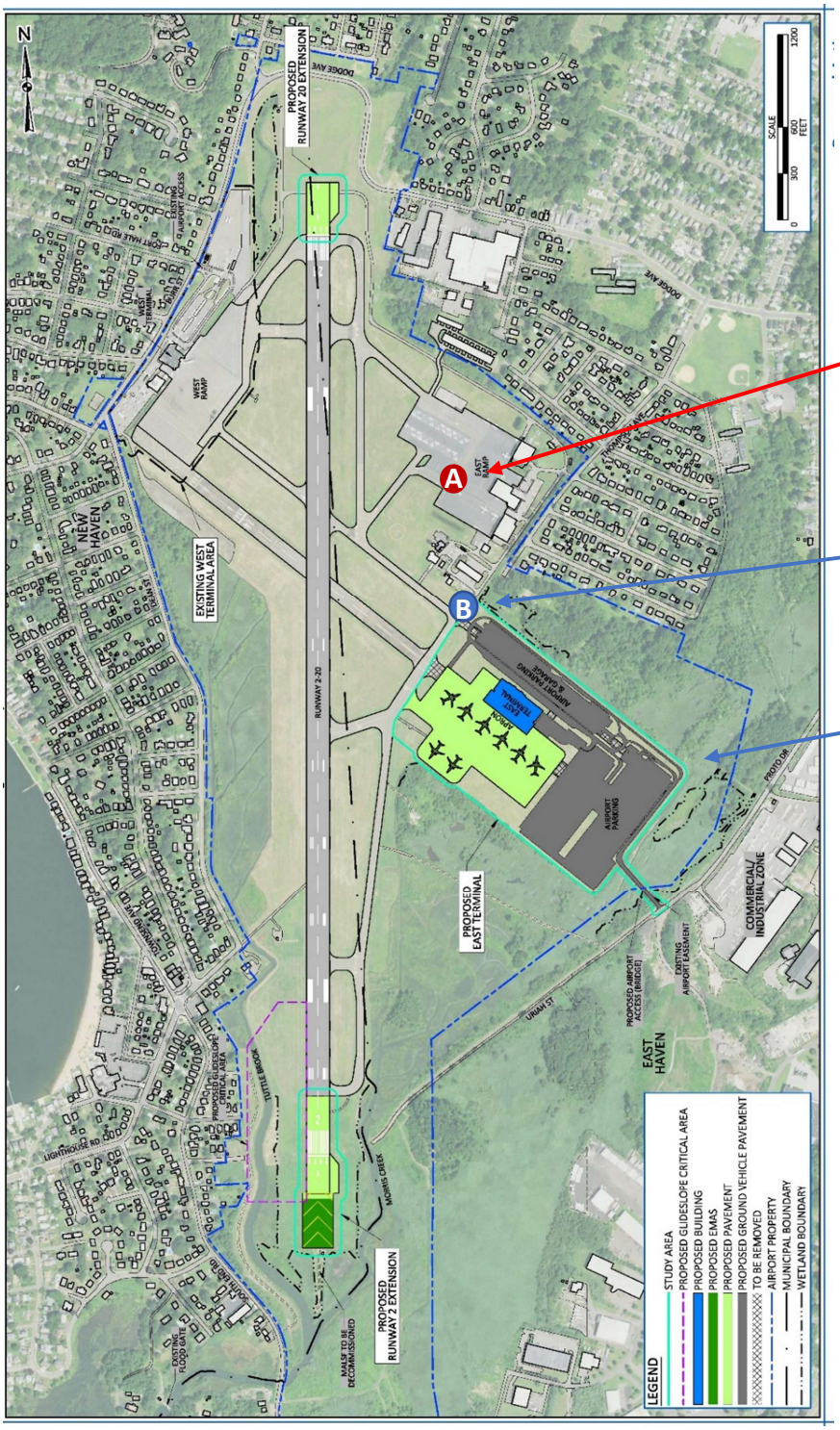


Figure 4. Proposed Airfield Layout

with helipad (red) and G. A. runup location (blue)
Source: McFarland Johnson, 2021

The plans for the new terminal area indicate eight aircraft parking locations, shown as P6 through P13 in **Table 5**, where aircraft may remain over night. **Figure 5** shows the proposed terminal area, with the eight parking locations indicated.

Table 5. HVN Airfield Layout Details for Proposed Action Alternative

Sources: FAA National Airspace System Resources (NASR) and HVN

Runway	Latitude (degrees)	Longitude (degrees)	Elevation (feet, MSL)	Displaced Landing Threshold (ft)	Glide Slope (degrees)	Threshold Crossing Height (ft)	Magnetic Orientation (degrees)	True Heading (degrees)
2 ext	41.254297	-72.888367	6.5	245	3	50	16	3
20 ext	41.272319	-72.887150	12.6	336	3.5	57	196	183
PAD_H	41.267259	-72.885026	12	"Helipad" location – start/end of modeled helicopter flight tracks				
RUNUP (B)	41.264772	-72.884903	5	GA Engine Maintenance Runup location			320	307
P6	41.262379	-72.883271	4	Commercial aircraft parking locations on apron adjacent to proposed new terminal			84	71
P7	41.262189	-72.882945	4				54	41
P8	41.263056	-72.884450	4				54	41
P9	41.262869	-72.884153	4				54	41
P10	41.262603	-72.883750	4				54	41
P11	41.262336	-72.883347	4				24	11
P12	41.261872	-72.882667	4				234	221
P13	41.262069	-72.882942	4				234	221

Notes: NASR data verified with https://www.faa.gov/airports/airport_safety/airportdata_5010/ 11/2/2021
Magnetic variation from https://www.airnav.com/airport/KHVN accessed 11/2/21

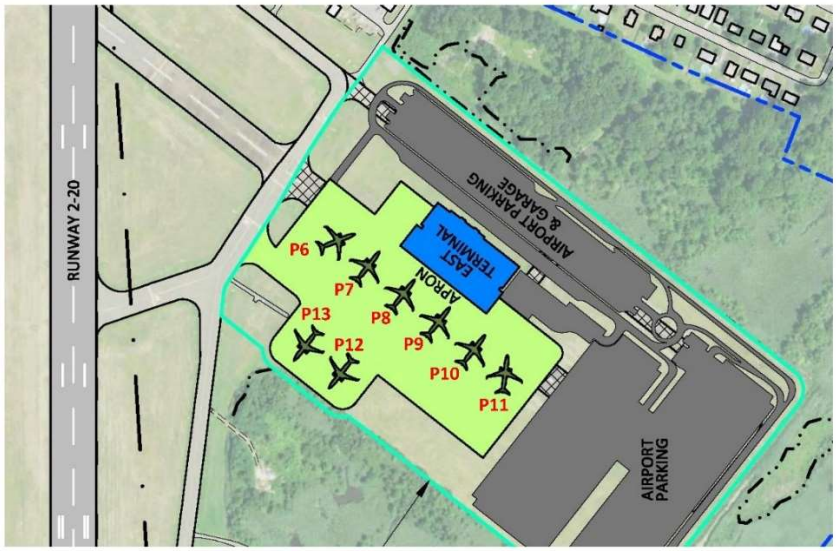


Figure 5. Proposed New Terminal Area

Source: McFarland Johnson, 2021

1.3.2 Aircraft Noise and Performance Characteristics

The AEDT database[7] contains noise and performance data for over 300 different aircraft types. The program automatically accesses the applicable noise and performance data for operations by those aircraft. Within the model, noise data are provided for slant distances[8] from 200 feet to 25,000 feet, for a particular aircraft with engines at a specific thrust level. Performance data include sets of thrust, speed, and altitude profiles for takeoffs and landings.

All air taxi, GA and military operations are modeled using standard AEDT flight profiles. For those aircraft types operating at HVN which are not directly represented in the AEDT database, the FAA has documented appropriate substitutions for noise modeling.

Avelo Airlines initiated passenger service at HVN operating Boeing 737-700W aircraft with CFM56-7B22 engines with a maximum certified thrust of 22,000 pounds. Because standard departure profiles in the AEDT database for the 737700 aircraft type assume engines with 24,000 pounds of thrust, 5 percent derated thrust profiles are used to model the Avelo 737-700W departures.

Aircraft engine thrust settings used on a specific flight are largely dependent on temperature and aircraft weight (including passenger load, baggage, and fuel). Reduced thrust translates to lower engine maintenance costs, which is why it is routinely used. Thrust affects noise and emissions, but lower thrust settings result in more time needed to climb to cruise altitude, so the net change direction cannot be assumed. The study team explored the possibility of modeling variable reduced thrusts in an effort to represent the forecast operational environment as accurately as possible. Appendix A contains a copy of the non-standard modeling request submitted to FAA, including departure procedure documentation from Avelo. While FAA approved the proposed derate and reduced thrust profiles, subsequent discussions determined that since actual aircraft reduced thrust varies widely, the best approach is a conservative estimate of noise and emissions using full thrust (which includes derate thrust for the 737700).

1.3.3 Aircraft Flight Operations

With the withdrawal of airline service at HVN by American Airlines in September 2021 and commencement of airline service by the new carrier Avelo in early November 2021, the Air Carrier forecast data in the recent Master Plan Update are already outdated. The flight operations inputs modeled for this EA are derived from two sources:

- Non-air carrier operations (classified into Air Taxi, Military and General Aviation (GA) categories) represent calendar years 2022, 2026, and 2031, as interpolated from the Master Plan Update.

[7] In this document "737-700W" and "737-800W" refer to the specific aircraft types flown by Avelo, while "737700" and "737800" refer to aircraft types contained in the AEDT database

[8] Direct distance from the aircraft to the receptor being modeled.

- Air Carrier operations represent the expected level of service to be provided by the airport's sole carrier, Avelo:
    - the Existing Conditions represent the level of Avelo service once that service is fully established[9], and
    - the four forecast scenarios represent Avelo's expected level of service in the design year (2026) and five years later (2031), with and without the proposed airport improvements.

The modeled air carrier operations are derived from the assumptions shown in **Table 6**. For the Existing Conditions, based on the Avelo flight schedule for summer 2022, the peak day and average day operations are the same, with 12 departures (and 12 arrivals) on each day of the week. The forecast Proposed Action scenarios are based on Avelo's forecast peak weekday flight schedules (as described in the letter of intent included in Appendix B). The No Action scenarios assume the same level of passenger demand, due to the underlying market Avelo has proven and foresees in each of those future years, but the No Action scenarios are configured to the constraints of the existing airport layout. The average daily operations modeled for each of the forecast scenarios, both No Action and Proposed Action, are assumed to be 80 percent of the peak day operations, based on Avelo's latest provided forecast schedule.

Table 6. Air Carrier Operations

Sources: Avelo flight schedule for 6/16/2022-9/07/2022 and Avelo letter of intent dated November 4, 2021

Scenario	Peak Day of Week Operations	Average Daily Operations	Annualized Operations
Existing Conditions	24	24.0	8,760
2026 No Action	40	32.0	11,680
2026 Proposed Action	34	27.2	9,928
2031 No Action	68	54.4	19,856
2031 Proposed Action	56	44.8	16,352
For each forecast year, the same number of passengers is assumed. Because the No Action alternative assumes full 147-seat 737-770s and a small number of 85%-capacity 737-800s, while the Proposed Action alternative assumes a mix of 147-passenger and 189-passenger aircraft, the No Action scenarios have higher numbers of aircraft operations.			

Avelo began operations at HVN using only Boeing 737-700W aircraft, due to runway length constraints. A small portion of scheduled flights have been flown by 737-800W since the beginning of July 2022, in order to meet demand; these larger aircraft are used at a reduced passenger capacity on the existing runway. As a result, the Existing Conditions and No Action scenarios assume that 95 percent of the air carrier operations are flown by 737-700W aircraft, and the remaining five percent by 737-800Ws. For the Proposed Action scenarios which include

[9] The operations level for summer 2022, which is approximately nine months after the commencement of Avelo service, is the basis for the Existing Conditions air carrier operations

runway extensions, some percentage of air carrier operations would be flown by the larger Boeing 737-800W aircraft. Under the Proposed Action, Avelo is planning to replace its 737-700Ws with 737-800Ws to the extent possible[10].

Avelo's peak day of the week schedule forecast for 2026 consists of 17 arrivals and 17 departures (34 operations) using a combination of 737-700W and 737-800W aircraft (assuming 50 percent of each), assuming the runway is extended. The study team calculated the passenger seat capacity from that fleet mix and level of service, and then assumed a fleet of 95 percent 737-700W aircraft and 5 percent 737-800W aircraft with reduced passenger capacity[11] to arrive at the 2026 No Action scenario peak weekday total of 40 operations (an additional three departures and three arrivals).

Following the same approach, the peak weekday schedule for 2031 (assuming the proposed runway extensions are built) consists of 28 arrivals and 28 departures (56 operations) using a combination of 737-700W and 737-800W aircraft (assuming 70 percent in the larger B737-800W aircraft). Calculating the passenger seat capacity as described above with 95 percent of flights in 737-700W aircraft, the result is a 2031 No Action scenario peak weekday total of 68 operations (an additional six departures and six arrivals). The study team confirmed that the additional flights can be accommodated on the existing three gates, but with significant detriment to the level of passenger service.

Table 7 presents the annual flight operations modeled for all cases and the corresponding average annual day. Flight operations totals for all three model years (Existing Conditions, 2026 and 2031) for all categories other than air carrier were interpolated from the FAA-approved HVN Master Plan Update[12] 2020, 2025, and 2030 data. It is assumed that the Proposed Action would not induce or cause changes to flight operations in the air taxi, military or GA categories.

[10] The Runway Length Eligibility memo dated December 17, 2021 from McFarland Johnson to FAA and its Attachment 1 letter from Avelo dated 12/15/2021 states that Avelo added 737-700W aircraft to their fleet solely for the ability to operate at HVN with its current runway length.

[11] assumed 162 passengers instead of the full-capacity 189 passengers

[12] prepared by McFarland Johnson dated October 2021

Table 7. Annual and Average Annual Daily Aircraft Operations for Existing and Forecast Cases

Source: MJ Airport Master Plan Forecast, Avelo flight schedule, Avelo letter of intent, and HMMH, 2021

Annual Operations						
Scenario	**Air Carrier**	**Air Taxi**	**GA Itinerant**	**GA Local**	**Military**	**Total Operations**
Existing Conditions	8,760	3,384	10,206	9,525	457	**32,332**
2026 No Action	11,680	3,335	10,267	9,582	457	**35,321**
2026 Proposed Action	9,928	3,335	10,267	9,582	457	**33,569**
2031 No Action	19,856	3,241	10,422	9,726	457	**43,702**
2031 Proposed Action	16,352	3,241	10,422	9,726	457	**40,198**
Annual Average Day Operations						
Scenario	**Air Carrier**	**Air Taxi**	**GA Itinerant**	**GA Local**	**Military**	**Total Operations**
Existing Conditions	24.0	9.3	28.0	26.1	1.3	**88.6**
2026 No Action	32.0	9.1	28.1	26.3	1.3	**96.8**
2026 Proposed Action	27.2	9.1	28.1	26.3	1.3	**92.0**
2031 No Action	54.4	8.9	28.6	26.6	1.3	**119.7**
2031 Proposed Action	44.8	8.9	28.6	26.6	1.3	**110.1**

The required AEDT inputs include counts of arrival and departure operations by each specific aircraft type separated into the day (7 am - 10 pm) and night (10 pm - 7 am) time periods that are used in calculating DNL. For air carrier operations, the flight schedule times provided by Avelo[13] determined the day/night split. The same day/night split was applied to both Avelo aircraft types across all destinations.

AEDT inputs also require distribution of departure operations into stage length[14] categories. The destinations in Avelo's letter of intent indicate that the stage lengths would be 2, 3, or 4[15], but the letter does not indicate how often or at what time of day departures would head to a given destination. Subsequent study team discussions determined the stage length distribution assumptions.

[13] Avelo's letter of intent, dated November 4, 2021, is included in Appendix A to this memorandum, as is Avelo's latest schedule for 6/16/2022-9/07/2022 operations, current as of the date of this report.

[14] Stage length 1 is defined as distances between 0 and 500 nautical miles (nmi), Stage length 2 is from 501 to 1000 nmi, Stage length 3 is from 1001 to 1500 nmi, Stage length 4 is from 1501 to 2500 nmi, Stage length 5 is from 2501 to 3500 nmi, Stage length 6 is from 3501 to 4500 nmi, and so on. In the AEDT database of standard flight profiles, many smaller aircraft types have a single representative weight used for all operations, identified as stage length 1.

[15] Florida destinations are stage length 2; Houston is stage length 3, Caribbean destinations are stage length 3 or 4, U.S. west coast destinations are stage length 4.

The air carrier fleet mix assumptions, stage length assumptions and reasoning for each scenario are as follows:

- Existing Conditions – Avelo serves multiple Florida destinations in the Existing Conditions using mostly 737-700W aircraft[16].
    - **Fleet mix split:** **95% 737-700W,** **5% 737-800W**
    - **Stage length split:** **100% stage length 2**
- 2026 No Action and 2031 No Action scenarios – Because it is assumed that the same passenger demand level would be accommodated, the stage length split is proportioned as it is in the corresponding Proposed Action scenario, but assumes that any stage 3 or stage 4 flights would be flown by 737-700 aircraft.
    - **Fleet mix split:** **95% 737-700W,** **5% 737-800W**
    - **Stage length split 2026: 87.5% stg 2 / 12.5% stg 3** for 737-700Ws
      100% stage length 2 for 737-800Ws
    - **Stage length split 2031: 67% stg 2 / 21% stg 3 / 12% stg 4** for 737-700Ws
      100% stage length 2 for 737-800Ws
- 2026 Proposed Action scenario – Avelo expects to serve destinations in Florida, Southern US, Midwestern US, and the Caribbean with the 737-700W and Eastern US destinations with the 737-800W.
    - **Fleet mix split:** **50% 737-700W,** **50% 737-800W**
    - **Stage length split:** **75% stg 2/ 25% stg 3** for 737-700Ws
      100% stage length 2 for 737-800Ws
- 2031 Proposed Action scenario - Avelo expects to serve destinations throughout the domestic US and the Caribbean with the 737-700W and Eastern US destinations with the 737-800W; any west coast destinations would therefore be serviced by 737-700Ws.
    - **Fleet mix split:** **30% 737-700W,** **70% 737-800W**
    - **Stage length split:** **60% stg 2 / 40% stg 4** for 737-700Ws
      70% stg 2 / 30% stg 3 for 737-800Ws

Table 8 lists the detailed annual air carrier operations for each modeling scenario, with the day/night split percentages shown at the bottom of each section. The No Action forecast cases show a higher night percentage for arrivals than the Proposed Action cases, because the confined space at the existing terminal only allows for three aircraft gates; the final arrivals of the day would need to occur after 10:00 pm. Conversely, the additional apron space afforded by the new terminal design would allow for more aircraft to be present at one time, with fewer late-arriving flights.

[16] Existing Conditions represent actual airport operations in spring, 2022.

Table 8. Detailed Annual Air Carrier Operations for Model Input

Source: Avelo and HMMH, 2022

AEDT Aircraft Type	Arrivals		Departures						Total Operations
	Day	Night	Day			Night			
			SL 2	SL 3	SL 4	SL 2	SL 3	SL 4	
Existing Conditions									
737700	3,121	1,040	3,468	0	0	694	0	0	8,322
737800	164	55	183	0	0	37	0	0	438
day/night split	75.0%	25.0%	83.3%			16.7%			
2026 No Action									
737700	4,993	555	4,126	589	0	728	104	0	11,096
737800	263	29	248	0	0	44	0	0	584
day/night split	90.0%	10.0%	85.0%			15.0%			
2026 Proposed Action									
737700	2,336	146	1,533	511	0	329	110	0	4,964
737800	2,336	146	2,044	0	0	438	0	0	4,964
day/night split	94.1%	5.9%	82.4%			17.6%			
2031 No Action									
737700	7,721	1,331	5,530	1,733	990	535	168	96	18,104
737800	747	129	799	0	0	77	0	0	1,752
day/night split	85.3%	14.7%	91.2%			8.8%			
2031 Proposed Action									
737700	2,102	350	1,314	0	876	158	0	105	4,906
737800	4,906	818	3,577	1,533	0	429	184	0	11,446
day/night split	85.7%	14.3%	89.3%			10.7%			

For air taxi, military and GA operations, HMMH applied the specific fleet mix, day/night split percentages, and stage length categorization as determined for the noise modeling in the HVN Master Plan Update[17]. **Table 9** displays the day/night split percentages for non-air carrier operations. The AEDT database includes performance profiles for most commercial aircraft types for a range of stage length values; however, many smaller aircraft types have a single representative weight used for all operations, identified as stage length 1. If the radar track data analysis counted departures by a particular aircraft type with a stage length exceeding the available performance profiles in AEDT, the profile for the greatest stage length available for that aircraft type in AEDT was used instead. The resulting data set includes only stage length 1 (SL1) or stage length 2 (SL2) departures for air taxi or GA operations.

[17] Fleet mix and day/night splits were based on an analysis of FAA National Offload Program (NOP) radar data for calendar year 2019. For each of the departures in the radar track data, HMMH used the destination city and great circle distance calculations to determine stage length.

Table 9. Day/Night Percentages for Non-Air Carrier Operations

Source: MJ Airport Master Plan and HMMH, 2021

	Air Taxi		GA and Military		GA Local
	Arrivals	Departures	Arrivals	Departures	
Day	79.5%	81.7%	95.8%	96.5%	99.1%
Night	20.5%	18.3%	4.2%	3.5%	0.9%

Table 10 through Table 12 compare the total non-air carrier operations by AEDT aircraft type for the three model years (Existing Conditions, 2026, and 2031). For the 2026 and 2031 forecast scenarios, it was assumed that the level of operations for air taxi, GA and military operations would be the same for both the No Action and the Proposed Action alternatives. Detailed modeled operations tables for air taxi, GA and military operations are provided in Appendix C.

Table 10. Modeled Annual Air Taxi Operations by AEDT Aircraft Type

Source: MJ Airport Master Plan Forecast, 2019 HVN radar data, and HMMH, 2021

Aircraft Category	AEDT Aircraft Type	Existing Conditions	2026 forecast[1]	2031 forecast[1]
Larger Jet	BD-700-1A10	56.1	55.3	53.7
	CL601	37.4	36.8	35.8
	CL600	65.4	64.5	62.7
Small Jet	CNA510	60.8	59.9	58.2
	CNA525C	355.3	350.1	340.2
	CNA55B	336.6	331.6	322.3
	CNA560U	285.1	281.0	273.1
	CNA560XL	51.4	50.7	49.2
	CNA680	322.5	317.8	308.9
	CNA750	182.3	179.6	174.6
	FAL900EX	9.3	9.2	9.0
	G650ER	14.0	13.8	13.4
	GIV	70.1	69.1	67.2
	GV	14.0	13.8	13.4
	LEAR35	341.2	336.2	326.8
	MU3001	140.2	138.2	134.3
Turboprop	CNA208	598.3	589.6	573.0
	DHC6	196.3	193.5	188.0
Piston	BEC58P	173.0	170.4	165.6
	CNA182	28.0	27.6	26.9
	GASEPV	14.0	13.8	13.4
Helicopter	EC130	32.7	32.2	31.3
TOTAL		**3,384.0**	**3,334.7**	**3,241.0**

[1] no difference between No Action and Proposed Action scenarios for Air Taxi operations

Table 11. Modeled Annual Military and GA Itinerant Operations by AEDT Aircraft Type

Source: MJ Airport Master Plan Forecast, 2019 HVN radar data, and HMMH, 2021

Aircraft Category	AEDT Aircraft Type	Existing Conditions	2026 forecast[1]	2031 forecast[1]
Larger Jet	BD-700-1A10	115.8	116.4	118.1
	CL600	245.1	246.5	250.1
	CL601	122.6	123.3	125.0
Small Jet	CNA500	81.7	82.2	83.4
	CNA510	54.5	54.8	55.6
	CNA525C	170.2	171.2	173.7
	CNA55B	360.9	363.0	368.2
	CNA560U	326.8	328.7	333.5
	CNA560XL	177.0	178.1	180.6
	CNA680	204.3	205.4	208.4
	CNA750	190.7	191.8	194.5
	ECLIPSE50	40.9	41.1	41.7
	FAL900EX	286.0	287.6	291.8
	G650ER	61.3	61.6	62.5
	GIIB	20.4	20.5	20.8
	GIV	306.4	308.2	312.6
	GV	197.5	198.6	201.5
	IA1125	143.0	143.8	145.9
	LEAR35	490.3	493.1	500.2
	MU3001	68.1	68.5	69.5
Turboprop	CNA208	401.7	404.0	409.9
	CNA441	47.7	47.9	48.6
	DHC6	728.6	732.8	743.3
Piston	BEC58P	551.5	554.7	562.7
	CNA172	919.2	924.5	937.8
	CNA182	258.7	260.2	264.0
	CNA206	40.9	41.1	41.7
	COMSEP	980.5	986.2	1,000.4
	GASEPF	354.1	356.1	361.2
	GASEPV	1,103.1	1,109.4	1,125.4
	PA28	1,375.5	1,383.4	1,403.3
	PA30	13.6	13.7	13.9
	PA31	95.3	95.9	97.3
Helicopter	B429	20.4	20.5	20.8
	S76	81.7	82.2	83.4
	SA330J	27.2	27.4	27.8
TOTAL		**10,663.2**	**10,724.4**	**10,879.1**

[1] no difference between No Action and Proposed Action scenarios for Military and GA itinerant operations

Table 12. Modeled Annual GA Local Operations by AEDT type

Source: MJ Airport Master Plan Forecast, 2019 HVN radar data, and HMMH, 2021

Aircraft Category	AEDT Aircraft Type	Existing Conditions	2026 forecast[1]	2031 forecast[1]
Piston	BEC58P	1,964.5	1,976.2	2,006.0
	CNA172	1,349.3	1,357.4	1,377.9
	CNA182	476.2	479.1	486.3
	CNA206	99.2	99.8	101.3
	COMSEP	2,123.2	2,135.9	2,168.1
	GASEPF	1,071.5	1,077.9	1,094.2
	GASEPV	2,440.7	2,455.3	2,492.3
TOTAL		**9,524.6**	**9,581.6**	**9,726.1**

[1] no difference between No Action and Proposed Action scenarios for local GA operations

1.3.4 Aircraft Ground Operations

As noted in Section 1.3.1, aircraft park at designated spots adjacent to the passenger terminal for "quick turns" [18] and utilize those same spots (as well as two other contingency spots, as necessary) for overnight parking. The noise modeling assumes a short period of engine idling prior to shutdown upon arrival and when starting up prior to departure.[19] Because mobile carts provide electrical power to the aircraft during the unloading and loading of passengers, no aircraft Auxiliary Power Unit (APU) is used at that time.[20] In the proposed new terminal area, shore power and pre-conditioned air will be provided at the six parking spots closest to the passenger terminal, making both mobile carts and APU use unnecessary during quick turn passenger loading and unloading.

AEDT requires several parameters as runup noise inputs, including:

- Number of annual operations
- Aircraft type
- Location
- Heading
- Power setting
- Duration
- Time (classified as daytime or nighttime, defined as 7:00 am – 10:00pm or 10:00pm – 7:00 am)

[18] The term quick turn applies to the process of disembarking passengers from an arrival flight and boarding passengers on to the same aircraft for subsequent departure.

[19] Historical noise studies prepared for HVN used low-power engine runups to represent the noise generated by the parked aircraft, in recognition of the potential noise impacts to the residents of the homes located in close proximity to the existing terminal. The Noise Exposure Map (NEM) prepared for the 2012 Part 150 study included such modeling, with noticeable effect on the DNL contours in that area. Similar runup operations were included in the recent Master Plan noise analysis.

[20] The Master Plan noise analysis had assumed 45 minutes of APU use for each quick turn (represented by 5% idle) and 30 minutes of 5% idle prior to shut down as well as 30 minutes of 5% idle at start up for each overnight. The study team for this EA decided that 5 minutes of idle at shutdown and start up is more realistic.

Table 13 through Table 17 provide a summary of the ground noise model inputs for each of the five scenarios. The terminal aircraft parking locations are labeled P1 through P13 to correspond with the labeling on **Figure 3** and **Figure 5**. In the existing terminal area, it is assumed that aircraft would be equally likely to use spots P1 through P3 for passenger loading and unloading, with the last arrival of the day remaining overnight. The locations labeled P4 and P5 are expected to be used as additional overnight parking, but aircraft would be towed to those spots after passengers disembark; therefore no engine idling is modeled there. Likewise, for the proposed new terminal area, it is assumed that aircraft would be most likely to use spots P7 through P10 for passenger loading and unloading while spots P6 and P11 would be used for passenger loading and unloading as needed; the last arrival of the day would remain in the spot overnight. The locations labeled P12 and P13 are expected to be used as additional overnight parking, but aircraft would be towed to those spots after passengers disembark; therefore no engine idling is modeled there.

Occasionally, GA aircraft perform engine maintenance runups at HVN. These are included in each of the runup inputs tables as developed for the Master Plan noise analysis; scaled up for the forecast years by applying the GA operations growth factor from the Master Plan (0.3 percent).

Table 13. Ground Noise Inputs to Noise Model: Existing Conditions Scenario

Source: Avports and HMMH, 2022

Location	AEDT Type	Aircraft Heading	Engine Thrust	Duration (minutes)	Operation	Annual Runup Operations		
						Day	Night	Total
Run-up Pad	CNA208	320	100%	5	Runup	105	0	105
	PA28	320	100%	1	Runup	30	0	30
Total GA						**135**	**0**	**135**
P1	737700	324	5%/Idle	5	Start	1156	231	1387
				5	Shutdown	1040	347	1387
P2				5	Start	1156	231	1387
				5	Shutdown	1040	347	1387
P3				5	Start	1156	231	1387
				5	Shutdown	1040	347	1387
P1	737800	324	5%/Idle	5	Start	61	12	73
				5	Shutdown	55	18	73
P2				5	Start	61	12	73
				5	Shutdown	55	18	73
P3				5	Start	61	12	73
				5	Shutdown	55	18	73
Total Air Carrier						**6935**	**1825**	**8760**

Table 14. Ground Noise Inputs to Noise Model: 2026 No Action Scenario

Source: Avports and HMMH, 2022

Location	AEDT Type	Aircraft Heading	Engine Thrust	Duration (minutes)	Operation	Annual Runup Operations		
						Day	Night	Total
Run-up Pad	CNA208	320	100%	5	Runup	106	0	106
	PA28	320	100%	1	Runup	30	0	30
Total GA						**136**	**0**	**136**
P1	737700	324	5%/Idle	5	Start	1572	277	1849
				5	Shutdown	1664	185	1849
P2				5	Start	1572	277	1849
				5	Shutdown	1664	185	1849
P3				5	Start	1572	277	1849
				5	Shutdown	1664	185	1849
P1	737800	324	5%/Idle	5	Start	83	15	97
				5	Shutdown	88	10	97
P2				5	Start	83	15	97
				5	Shutdown	88	10	97
P3				5	Start	83	15	97
				5	Shutdown	88	10	97
Total Air Carrier						**10220**	**1460**	**11680**

Table 15. Ground Noise Inputs to Noise Model: 2026 Proposed Action Scenario

Source: Avports and HMMH, 2022

Location	AEDT Type	Aircraft Heading	Engine Thrust	Duration (minutes)	Operation	Annual Runup Operations		
						Day	Night	Total
Relocated Run-up Pad	CNA208	320	100%	5	Runup	106	0	106
	PA28	320	100%	1	Runup	30	0	30
Total GA						**136**	**0**	**136**
P6	737700	84	5%/Idle	5	Start	204	44	248
				5	Shutdown	234	15	248
P7		54		5	Start	409	88	496
				5	Shutdown	467	29	496
P8		54		5	Start	409	88	496
				5	Shutdown	467	29	496
P9		54		5	Start	409	88	496
				5	Shutdown	467	29	496
P10		54		5	Start	409	88	496
				5	Shutdown	467	29	496
P11		24		5	Start	204	44	248
				5	Shutdown	234	15	248
P6	737800	84	5%/Idle	5	Start	204	44	248
				5	Shutdown	234	15	248
P7		54		5	Start	409	88	496
				5	Shutdown	467	29	496
P8		54		5	Start	409	88	496
				5	Shutdown	467	29	496
P9		54		5	Start	409	88	496
				5	Shutdown	467	29	496
P10		54		5	Start	409	88	496
				5	Shutdown	467	29	496
P11		24		5	Start	204	44	248
				5	Shutdown	234	15	248
Total Air Carrier						**8760**	**1168**	**9928**

Table 16. Ground Noise Inputs to Noise Model: 2031 No Action Scenario

Source: Avports and HMMH, 2022

Location	AEDT Type	Aircraft Heading	Engine Thrust	Duration (minutes)	Operation	Annual Runup Operations		
						Day	Night	Total
Run-up Pad	CNA208	320	100%	5	Runup	107	0	107
	PA28	320	100%	1	Runup	31	0	31
Total GA						**138**	**0**	**138**
P1	737700	324	5%/Idle	5	Start	2751	266	3017
				5	Shutdown	2574	444	3017
P2				5	Start	2751	266	3017
				5	Shutdown	2574	444	3017
P3				5	Start	2751	266	3017
				5	Shutdown	2574	444	3017
P1	737800	324	5%/Idle	5	Start	266	26	292
				5	Shutdown	249	43	292
P2				5	Start	266	26	292
				5	Shutdown	249	43	292
P3				5	Start	266	26	292
				5	Shutdown	249	43	292
Total Air Carrier						**17520**	**2336**	**19856**

Table 17. Ground Noise Inputs to Noise Model: 2031 Proposed Action Scenario

Source: Avports and HMMH, 2022

Location	AEDT Type	Aircraft Heading	Engine Thrust	Duration (minutes)	Operation	Annual Runup Operations		
						Day	Night	Total
Relocated	CNA208	320	100%	5	Runup	107	0	107
Run-up Pad	PA28	320	100%	1	Runup	31	0	31
Total GA						**138**	**0**	**138**
P6	737700	84	5%/Idle	5	Start	0	584	584
				5	Shutdown	146	438	584
P7		54		5	Start	0	584	584
				5	Shutdown	146	438	584
P8		54		5	Start	219	26	245
				5	Shutdown	210	35	245
P9		54		5	Start	438	53	491
				5	Shutdown	420	70	491
P10		54		5	Start	438	53	491
				5	Shutdown	420	70	491
P11		24		5	Start	438	53	491
				5	Shutdown	420	70	491
P6	737800	84	5%/Idle	5	Start	511	61	572
				5	Shutdown	491	82	572
P7		54		5	Start	1022	123	1145
				5	Shutdown	981	164	1145
P8		54		5	Start	1022	123	1145
				5	Shutdown	981	164	1145
P9		54		5	Start	1022	123	1145
				5	Shutdown	981	164	1145
P10		54		5	Start	1022	123	1145
				5	Shutdown	981	164	1145
P11		24		5	Start	511	61	572
				5	Shutdown	491	82	572
Total Air Carrier						**14308**	**2044**	**16352**

1.3.5 Runway Utilization Rates

For the Master Plan Update, HMMH derived Existing Conditions runway usage by aircraft category from the analysis of 2019 radar flight track data, which contained 11,835 arrival and departure operations with enough information to categorize the flight. The radar flight track data also included almost 4,500 flight tracks that were identifiable from their geometry as local circuit patterns; these served as the data source for local operations. The same runway use percentages were applied to the modeled forecast operations in the Master Plan noise analysis.

For this EA, the non-air carrier operations were assumed to use the runways as they did in 2019 for the Existing Conditions and for each of the forecast scenarios. **Table 18** presents the runway usage rates modeled for each of the four non-air carrier aircraft categories: larger jets, small jets, turboprops, and piston-engine aircraft. The same runway use percentages are applied to

the modeled non-air carrier operations in all of the forecast scenarios, assuming that the proposed action will not change non-air carrier runway use.

Table 18. Existing and Forecast Scenario Runway Use Percentages for Non-Air Carrier Aircraft

Source: 2019 HVN radar flight track data, HMMH, 2021

Aircraft Category	Arrivals		Departures		Local Circuits	
	2	20	2	20	2	20
Larger Jets	61.4%	38.6%	34.4%	65.6%	0.0%	0.0%
Small Jets	51.0%	49.0%	50.4%	49.6%	0.0%	0.0%
Turboprops	55.5%	44.5%	56.5%	43.5%	0.0%	0.0%
Pistons	34.8%	65.2%	36.8%	63.2%	40.7%	59.3%

Runway use by the air carrier operations, all new Avelo flights, may differ from the 2019 jet use patterns. For the Existing Conditions, the air carrier operations were assumed to have approximately the same runway usage as was observed for the larger jets in the 2019 radar flight track data. For the forecast scenarios, the study team considered:

- Potential changes in runway use between the No Action and the Proposed Action alternatives due to airport improvements. Runway use is dictated by wind conditions and air traffic constraints[21]. The proposed project will not affect either of those constraints. Given the position of the proposed new terminal there is not a significant operational benefit that would influence runway preference.
- Potential changes in runway use between the Existing Conditions and either forecast year due to changes in the forecast flight schedule or forecast fleet mix. As noted above, wind conditions and air traffic constraints are expected to continue to dictate runway use. However, the study team acknowledged that the more traffic the runway handles, the less likely it is for the air traffic control tower to reverse the flow of the runway. Given that the majority of air carrier flights would have southern destinations, the majority south flow departure runway usage from the Existing Conditions was maintained, and the arrival runway use estimates were adjusted to moderately more south flow in the future year scenarios.
- Any differences in runway use between the daytime and nighttime periods for any of the scenarios. The study team did not expect any changes to runway use by time period.

Table 19 shows the resulting estimated modeled runway use percentages for Avelo flights for each scenario. The study team did not expect any changes to runway use to occur either as a result of the proposed project or for either of the future No Action scenarios.

[21] At HVN, the major air traffic considerations are from the New York metropolitan area airspace

Table 19. Modeled Runway Use Percentages for Air Carrier Aircraft

Source: 2019 HVN radar flight track data, HMMH, 2021

Scenario	Arrivals		Departures	
	2	20	2	20
Existing Conditions	62%	38%	34%	66%
2026 No Action	56%	44%	34%	66%
2026 Proposed Action	56%	44%	34%	66%
2031 No Action	56%	44%	34%	66%
2031 Proposed Action	56%	44%	34%	66%

Helicopter operations were not modeled using Runway 02-20; instead, a spot on the East Ramp was modeled as a "helipad" (marked with a red dot on **Figure 2** and **Figure 4**) for representing the noise from the small number of helicopter operations at HVN. There were about 50 identifiable helicopter flights in the 2019 radar flight track data, which informed the modeling assumptions for 129 annual helicopter flights in the Existing Conditions. The same helicopter usage was applied to all forecast helicopter operations.

1.3.6 Flight Track Geometry and Utilization Rates

For the Master Plan Update, HMMH developed flight track geometry and flight track utilization rates using the 2019 radar data. That process sorted flights into six groups: jet arrivals, jet departures, non-jet fixed-wing aircraft arrivals, non-jet fixed-wing aircraft departures, local circuit operations (all of which were by non-jets), and helicopters. In the Master Plan modeling process, the same flight track geometry and track use percentages were applied to the modeled forecast operations as for the existing conditions. The flight track points near the runway were modified to adjust to the new runway thresholds resulting from the planned runway extensions at both ends of Runway 02-20; the model flight tracks did not shift in relation to locations on the ground beneath the flight paths.

For this EA, all non-air carrier operations are modeled using the same flight tracks and flight track usage rates as derived from the 2019 radar data. The air carrier operations, all of which are new Avelo flights, are modeled using the previously developed model jet flight tracks, shown in **Figure 6 through Figure 9**. In each figure, the 2019 radar tracks, "bundled" by common geometry, are overlaid by their representative model tracks. The backbone track for each bundle is portrayed by a bold line, the associated dispersion tracks by dashed lines. The name of the bundle is marked on each backbone track. Each of the flight track figures is superimposed by a table listing the flight track bundle names, the number of model tracks (usually 3) within the bundle, and the distribution percentage to be applied to the Avelo flights for each of the EA scenarios.

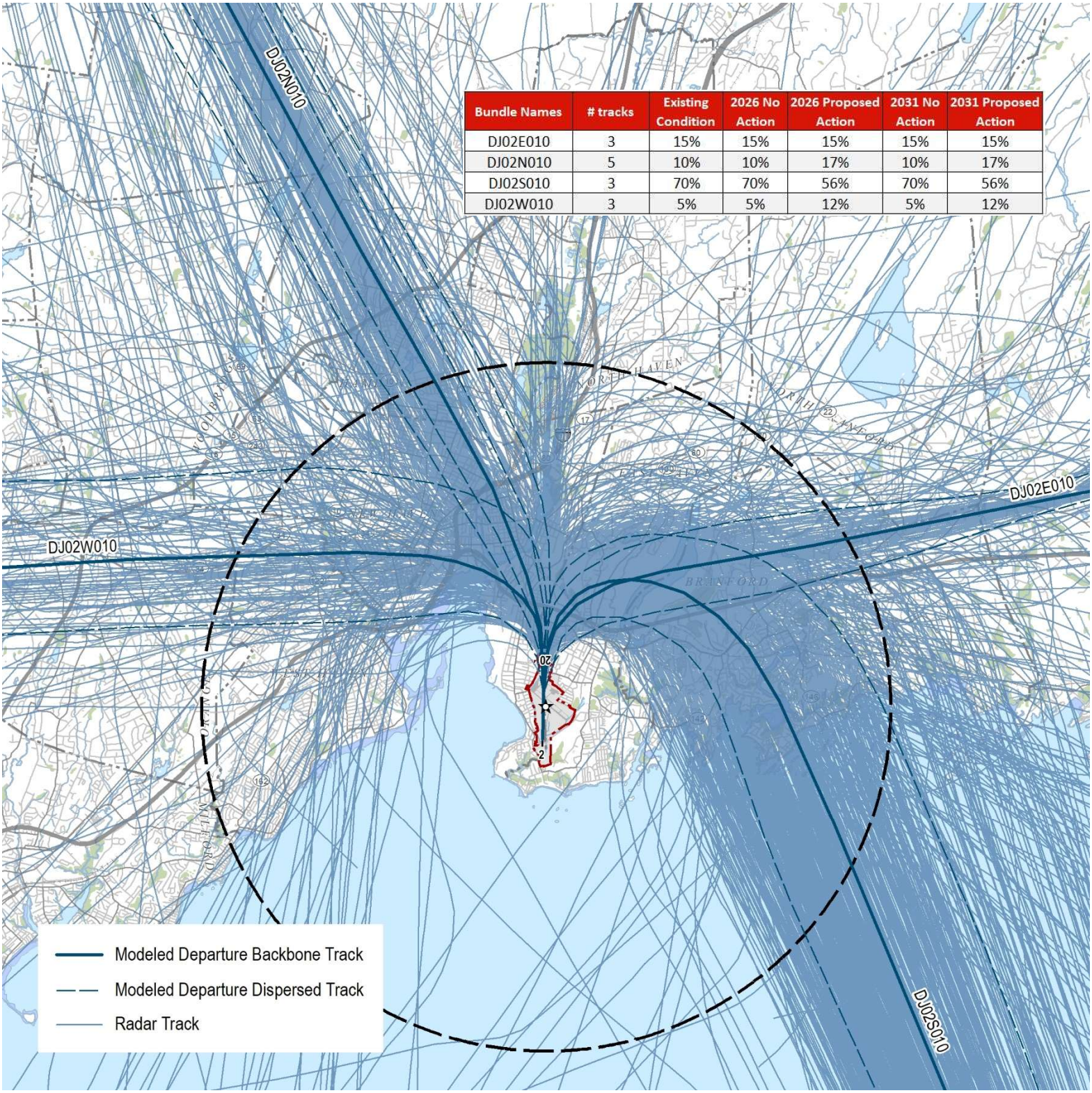
The study team estimated flight track usage rates for the air carriers, taking aircraft performance capabilities and flight origins/destinations into account. For the Existing Conditions air carrier flights, the majority of the traffic was assumed to use departure routes to the south and arrival routes from the south, with a minimum of traffic on routes to or from the north or east.

The study team considered:

- Potential changes in flight track use between the No Action and the Proposed Action alternatives due to airport improvements. The runway extension would allow Avelo to add flights to and from west coast destinations. Because of its proximity to the New York metropolitan area, westbound traffic from HVN may initially head northward; the reverse is true for arrivals to HVN. Therefore, the flight track use for the Proposed Action scenarios include a shift of a proportion of the operations onto western tracks and northern tracks from southern tracks.
- Potential changes in flight track use between the Existing Conditions and either forecast year due to changes in the forecast fleet mix. There is no reason to anticipate that the expected growth in operations would have an effect on the distribution of aircraft over the model flight tracks.
- Any differences in runway use between the daytime and nighttime periods for any of the scenarios. The study team did not expect any changes to flight track use by time period.

The flight track usage rates modeled for the air taxi, military and GA (non-air carrier) aircraft are provided in Appendix D, along with the flight track maps for non-jets. The same flight track use percentages are applied to the modeled non-air carrier operations in all of the forecast scenarios, assuming that the proposed action will not change non-air carrier flight patterns.

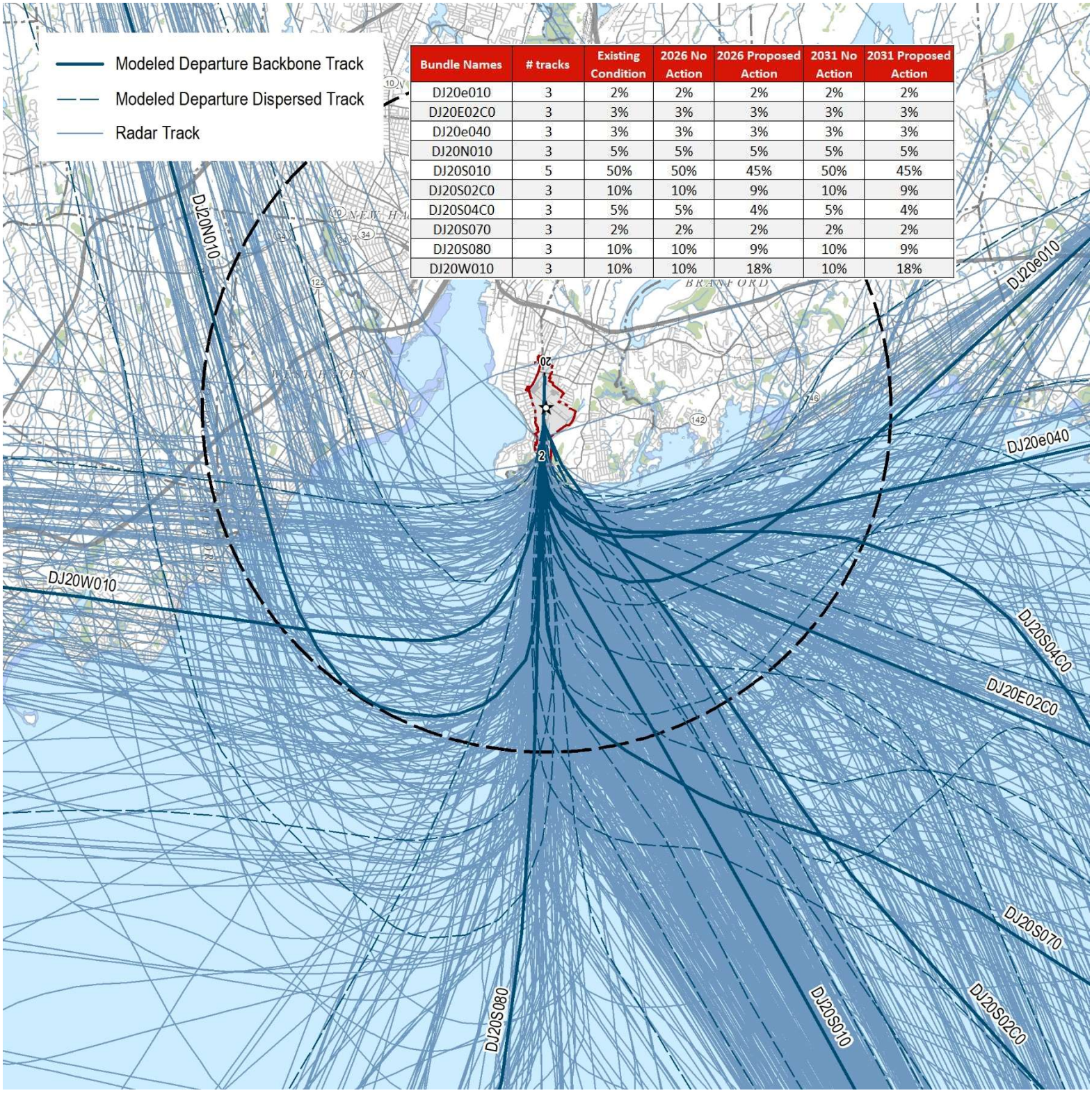
In the modeling process, the straight flight track segment representing the takeoff or landing was adjusted by the length of the proposed runway extension. Therefore, the flight track locations in relation to ground landmarks remain unchanged from the No Action to the Proposed Action.



Bundle Names	# tracks	Existing Condition	2026 No Action	2026 Proposed Action	2031 No Action	2031 Proposed Action
DJ02E010	3	15%	15%	15%	15%	15%
DJ02N010	5	10%	10%	17%	10%	17%
DJ02S010	3	70%	70%	56%	70%	56%
DJ02W010	3	5%	5%	12%	5%	12%

Figure 6. Jet Departure Flight Tracks from Runway 2

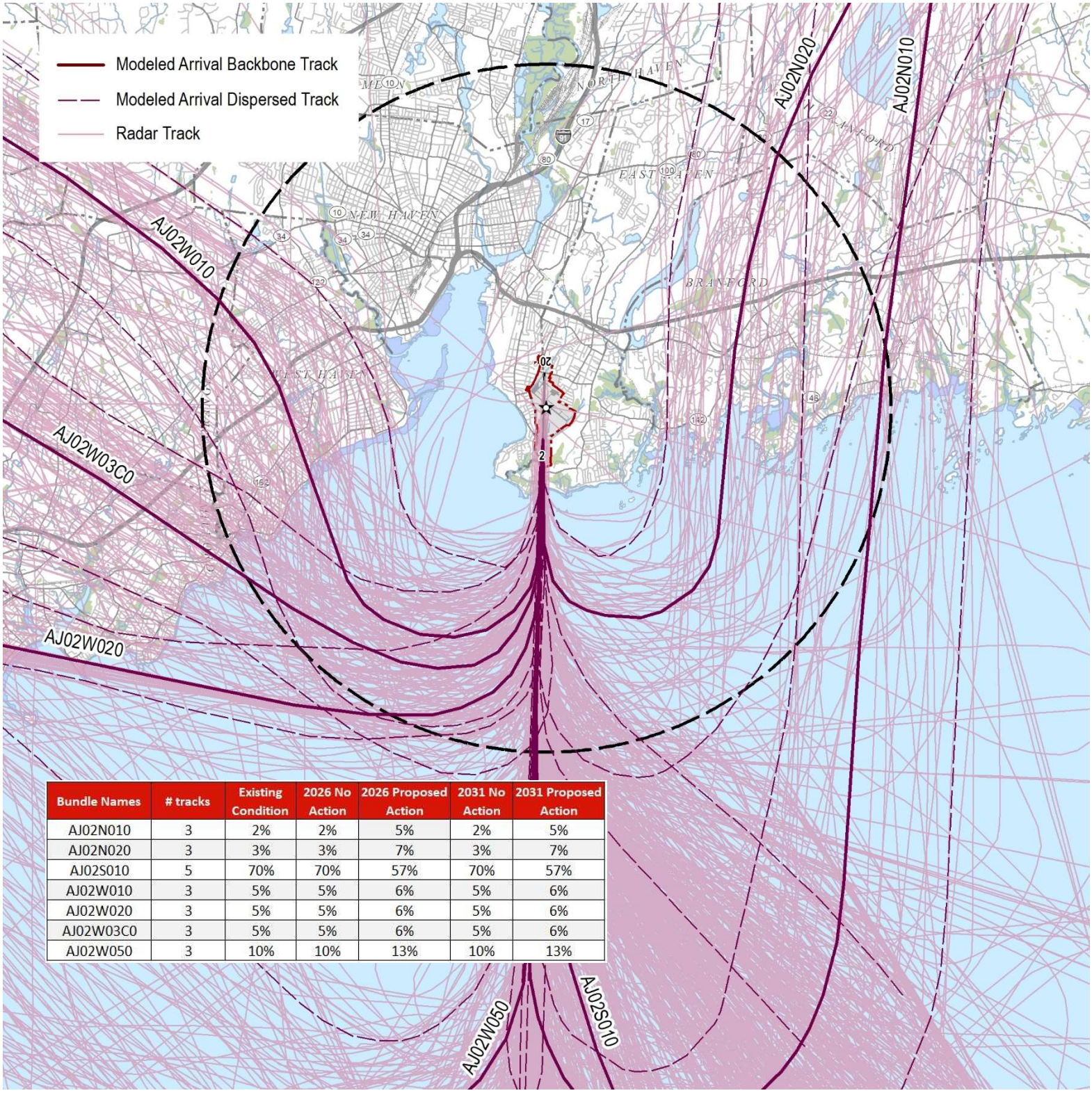
Source FAA radar data, 2019 and HMMH analysis for Master Plan, 2020



Bundle Names	# tracks	Existing Condition	2026 No Action	2026 Proposed Action	2031 No Action	2031 Proposed Action
DJ20e010	3	2%	2%	2%	2%	2%
DJ20E02C0	3	3%	3%	3%	3%	3%
DJ20e040	3	3%	3%	3%	3%	3%
DJ20N010	3	5%	5%	5%	5%	5%
DJ20S010	5	50%	50%	45%	50%	45%
DJ20S02C0	3	10%	10%	9%	10%	9%
DJ20S04C0	3	5%	5%	4%	5%	4%
DJ20S070	3	2%	2%	2%	2%	2%
DJ20S080	3	10%	10%	9%	10%	9%
DJ20W010	3	10%	10%	18%	10%	18%

Figure 7. Jet Departure Flight Tracks from Runway 20

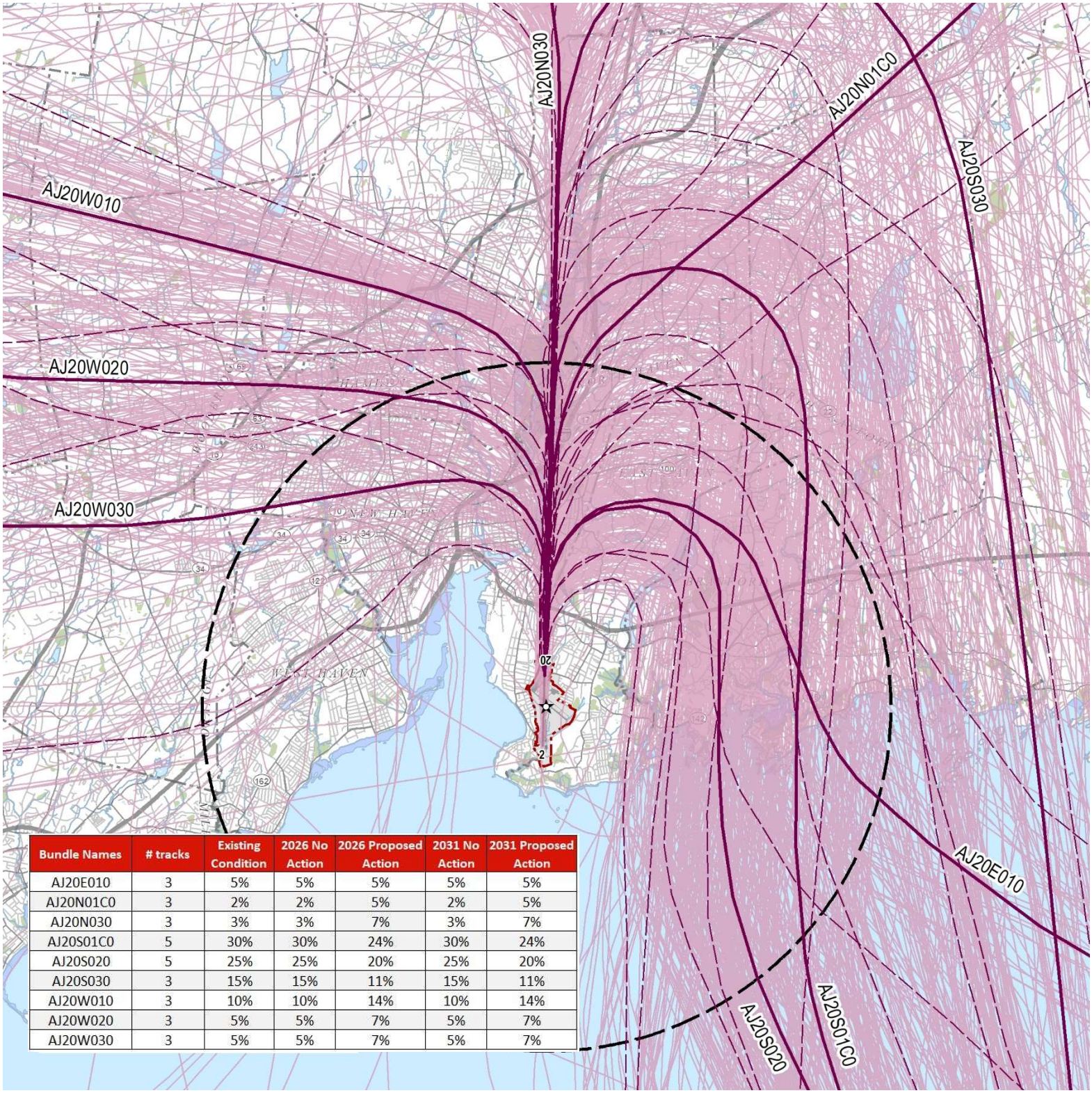
Source: FAA radar data, 2019 and HMMH analysis for Master Plan, 2020



Bundle Names	# tracks	Existing Condition	2026 No Action	2026 Proposed Action	2031 No Action	2031 Proposed Action
AJ02N010	3	2%	2%	5%	2%	5%
AJ02N020	3	3%	3%	7%	3%	7%
AJ02S010	5	70%	70%	57%	70%	57%
AJ02W010	3	5%	5%	6%	5%	6%
AJ02W020	3	5%	5%	6%	5%	6%
AJ02W03C0	3	5%	5%	6%	5%	6%
AJ02W050	3	10%	10%	13%	10%	13%

Figure 8. Jet Arrival Flight Tracks to Runway 2

Source: FAA radar data, 2019 and HMMH analysis for Master Plan, 2020



Bundle Names	# tracks	Existing Condition	2026 No Action	2026 Proposed Action	2031 No Action	2031 Proposed Action
AJ20E010	3	5%	5%	5%	5%	5%
AJ20N01C0	3	2%	2%	5%	2%	5%
AJ20N030	3	3%	3%	7%	3%	7%
AJ20S01C0	5	30%	30%	24%	30%	24%
AJ20S020	5	25%	25%	20%	25%	20%
AJ20S030	3	15%	15%	11%	15%	11%
AJ20W010	3	10%	10%	14%	10%	14%
AJ20W020	3	5%	5%	7%	5%	7%
AJ20W030	3	5%	5%	7%	5%	7%

Figure 9. Jet Arrival Flight Tracks to Runway 20

Source: FAA radar data, 2019 and HMMH analysis for Master Plan, 2020

1.3.7 Meteorological Conditions

AEDT uses meteorological data to adjust aircraft performance and sound propagation. The FAA requires the use of the provided AEDT weather information. The AEDT database includes 10-year average[22] weather for each airport. These data for HVN in AEDT version 3d are:

- Temperature: 53.69° F
- Station Pressure: 1015.46 mbar
- Sea Level Pressure: 1016.67 mbar
- Dew point: 44.33° F
- Relative humidity: 70.52%
- Wind speed 6.01 knots

1.3.8 Terrain Data

AEDT uses terrain data to adjust the aircraft-to-ground path length, which takes terrain variation relative to the airfield elevation into account. The terrain data inputs to AEDT for this study were obtained from the United States Geological Survey 3D Elevation Products dataset with 1/3 arc second (approximately 33 feet) resolution covering the Study Area.

1.4 Noise Analysis Results

DNL contours are the primary mechanism for evaluating airport noise in this EA. A supplemental grid point analysis investigates precisely where and to what extent noise exposure changes would be expected to occur. An inventory of the acreage, population and housing units within the various bands of noise exposure provides additional information.

1.4.1 DNL Contours

As noted in Section 1.1, all aircraft activity was modeled with AEDT version 3d. **Figures 10 through 14** present the required DNL contours of 65 dB, 70 dB, and 75 dB. FAA considers a DNL of 65 dB as the threshold below which all land uses are compatible. **Figure 10** depicts the Existing Conditions noise environment, representing 2022 aircraft operations with the summer 2022 scheduled level of air carrier operations. **Figure 11** presents the No-Action Alternative DNL contours for the forecast design year, 2026. **Figure 12** shows the corresponding Proposed Action Alternative DNL contours for 2026. Likewise, **Figure 13** and **Figure 14** portray the DNL contours for the No-Action Alternative and Proposed Action Alternative, respectively, for 2031, representing the forecast five years beyond the target design year.

HVN has an ongoing Residential Sound Insulation Program (RSIP) based on the 2012 Part 150 study. Homes that have participated in the voluntary RSIP are shown on each figure. These properties are considered compatible with aircraft noise.

[22] For the 10-year period 2011 through 2020



Figure 10. Existing Conditions (2022) DNL Contours
Source: HMMH analysis, 2022



Figure 11. 2026 Forecast No-Action Alternative DNL Contours
Source: HMMH analysis, 2022



Figure 12. 2026 Forecast Proposed Action Alternative DNL Contours
Source: HMMH analysis, 2022

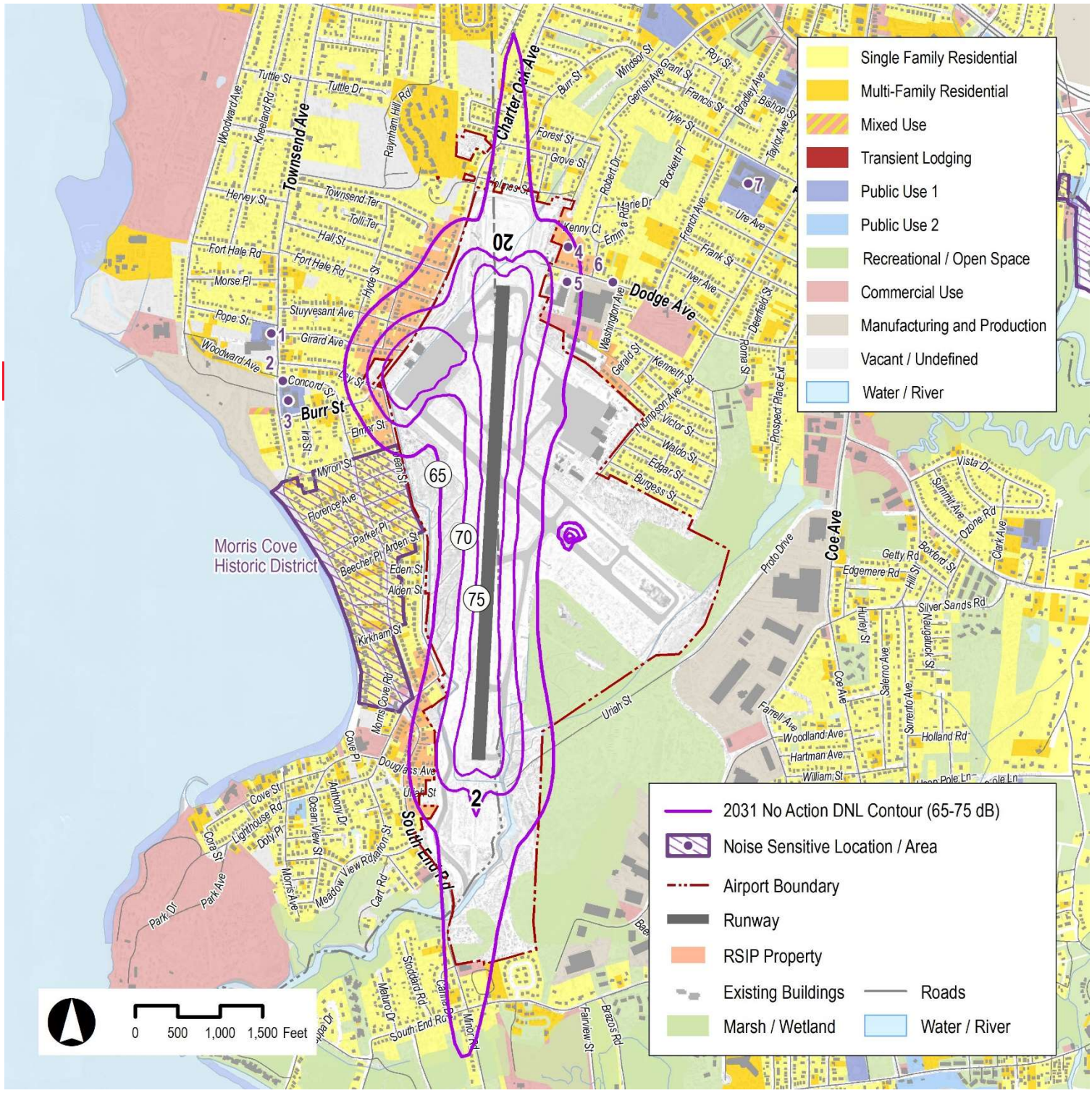


Figure 13. 2031 Forecast No-Action Alternative DNL Contours
Source: HMMH analysis, 2022

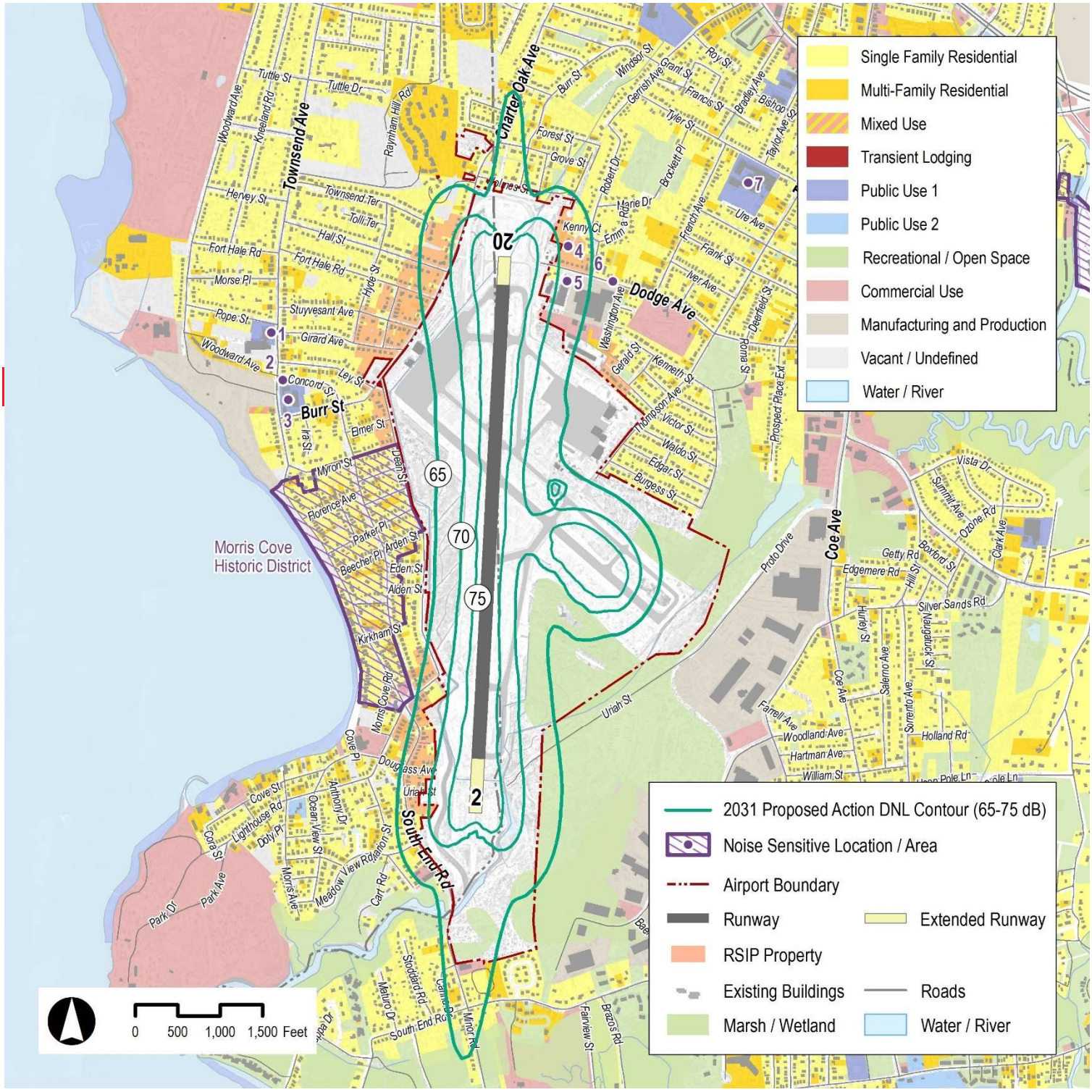


Figure 14. 2031 Forecast Proposed Action Alternative DNL Contours
Source: HMMH analysis, 2022

Figure 15 and **Figure 16** present comparisons of the No-Action and Proposed Action Alternatives for the design year 2026 and forecast year 2031, respectively. The changes in noise exposure due to the proposed runway extensions and the relocation of the passenger terminal are observable on the contour comparison figures.

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. This is due primarily to the greater number of air carrier operations modeled in the No Action alternative inputs. As described in Section 1.3.1, 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 2031 No Action and Proposed Action contours extend to approximately the same point along the 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.

As seen on the north end, 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 northward from Runway 02. Those "shoulders" extend farther southward 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.

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 portion of the DNL 65 contours representing terminal area ground noise do not extend into neighboring residential areas.



Figure 15. Comparison of No-Action to Proposed Action DNL Contours for Forecast Year 2026

Source: HMMH analysis, 2022

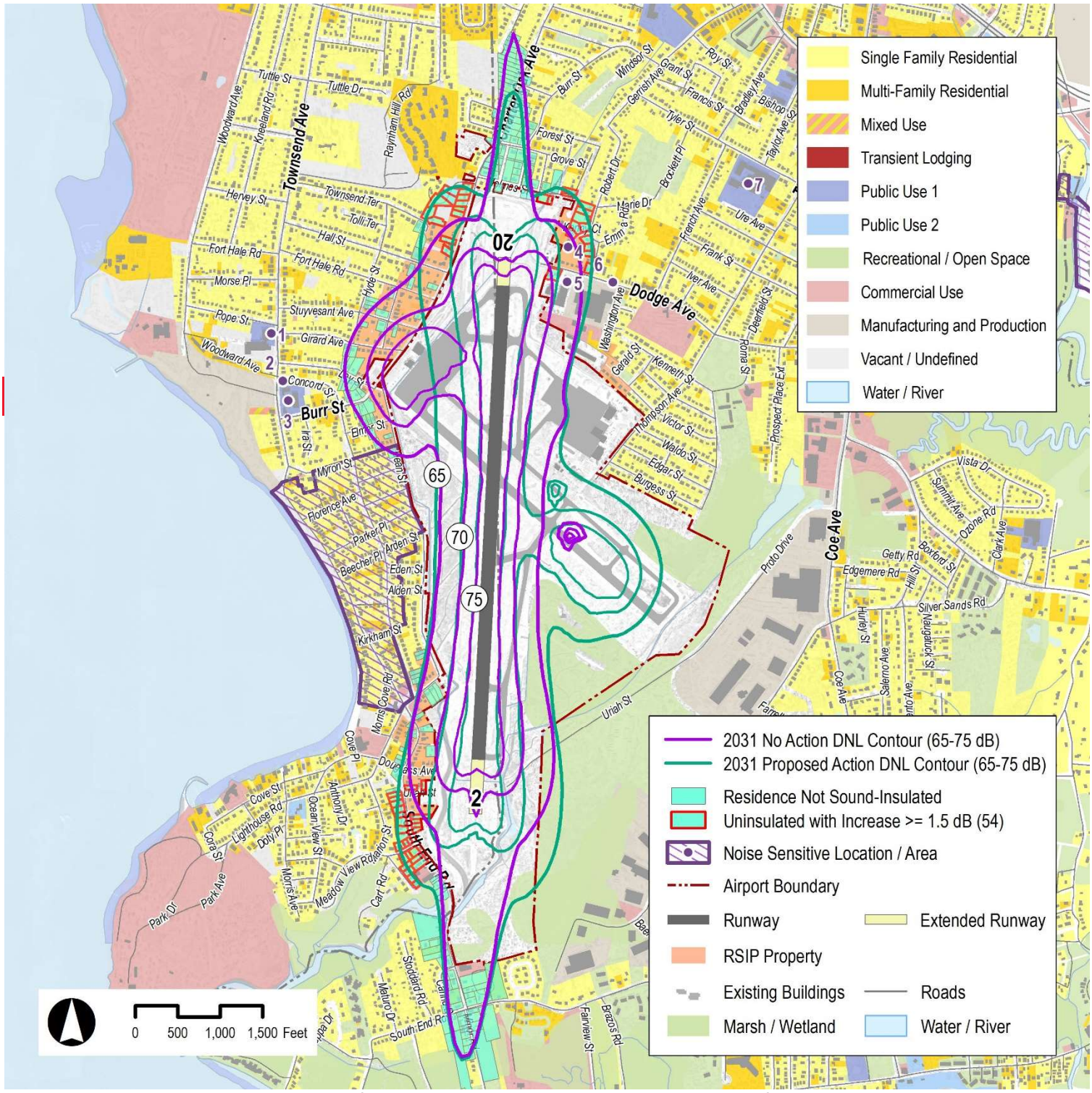


Figure 16. Comparison of No-Action to Proposed Action DNL Contours for Forecast Year 2031

Source: HMMH analysis, 2022

1.4.2 Grid Point Analysis

The goal of the grid point analysis is to compare the No-Action and Proposed Action Alternatives, using FAA's thresholds of significance. **Table 20** defines the significance threshold for changes in noise in accordance with FAA Order 1050.1F. 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 is considered significant. **Table 20** also lists FAA-defined reportable changes of noise levels.

Table 20. FAA Thresholds for Significant or Reportable Changes in Noise

Source: FAA Order 1050.1F Desk Reference, Chapter 11

	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

To identify any regions meeting the FAA criteria for significant or reportable changes in noise because of the Proposed Action, HMMH compared the underlying noise exposure grids that inform the contours**. Figure 17** and **Figure 18** present the No-Action to Proposed Action contour comparisons again, with off-airport grid differences color-coded according to the criteria listed in **Table 20**.

The red dots on **Figure 17** and **Figure 18** indicate the off-airport regions within the Proposed Action DNL 65 contour that would be expected to experience a significant impact as a result of the proposed changes. Those regions are located at either end of the runway, where the DNL 65 contour has a rounded "shoulder" shape that is the result of start-of-takeoff-roll noise emanating from jet aircraft departing in the opposite direction.

The green dots on the west side of the airport indicate areas expected to experience a significant decrease in DNL as a result of the proposed action. Surrounding that region, blue and purple dots identify areas with reportable noise decreases. The orange and lilac-colored dots on the east side of the airport identify areas with reportable noise increases.

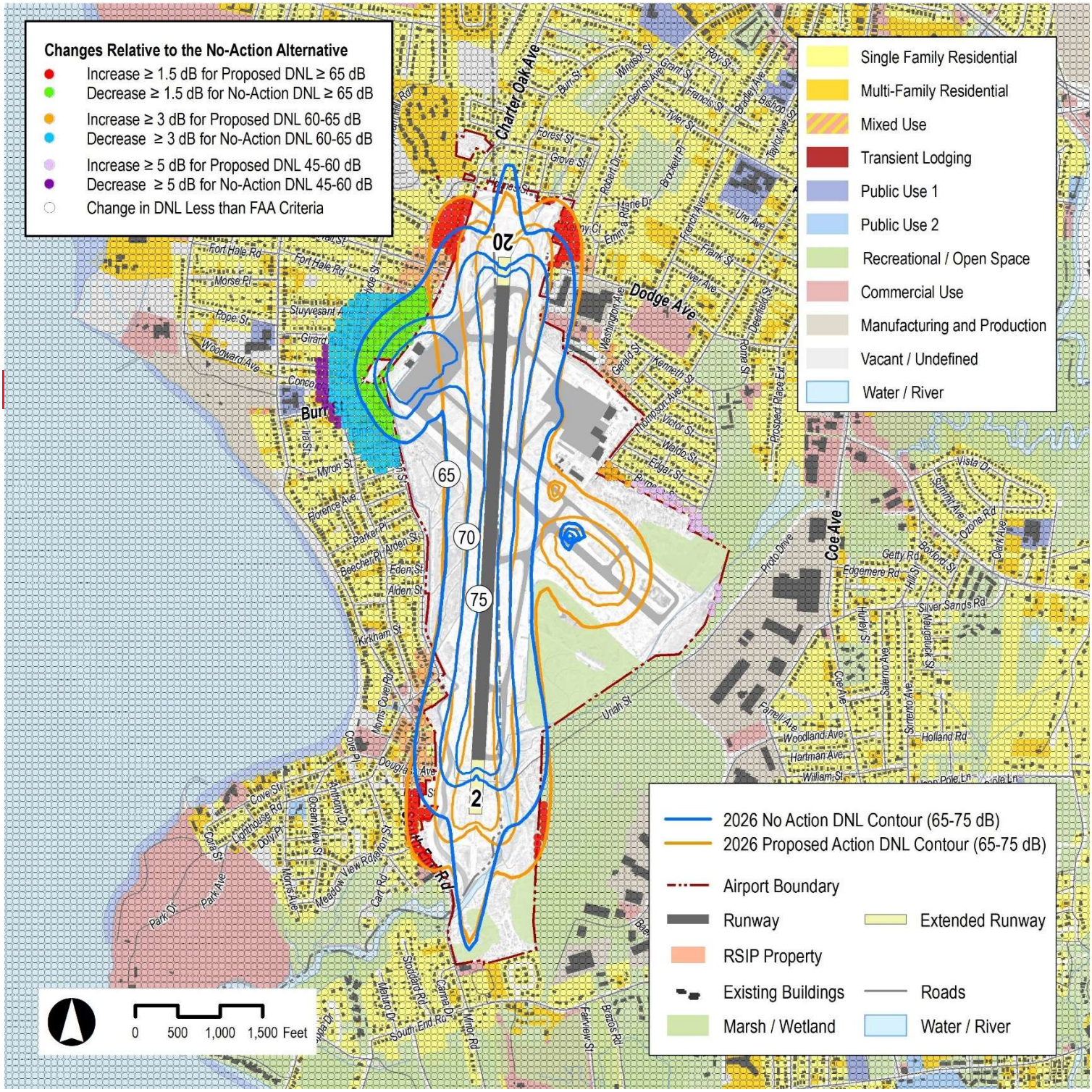


Figure 17. Grid Point Differences Between No-Action and Proposed Action for Forecast Year 2026

Source: HMMH analysis, 2022

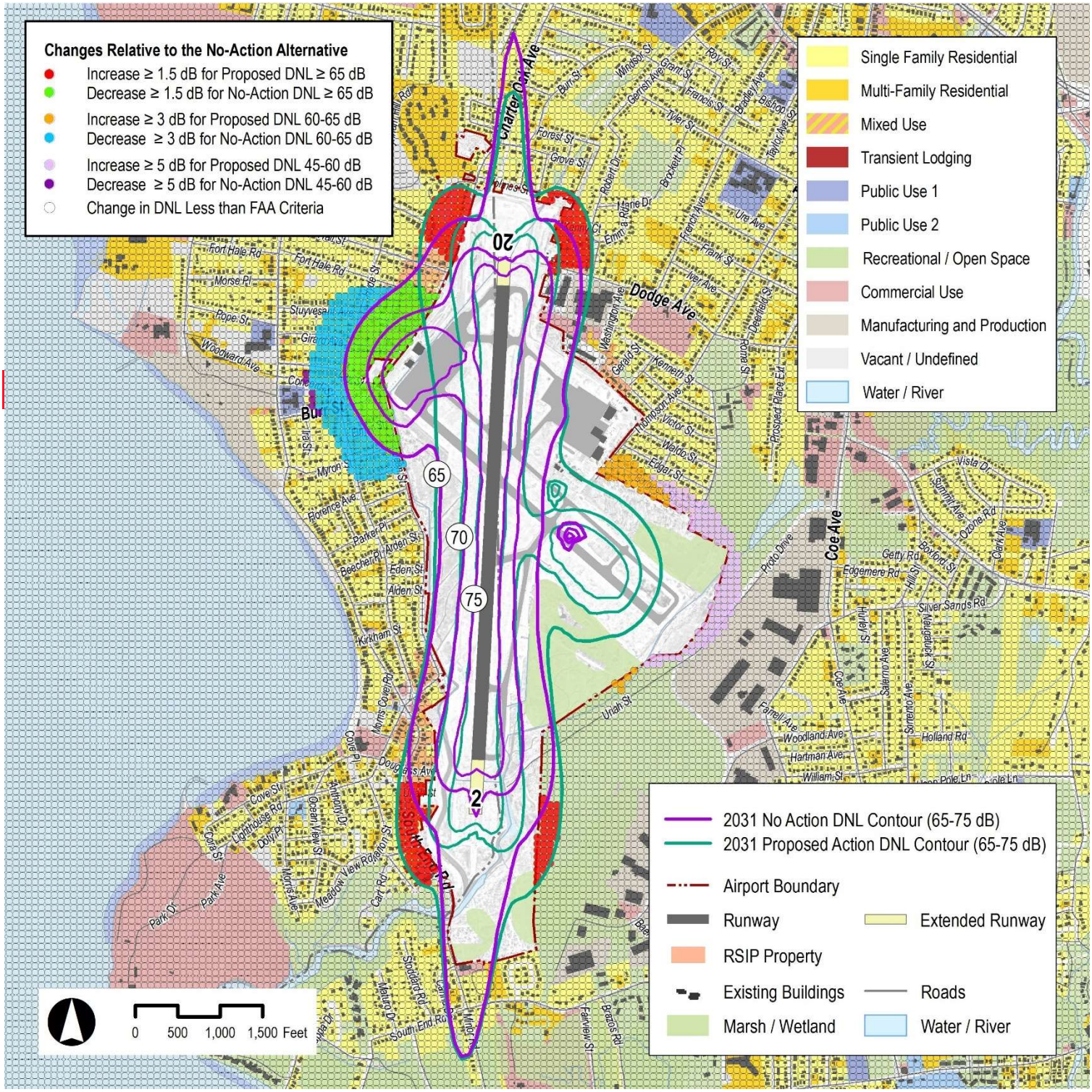


Figure 18. Grid Point Differences Between No-Action and Proposed Action for Forecast Year 2031

Source: HMMH analysis, 2022

1.4.3 Population Inventory

For each of the five sets of DNL contours prepared for this EA, HMMH prepared an inventory of housing units and population[23] in the residential land use areas exposed to 65 dB DNL or higher. First, Geographic Information Systems (GIS) tools identified all 2020 US Census Blocks[24] that are completely or partially contained within the noise exposure area defined by the DNL contour lines. The population and housing units data for those blocks were then used to determine a "population factor" (number of people per household) of 2.40 for the affected area.

Next, HMMH intersected residential parcel boundaries[25] with the various DNL noise contour intervals (65-70, 70-75, and >75 dB DNL). If a contour line crosses a parcel boundary, the parcel is counted in the higher interval. The parcels' housing unit values are summed and presented in **Table 21**. Multiplying the housing units count by the population factor of 2.40 people per household provides the estimated residential population in the table.

The increase (or decrease) columns in the table indicate the change that would be attributable to the Proposed Action as opposed to No Action for the two forecast years. 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. This is due to the shift in noise exposure area relating to the proposed relocation of the terminal. That shift is somewhat counteracted by other shifts of the contours in areas at the north and south ends of the airport which are due mainly to the runway extensions.

Table 21 also provides the off-airport land acreage within each contour interval. The majority of the land within the 65 DNL contours is on airport property; the airport property line is clearly visible on **Figure 17** and **Figure 18** for reference. For forecast year 2026, the Proposed Action 65 DNL contour encompasses slightly less off-airport area than the No Action alternative. For 2031, the Proposed Action alternative includes 2.3 acres more.

Since 2014, HVN has been implementing a Residential Sound Insulation Program (RSIP) as part of its Noise Compatibility program. Each identified residential property in **Figure 10 through Figure 14** is color coded a shade of orange if the property has been included in the RSIP. Once a residence has received airport-provided sound insulation treatment, the property is considered mitigated and compatible with aircraft noise.

[23] Population estimates are based on 2020 U. S. census data.

[24] Census Blocks are the smallest census enumeration unit

[25] Parcel data source: https://koordinates.com/data/global/north-america/united-states/connecticut/new-haven/

Table 21. Comparison of Noise Exposure in terms of Population and Acreage

Sources: HMMH analysis, 2022

Noise Exposure Interval	Existing Conditions (2022)	Design Year (2026)			5-Year Forecast (2031)		
		No-Action Alternative	Proposed Action Alternative	increase (or decrease)	No-Action Alternative	Proposed Action Alternative	increase (or decrease)
Housing Units Inventory							
75 DNL or	2	1	0	-1	5	0	-5
70-75 DNL	14	17	3	-14	29	17	-12
65-70 DNL	110	125	100	-25	253	221	-32
total 65 DNL or greater	**126**	**143**	**103**	**-40**	**287**	**238**	**-49**
Population Inventory							
75 DNL or	5	2	0	-2	12	0	-12
70-75 DNL	34	41	7	-34	70	41	-29
65-70 DNL	264	300	240	-60	607	530	-77
total 65 DNL or greater	**303**	**343**	**247**	**-96**	**689**	**571**	**-118**
Off- Airport Acreage Inventory							
75 DNL or	0.4	0.4	0.0	-0.4	1.2	0.0	-1.2
70-75 DNL	3.2	3.6	0.8	-2.8	6.5	3.3	-3.2
65-70 DNL	25.0	30.4	32.8	2.4	68.2	74.9	6.7
total 65 DNL or greater	**28.6**	**34.4**	**33.6**	**-0.8**	**75.9**	**78.2**	**2.3**

Figure 15 and **Figure 16** include light blue color coding for residential properties within the 65 DNL contour for one or both of the alternatives which have not been previously sound-insulated because:

- the property was not previously identified as being exposed to DNL 65 or greater on the airport's Noise Exposure Map,
- the homeowner declined to participate in the program, or
- the structure was not eligible for participation[26].

The red-outlined residential parcels on **Figure 15** and **Figure 16** are in the area which would be exposed to a significant noise increase under the Proposed Action alternative as compared to the No Action alternative for that analysis year. That same area is indicated by the red dots on Figure **17** and **Figure 18.**

Table 22 presents counts of the identified residential properties within each contour interval, categorized as previously sound-insulated or not sound-insulated, and indicating whether the property is in New Haven or in East Haven. Unless deemed ineligible for structural reasons,

[26] In order to be eligible a home must be located within the NEM 65 DNL contour, constructed prior to October 1, 1998, meet local building codes, and have the average noise level in habitable rooms at or above 45 DNL (with windows closed).

residences not previously treated would be considered in future phases of the airport's RSIP. The far-right column of **Table 22** lists the estimated number of residences which have not been sound-insulated and which would be exposed to a significant noise increase under the Proposed Action alternative as compared to the No Action alternative for that analysis year.

Table 22. Mitigation Status of Noise-Exposed Residential Units

Source: Avports RSIP records, HMMH 2022

Noise Exposure Interval	**Total estimated residential units**	**Previously sound-insulated**		Not sound-insulated		Not sound-insulated in area of significant impact	
		New Haven	East Haven	New Haven	East Haven	New Haven	East Haven
Existing Conditions (2022)							
75 DNL or greater	**2**	2	0	0	0		
70-75 DNL	**14**	13	0	1	0		
65-70 DNL	**110**	79	6	23	2		
total ≥ 65 DNL	**126**	**94**	**6**	**24**	**2**		
No-Action Alternative (2026)							
75 DNL or greater	**1**	1	0	0	0		
70-75 DNL	**17**	14	0	2	1		
65-70 DNL	**125**	88	9	24	4		
total ≥ 65 DNL	**143**	**103**	**9**	**26**	**5**		
Proposed Action Alternative (2026)							
75 DNL or greater	**0**	0	0	0	0	0	0
70-75 DNL	**3**	2	0	0	1	0	0
65-70 DNL	**100**	49	13	33	5	20	5
total ≥ 65 DNL	**103**	**51**	**13**	**33**	**6**	**20**	**5**
No-Action Alternative (2031)							
75 DNL or greater	**5**	5	0	0	0		
70-75 DNL	**29**	26	0	2	1		
65-70 DNL	**253**	97	11	67	78		
total ≥ 65 DNL	**287**	**128**	**11**	**69**	**79**		
Proposed Action Alternative (2031)							
75 DNL or greater	**0**	0	0	0	0	0	0
70-75 DNL	**17**	9	4	3	1	1	1
65-70 DNL	**221**	58	10	80	73	39	13
total ≥ 65 DNL	**238**	**67**	**14**	**83**	**74**	**40**	**14**

As noted in the introduction to this document, this noise analysis focused exclusively on airport-related noise sources. The Proposed Action is not expected to change non-airport noise sources such as commercial activity, highway traffic, or noise from local roadways. However, ambient noise levels from those sources do contribute to the overall acoustic environment. Residential locations within the aircraft noise 60 DNL or 65 DNL contours that are also in close proximity to busy streets or highways could experience actual DNL values higher than depicted on the contour map.

1.4.4 Noise Sensitive Sites

Seven noise sensitive sites and a historic district were identified within the study area described in Section 1.2. These are identified in **Table 23**; the seven sites are assigned numbers that correspond to the point labels on the DNL contour figures (**Figure 10 through Figure 16)**. The Morris Cove Historic District is immediately west of the airport and is marked on the contour maps with cross-hatching. As discussed in Section 1.1.1, the 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 23.** 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.

Two of the sites are within the 65 to 70 DNL interval under either alternative for the 2026 and 2031 forecast scenarios. Ms. Shaina's Neighbor School (Site 4 on the contour figures) appears to be housed on a parcel that has been mitigated for noise under HVN's existing sound insulation program. East Haven Adult Education (Site 5 on the contour figures) is located in a building that houses other businesses at 290 Dodge Ave, East Haven. The East Haven Adult Education site is also in the 65 to 70 DNL contour interval under Existing Conditions.

Table 23. Noise Analysis Results for Noise Sensitive Sites

Source: HMMH, 2022

	1	2	3	4	5	6	7	Morris Cove Historic District
	Nathan Hale School	*East Shore Senior Center*	*St. Bernadette Church*	*Ms.Shaina's Neighbor School**	*East Haven Adult Education*	*Little Bear's Day Care*	*Former East Haven High School*	
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***

**Note: Site 4 is a daycare which is located in a residential home that has been sound insulated.*

1.4.5 Temporary Construction Noise

Construction noise would temporarily increase sound levels in the immediate vicinity of construction and land clearing. Pile driving, pavement removal, and grading operations are the noisiest, with such equipment generating noise levels as high as 75 to 95 dB within 50 feet of its operation. Distance rapidly diminishes noise levels, so depending on the distance from each site, area residents would likely experience some increase in noise during construction hours. The

potential noise impact associated with the operation of on-site machinery would be temporary and can be reduced using construction timing and staging. To further minimize potential noise, construction equipment would be maintained to meet manufacturers' operating specifications.

The distance between the new terminal facility and the nearest noise-sensitive area (i.e., residence) is approximately 600 feet. The land between the proposed terminal and the nearest residential receptor is wooded, which makes it unlikely that high levels of construction noise would occur in the community.

Noise impacts related to the delivery of materials may be minimized by requiring that the contractor use designated haul routes that directly connect to the airport and avoid residential and other noise-sensitive areas. Overall, construction noise is expected to have a minor and temporary impact (and no permanent impact) to noise-sensitive land or facilities.

1.4.6 Mitigation and Minimization

NEPA and the Council on Environmental Quality (CEQ) require that FAA consider mitigation of significant adverse impacts that are reasonably foreseeable. In addition, 49 USC 47106 (c)(2)(B) imposes an obligation upon the FAA to document appropriate mitigation in such context. Accordingly, the FAA could require the airport to take steps to minimize any significant noise impacts resulting from any Build Alternative, if selected.

Most residential housing units in the significant noise impact area (1.5 dB increase or more in DNL above 65 due to the Proposed Action) have been previously mitigated by the airport. **Figure 15** and **Figure 16** show the properties (outlined in red) that have not been mitigated but which are within the area identified as having potential significant noise impact. For 2026, there are 25 such properties; for 2031 there are 54. The RSIP would be updated to include the housing units on those properties.

The one school (East Haven Adult Education) within the 65 DNL that is not sound-insulated is potentially eligible for mitigation; however, the airport and FAA will need to determine the eligibility of the school since it is located within a multi-unit commercial building.

To reduce the remaining non-compatible land use due to the Proposed Action, which is primarily residential properties, the FAA could require the airport to expand its ongoing Residential Sound Insulation Program (RSIP) to include areas that have not participated in the program and are within the selected alternative 65 DNL contour. There are 157 potentially eligible homes within the 2031 Proposed Action 65 DNL contour (as indicated by the sum of the residential properties which have not been sound-insulated for that scenario listed in **Table 22**). Of these, 54 have been identified in the significant noise impact area (1.5 dB increase or more in DNL above 65).

The airport will continue to implement measures developed as part of the 2012 Part 150 study and may consider updating the Part 150 study once the Proposed Action (if selected) is completed.

2. Air Quality Analysis

As discussed in Section 1, the noise analysis for this EA represented all aircraft operations for the existing conditions and future years as inputs to the FAA's Aviation Environmental Design Tool (AEDT), version 3d. The AEDT was used to calculate both emissions and noise from aircraft activity, using the same aircraft operations inputs for each of the five scenarios.
Emissions analyses for this EA fall under two categories for the Proposed Action:

- operational emissions: evaluating the effects of
  - changes in aircraft activity,
  - additional road vehicle traffic (including new parking area), and
  - new heating/cooling boilers (if applicable)
- emissions from construction activities (including any necessary demolition).

The next sections present and discuss the potential for air quality impacts from the Proposed Action associated with (1) the construction and demolition activities, and (2) additional aircraft and associated auxiliary operations along with other direct and indirect emissions associated with operation of the Proposed Action. Comparing the inventory of air pollutant emissions associated with each of those items to the General Conformity *de minimis* thresholds for significance is the basis for evaluating the potential for significant impacts.

2.1 Affected Environment

2.1.1 National Ambient Air Quality Standards

Under the NEPA, federal agencies must consider the impact their actions will have on the environment compared to a no-action alternative. According to FAA NEPA implementing guidance (FAA Order 1050.1F and Desk Reference, and FAA Order 5050.4B), impacts to air quality must be considered as part of the environmental analysis under NEPA. Potential effects of the proposed action are evaluated against the National Ambient Air Quality Standards (NAAQS), as promulgated by the EPA under the Federal Clean Air Act (CAA).

The EPA currently regulates six criteria pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM), and lead (Pb). Particulate matter is divided into two 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 ($PM_{2.5}$). The NAAQS are expressed in terms of pollutant concentration measured (or averaged) over a defined period of time and are two-tiered. The first tier (the "primary standard") is intended to protect public health; the second tier (the "secondary standard") is intended to protect public welfare and prevent further degradation of the environment.
Table 24 shows the primary and secondary NAAQS for the criteria pollutants. Section 176(c) of the CAA states that federal agencies cannot engage, support, or provide financial assistance for licensing, permitting, or approving any project that could cause or contribute to the severity and/or number of violations of the NAAQS, or could inhibit the expeditious attainment of these standards.

The standards in **Table 24** apply to the concentration of a pollutant in outdoor ambient air. If the air quality in a geographic area is equal to or better than the national standard, the EPA will typically designate the region as an "attainment area." An area where air quality does not meet

the national standard is typically designated by the EPA as a "non-attainment area." Once the air quality in a non-attainment area improves to the point where it meets the standards and the additional requirements outlined in the CAA, the EPA can re-designate the area to attainment upon approval of a Maintenance Plan, and these areas are then referred to as "maintenance areas." Each state is required to prepare a State Implementation Plan (SIP) that outlines measures that regions within the state will implement to attain the applicable air quality standard in non-attainment areas for applicable criteria air pollutant, and to maintain compliance with the applicable air quality standard in maintenance areas. The status and severity of pollutant concentrations in a particular area will impact the types of measures a state must take to reach attainment with the NAAQS. The EPA must review and approve each state's SIP to ensure the proposed measures are sufficient to either attain or maintain compliance with the NAAQS within a set period of time.

Table 24. National Ambient Air Quality Standards

Source: U.S. EPA NAAQS https://www.epa.gov/criteria-air-pollutants/naaqs-table

Pollutant	Averaging Time	Primary Standards	Secondary Standards
CO	Eight-hour	9 parts per million (ppm)	None
	One-hour	35 ppm	
Pb	Rolling Three-Month Average	0.15 micrograms (µg) /cubic meter of air (m^3)	Same as Primary
NO_2	Annual Arithmetic Mean	0.053 ppm (100 µg/m^3)	Same as Primary
	One-hour	0.100 ppm Note 2	None
O_3	8-hour (2015 standard) Note 4	0.070 ppm	Same as Primary
$PM_{2.5}$	Annual Arithmetic Mean	12 µg/m^3 Note 1	15 µg/m^3
	24-hour	35 µg/m^3	Same as Primary
PM_{10}	24-Hour	150 µg/m^3 Note 1	Same as Primary
SO_2	One-hour	75 parts per billion (ppb) Note 3	None
	Three-hour	None	0.5 ppm

Table Notes:
1. For PM_{10}, the 24-hour standard is not to be exceeded more than once per year on average over three years. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over three years, are equal to or are less than the standard.
2. To attain this standard, the three-year average of the 98th percentile of the daily maximum one-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010).
3. Final rule signed June 2, 2010. To attain this standard, the three-year average of the 99th percentile of the daily maximum one-hour average at each monitor within an area must not exceed 75 ppb.
4. EPA updated the NAAQS for O_3 to strengthen the primary eight-hour standard to 0.07 ppm on October 1, 2015. An area will meet the standard if the fourth-highest maximum daily eight-hour ozone concentration per year, averaged over three years is equal to or less than 70 ppb.

The Clean Air Act Amendments (CAAA) of 1990 require states to make recommendations to the EPA regarding the attainment status of all areas within their borders when the EPA finalizes an update to any NAAQS. Under its CAAA authority, the EPA further classifies non-attainment areas for some pollutants – such as ozone – based on the severity of the NAAQS violation as marginal, moderate, serious, severe, and extreme. To further improve the nation's air quality, the EPA lowered the ozone standard in 2015 to 0.070 parts per million (ppm).

2.1.2 Representative Monitoring Data

Existing air quality conditions in the New Haven area can be reflected through the current status of the NAAQS attainment (as discussed above) and the recent ambient air monitoring data collected by the state agencies. The Connecticut Department of Environmental Protection Bureau of Air Management, Planning and Standards Division's Ambient Monitoring Group operates and collects the state of Connecticut's air monitoring sites to continuously monitor pollutant levels throughout the state, including ambient (i.e., outdoor) air monitoring sites. This data is used to monitor compliance with federal and state ambient air quality standards and is provided to the EPA.

The latest full year of available data (2021) were obtained from the EPA Outdoor Air Quality Data Monitor Values Report[27] and were reviewed for carbon monoxide, ozone, nitrogen dioxide, sulfur dioxide and particulate matter. **Table 25** summarizes data from the closest monitoring station to HVN, which is the James Street monitor at Criscuolo Park. This data is considered representative of the study area. **Table 25** shows that the measured values for each pollutant at Criscuolo Park are below the NAAQS levels.

Table 25. 2021 Criscuolo Park (1 James Street, New Haven) Air Monitor Values

Source: https://www.epa.gov/outdoor-air-quality-data/monitor-values-report

Pollutant	Period	2021	NAAQS
		Concentration	Concentration
CO	1-hour 8-hour	1.1 ppm 1.0 ppm	35 ppm 9 ppm
NO_2	1-hour 98th Percentile Annual	48 ppb 11.66 ppb	100 ppb 53 ppb
Ozone	8-hour 4th Max	0.071 ppm	0.07 ppm
$PM_{2.5}$	24-hour 98th Percentile Annual	*22* $\mu g/m^3$ 8.2 $\mu g/m^3$	35 $\mu g/m^3$ 15 $\mu g/m^3$
PM_{10}	24-hour	56 $\mu g/m^3$	150 $\mu g/m^3$
SO_2	1-hour 99th Percentile	3 ppb	75 ppb

2.1.3 Attainment Status

Air quality in the New Haven area (i.e., New Haven County) is currently designated by EPA Greenbook as being in attainment for all criteria pollutants except for the 2008 and 2015 8-hour ozone standard and maintenance for carbon monoxide (CO) and particulate matter ($PM_{2.5}$) criteria NAAQS pollutants[28]. It should be noted that USEPA recently reclassified the New York City/Northern New Jersey/Long Island (NY-NJ-CT) area, including New Haven County for the

[27] https://www.epa.gov/outdoor-air-quality-data/monitor-values-report (accessed on December 15, 2022)

[28] https://www3.epa.gov/airquality/greenbook/anayo_ct.html

2008 ozone standard from serious to severe[29] effective 30-days after notice in the Federal Register which was September 15, 2022. This redesignation will determine the *de minimis* thresholds used for General Conformity Applicability as discussed in Section 2.2.8.

Because the New Haven area is designated as non-attainment and maintenance for some pollutants, the General Conformity Rule applies. Under the General Conformity Rule and NEPA, a project's impact on air quality is assessed by evaluating whether it would cause a new violation of a NAAQS or contribute to a new violation in a manner that would increase the frequency or severity of a new violation.[30] For this analysis, the net change in air emissions from the No Action to the Proposed Action alternative is compared to the applicable U.S. EPA de minimis levels for determining significant impacts.

2.1.4 General Conformity Rule

The General Conformity Rule defines a federal action as any activity engaged in by a department, agency, or instrumentality of the federal government, or any activity that a department, agency, or instrumentality of the federal government supports in any way, provides financial assistance for, licenses, permits, or approves. General Conformity is defined as demonstrating that a project or action conforms to the SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards. Federally funded and approved actions at airports are subject to the U.S. EPA's General Conformity regulations. The General Conformity Rule[31] applies to all federal actions except for certain highway and transit programs which must instead comply with the Transportation Conformity Plans[32].

The General Conformity Rule includes annual emissions thresholds for nonattainment and maintenance areas that trigger the need for a General Conformity determination and defines projects that are typically excluded from General Conformity requirements. Since the General Conformity Rule applies to federally funded projects in EPA-designated non-attainment and maintenance areas, the General Conformity requirements apply to this Proposed Action at HVN[33].

2.2 Environmental Consequences of Proposed Action

Potential air quality impacts associated with construction and demolition under the Proposed Action are discussed in this section. After construction, the Proposed Action would induce changes in aircraft operations, additional vehicle trips as well as parking facilities compared to the No Action alternative. Therefore, foreseeable effects of the project that were inventoried

[29] https://www.epa.gov/system/files/documents/2022-09/Fact%20Sheet%20NFRM%202008%20Ozone%20Determinations%20final_1.pdf

[30] https://www.faa.gov/sites/faa.gov/files/about/office_org/headquarters_offices/apl/1-air-quality.pdf

[31] Revisions to the General Conformity Rule are codified under 40 CFR Parts 51 and 93, Subpart W, Revisions to the General Conformity Regulations, Final Rule (April 2010).

[32] 40 CFR Part 93, Subpart A

[33] HVN is located in an EPA-designated non-attainment area for ozone and maintenance area for CO and $PM_{2.5}$

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 operational traffic as a result of the Proposed Action.

2.2.1 Methodology

This section documents the methods used to calculate emissions of carbon monoxide (CO), volatile organic compounds (VOCs), oxides of nitrogen (NOx), sulfur oxides (SOx), particulate matter less than 10 microns (PM10), fine particulate matter ($PM_{2.5}$) and greenhouse gases (GHG) from construction and demolition-related sources along with aircraft operations at HVN. This analysis develops emissions inventories pursuant to NEPA, as well as determining whether emissions associated with the Proposed Action would exceed applicable de minimis thresholds.

Estimates of construction and demolition-related emissions were developed for the Proposed Action using standard industry methodologies and techniques. These techniques are described in more detail in the following sections. 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 direct and indirect operational emissions were inventoried and compared to appropriate EPA de minimis thresholds for determining significant impacts.

2.2.2 Demolition and Construction Activities

Construction and demolition emissions were not estimated for the No Action Alternative, because no demolition or construction activity would be associated with the No Action Alternative. 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 such as:

- haul trucks,
- site clearing, and
- grading.

On-road vehicles include those associated with:

- transport and delivery of supplies,
- materials and equipment to and from the site, and
- construction worker trips.

Additionally, fugitive dust emissions sources include:

- site preparation,
- land clearing,
- material handling,
- equipment movement on unpaved roads and
- evaporative emissions from the application of asphalt paving.

Demolition and construction activities associated with the Proposed Action are expected to begin approximately March of 2024 and be completed approximately July of 2026. **Table 26** presents the primary components of the Proposed Action, including estimated activity costs, area estimates (square feet) and anticipated start and end dates of construction. These costs and area estimates were used for deriving construction activity emission estimates with the Airport Cooperative Research Board's (ACRP) Airport Construction Emissions Inventory Tool (ACEIT)[34]. Construction emission analyses generally require a detailed construction schedule such as the type of equipment, the amount of time of operation of such equipment, estimates of construction material and trips, employee activity, etc. Since this detailed construction data was not available for this analysis for each activity, the ACRP ACEIT model was used to estimate construction schedules for each activity.

Table 26. Proposed Action Construction and Demolition Activities

Source: McFarland Johnson, December 2021

Project Action Component	Estimated Project Costs ($)	Area (Sq.Ft)	Construction Start	Construction End
Runway 2-20 Extension (Northern and Southern End)	13.3M	155,2500	2026: QTR 1	2026: QTR 3
Runway and Taxi Partial Reconstruction	11.9M	476,650	2026: QTR 1	2026: QTR 3
Runway 2 EMAS	7.5M	73,000	2026: QTR 1	2026: QTR 3
Taxiway Stub Connector (New apron to existing taxiway)	0.5M	17,000	2025: QTR 2	2025: QTR 2
New Passenger Terminal	53.6M	80,000	2024: QTR 2	2025: QTR 4
New Surface Parking Lot	8.9M	662,000	2025: QTR 2	2025: QTR 4
New Parking Garage	60.0M	613,038	2025: QTR2	2026: QTR 2
New Apron	9.5M	468,000	2025: QTR 2	2025: QTR 4
New Access Road (Access road + Loop road)	1.1M	125,841	2025: QTR 2	2025: QTR 4
Site Work (utilities)	0.5M	N/A	2024: QTR 1	2024: QTR 2

HMMH used the ACRP ACEIT model to estimate the construction schedule of equipment for each project component based on the project dimensions and project costs for each activity. The model generates construction schedules for a variety of standard airport construction projects, including the associated activity types and the equipment used for this project.

ACEIT can produce emission factors for nonroad and on-road construction equipment, as well as for fugitive emission sources using EPA and industry standard models and methodologies. However, the current version of ACEIT includes an older version of the U.S EPA's Motor Vehicle Emission Simulator (MOVES) emission model, MOVES2010a and NONROADs, which have both

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

been updated over the years. For this analysis, the current version of MOVES (Version MOVES3.0.3) 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 (VMT) and construction equipment (hours, horsepower, load factor), respectively, as generated in ACEIT for each construction activity and year. Emission factors generated in NONROAD assume the phasing of Tier 1, Tier 2, Tier 3, and Tier 4 engines over time based on EPA regulations[35]. 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. Emission factors were also obtained from MOVES for these trips and emissions were estimated for this activity and included in the construction emission inventory. ACEIT and MOVES3 calculations for construction and demolition are presented in Appendix E.

Off-Road Construction Equipment

HMMH estimated off-road equipment emission factors for each construction year using the EPA NONROADs model within MOVES3 and representative equipment used in New Haven County[36] for both criteria pollutants/precursors and greenhouse gases. Emission factors in grams per horsepower (hp-hr) for each off-road equipment type were applied to the equipment size (in hp), load factor, and anticipated activity levels (in hours per year) of expected equipment use, as generated in in the construction equipment inventory by ACEIT. The annual emissions for off-road construction equipment were computed using the following equation:

Off-road Vehicle Construction emissions (tons per year) = emission factor (grams per hp-hr) x size (hp) x load factor x hours per year x (1 pound/453.6 grams) x (1 ton /2000 pounds)

On-Road Construction Passenger/Truck Delivery Vehicles

Vehicle miles traveled (VMT) data for each on-road employee trip and truck delivery vehicles were derived from round trip distances and the number of employee hours from the activity-specific construction schedule. It is assumed that all on-road equipment will use gasoline for passenger vehicles and diesel fuel for truck deliveries. Emission factors in grams per mile (g/mile) for each on-road vehicle type were applied to the anticipated VMT. Similar to the way emissions are estimated for offroad equipment, the MOVES3 model uses vehicle data representative of vehicles used in New Haven County for both criteria pollutants/precursors and greenhouse gases to estimate emissions factors in grams per mile.

The annual emissions for on-road construction equipment and passenger/delivery vehicles were computed for each year using the following equation:
On-road construction vehicles emissions (tons per year) = emission factor (g/mile) x annual vehicle miles traveled (VMT) x (1 pound/453.6 grams) x (1 ton/2000 pounds)

[35] Exhaust and Crankcase Emission Factors for Nonroad Compression-Ignition Engines in MOVES2014b (PDF) (177 pp, 15.4 MB, EPA-420-R-18-009, July 2018)

[36] Construction emissions used in MOVES3 assumed a blend of Tier 1, Tier 2, Tier 3, and Tier 4 for New Haven County based on EPA phasing ratios of older equipment in future years and does not reflect the primary use of either Tier 1 thru 4 engines. MOVES emission factors are specific to New Haven County as generated within MOVES for each year.

Fugitive Dust Emissions

HMMH calculated 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. These are all included in the total construction emissions. ACEIT default assumptions were used for each activity to estimate fugitive PM and VOC emissions.

2.2.3 Summary of Construction-Related Emissions

Construction-related emissions of criteria pollutants during the construction period (2024 to 2026) under the Proposed Action alternative are summarized in **Table 27.** The calculations include truck trips associated with additional fill to support the runway reconstruction and extension. For this analysis, GHG emissions associated with the Proposed Action were calculated, for disclosure purposes, as carbon dioxide equivalent (CO_{2e}) in metric tons per year, relevant to their global warming potential.[37] Section 2.3 provides additional discussion on GHG emissions related to the Proposed Action.

Table 27. Construction Emission Inventory - Proposed Action

Source: HMMH, 2022, Based on ACEIT, MOVES3.0.3 results using construction information provided by McFarland Johnson, December 2021

Year	Relevant Criteria Pollutant Emissions (tons per year)						
	CO	VOC[Note 1]	NOx[Note 1]	SO_2	PM_{10}	$PM_{2.5}$	CO_2e[Note 2]
2024	4.72	0.22	2.09	0.009	0.26	0.11	2,274
2025	22.05	1.56	7.48	0.074	3.15	0.41	10,214
2026	7.49	0.79	3.88	0.030	1.43	0.16	4,528

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. CO_2e emissions are in metric tons per year equivalent relevant to their GWP.

2.2.4 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 trips that would be expected to occur as a result of 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.

[37] Global warming potentials are based on the latest Intergovernmental Panel on Climate Change (IPCC), *Fifth Assessment Report (AR5),* November 2014.

2.2.5 *Aircraft Operational Activities*

As discussed above, 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, documented in Section 1.3. 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 GSE equipment, and AEDT default APU times (26 minutes). Aircraft operations estimated for this analysis include emissions below the default 3,000 mixing height and include:

- Start up
- Taxi Out
- Climb below the mixing height
- Descend below the mixing height
- Taxi In
- Ground Service Equipment (GSE) landing and takeoff (LTO); and
- Auxiliary Power Units (APU)

Table 28 shows the carbon monoxide (CO), hydrogen carbons, and nitrogen oxides (NOx) emission factors in AEDT version 3d for the modeled Avelo aircraft: the 737700 with a CFM International engine, model CFM56-7B22 and the 737800 with a CFM International engine, model CFM56-7B26. As shown in the comparison, the carbon monoxide emissions have the same take-off and climb out factors for the two aircraft for while the 737700 has higher emissions on approach and idle. Hydrocarbons emissions are the same for take-off, climb out, and approach, but the 737700 has higher idle emissions. For NOx, the 737800 emissions are higher in all four modes.

Table 29 provides the existing and the forecast 2026 and 2031 No Action and Proposed Action operational emissions as calculated by AEDT. The net change in emissions is provided in bold. Although the same number of passengers is expected for either alternative in a given year, 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, 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.

Table 28. Reference Emission Factors in AEDT database for 737700 and 737800

Source: AEDT version 3d, 2021

Aircraft	Carbon Monoxide (CO) Reference Emissions Index			
	Takeoff	Climb Out	Approach	Idle
737700	0.5	0.6	2.5	22.8
737800	0.2	0.6	1.6	18.8
Aircraft	**Total Hydrocarbons (HC) Reference Emissions Index**			
	Takeoff	Climb Out	Approach	Idle
737700	0.1	0.1	0.1	2.5
737800	0.1	0.1	0.1	1.9
Aircraft	**Oxides of Nitrogen (NOx) Reference Emissions Index**			
	Takeoff	Climb Out	Approach	Idle
737700	23.1	19	10	4.5
737800	28.8	22.5	10.8	4.7

Note: All index factors shown are in grams per kilogram of fuel burned

Table 29. Operational Emissions Inventory of the Forecast No Action and Proposed Action Cases

Source: HMMH and McFarland Johnson, 2022

Aircraft Operations Case	Aircraft Operations	Relevant Criteria Pollutant Emissions (tons per year)[Note 2]					
		CO	VOC[Note 1]	NOx[Note 1]	SO_2	PM_{10}	$PM_{2.5}$
2022 Existing	32,332	159.4	14.6	192.9	11.7	1.5	1.5
2026 No Action	35,321	171.8	15.9	255.3	15.3	1.9	1.9
2026 Proposed Action	33,569	163.2	15.0	260.4	14.1	1.8	1.8
2026 Net Change (Proposed Action – No Action)	**-1,752**	**-8.5**	**-0.9**	**5.1**	**-1.2**	**-0.1**	**-0.1**
2031 No Action	43,702	207.4	19.9	438.4	25.6	3.1	3.1
2031 Proposed Action	40,198	190.4	18.0	457.6	23.5	3.0	3.0
2031 Net Change (Proposed Action – No Action)	**-3,504**	**-17.0**	**-1.8**	**+19.3**	**-2.1**	**-0.1**	**-0.1**

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. Operational emissions denote emissions associated with aircraft and related operations (i.e. GSE and APU) only.

2.2.6 *New Heating/Cooling Operations*

The proposed heating / cooling strategy for the new terminal is 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.

2.2.7 *Additional Ground Access Vehicles and Parking Areas*

The Proposed Action would change how the passengers access the airport and could generate a slight increase in vehicle trips to the airport above the No Action alternative. The additional vehicle trips accessing the airport are expected to occur after full implementation of the projects, therefore additional vehicle trips above the No Action were estimated for just the 2031 conditions based on estimated traffic data from FHI Studio[38] and included both moving and idling emissions as they enter and leave the airport. In addition to vehicle trips from passenger drop off and pickups, vehicle emissions associated with the cars parking in the new parking facilities were also estimated based on parking capacity spaces.

Vehicle miles traveled were estimated for the roadway network based on the roadway segment data and the expected 400 additional passenger/employee daily trips which were assumed to occur along Proto Drive to and from the new terminal under the 2031 Proposed Action conditions. The USEPA MOVES3 emission model was used to estimate pollutant specific emission factors for each segment based on expected vehicle speeds of 30 miles per hour and average idling time of 5 minutes per hour for each vehicle. The net changes (i.e. Proposed Action minus the No Action) in emissions were estimated for the ground access vehicles accessing the airport; therefore, emissions associated with the additional traffic are attributed to the 2031 Proposed Action alternative while the 2031 No Action alternative assumes no change to the existing traffic.

The Proposed Action Alternative also includes emissions associated with vehicles using the new parking area, with estimates based on the additional parking lot capacity. Site plans indicate a total of approximately 4,000 new vehicle parking spaces to serve the new East Terminal. The existing (west terminal) parking lot has 925 parking spaces. Thus, the net change from the Proposed Action compared to the No Action is 3,075 new spaces. In addition, under the No Action Alternative, there could be a new 500 space satellite parking area at Long Wharf Drive to accommodate additional passenger/vehicle trips associated with expected aircraft operations, in the event the Proposed Action does not occur. The Long Wharf parking area is approximately 3 miles from HVN and includes up to 240 daily shuttle bus trips to and from HVN. Emissions for the Long Wharf satellite parking and bus trips were included in the analysis for the No Action. Emissions for the new parking area and the Long Wharf satellite parking and shuttle trips were estimated for 2031 using USEPA MOVES3 emissions factors. Appendix E includes the emission calculations for the ground access vehicles and the new parking areas.

[38] FHI Studio email dated 6/22/22 including daily vehicle trips generated for Proposed Action and No Action

Table 30 and **Table 31** summarize the operational emissions along the roadways and from the parking facility, respectively, under the No Action and Proposed Action alternatives for 2031.

Table 30. Operational Emissions Inventory of the Additional Ground Access Vehicles

Source; HMMH and McFarland Johnson, 2022

Ground Access Vehicles Case	Relevant Criteria Pollutant Emissions (tons per year)[Note 2]					
	CO	VOC[Note 1]	NOx[Note 1]	SO_2	PM_{10}	$PM_{2.5}$
2031 No Action	N/C	N/C	N/C	N/C	N/C	N/C
2031 Proposed Action[Note3]	0.87	0.009	0.005	0.001	0.001	0.001
2031 Net Change (Proposed Action – No Action)	**+0.87**	**+0.009**	**+0.005**	**+0.001**	**+0.001**	**+0.001**

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. Operational emissions denote emissions associated with additional ground vehicles passenger trips generated by the Proposed Action compared to the No Action. N/C denotes the No Action remains unchanged.
3. Proposed Action emissions represent additional ground access vehicle trips compared to the No Action.

Table 31. Operational Emissions Inventory of the Additional Parking Areas

Source; HMMH and McFarland Johnson, 2022

Parking Area Case	Relevant Criteria Pollutant Emissions (tons per year)[Note 2]					
	CO	VOC[Note 1]	NOx[Note 1]	SO_2	PM_{10}	$PM_{2.5}$
2031 No Action	1.49	0.042	2.34	0.003	0.010	0.010
2031 Proposed Action[Note3]	5.54	0.060	0.061	0.004	0.004	0.003
2031 Net Change (Proposed Action – No Action)	**+4.05**	**+0.018**	**-2.28**	**+0.001**	**-0.001**	**-0.001**

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. Operational emissions denote emissions associated with vehicles utilizing the new parking areas by the Proposed Action compared to the No Action.
3. Proposed Action emissions represent additional vehicles associated with the new parking areas compared to the No Action.
4. No Action assumes shuttle trips and parking from the proposed satellite parking at Long Wharf Drive if the Proposed Action does not occur.

2.2.8 *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 USEPA under the CAA, for any of the time periods analyzed, or would increase the frequency or severity of any such existing violations. Additionally, the CAA requires federal agencies such as the FAA to ensure their actions conform to the appropriate SIP. Conformity requires that a project or action adheres to the SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards. As stated in Section 2.1.4, the General Conformity Rule applies to this project.

If General Conformity applies, an applicability analysis is performed to determine if a General Conformity Determination is required to demonstrate that the Proposed Action conforms to the approved SIP(s). A conformity determination is required if the total direct and indirect pollutant emissions resulting from a project are above the *de minimis* emissions threshold levels specified in the conformity regulations.[39] 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 2.1.3, 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 noted in Section 2.1.2, EPA has recently redesignated New Haven County as "Severe"[40] with the 2008 ozone standards, therefore, the *de minimis* thresholds associated with Severe was used for ozone.

Since the area is designated as non-attainment and maintenance with the current USEPA air quality standards, the General Conformity Rule applies.

The current Federal EPA *de minimis* emission thresholds for attainment/maintenance and nonattainment areas relevant to New Haven County are listed in **Table 32**. As noted in the table,

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

[40] 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

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 32. General Conformity EPA De Minimis Pollutant Emission Thresholds[2]

Source; HMMH 2022

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.

2.2.9 Construction Impacts

Table 33 presents the total emissions associated with demolition and construction of the Proposed Action for each year of the construction period (2024 through 2026) compared with the appropriate EPA *de minimis* thresholds. As the table shows, the total emissions for each construction year would be below established *de minimis* thresholds for all pollutants. Therefore, a General Conformity determination is not required for the construction and demolition activities for the Proposed Action. Additionally, in accordance with the FAA Air Quality Handbook, the Proposed Action can be determined to "not cause a significant air quality impact, since it is unlikely the pollutant concentration analyzed would exceed a NAAQS." No significant adverse air quality impacts would be expected to result from construction of the Proposed Action. It should be noted that the changes in aircraft operational emissions were evaluated for 2026 and were included in the 2026 construction and demolition emissions in **Table 33** for comparison to de minimis thresholds.

Table 33. Total Construction and Demolition Emissions Compared to De Minimis Thresholds

Source: HMMH, 2022

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	7.49	0.79	3.88	0.030	1.43	0.16
2026 Aircraft Operational Net Change (Proposed Action – No Action)	**-8.5**	**-0.9**	**5.1**	**-1.2**	**-0.1**	**-0.1**
Total Emissions of Construction and Demolition including Aircraft Operations[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***

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

2.2.10 Operational Impacts

Table 34 presents the net change in operational emissions (aircraft, ground access vehicles, and net new parking facilities) from the implementation of the Proposed Action (as compared to the No Action alternative) and compares those emission changes to the appropriate de minimis thresholds for significance determination for the future 2031 conditions. As the table shows, the net change would be below established de minimis thresholds for all pollutants. Therefore, a General Conformity determination is not required for the net change in operational emissions associated with the Proposed Action. Additionally, in accordance with the FAA Air Quality Handbook, the Proposed Action can be determined to "not cause a significant air quality impact, since it is unlikely the pollutant concentration analyzed would exceed a NAAQS." No significant adverse air quality impacts would be expected to result from implementation of the Proposed Action.

Table 34. Net Operational Emission Changes Compared to De Minimis Thresholds

Source: HMMH, 2022

Year	Relevant Criteria Pollutant Emissions (tons per year)					
	CO	VOC	NOx	SO_2	PM_{10}	$PM_{2.5}$
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**

2.2.11 No Action Alternative

The No-Action alternative assumes that the proposed action is not implemented, and air quality from aircraft operations would remain unchanged for 2026 and 2031.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 34** accounts for those impacts, which are well below the EPA *de minimis* thresholds.

2.2.12 Mitigation

As indicated in Sections 2.2.9 and 2.2.10, air quality impacts associated with implementation of the Proposed Action would not be significant when compared to the No Action Alternative; therefore, no mitigation measures are required. Air emissions associated with the Proposed Action would be further minimized and reduced through the implementation of the following Best Management Practices (BMPs) and reasonably available control measures:

- Construction sequencing or phasing
- Require 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

2.2.13 Signalized Intersections

The air quality analysis also included a review of signalized intersections in the project area which could be affected by the Proposed Action. The goal is to identify 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, based on the traffic analysis conducted by FHI Studio, are included in Appendix F.

HMMH conducted microscale analyses using the latest version of 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 Connecticut Department of Energy and Environmental Protection (CTDEEP) 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.

Worst Case intersections

HMMH applied the USEPA's detailed guidance[41] for CO analyses to identify the worst-case intersections, based on forecasts of peak volumes and intersection level of service (LOS). The LOS and peak hourly volumes for the construction year 2026 and Proposed Action 2031 confirmed the worst-case intersection locations for consideration. The intersections were

[41] U.S. Environmental Protection Agency, *Guideline for Modeling Carbon Monoxide from Roadway Intersections*, USEPA-454/R-92-005, Office of Air Quality Planning and Standards, November 1992.

summarized by worst-case peak AM or midday volumes and LOS for 2026 and 2031. The midday peak hour represents the peak period of the highest traffic volumes. **Figure 19** presents the intersection locations studied in the FHI Studio traffic analysis. For 2026, traffic volumes include forecast traffic for 2026 along with expected airport construction traffic under the Proposed Action (655 round trips per day). For 2031, traffic volumes include the forecast traffic associated with the Proposed Action. A summary of the intersections evaluated in the traffic analysis including LOS, peak AM and midday volumes are presented in **Table 35** for 2026 and **Table 36** and **Table 37** for 2031, respectively.

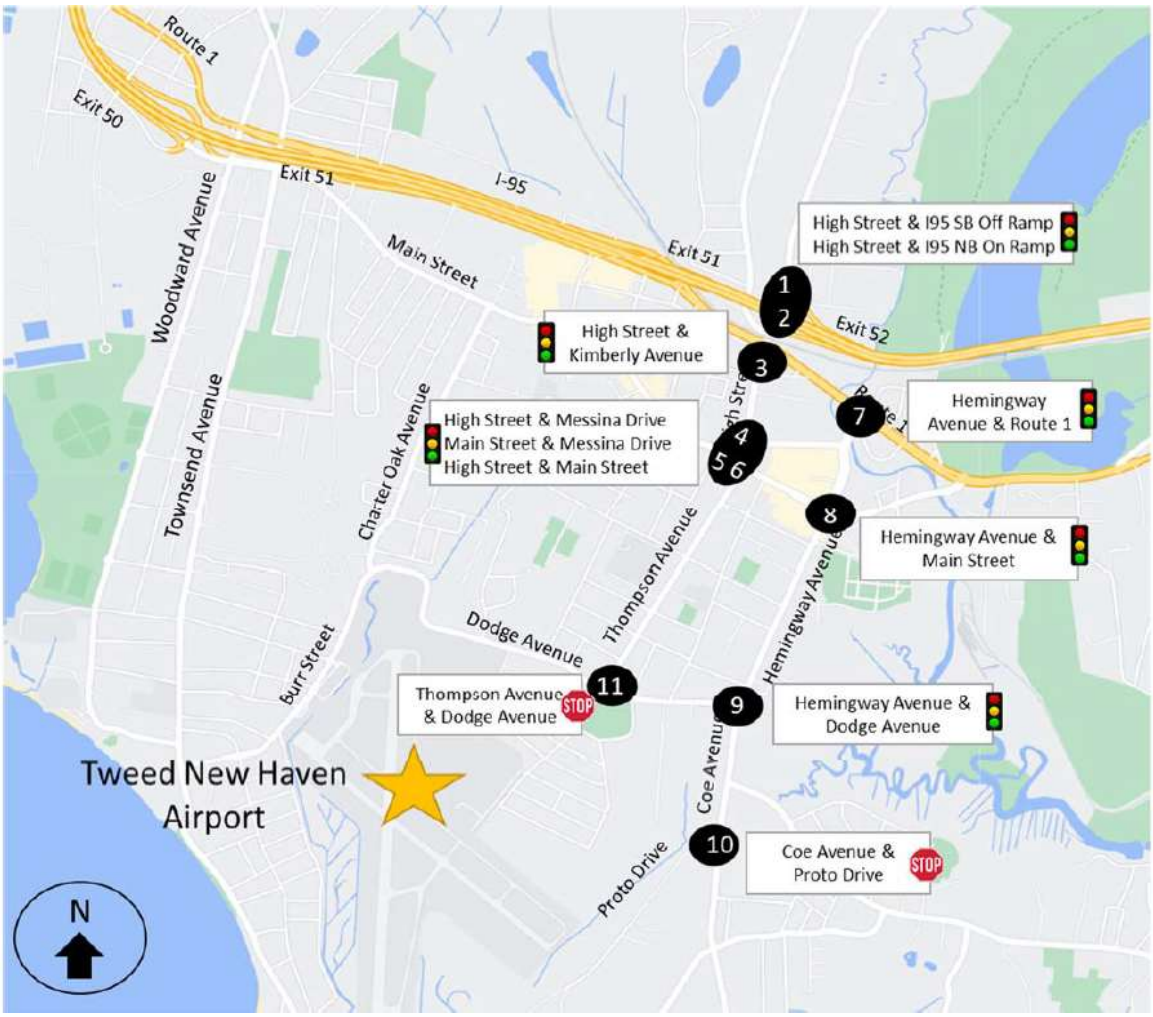


Figure 19. Study Area Intersections
Source: FHI Studio

Table 35. Summary of Proposed Action Construction 2026 Level of Service and Approach Volumes

Source: FHI Studio

ID	Intersection	Control Type	LOS	Intersection Total Approach Volume (Vehicles per Hour)
1	High Street (Rte 100) & I-95 SB Off Ramp (Exit 52)	Signal	C	1,393
2	High Street (Rte 100) & I-95 NB On Ramp (Exit 52)	Signal	E	1,837
3	High Street (Rte 100) & Kimberly Avenue (Rte 735)	Signal	D	1,622
4	High Street (Rte 100) & Messina Drive	Signal	B	1,114
5	Main Street & Messina Drive	Signal	B	765
6	High Street (Rte 100) & Main Street (Rte 100)	Signal	C	1,200
7	Hemingway Avenue (Rte 142) & Saltonstall Parkway (Rte 1)	Signal	C	2,289
8	Hemingway Avenue (Rte 142) & Main Street (Rte 100)	Signal	D	2,197
9	Hemingway Avenue (Rte 142) & Dodge Avenue	Signal	B	1,857
10	Coe Avenue (Rte 337) & Proto Drive	TWSC	F	1,179
11	Thompson Avenue & Dodge Avenue	AWSC	A	434
TWSC: Two-way Stop Controlled - LOS Reports average side street delay				
AWSC: All-way Stop Controlled				

Table 36. Summary of Proposed Action 2031 Level of Service

Source: FHI Studio

			Proposed Action No Improvements (2029)	
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	F
3	High Street (Rte 100) & Kimberly Avenue (Rte 735)	Signal	B	E
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	C	D*
8	Hemingway Avenue (Rte 142) & Main Street (Rte 100)	Signal	D*	D*
9	Hemingway Avenue (Rte 142) & Dodge Avenue	Signal	B	C*
10	Coe Avenue (Rte 337) & Proto Drive^	Signal	B	B
11	Thompson Avenue & Dodge Avenue	AWSC	A	B
^A signal is anticipated to be installed in 2029.				
AWSC: All-way Stop Controlled				
*Intersections with critical movements at LOS E or LOS F.				

Table 37. Summary of Proposed Action 2031 Total Approach Volumes

Source: FHI Studio

			Proposed Action (2029)	
ID	Intersection	Control Type	AM Peak Hour	Midday Peak Hour
1	High Street (Rte 100) & I-95 SB Off Ramp (Exit 52)	Signal	1,007	1,535
2	High Street (Rte 100) & I-95 NB On Ramp (Exit 52)	Signal	1,444	2,060
3	High Street (Rte 100) & Kimberly Avenue (Rte 735)	Signal	1,254	1,808
4	High Street (Rte 100) & Messina Drive	Signal	997	1,304
5	Main Street & Messina Drive	Signal	623	806
6	High Street (Rte 100) & Main Street (Rte 100)	Signal	1,047	1,393
7	Hemingway Avenue (Rte 142) & Saltonstall Parkway (Rte 1)	Signal	2,201	2,925
8	Hemingway Avenue (Rte 142) & Main Street (Rte 100)	Signal	2,257	2,919
9	Hemingway Avenue (Rte 142) & Dodge Avenue	Signal	1,923	2,581
10	Coe Avenue (Rte 337) & Proto Drive	TWSC	1,430	1,713
11	Thompson Avenue & Dodge Avenue	AWSC	358	669
AWSC: All-way Stop Controlled				

Based on a review of the LOS and intersection approach volumes, the following three worst-case intersections were evaluated for a CO and $PM_{2.5}$ hot-spot analysis:

- ID #2: High Street Route 100 & I95 NB On Ramp (Exit 52)
- ID #8: Hemingway Avenue Route 142 & Main Street Route 100
- ID #3: High Street Route 100 & Kimberly Avenue

The traffic analysis, as summarized above, demonstrates that these three intersections selected for evaluation in the CO and $PM_{2.5}$ hot-spot analysis have the worst-case LOS and highest traffic volumes for the 2026 and 2031 conditions, and therefore are representative of the locations in the study area where peak CO and $PM_{2.5}$ concentrations would be expected to occur.

It is assumed that if these worst-case intersections show peak ground level CO and $PM_{2.5}$ concentrations below the NAAQS, then all other locations in the study area would also be below the CO and $PM_{2.5}$ NAAQS.

MOVES Emission Rates

HMMH estimated vehicle emission rates for CO and $PM_{2.5}$ using the latest version of the EPA Motor Vehicle Emissions Simulator model (MOVES3.0.3). The methodologies and assumptions used for the MOVES modeling were consistent with EPA guidance[42]. The MOVES input files were specific to New Haven County within the MOVES database including:

- Vehicle and Fuels data
- Meteorology
- Age Distribution
- Inspection and maintenance
- Roadway and Speed distribution
- Source Type Population

Other assumptions include:

- Receptor locations were placed on the edge of the right-of-way (consistent with EPA guidance);
- Zero median width; and
- At grade intersection.

CAL3QHC

The latest version of the CAL3QHC model (04244)[43] was used to predict worst-case CO and $PM_{2.5}$ concentrations from free-flow and queuing links using the latest version of the FHWA CAL3i[44]. CAL3i is a software package that incorporates the EPA CAL3QHC dispersion model and various worst-case default parameters, per EPA guidance. The peak 1-hour concentrations from CAL3QHC were scaled by a persistence factor of 0.7 (EPA default) to estimate 8-hour concentrations for CO. For $PM_{2.5}$, the peak 1-hour concentrations were scaled by a persistence factor of 0.4 and 0.1 to estimate 24-hour and annual concentrations, respectively. This persistence factor accounts for the variability in meteorology over an eight-hour, 24-hour and annual period relative to one-hour conditions. A summary of inputs used in the CAL3Interface model are shown in **Table 38**.

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[42] https://nepis.epa.gov/Exe/ZyNET.exe/000033I9.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1991+Thru+1994&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C91thru94%5CTxt%5C00000002%5C000033I9.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL

[43] "User's Guide to CAL3QHC Version 2.0: A Modeling Methodology for Predicting Pollutant Concentrations Near Roadway Intersections", EPA-454/R-92-006 (Revised), EPA, September 1995.

[44] See CAL3Interface – A Graphical User Interface for the CALINE3 and CAL3QHC Highway Air Quality Models", Michael Claggett, Ph.D., FHWA Resource Center, 2016.

Table 38. Summary of CAL3QHC Inputs

Source: HMMH 2022

Description	Value
Surface Roughness Coefficient	175 Centimeters
CO Background Concentrations	2.0 ppm 1-hour, 1.2 ppm 8-hour (New Haven Criscuolo)
$PM_{2.5}$ Background Concentrations	19 ug/m3 24-hour, 6.8 ug/m3 Annual (New Haven Criscuolo)
CO Persistence Factor	0.7 (EPA default)
$PM_{2.5}$ Persistence Factor	0.4 (24-hour), 0.10 (Annual) EPA default
Wind Speed	1.0 meter per second
Stability Class	E
Mixing Height	1,000 meters
Wind Direction	10-degree increments (1 thru 36)
Receptor Height	5.9 feet

CAL3QHC input and output files are provided in Appendix G.

Worst-case modeled concentrations from CAL3QHC were added to appropriate background CO concentrations for comparison to the NAAQS. The background CO and $PM_{2.5}$ levels specified in the CT DEEP[45] Design Values for 2018 (last updated in 8/19/2019) were used from the New Haven Criscuolo Park monitor location. **Figure 20** shows the Criscuolo monitor location (denoted as orange triangle) relative to HVN (denoted as a blue star). Background CO concentrations of 2.0 ppm (one-hour CO concentration) and 1.2 ppm (eight-hour concentration) were used and background $PM_{2.5}$ concentrations of 19 ug/m3 and 6.8 ug/m3 were used for 24-hour and annual concentrations, respectively and added to CAL3QHC concentrations.

[45] CTDEEP CO Design Values http://www.ct.gov/deep/cwp/view.asp?a=2684&q=421150&deepNav_GID=1619

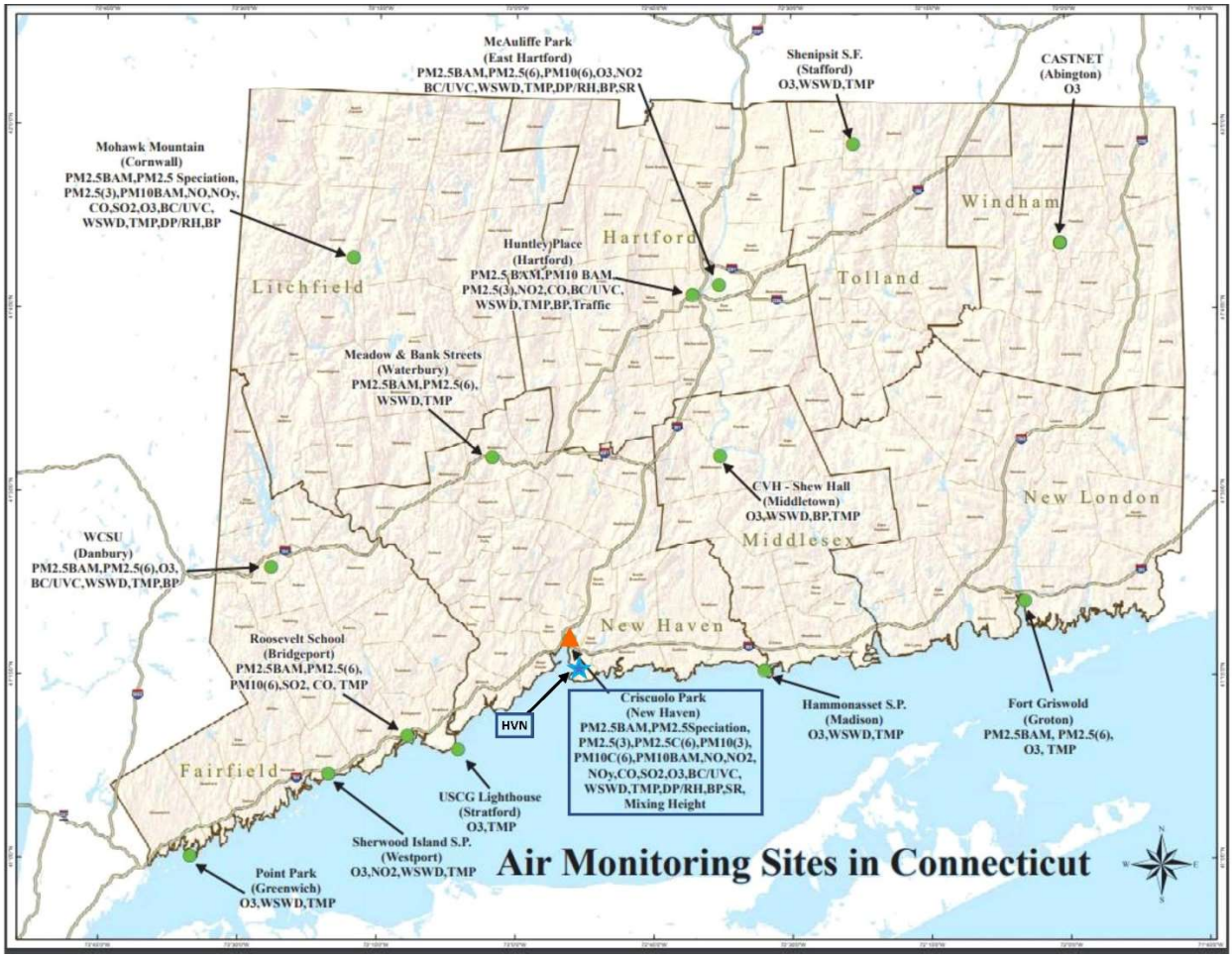


Figure 20 Criscuolo Monitor Location Relative to HVN

Source: https://portal.ct.gov/DEEP/Air/Permits/Air-Quality-Modeling/Criteria-Pollutant-Background-Air-Quality

Receptors

Receptor locations are placed in the vicinity of the intersection at worst-case locations such as sidewalks, property lines, and parking lots where the public generally has access. For worst-case analyses for arterial streets (including intersections), the receptors are placed ten feet from the roadway edge (i.e., at the nearest possible location for the model, which assumes a ten-foot mixing zone next to the roadway).

Receptor locations for the worst-case intersection were generated in CAL3i consistent with EPA modeling guidelines[46] where the receptors were located a minimum of 3 meters from the edge of the roadway and positioned at a height of 1.8 meters above the ground (5.9 feet). **Figure 21 through Figure 23** show the receptor locations at the worst-case intersection as displayed in the CAL3i interface.

[46] "Guidelines for Modeling Carbon Monoxide from Roadway Intersections", EPA-454/R-92-005, US EPA, 1992.

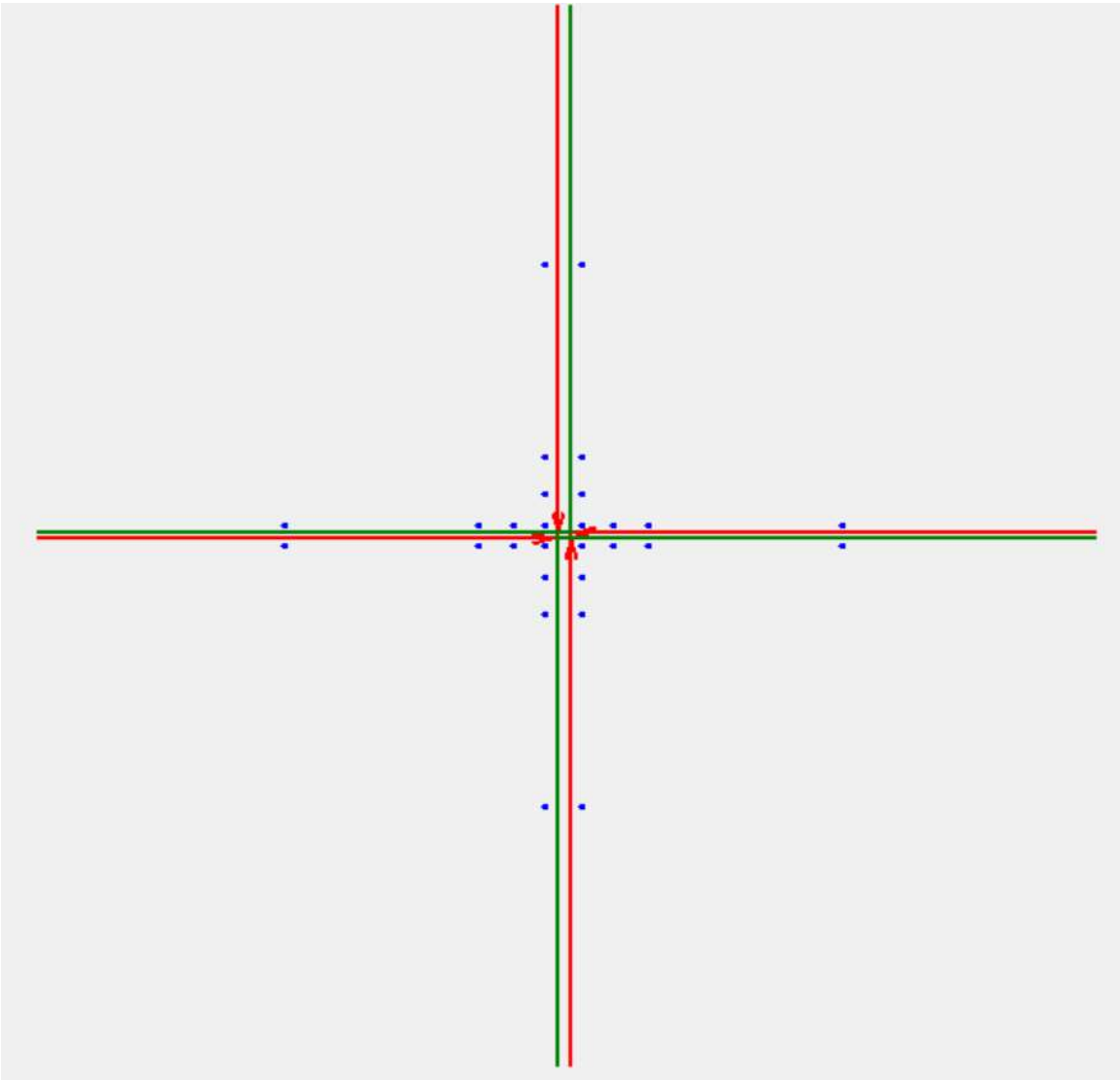


Figure 21. CAL3i Generated CAL3QHC Receptor Locations for High Street Route 100 & I95 NB On Ramp (Exit 52)

Source: FHWA CAL3i

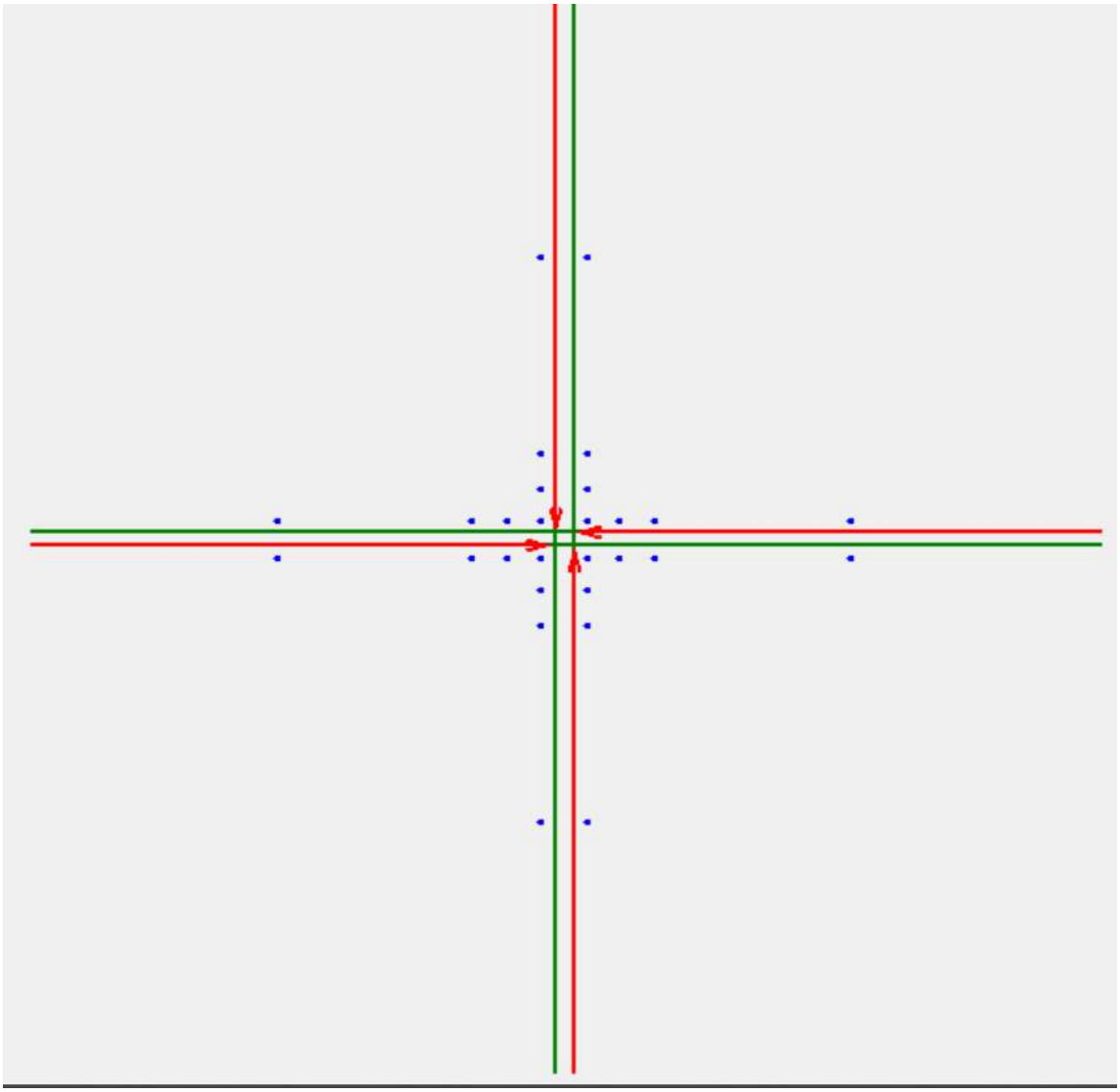


Figure 22. CAL3i Generated CAL3QHC Receptor Locations Hemingway Avenue Route 142 & Main Street Route 100

Source: FHWA CAL3i

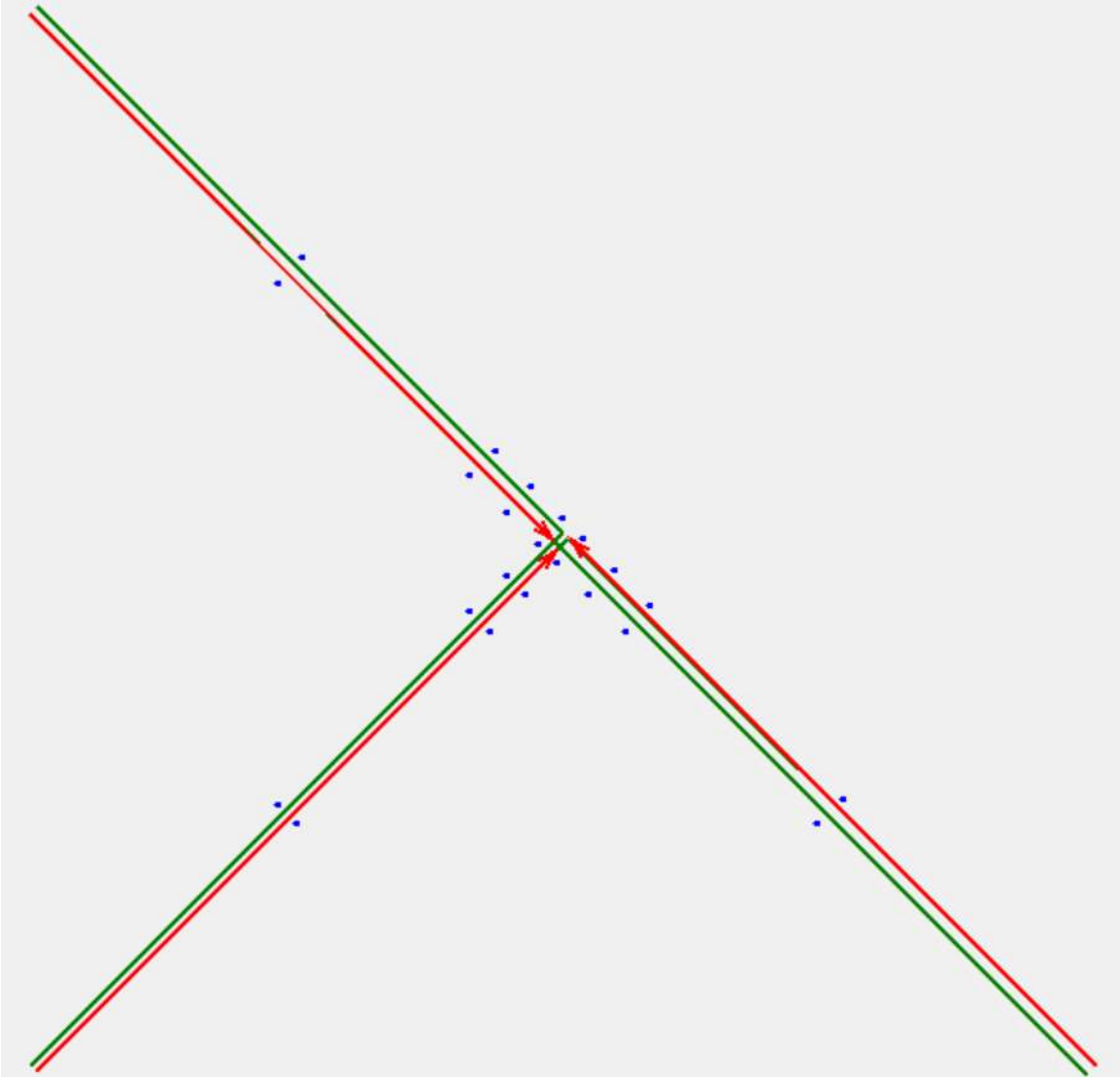


Figure 23. CAL3i Generated CAL3QHC Receptor Locations for High Street Route 100 & Kimberly Avenue
Source: FHWA CAL3i

CAL3QHC Modeling Results

Table 39 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 table includes the overall worst-case modeled concentrations for the midday peak periods. The concentrations in **Table 39** also include the appropriate 1-hour and 8-hour background concentrations of 2.0 ppm and 1.2 ppm[47],

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

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 39. CAL3QHC CO and $PM_{2.5}$ Modeling Results for the Worst-Case Intersections

Source: HMMH 2022

Intersection	Pollutant	Averaging Period	2026[1,2] Construction	2031[1,2] No Action	2031[1,2] Proposed Action	NAAQS
			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.
3. The background CO and $PM_{2.5}$ levels specified in the CT DEEP Design Values for 2018 (last updated in 8/19/2019) were used from the New Haven Criscuolo Park monitor location.

The highest 1-hour CO predicted concentrations for the 2026 Construction and 2031 Proposed Action conditions were 3.0 ppm and 2.6 ppm, respectively. The highest 24-hour $PM_{2.5}$ predicted concentrations were 19.24 ug/m3 and 19.20 ug/m3 for 2026 and 2031, respectively. The highest modeled 1-hour CO and 24-hour concentration for the 2026 and 2031 conditions are expected at the Hemingway Ave Route 142 and Main Street intersection. All predicted peak 1-hour CO and 24-hour $PM_{2.5}$ concentrations are well below the 1-hour CO NAAQS of 35 ppm and the 24-hour $PM_{2.5}$ NAAQS of 35 ug/m3.

The peak 1-hour values generated by CAL3QHC were scaled by a persistence factor of 0.7 to generate peak 8-hour CO concentrations and by 0.1 to generate annual PM2.5 concentrations. These values were then added to the appropriate background concentration for comparison to the CO and $PM_{2.5}$ NAAQS. The highest 8-hour CO predicted concentrations for the 2026 Construction and 2031 Proposed Action conditions were 1.90 ppm and 1.6 ppm, respectively. Similarly, the highest Annual $PM_{2.5}$ predicted concentrations were 6.90 ug/m3 and 6.84 ug/m3 for 2026 and 2031, respectively. Similar to the 1-hour and 24-hour concentrations, the highest modeled 8-hour CO and Annual concentration for the 2026 and 2031 conditions are expected at the Hemingway Ave Route 142 and Main Street intersection. All predicted peak 8-hour CO and

Annual $PM_{2.5}$ concentrations are well below the 8-hour CO NAAQS of 9 ppm and the Annual $PM_{2.5}$ NAAQS of 12 ug/m3.

These results demonstrate that the three worst-case intersections identified for the Construction Year 2026 and 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 CAA 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.

2.3 Climate

Climate change is a global phenomenon that can have local impacts.[48] Scientific measurements show that Earth's climate is warming, with concurrent impacts including warmer air temperatures, increased sea level rise, increased storm activity, and an increased intensity in precipitation events. Increasing concentrations of greenhouse gas (GHG) emissions in the atmosphere affect global climate.[49,50] 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.[51] 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 (GAO) reports that "domestic aviation contributes about three percent of total carbon dioxide emissions, according

[48] 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).

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

[50] 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).

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

to EPA data," and compares that with other industrial sources, including the remainder of the transportation sector (20%) and power generation (41%). The International Civil Aviation Organization (ICAO) estimates that GHG emissions from aircraft account for roughly two percent of all anthropogenic GHG emissions globally.[52] Climate change due to GHG emissions is a global phenomenon; therefore, the affected environment is the global climate.

2.3.1 Regulatory Framework

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 VOCs, particulates, and other trace compounds."[53]

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}). The Global Warming Potential index provides 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 CO_2; 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. Thus, the amount of CH_4 emissions would be multiplied by 28 to determine its CO_{2e} value. NOX 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.

Although no federal standards have been set for GHG emissions, it is well established that GHG emissions can affect climate. Based on the President's recent Executive Order[54], the project impacts on GHG emissions and climate change should be documented in the Environmental Assessment (EA). 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[55]. 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.

On December 16, 2021, the Governor of Connecticut signed Executive Order No. 21-332 which calls for 23 actions supporting recommendations proposed by the Governor's Council of Climate

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

[53] 14 FAA, January 2005, Aviation and Emissions A Primer. What emissions come from aviation?

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

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

Change and which directs State executive branch agencies to take significant steps within their authority to reduce carbon emissions. Many of these actions implement recommendations of the Governor's Council on Climate Change Phase 1 Report[56] 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** of the Draft EA (Floodplains) for additional information about climate change and sea level rise.

2.3.2 Affected Environment

The City of New Haven worked with Yale University to update its greenhouse gas inventory in 2019.[57] 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_2 equivalents (CO_{2e}) in 2019, which is slightly higher than the baseline 2015 inventory of 1.037 million tons of CO_{2e}. **Table 40** presents the breakdown of the GHG inventory for 2019 compared to 2015.

Table 40. City of New Haven GHG Emissions 2015 and 2019

Source: City of New Haven 2019 GHG Inventory

	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**

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

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

2.3.3 Analysis Methodology

For this analysis, GHG emissions associated with the Proposed Action were prepared for carbon dioxide, methane, and nitrous oxide and presented as carbon dioxide equivalent (CO_{2e}) in metric tons per year relevant to their Global Warming Potential. The carbon dioxide equivalent is estimated by taking the mass equivalent of each pollutant (TPY), multiplying by the Global Warming Potential (GWP) of each pollutant, and then adding them together. For example, CO_2 is 1 GBP, of CH_4 is 28 GWP, and of N_2O is 265 GWP, according to the IPCC Fifth Assessment Report[58].

The methodology and assumptions for the GHG analysis are consistent with the air quality analysis discussed in Section 2.2.2 and 2.2.5. GHG emissions associated with the construction and demolition activities as well as the increase in GHG emissions due to operational changes of the Proposed Action were qualitatively evaluated.

2.3.4 Environmental Consequences of Proposed Action Alternative

Table 41 presents the annual greenhouse gas emissions for demolition and construction activities while **Table 42** presents the GHG operational emissions associated with the 2022 existing and future Proposed Action and No Action for 2026 and 2031.

As stated earlier, 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. As shown in Sections 2.2.9 and 2.2.10, construction and operational emissions under the Proposed Action would not result in a significant air quality impact. Similarly, any increases in GHG emissions from construction and operational activity associated with the Proposed Action would comprise a very small fraction of the City of New Haven 2019 GHG emissions of 1,422,668 metric tons of carbon dioxide equivalents (TCO_{2e}), the U.S.-based emissions of 6,472 million metric tons CO_{2e}, and even less than the 49 gigatons of carbon dioxide equivalent global GHG emissions.[59, 60, 61]

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 2.2.5, 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

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

[59] https://www.nashville.gov/Portals/0/SiteContent/Sustainability/2009GreenhouseGasInventory.pdf

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

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

the associated GHG emissions are expected to be very small compared to community levels. GHGs associated with the Proposed Action have been calculated in accordance with the latest FAA guidelines (1050.1F) for climate impacts in a NEPA document[62] and included in the emission spreadsheets in Appendix E.

Table 41. GHG Emissions Associated with Construction for the Proposed Action

Source: HMMH 2022

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 CO_2 emissions with the CO_2-equivalent emissions of other greenhouse gases.

Table 42. GHG Emissions Associated with Operations for the Proposed Action

Source: HMMH 2022

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 CO_2 emissions with the CO_2-equivalent emissions of other greenhouse gases.
N/A = Not applicable; AEDT does not estimate CH_4 and N20 emissions. N/A under the aircraft fuel usage indicates non-aircraft source

[62] 1050.1F Desk Reference, https://www.faa.gov/about/office_org/headquarters_offices/apl/environ_policy_guidance/policy/faa_nepa_order/desk_ref/media/3-climate.pdf

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; FAA guidance will evolve as new federal requirements are established.

2.3.5 Environmental Consequences of No Action Alternative

The No-Action alternative assumes that the Proposed Action is not implemented, and that 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 a higher number of operations under the No Action alternative as compared to the Proposed Action. As result, CO_{2e} emissions and fuel usage are expected to be higher under the No Action alternative as compared to the Proposed Action, as shown by **Table 42.** 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 42** accounts for those impacts.

2.3.6 Climate 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 20-inch rise in sea level by the year 2050. In consideration of the reasonably foreseeable effects of climate change, the Proposed Action would raise the runway ends by approximately 3 feet to address potential flooding, well above the State-projected sea level rise. 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 impact of sea level rise.

APPENDIX A AIRCRAFT NOISE TERMINOLOGY

Noise is a complex physical quantity. The properties, measurement, and presentation of noise involve specialized terminology that can be difficult to understand. To provide a basic reference on these technical issues, this section introduces fundamentals of noise terminology, the effects of noise on human activity, and noise propagation.

Introduction to Noise Terminology

Analyses of potential impacts from changes in aircraft noise levels rely largely on a measure of cumulative noise exposure over an entire calendar year, expressed in terms of a metric called the Day-Night Average Sound Level (DNL). However, DNL does not provide an adequate description of noise for many purposes. A variety of measures, which are further described in subsequent sub-sections, are available to address essentially any issue of concern, including:

- Sound Pressure Level, SPL, and the Decibel, dB
- A-Weighted Decibel, dBA
- Maximum A-Weighted Sound Level, L_{max}
- Time Above, TA
- Sound Exposure Level, SEL
- Equivalent A-Weighted Sound Level, L_{eq}
- Day-Night Average Sound Level, DNL

Sound Pressure Level, SPL, and the Decibel, dB

All sounds come from a sound source – a musical instrument, a voice speaking, an airplane passing overhead. It takes energy to produce sound. The sound energy produced by any sound source travels through the air in sound waves – tiny, quick oscillations of pressure just above and just below atmospheric pressure. The ear senses these pressure variations and – with much processing in our brain – translates them into "sound."

Our ears are sensitive to a wide range of sound pressures. The loudest sounds that we can hear without pain contain about one million times more energy than the quietest sounds we can detect. To allow us to perceive sound over this very wide range, our ear/brain "auditory system" compresses our response in a complex manner, represented by a term called sound pressure level (SPL), which we express in units called decibels (dB).

Mathematically, SPL is a logarithmic quantity based on the ratio of two sound pressures, the numerator being the pressure of the sound source of interest (P_{source}), and the denominator being a reference pressure ($P_{reference}$) [63]

$$\textit{Sound Pressure Level (SPL)} = 20 * Log\left(\frac{P_{source}}{P_{reference}}\right) dB$$

[63] The reference pressure is approximately the quietest sound that a healthy young adult can hear.

The logarithmic conversion of sound pressure to SPL means that the quietest sound that we can hear (the reference pressure) has a sound pressure level of about 0 dB, while the loudest sounds that we hear without pain have sound pressure levels of about 120 dB. Most sounds in our day-to-day environment have sound pressure levels from about 40 to 100 dB[64].
Because decibels are logarithmic quantities, we cannot use common arithmetic to combine them. For example, if two sound sources each produce 100 dB operating individually, when they operate simultaneously, they produce 103 dB -- not the 200 dB we might expect. Increasing to four equal sources operating simultaneously will add another three decibels of noise, resulting in a total SPL of 106 dB. For every doubling of the number of equal sources, the SPL goes up another three decibels.

If one noise source is much louder than another is, the louder source "masks" the quieter one and the two sources together produce virtually the same SPL as the louder source alone. For example, a 100 dB and 80 dB sources produce approximately 100 dB of noise when operating together.

Two useful “rules of thumb” related to SPL are worth noting: (1) humans generally perceive a six to 10 dB increase in SPL to be about a doubling of loudness,[65] and (2) changes in SPL of less than about three decibels for a particular sound are not readily detectable outside of a laboratory environment.

A-Weighted Decibel

An important characteristic of sound is its frequency, or "pitch.” This is the per-second oscillation rate of the sound pressure variation at our ear, expressed in units known as Hertz (Hz).

When analyzing the total noise of any source, acousticians often break the noise into frequency components (or bands) to consider the “low,” “medium,” and “high” frequency components. This breakdown is important for two reasons:

- Our ear is better equipped to hear mid and high frequencies and is least sensitive to lower frequencies. Thus, we find mid- and high-frequency noise more annoying.
- Engineering solutions to noise problems differ with frequency content. Low-frequency noise is generally harder to control.

The normal frequency range of hearing for most people extends from a low of about 20 Hz to a high of about 10,000 to 15,000 Hz. Most people respond to sound most readily when the predominant frequency is in the range of normal conversation – typically around 1,000 to 2,000 Hz. The acoustical community has defined several “filters,” which approximate this sensitivity of

[64] The logarithmic ratio used in its calculation means that SPL changes relatively quickly at low sound pressures and more slowly at high pressures. This relationship matches human detection of changes in pressure. We are much more sensitive to changes in level when the SPL is low (for example, hearing a baby crying in a distant bedroom), than we are to changes in level when the SPL is high (for example, when listening to highly amplified music).

[65] A “10 dB per doubling” rule of thumb is the most often used approximation.

our ear and thus, help us to judge the relative loudness of various sounds made up of many different frequencies.

The so-called "A" filter (“A weighting”) generally does the best job of matching human response to most environmental noise sources, including natural sounds and sound from common transportation sources. “A-weighted decibels” are abbreviated “dBA.” Because of the correlation with our hearing, the U. S. Environmental Protection Agency (EPA) and nearly every other federal and state agency have adopted A-weighted decibels as the metric for use in describing environmental and transportation noise. **Figure** depicts A-weighting adjustments to sound from approximately 20 Hz to 10,000 Hz.

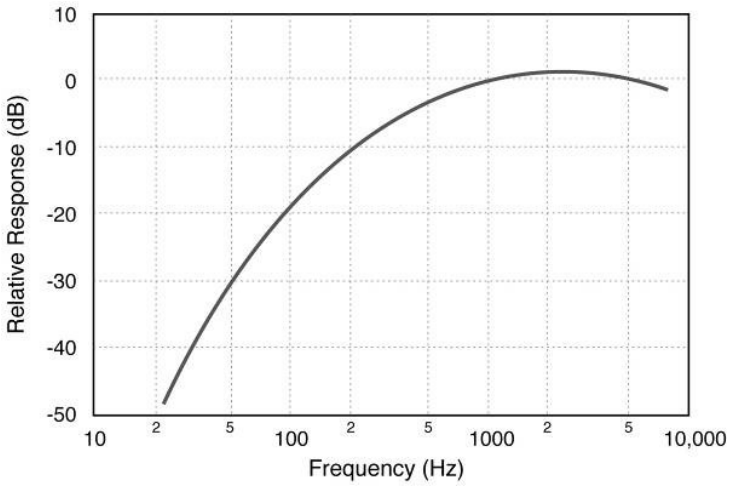


Figure A-1. A-Weighting Frequency Response

Source: Extract from Harris, Cyril M., Editor, “Handbook of Acoustical Measurements and Control,” McGraw-Hill, Inc., 1991, pg. 5.13; HMMH

As the figure shows, A-weighting significantly de-emphasizes noise content at lower and higher frequencies where we do not hear as well, and has little effect, or is nearly "flat,” in for mid-range frequencies between 1,000 and 5,000 Hz. All sound pressure levels presented in this document are A-weighted unless otherwise specified.

Figure A-2 depicts representative A-weighted sound levels for a variety of common sounds.

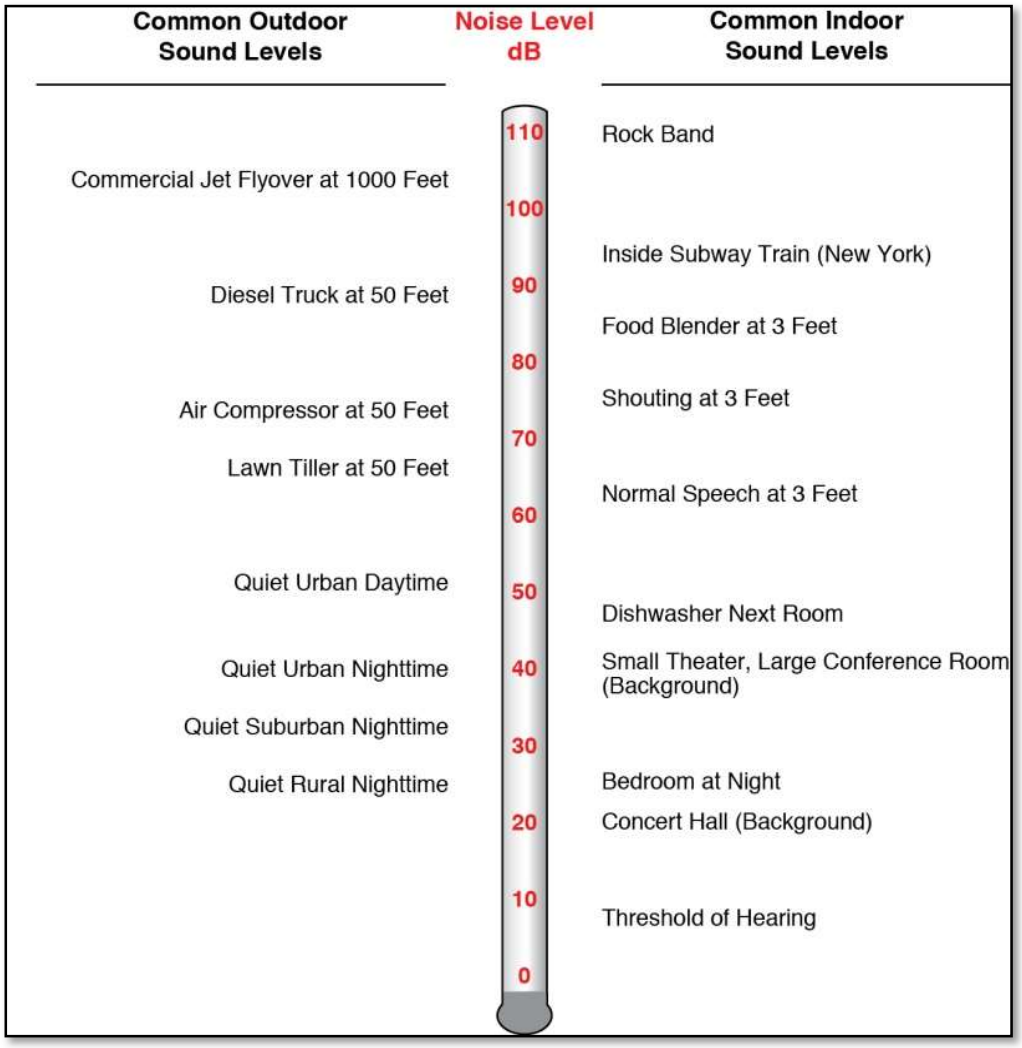


Figure A-2. A-Weighted Sound Levels for Common Sounds
Source: HMMH

Maximum A-Weighted Sound Level, L_{max}

An additional dimension to environmental noise is that A-weighted levels vary with time. For example, the sound level increases as a car or aircraft approaches, then falls and blends into the background as the aircraft recedes into the distance. The background or "ambient" level continues to vary in the absence of a distinctive source, for example due to birds chirping, insects buzzing, leaves rustling, etc. It is often convenient to describe a particular noise "event" (such as a vehicle passing, a dog barking, etc.) by its maximum sound level, abbreviated as L_{max}.

Figure A-3 depicts this general concept, for a hypothetical noise event with an L_{max} of approximately 102 dB.

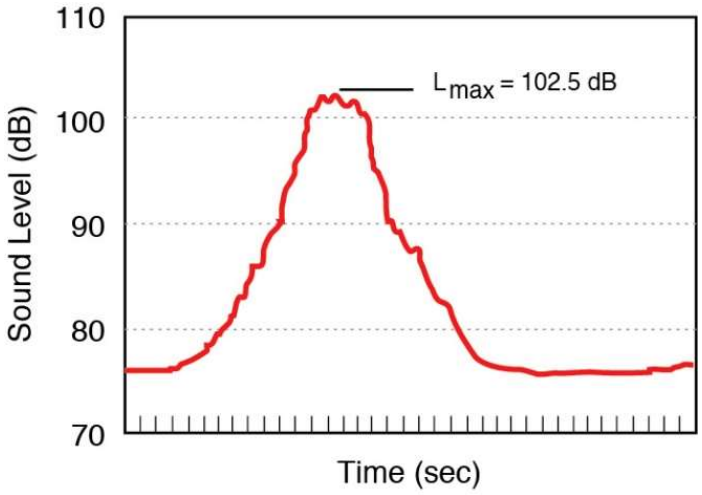


Figure A-3. Variation in A-Weighted Sound Level over Time and Maximum Noise Level
Source: HMMH

While the maximum level is easy to understand, it suffers from a serious drawback when used to describe the relative "noisiness" of an event such as an aircraft flyover; that is, it describes only one dimension of the event and provides no information on the event's overall, or cumulative, noise exposure. In fact, two events with identical maximum levels may produce very different total exposures. One may be of very short duration, while the other may continue for an extended period and be judged much more annoying. The next section introduces a measure that accounts for this concept of a noise "dose," or the cumulative exposure associated with an individual "noise event" such as an aircraft flyover.

Sound Exposure Level, SEL

The most commonly used measure of cumulative noise exposure for an individual noise event, such as an aircraft flyover, is the Sound Exposure Level, or SEL. SEL is a summation of the A-weighted sound energy over the entire duration of a noise event. SEL expresses the accumulated energy in terms of the one-second-long steady-state sound level that would contain the same amount of energy as the actual time-varying level.

SEL provides a basis for comparing noise events that generally match our impression of their overall "noisiness," including the effects of both duration and level. The higher the SEL, the more annoying a noise event is likely to be. In simple terms, SEL "compresses" the energy for the noise event into a single second. **Figure A-4** depicts this compression, for the same hypothetical event shown in **Figure A-3**. Note that the SEL is higher than the L_{max}.

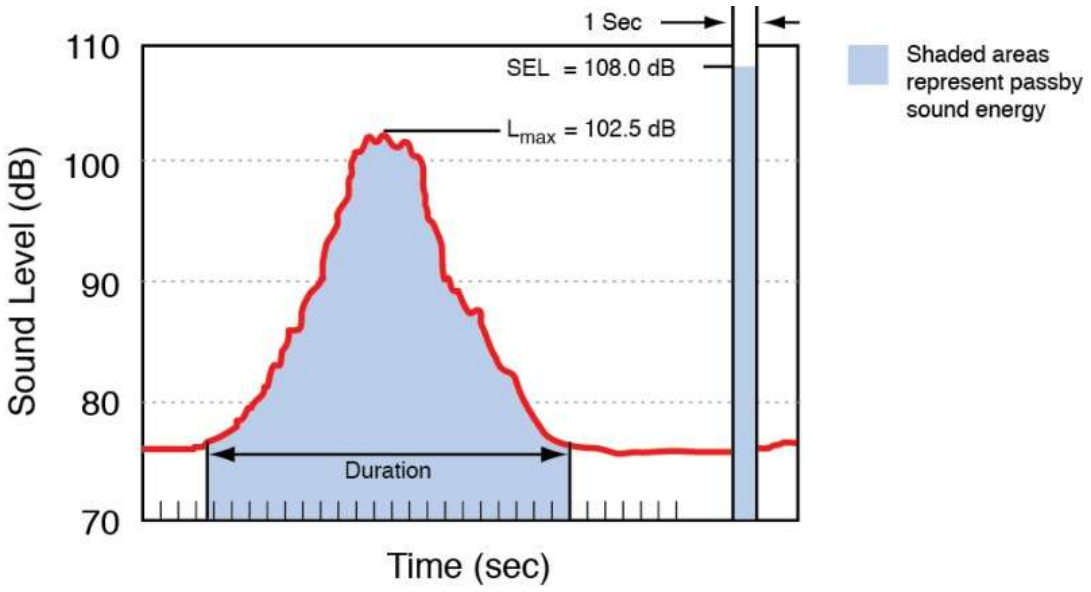


Figure A-4. Graphical Depiction of Sound Exposure Level
Source: HMMH

The "compression" of energy into one second means that a given noise event's SEL will almost always be a higher value than its L_{max}. For most aircraft flyovers, SEL is roughly five to 12 dB higher than L_{max}. Adjustment for duration means that relatively slow and quiet propeller aircraft can have the same or higher SEL than faster, louder jets, which produce shorter duration events.

Equivalent A-Weighted Sound Level, L_{eq}

The Equivalent Sound Level, abbreviated L_{eq}, is a measure of the exposure resulting from the accumulation of sound levels over a particular period of interest; e.g., one hour, an eight-hour school day, nighttime, or a full 24-hour day. L_{eq} plots for consecutive hours can help illustrate how the noise dose rises and falls over a day or how a few loud aircraft significantly affect some hours.

L_{eq} may be thought of as the constant sound level over the period of interest that would contain as much sound energy as the actual varying level. It is a way of assigning a single number to a time-varying sound level. **Figure A-5** illustrates this concept for the same hypothetical event shown in **Figure A-3** and **Figure A-4**. Note that the L_{eq} is lower than either the L_{max} or SEL.

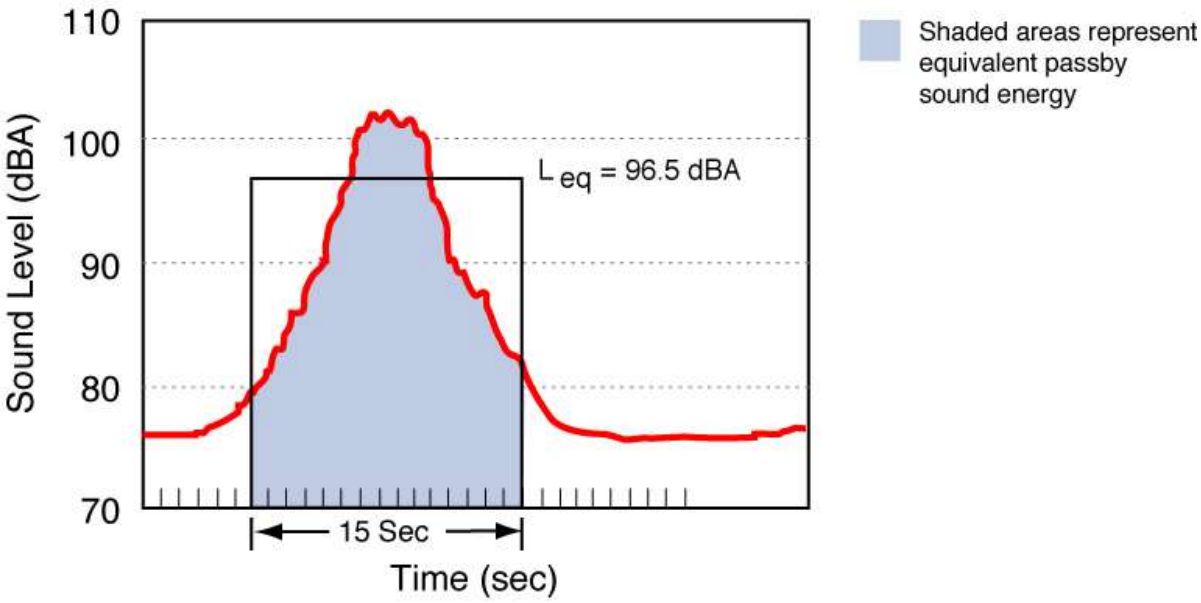


Figure A-5. Example of a 15-Second Equivalent Sound Level
Source: HMMH

Day-Night Average Sound Level, DNL or L_{dn}

The FAA requires that airports use a measure of noise exposure that is slightly more complicated than L_{eq} to describe cumulative noise exposure – the Day-Night Average Sound Level, DNL.

The U.S. EPA identified DNL as the most appropriate means of evaluating airport noise based on the following considerations[66].

- The measure should be applicable to the evaluation of pervasive long-term noise in various defined areas and under various conditions over long periods.
- The measure should correlate well with known effects of the noise environment and on individuals and the public.
- The measure should be simple, practical, and accurate. In principle, it should be useful for planning as well as for enforcement or monitoring purposes.
- The required measurement equipment, with standard characteristics, should be commercially available.
- The measure should be closely related to existing methods currently in use.
- The single measure of noise at a given location should be predictable, within an acceptable tolerance, from knowledge of the physical events producing the noise.
- The measure should lend itself to small, simple monitors, which can be left unattended in public areas for long periods.

[66] "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety," U. S. EPA Report No. 550/9-74-004, March 1974.

Most federal agencies dealing with noise have formally adopted DNL. The Federal Interagency Committee on Noise (FICON) reaffirmed the appropriateness of DNL in 1992. The FICON summary report stated: "There are no new descriptors or metrics of sufficient scientific standing to substitute for the present DNL cumulative noise exposure metric."

In 2015, the FAA began a multi-year effort to update the scientific evidence on the relationship between aircraft noise exposure and its effects on communities around airports.[67] This was the most comprehensive study using a single noise survey ever undertaken in the United States, polling communities surrounding 20 airports nationwide. The FAA Reauthorization Act of 2018 under Section 188 and 173, required FAA to complete the evaluation of alternative metrics to the DNL standard within one year. The Section 188 and 173 Report to Congress was delivered on April 14, 2020[68] and concluded that while no single noise metric can cover all situations, DNL provides the most comprehensive way to consider the range of factors influencing exposure to aircraft noise. In addition, use of supplemental metrics is both encouraged and supported to further disclose and aid in the public understanding of community noise impacts. The full study supporting these reports was released in January 2021. If changes are warranted in the use of DNL, which DNL level to assess or the use of supplemental metrics, FAA will propose revised policy and related guidance and regulations, subject to interagency coordination, as well as public review and comment.

In simple terms, DNL is the 24-hour L_{eq} with one adjustment; all noises occurring at night (defined as 10 p.m. through 7 a.m.) are increased by 10 dB, to reflect the added intrusiveness of nighttime noise events when background noise levels decrease. In calculating aircraft exposure, this 10 dB increase is mathematically identical to counting each nighttime aircraft noise event ten times.

DNL can be measured or estimated. Measurements are practical only for obtaining DNL values for limited numbers of points, and, in the absence of a permanently installed monitoring system, only for relatively short periods. Most airport noise studies use computer-generated DNL estimates depicted as equal-exposure noise contours (much as topographic maps have contours of equal elevation).

The annual DNL is mathematically identical to the DNL for the average annual day; i.e., a day on which the number of operations is equal to the annual total divided by 365 (366 in a leap year). **Figure A-6** graphically depicts the manner in which the nighttime adjustment applies in calculating DNL. **Figure A-7** presents representative outdoor DNL values measured at various U.S. locations.

[67] Federal Aviation Administration. Press Release – FAA To Re-Evaluate Method for Measuring Effects of Aircraft Noise. https://www.faa.gov/news/press_releases/news_story.cfm?newsId=18774

[68] Federal Aviation Administration. Report to Congress on an evaluation of alternative noise metrics. https://www.faa.gov/about/plans_reports/congress/media/Day-Night_Average_Sound_Levels_COMPLETED_report_w_letters.pdf

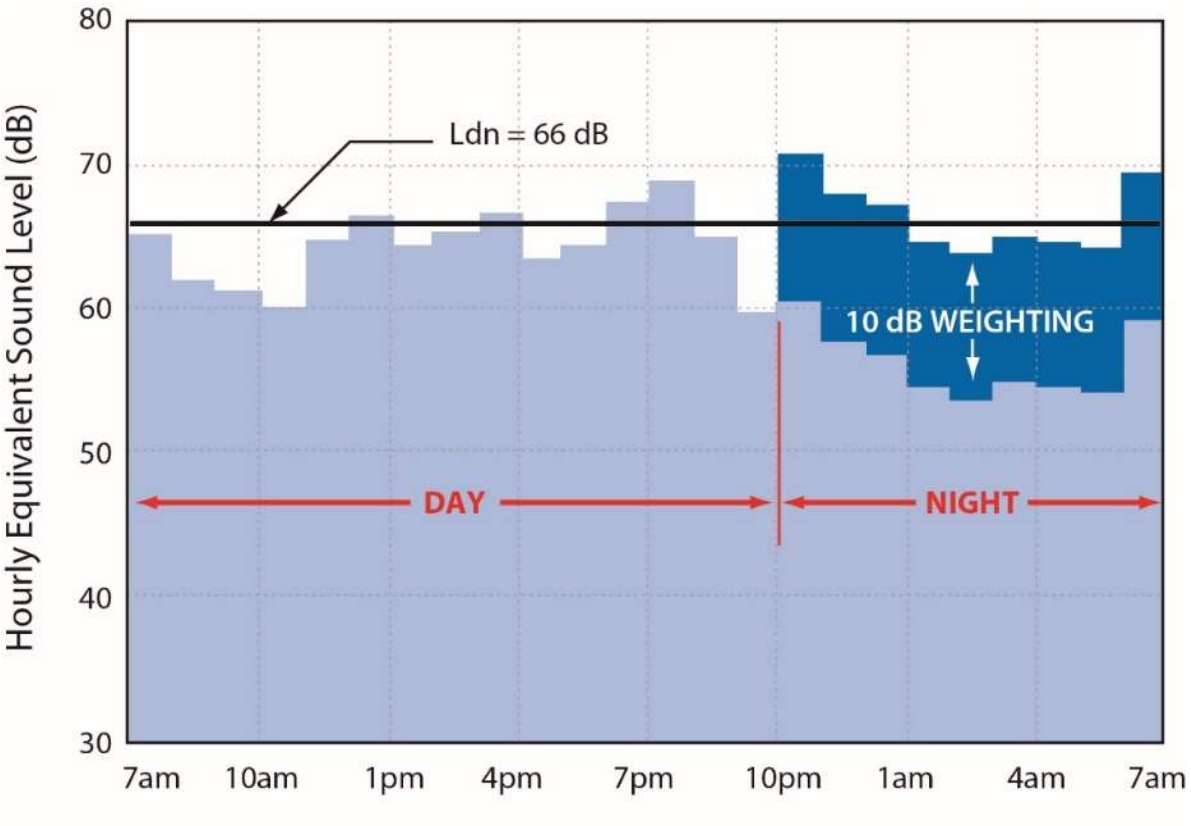


Figure A-6. Example of a Day-Night Average Sound Level Calculation
Source: HMMH

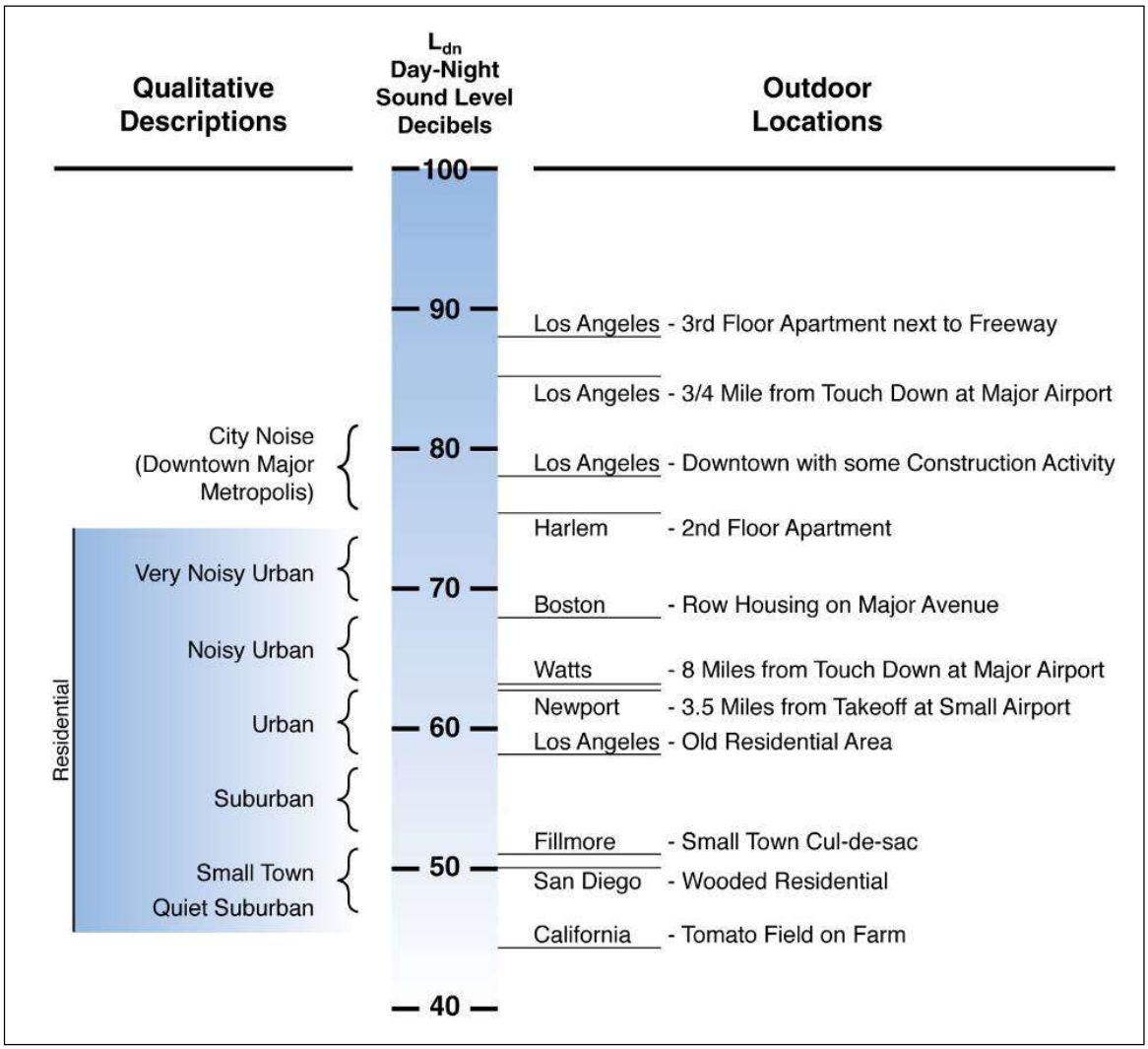


Figure A-7. Examples of Measured Day-Night Average Sound Levels, DNL
Source: U.S. Environmental Protection Agency, "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety," March 1974, p.14.

Aircraft Noise Effects on Human Activity

Aircraft noise can be an annoyance and a nuisance. It can interfere with conversation and listening to television, disrupt classroom activities in schools, and disrupt sleep. Relating these effects to specific noise metrics helps in the understanding of how and why people react to their environment.

Speech Interference

One potential effect of aircraft noise is its tendency to "mask" speech, making it difficult to carry on a normal conversation. The sound level of speech decreases as the distance between a talker and listener increases. As the background sound level increases, it becomes harder to hear speech.

Figure A-8 presents typical distances between talker and listener for satisfactory outdoor conversations, in the presence of different steady A-weighted background noise levels for raised, normal, and relaxed voice effort. As the background level increases, the talker must raise his/her voice, or the individuals must get closer together to continue talking.

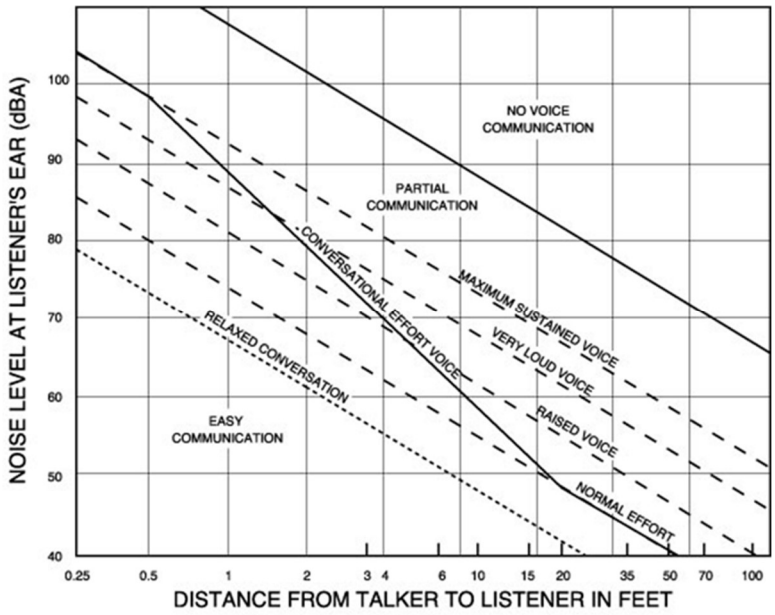


Figure A-8. Outdoor Speech Intelligibility

Source: U.S. EPA, "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety," March 1974, p.D-5.

Satisfactory conversation does not always require hearing every word; 95% intelligibility is acceptable for many conversations. In relaxed conversation, however, we have higher expectations of hearing speech and generally require closer to 100% intelligibility. Any combination of talker-listener distances and background noise that falls below the bottom line in the figure (which roughly represents the upper boundary of 100% intelligibility) represents an ideal environment for outdoor speech communication. Indoor communication is generally acceptable in this region as well.

One implication of the relationships in **Figure A-8** is that for typical communication distances of three or four feet, acceptable outdoor conversations can be carried on in a normal voice as long as the background noise outdoors is less than about 65 dB. If the noise exceeds this level, as might occur when an aircraft passes overhead, intelligibility would be lost unless vocal effort were increased or communication distance were decreased.

Indoors, typical distances, voice levels, and intelligibility expectations generally require a background level less than 45 dB. With windows partly open, housing generally provides about 10 to 15 dB of interior-to-exterior noise level reduction. Thus, if the outdoor sound level is 60 dB or less, there is a reasonable chance that the resulting indoor sound level will afford acceptable interior conversation. With windows closed, 24 dB of attenuation is typical.

Sleep Interference

Research on sleep disruption from noise has led to widely varying observations. In part, this is because (1) sleep can be disturbed without awakening, (2) the deeper the sleep the more noise it takes to cause arousal, (3) the tendency to awaken increases with age, and other factors. **Figure A-9** shows a summary of findings on the topic.

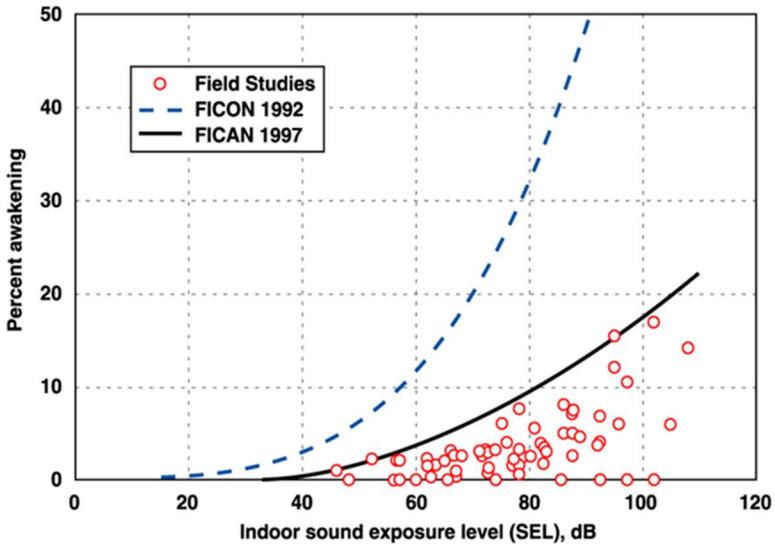


Figure A-9. Sleep Interference

Source: Federal Interagency Committee on Aircraft Noise (FICAN), "Effects of Aviation Noise on Awakenings from Sleep," June 1997, pg. 6

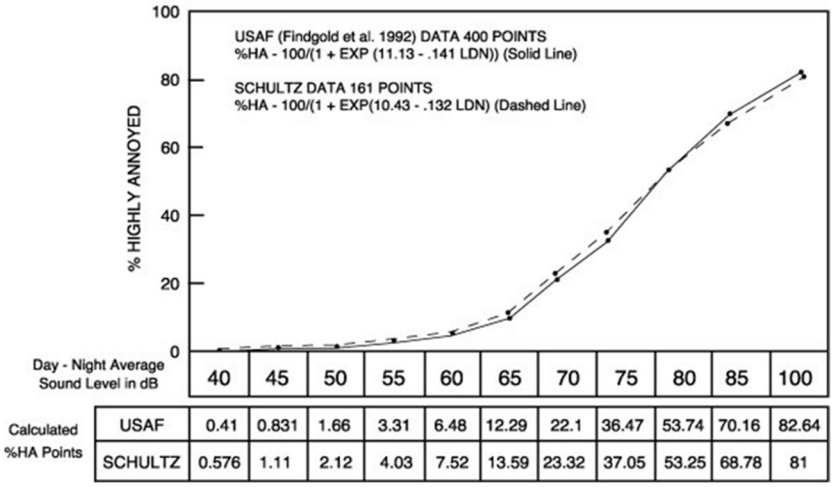
Figure A-9 uses indoor SEL as the measure of noise exposure; current research supports the use of this metric in assessing sleep disruption. An indoor SEL of 80 dBA results in a maximum of 10% awakening.[69]

Community Annoyance

Numerous psychoacoustic surveys provide substantial evidence that individual reactions to noise vary widely with noise exposure level. Since the early 1970s, researchers have determined (and subsequently confirmed) that aggregate community response is generally predictable and relates reasonably well to cumulative noise exposure such as DNL. **Figure A-10** depicts the widely recognized relationship between environmental noise and the percentage of people "highly annoyed," with annoyance being the key indicator of community response usually cited in this body of research. Separate work by the EPA showed that overall community reaction to a noise environment was also correlated with DNL. **Figure A-11** depicts this relationship.

[69] The awakening data presented in Figure A-9 apply only to individual noise events. The American National Standards Institute (ANSI) has published a standard that provides a method for estimating the number of people awakened at least once from a full night of noise events: ANSI/ASA S12.9-2008 / Part 6, "Quantities and Procedures for Description and Measurement of Environmental Sound – Part 6: Methods for Estimation of Awakenings Associated with Outdoor Noise Events Heard in Homes." This method can use the information on single events computed by a program such as the FAA's AEDT, to compute awakenings.

As noted above in the discussion of DNL, the full report on the FAA's recent research, polling communities surrounding 20 airports nationwide, was released in January 2021. At the time of this reporting, the public review and comment period on that research had ended but FAA had not yet issued new guidance.



Day - Night Average Sound Level in dB		40	45	50	55	60	65	70	75	80	85	100
Calculated %HA Points	USAF	0.41	0.831	1.66	3.31	6.48	12.29	22.1	36.47	53.74	70.16	82.64
	SCHULTZ	0.576	1.11	2.12	4.03	7.52	13.59	23.32	37.05	53.25	68.78	81

Figure A-10. Percentage of People Highly Annoyed

Source: FICON, "Federal Agency Review of Selected Airport Noise Analysis Issues," September 1992

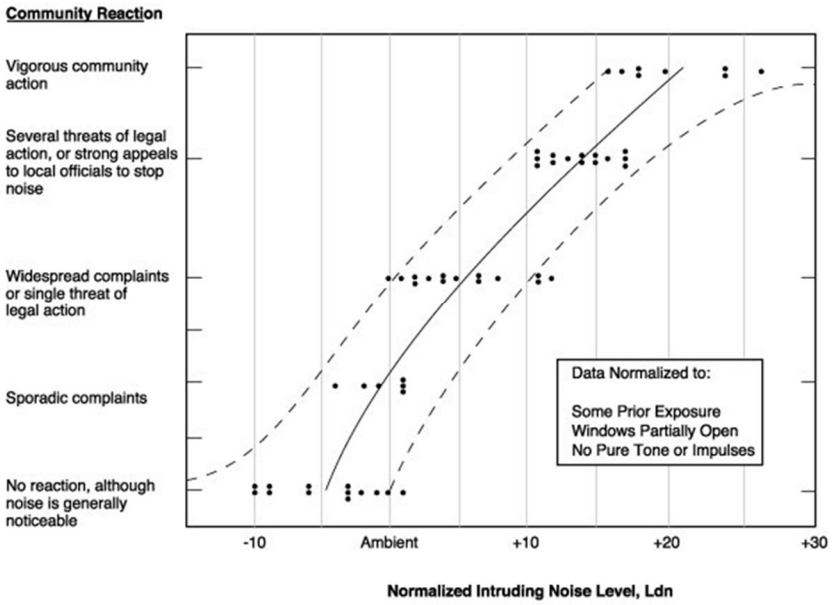


Figure A-11. Community Reaction as a Function of Outdoor DNL

Source: Wyle Laboratories, Community Noise, prepared for the U.S. EPA, Office of Noise Abatement and Control, Washington, D.C., December 1971, pg. 63

Data summarized in the figure suggest that little reaction would be expected for intrusive noise levels five decibels below the ambient, while widespread complaints can be expected as intruding noise exceeds background levels by about five decibels. Vigorous action is likely when levels exceed the background by 20 dB.

Noise Propagation

This section presents information sound-propagation effect due to weather, source-to-listener distance, and vegetation.

Weather-Related Effects

Weather (or atmospheric) conditions that can influence the propagation of sound include humidity, precipitation, temperature, wind, and turbulence (or gustiness). The effect of wind – turbulence in particular – is generally more important than the effects of other factors. Under calm-wind conditions, the importance of temperature (in particular vertical "gradients") can increase, sometimes to very significant levels. Humidity generally has little significance relative to the other effects.

Influence of Humidity and Precipitation

Humidity and precipitation rarely affect sound propagation in a significant manner. Humidity can reduce propagation of high-frequency noise under calm-wind conditions. This is called "Atmospheric absorption." In very cold conditions, listeners often observe that aircraft sound "tinny," because the dry air increases the propagation of high-frequency sound. Rain, snow, and fog also have little, if any noticeable effect on sound propagation. A substantial body of empirical data supports these conclusions.[70]

Influence of Temperature

The velocity of sound in the atmosphere is dependent on the air temperature. [71] As a result, if the temperature varies at different heights above the ground, sound will travel in curved paths rather than straight lines. During the day, the temperature normally decreases with increasing height. Under such "temperature lapse" conditions, the atmosphere refracts ("bends") sound waves upwards and an acoustical shadow zone may exist at some distance from the noise source.

Under some weather conditions, an upper level of warmer air may trap a lower layer of cool air. Such a "temperature inversion" is most common in the evening, at night, and early in the

[70]Ingard, Uno. "A Review of the Influence of Meteorological Conditions on Sound Propagation," *Journal of the Acoustical Society of America*, Vol. 25, No. 3, May 1953, p. 407.

[71]In dry air, the approximate velocity of sound can be obtained from the relationship:

$c = 331 + 0.6T_c$ (c in meters per second, T_c in degrees Celsius). Pierce, Allan D., *Acoustics: An Introduction to its Physical Principles and Applications.* McGraw-Hill. 1981. p. 29.

morning when heat absorbed by the ground during the day radiates into the atmosphere. [72] The effect of an inversion is just the opposite of lapse conditions. It causes sound propagating through the atmosphere to refract downward.

The downward refraction caused by temperature inversions often allows sound rays with originally upward-sloping paths to bypass obstructions and ground effects, increasing noise levels at greater distances. This type of effect is most prevalent at night, when temperature inversions are most common and when wind levels often are very low, limiting any confounding factors. [73] Under extreme conditions, one study found that noise from ground-borne aircraft might be amplified 15 to 20 dB by a temperature inversion. In a similar study, noise caused by an aircraft on the ground registered a higher level at an observer location 1.8 miles away than at a second observer location only 0.2 miles from the aircraft. [74]

Influence of Wind

Wind has a strong directional component that can lead to significant variation in propagation. In general, receivers that are downwind of a source will experience higher sound levels, and those that are upwind will experience lower sound levels. Wind perpendicular to the source-to-receiver path has no significant effect.

The refraction caused by wind direction and temperature gradients is additive. [75] One study suggests that for frequencies greater than 500 Hz, the combined effects of these two factors tends towards two extreme values: approximately 0 dB in conditions of downward refraction (temperature inversion or downwind propagation) and -20 dB in upward refraction conditions (temperature lapse or upwind propagation). At lower frequencies, the effects of refraction due to wind and temperature gradients are less pronounced. [76]

Wind turbulence (or "gustiness") can also affect sound propagation. Sound levels heard at remote receiver locations will fluctuate with gustiness. In addition, gustiness can cause considerable attenuation of sound due to effects of eddies traveling with the wind. Attenuation due to eddies is essentially the same in all directions, with or against the flow of the wind, and can mask the refractive effects discussed above. [77]

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[72]Embleton, T.F.W., G.J. Thiessen, and J.E. Piercy, "Propagation in an inversion and reflections at the ground," *Journal of the Acoustical Society of America*, Vol. 59, No. 2, February 1976, p. 278.

[73]Ingard, p. 407.

[74]Dickinson, P.J., "Temperature Inversion Effects on Aircraft Noise Propagation," (Letters to the Editor) *Journal of Sound and Vibration.* Vol. 47, No. 3, 1976, p. 442.

[75]Piercy and Embleton, p. 1412. Note, in addition, that as a result of the scalar nature of temperature and the vector nature of wind, the following is true: under lapse conditions, the refractive effects of wind and temperature add in the upwind direction and cancel each other in the downwind direction. Under inversion conditions, the opposite is true.

[76]Piercy and Embleton, p. 1413.

[77]Ingard, pp. 409-410.

Distance-Related Effects

People often ask how distance from an aircraft to a listener affects sound levels. Changes in distance may be associated with varying terrain, offsets to the side of a flight path, or aircraft altitude. The answer is a bit complex, because distance affects the propagation of sound in several ways.

The principal effect results from the fact that any emitted sound expands in a spherical fashion – like a balloon – as the distance from the source increases, resulting in the sound energy being spread out over a larger volume. With each doubling of distance, spherical spreading reduces instantaneous or maximum level by approximately six decibels and SEL by approximately three decibels.

Vegetation-Related Effects

Sound can be scattered and absorbed as it travels through vegetation. This results in a decrease in sound levels. The literature on the effect of vegetation on sound propagation contains several approaches to calculating its effect. Though these approaches differ in some respects, they agree on the following:

- The vegetation must be dense and deep enough to block the line of sight
- The noise reduction is greatest at high frequencies and least at low frequencies

The International Standard ISO 9613-2[78] provides a useful example of the types of calculations employed in these methods. Originally developed for industrial noise sources, ISO 9613-2 is well-suited for the evaluation of ground-based aircraft noise sources under favorable meteorological conditions for sound propagation. ISO 9613-2's methodology for calculating sound propagation includes geometric dispersion from acoustical point sources, atmospheric absorption, the effects of areas of hard and soft ground, screening due to barriers, and reflections. The attenuation provided by dense foliage varies by octave band and by distance as shown in **Table A-1**.

For propagation through less than 10 m of dense foliage, no attenuation is assumed. For propagation through 10 m to 20 m of dense foliage, the total attenuation is shown in the first row of **Table A-1.** For distances between 20 m and 200 m, the total attenuation is computed by multiplying the distance of propagation through dense foliage by the dB/m values shown in the second row of **Table A-1.**

[78] International Organization for Standardization, Acoustics – Attenuation of sound during propagation outdoors – Part 2: General Method of calculation, International Standard ISO9613-2, Geneva, Switzerland (15 December 1996).

Table A-1. Dense Foliage Noise Attenuation

Source: ISO 9613-2, Table A.1

Propagation Distance	Nominal Midband Frequency (Hz)							
	63	125	250	500	1,000	2,000	4,000	8,000
10 m to 20 m (dB Attenuation)	0	0	1	1	1	1	2	3
20 m to 200 m (dB/m Attenuation)	0.02	0.03	0.04	0.05	0.06	0.08	0.09	0.12

ISO 9613-2 assumes a moderate downwind condition. The equations in the ISO Standard also hold, equivalently, for average propagation under a well-developed moderate ground-based temperature inversion, such as commonly occurs on clear, calm nights. In either case, the sound is refracted downward. The radius of this curved path is assumed to be 5 km. With this curved sound path, only portions of the sound path may travel through the dense foliage, as illustrated by **Figure A-12**. Thus, the relative locations of the source and receiver, the dimensions of the volume of dense foliage, and the contours of the intervening terrain are essential to the estimation of the noise attenuation.

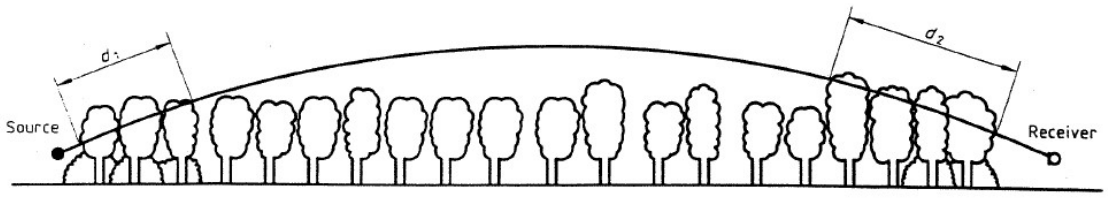


Figure A-12. Downward Refracting Sound Path

source: ISO 9613-2

As illustrated in **Figure A-12**, the foliage only provides attenuation if the sound path passes through the foliage. For aircraft in the air, the sound will pass through little, if any foliage. Additionally, either the noise source or receiver must be near the foliage for it to have an effect.

APPENDIX B REFERENCE CORRESPONDENCE

Avelo Airlines Letter of Intent

November 4, 2021

Mr. Jorge Roberts
45025 Aviation Drive
Suite 100
Dulles, VA 20166

Subject: **Avelo Airlines' intent in expanding service at Tweed New Haven Airport (HVN)**

Dear Mr. Roberts:

With the successful launch of nonstop service to Florida from HVN on November 3, 2021, we would like to confirm Avelo Airlines' desire to expand commercial air service at the Tweed New Haven Airport (HVN). As of today, we anticipate the following estimates and restrictions.

2021 and 2022 Operations (initial full year):

- Aircraft: B737-700W, CFM56-7B22 engines.
- Destinations: initially 6 destinations in Florida (Fort Lauderdale-Hollywood International Airport (FLL), Fort Myers' Southwest Florida International Airport (RSW), Orlando International Airport (MCO), Sarasota/Bradenton International Airport (SRQ) Tampa International Airport (TPA) and West Palm Beach (PBI)).
- Limitations: out of 147 seats on the 737-700W, only 130-140 passengers can be carried on routes of 1,000-1,200 statute miles (Florida), only 118-129 passengers on routes 1,200-1,700 miles (Rocky Mountains, Texas, etc.), and only 80-90 passengers on routes more than 1,700 miles away (Western US) due to the limitation of the existing runway length. Avelo plans to replace B737-700Ws with B737-800Ws with 189 seats with the extended runway to operate Eastern US routes, but will still require use of 737-700Ws in order to operate longer flights capable of carrying 147 passengers.
- Aircraft Operations for the 737-700W and 737-800W, max thrust setting required and flaps at 5 degrees for takeoff, minimum autobrakes and flaps at 40 degrees for landing (note that these are unusual, but necessary settings for operations on existing runway).
- Runway Length Need: A runway length of 6,635 feet would be needed to eliminate weight penalties/passenger limitation to the B737-700W aircraft in operating routes more than 1,200 miles and, allowing us operating our B737-800W aircraft in fleet to serve Eastern US destinations without a 50-passenger weight restriction.
- Anticipated Peak Day of Week Schedule:

Departures	Arrivals
06:00	09:00
06:00	10:25
07:00	13:40
07:45	14:00
08:30	14:55
09:45	15:10
11:10	17:25
14:25	19:40
14:45	21:05
15:40	21:45
15:55	22:25

18:10	22:35

2024 Operations (post Runway extension):

- Aircraft: B737-700W, CFM56-7B22 engines and B737-800W, CFM56-7B26 engines
- Destinations: Florida, Southern US, Midwestern US, pre-clearance Caribbean
- Runway Length Need: A runway length of 6,635 feet would be needed for this aircraft to operate without any weight penalties/passenger limitation to serve all our destinations with the 737-700W and eastern US with the 737-800W.
- Aircraft Operations For the 737-700W and 737-800W, reduced thrust setting (max thrust no longer required) and flaps at 5 degrees for takeoff, autobrakes level 3 and flaps at 30 degrees for landing (note that these are more standard settings possible with the longer runway).
- Anticipated Peak Day of Week Schedule:

Departures	Arrivals
06:00	[illegible]
06:00	09:[illegible]
06:30	10:05
07:00	10:25
07:45	13:40
08:00	14:00
09:45	14:40
10:50	14:55
11:10	15:05
14:25	17:25
14:45	18:50
15:25	19:25
15:[illegible]	19:40
[illegible]:50	21:05
[illegible]	21:45
19:4[illegible]	21:55
20:10	22:35

2029 Operations:

- Aircraft: [illegible]737-700W, C[illegible]56-7B22 [illegible]gines and B737-800W, CFM56-7B26 engines
- Destinations: Domestic U[illegible]nd pre-clearance Caribbean
- Runway Length Need: A runway length of 6,635 feet would be needed for this aircraft to operate without any weight penalties/passenger limitation to serve all our destinations with the 737-700W and eastern US with the 737-800W.
- Aircraft Operations: [illegible]e 737-700W and 737-800W, reduced thrust setting (max thrust no longer required) a[illegible] flaps at 5 degrees for takeoff, autobrakes level 3 and flaps at 30 degrees for landing (note that these are more standard settings possible with the longer runway).
- Anticipated Peak Day of Week Schedule:

Departures	Arrivals
6:00	06:00
6:15	06:50
6:30	08:05
7:00	09:00
7:45	09:15
8:00	10:05
8:50	10:10

DRAFT

9:00	10:25
9:45	12:50
10:00	13:40
10:50	14:00
10:55	14:40
11:10	14:55
13:35	15:05
14:25	15:50
14:45	15:55
15:25	16:55
15:40	17:25
15:50	40
16:35	
16:40	18:50
17:40	:25
18:10	
18:25	21:
19:35	21:45
19:45	21:55
20:10	22:35
20:25	23:20

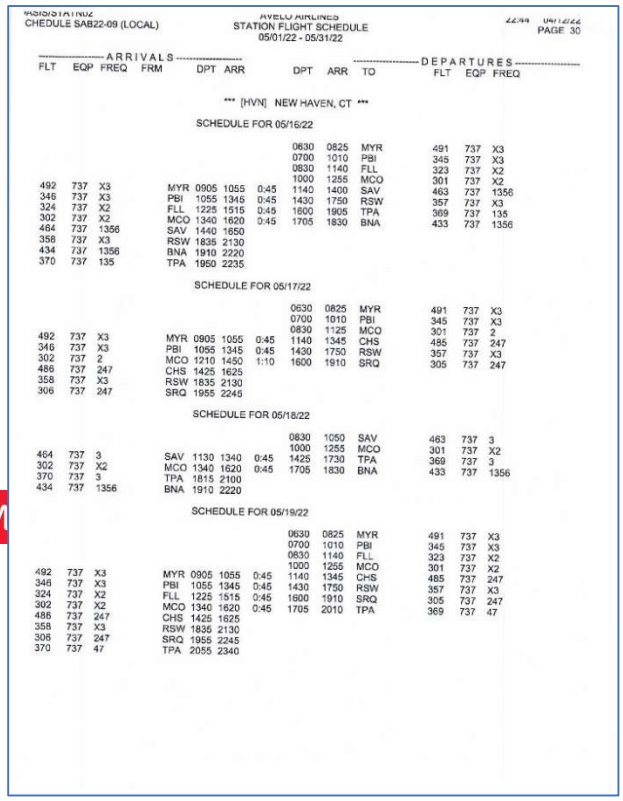
We are excited about the opportunity for Avelo [illegible] expand se[illegible]e at HVN. Please feel free to contact me with any further questions.

Best regards,

Greg Rehwaldt
Avelo Airlines
XXX

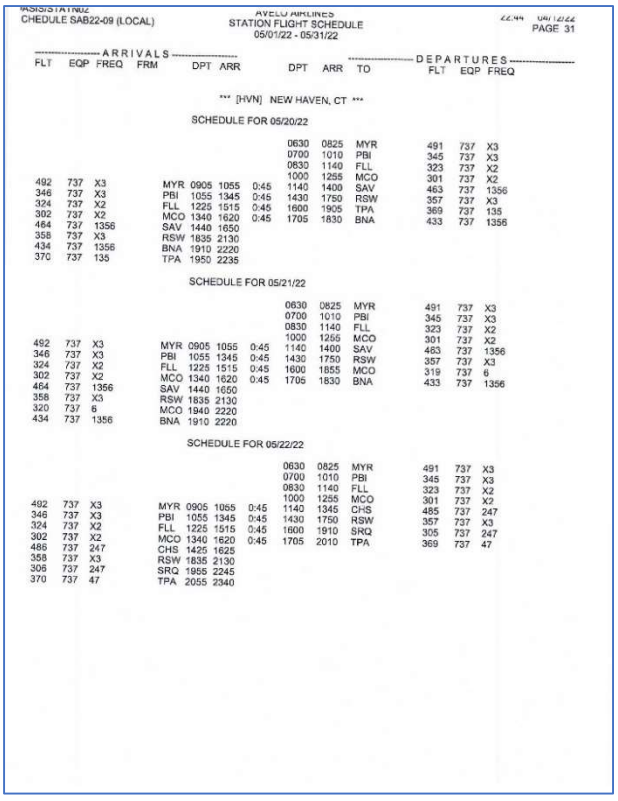
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Avelo Airlines Flight Schedule for May - July 2022



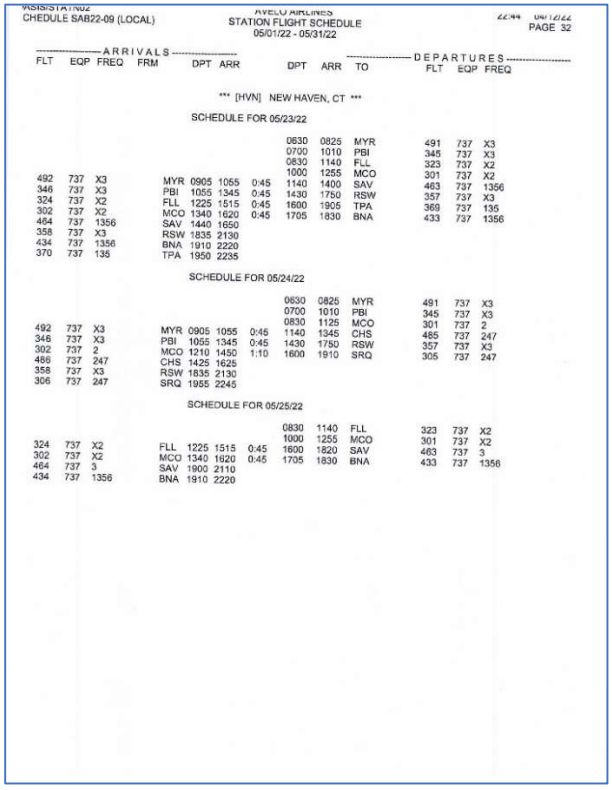
AVELO AIRLINES
CHEDULE SAB22-09 (LOCAL) STATION FLIGHT SCHEDULE PAGE 30
05/01/22 - 05/31/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
*** [HVN] NEW HAVEN, CT ***												
SCHEDULE FOR 05/16/22												
							0630	0825	MYR	491	737	X3
							0700	1010	PBI	345	737	X3
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	X2
492	737	X3	MYR	0905	1055	0:45	1140	1400	SAV	463	737	1356
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
324	737	X2	FLL	1225	1515	0:45	1600	1905	TPA	369	737	135
302	737	X2	MCO	1340	1620	0:45	1705	1830	BNA	433	737	1356
464	737	1356	SAV	1440	1650							
358	737	X3	RSW	1835	2130							
434	737	1356	BNA	1910	2220							
370	737	135	TPA	1950	2235							
SCHEDULE FOR 05/17/22												
							0630	0825	MYR	491	737	X3
							0700	1010	PBI	345	737	X3
							0830	1125	MCO	301	737	2
492	737	X3	MYR	0905	1055	0:45	1140	1345	CHS	485	737	247
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
302	737	2	MCO	1210	1450	1:10	1600	1910	SRQ	305	737	247
486	737	247	CHS	1425	1625							
358	737	X3	RSW	1835	2130							
306	737	247	SRQ	1955	2245							
SCHEDULE FOR 05/18/22												
							0630	1050	SAV	463	737	3
							1000	1255	MCO	301	737	X2
464	737	3	SAV	1130	1340	0:45	1425	1730	TPA	369	737	3
302	737	X2	MCO	1340	1620	0:45	1705	1830	BNA	433	737	1356
370	737	3	TPA	1815	2100							
434	737	1356	BNA	1910	2220							
SCHEDULE FOR 05/19/22												
							0630	0825	MYR	491	737	X3
							0700	1010	PBI	345	737	X3
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	X2
492	737	X3	MYR	0905	1055	0:45	1140	1345	CHS	485	737	247
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
324	737	X2	FLL	1225	1515	0:45	1600	1910	SRQ	305	737	247
302	737	X2	MCO	1340	1620	0:45	1705	2010	TPA	369	737	47
486	737	247	CHS	1425	1625							
358	737	X3	RSW	1835	2130							
306	737	247	SRQ	1955	2245							
370	737	47	TPA	2055	2340							



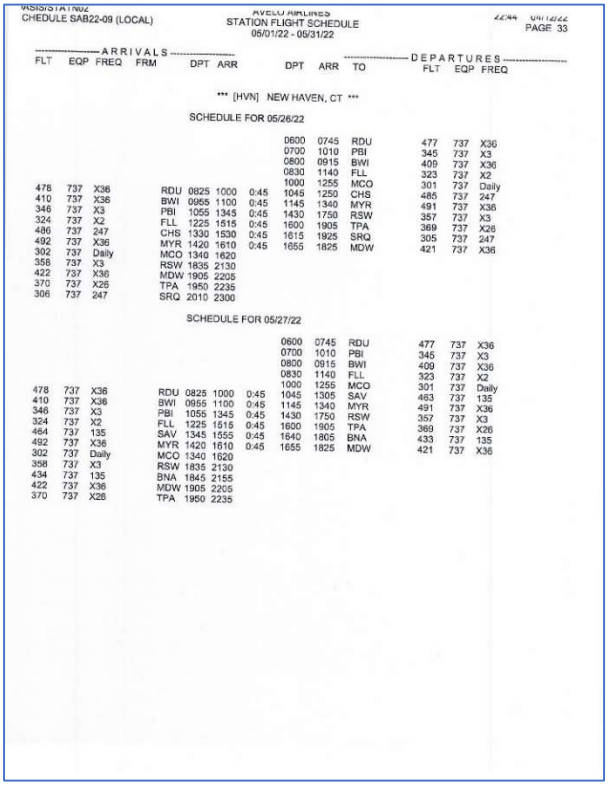
AVELO AIRLINES
CHEDULE SAB22-09 (LOCAL) STATION FLIGHT SCHEDULE PAGE 31
05/01/22 - 05/31/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
*** [HVN] NEW HAVEN, CT ***												
SCHEDULE FOR 05/20/22												
							0630	0825	MYR	491	737	X3
							0700	1010	PBI	345	737	X3
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	X2
492	737	X3	MYR	0905	1055	0:45	1140	1400	SAV	463	737	1356
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
324	737	X2	FLL	1225	1515	0:45	1600	1905	TPA	369	737	135
302	737	X2	MCO	1340	1620	0:45	1705	1830	BNA	433	737	1356
464	737	1356	SAV	1440	1650							
358	737	X3	RSW	1835	2130							
434	737	1356	BNA	1910	2220							
370	737	135	TPA	1950	2235							
SCHEDULE FOR 05/21/22												
							0630	0825	MYR	491	737	X3
							0700	1010	PBI	345	737	X3
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	X2
492	737	X3	MYR	0905	1055	0:45	1140	1400	SAV	463	737	1356
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
324	737	X2	FLL	1225	1515	0:45	1600	1855	MCO	319	737	6
302	737	X2	MCO	1340	1620	0:45	1705	1830	BNA	433	737	1356
464	737	1356	SAV	1440	1650							
358	737	X3	RSW	1835	2130							
320	737	6	MCO	1940	2220							
434	737	1356	BNA	1910	2220							
SCHEDULE FOR 05/22/22												
							0630	0825	MYR	491	737	X3
							0700	1010	PBI	345	737	X3
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	X2
492	737	X3	MYR	0905	1055	0:45	1140	1345	CHS	485	737	247
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
324	737	X2	FLL	1225	1515	0:45	1600	1910	SRQ	305	737	247
302	737	X2	MCO	1340	1620	0:45	1705	2010	TPA	369	737	47
486	737	247	CHS	1425	1625							
358	737	X3	RSW	1835	2130							
306	737	247	SRQ	1955	2245							
370	737	47	TPA	2055	2340							



AVELO AIRLINES
CHEDULE SAB22-09 (LOCAL) STATION FLIGHT SCHEDULE PAGE 32
05/01/22 - 05/31/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
*** [HVN] NEW HAVEN, CT ***												
SCHEDULE FOR 05/23/22												
							0630	0825	MYR	491	737	X3
							0700	1010	PBI	345	737	X3
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	X2
492	737	X3	MYR	0905	1055	0:45	1140	1400	SAV	463	737	1356
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
324	737	X2	FLL	1225	1515	0:45	1600	1905	TPA	369	737	135
302	737	X2	MCO	1340	1620	0:45	1705	1830	BNA	433	737	1356
464	737	1356	SAV	1440	1650							
358	737	X3	RSW	1835	2130							
434	737	1356	BNA	1910	2220							
370	737	135	TPA	1950	2235							
SCHEDULE FOR 05/24/22												
							0630	0825	MYR	491	737	X3
							0700	1010	PBI	345	737	X3
							0830	1125	MCO	301	737	2
492	737	X3	MYR	0905	1055	0:45	1140	1345	CHS	485	737	247
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
302	737	2	MCO	1210	1450	1:10	1600	1910	SRQ	305	737	247
486	737	247	CHS	1425	1625							
358	737	X3	RSW	1835	2130							
306	737	247	SRQ	1955	2245							
SCHEDULE FOR 05/25/22												
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	X2
324	737	X2	FLL	1225	1515	0:45	1600	1820	SAV	463	737	3
302	737	X2	MCO	1340	1620	0:45	1705	1830	BNA	433	737	1356
464	737	3	SAV	1900	2110							
434	737	1356	BNA	1910	2220							



AVELO AIRLINES
CHEDULE SAB22-09 (LOCAL) STATION FLIGHT SCHEDULE PAGE 33
05/01/22 - 05/31/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
*** [HVN] NEW HAVEN, CT ***												
SCHEDULE FOR 05/26/22												
							0600	0745	RDU	477	737	X36
							0700	1010	PBI	345	737	X3
							0800	0915	BWI	409	737	X36
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	Daily
478	737	X36	RDU	0825	1000	0:45	1045	1250	CHS	485	737	247
410	737	X36	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X36
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
324	737	X2	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X26
486	737	247	CHS	1330	1530	0:45	1615	1925	SRQ	305	737	247
492	737	X36	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X36
302	737	Daily	MCO	1340	1620							
358	737	X3	RSW	1835	2130							
422	737	X36	MDW	1905	2205							
370	737	X26	TPA	1950	2235							
306	737	247	SRQ	2010	2300							
SCHEDULE FOR 05/27/22												
							0600	0745	RDU	477	737	X36
							0700	1010	PBI	345	737	X3
							0800	0915	BWI	409	737	X36
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	Daily
478	737	X36	RDU	0825	1000	0:45	1045	1305	SAV	463	737	135
410	737	X36	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X36
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
324	737	X2	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X26
464	737	135	SAV	1345	1555	0:45	1640	1805	BNA	433	737	135
492	737	X36	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X36
302	737	Daily	MCO	1340	1620							
358	737	X3	RSW	1835	2130							
434	737	135	BNA	1845	2155							
422	737	X36	MDW	1905	2205							
370	737	X26	TPA	1950	2235							

CHEDULE SAB22-09 (LOCAL) AVELO AIRLINES STATION FLIGHT SCHEDULE 05/01/22 - 05/31/22 PAGE 34

*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 05/28/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0755	MYR	491	737	6
							0630	0850	SAV	463	737	6
							0700	1010	PBI	345	737	X3
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	Daily
492	737	6	MYR	0835	1025	0:45	1110	1315	CHS	485	737	6
464	737	6	SAV	0930	1140	0:45	1225	1350	BNA	433	737	6
346	737	X3	PBI	1055	1345	0:45	1430	1625	MYR	495	737	6
324	737	X2	FLL	1225	1515	0:45	1600	1855	MCO	319	737	6
486	737	6	CHS	1355	1555							
302	737	Daily	MCO	1340	1620							
434	737	6	BNA	1430	1740							
496	737	6	MYR	1705	1855							
320	737	6	MCO	1940	2220							

SCHEDULE FOR 05/29/22

							0600	0745	RDU	477	737	X36
							0800	0915	BWI	409	737	X36
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	Daily
478	737	X36	RDU	0825	1000	0:45	1045	1250	CHS	485	737	247
410	737	X36	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X36
							1430	1750	RSW	357	737	X3
324	737	X2	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X26
486	737	247	CHS	1330	1530	0:45	1615	1925	SRQ	305	737	247
492	737	X36	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X36
302	737	Daily	MCO	1340	1620							
358	737	X3	RSW	1835	2130							
422	737	X36	MDW	1905	2205							
370	737	X26	TPA	1950	2235							
306	737	247	SRQ	2010	2300							

CHEDULE SAB22-09 (LOCAL) AVELO AIRLINES STATION FLIGHT SCHEDULE 05/01/22 - 05/31/22 PAGE 35

*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 05/30/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X36
							0700	1010	PBI	345	737	X3
							0800	0915	BWI	409	737	X36
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	Daily
478	737	X36	RDU	0825	1000	0:45	1045	1305	SAV	463	737	135
410	737	X36	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X36
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
324	737	X2	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X26
464	737	135	SAV	1345	1555	0:45	1640	1805	BNA	433	737	135
492	737	X36	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X36
302	737	Daily	MCO	1340	1620							
358	737	X3	RSW	1835	2130							
434	737	135	BNA	1845	2155							
422	737	X36	MDW	1905	2205							
370	737	X26	TPA	1950	2235							

SCHEDULE FOR 05/31/22

							0600	0745	RDU	477	737	X36
							0700	1010	PBI	345	737	X3
							0800	0915	BWI	409	737	X36
							1000	1255	MCO	301	737	Daily
478	737	X36	RDU	0825	1000	0:45	1045	1250	CHS	485	737	247
410	737	X36	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X36
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
486	737	247	CHS	1330	1530	0:45	1615	1925	SRQ	305	737	247
492	737	X36	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X36
302	737	Daily	MCO	1340	1620							
358	737	X3	RSW	1835	2130							
422	737	X36	MDW	1905	2205							
306	737	247	SRQ	2010	2300							

CHEDULE SAB22-08 (LOCAL) AVELO AIRLINES STATION FLIGHT SCHEDULE 06/01/22 - 06/30/22 PAGE 32

*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 06/01/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	Daily
							1045	1305	SAV	463	737	135
324	737	X2	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X26
464	737	135	SAV	1345	1555	0:45	1640	1805	BNA	433	737	135
302	737	Daily	MCO	1340	1620							
434	737	135	BNA	1845	2155							
370	737	X26	TPA	1950	2235							

SCHEDULE FOR 06/02/22

							0600	0745	RDU	477	737	X36
							0700	1010	PBI	345	737	X3
							0800	0915	BWI	409	737	X36
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	Daily
478	737	X36	RDU	0825	1000	0:45	1045	1250	CHS	485	737	247
410	737	X36	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X36
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
324	737	X2	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X26
486	737	247	CHS	1330	1530	0:45	1615	1925	SRQ	305	737	247
492	737	X36	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X36
302	737	Daily	MCO	1340	1620							
358	737	X3	RSW	1835	2130							
422	737	X36	MDW	1905	2205							
370	737	X26	TPA	1950	2235							
306	737	247	SRQ	2010	2300							

SCHEDULE FOR 06/03/22

							0600	0745	RDU	477	737	X36
							0700	1010	PBI	345	737	X3
							0800	0915	BWI	409	737	X36
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	Daily
478	737	X36	RDU	0825	1000	0:45	1045	1305	SAV	463	737	135
410	737	X36	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X36
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
324	737	X2	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X26
464	737	135	SAV	1345	1555	0:45	1640	1805	BNA	433	737	135
492	737	X36	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X36
302	737	Daily	MCO	1340	1620							
358	737	X3	RSW	1835	2130							
434	737	135	BNA	1845	2155							
422	737	X36	MDW	1905	2205							
370	737	X26	TPA	1950	2235							

CHEDULE SAB22-08 (LOCAL) AVELO AIRLINES STATION FLIGHT SCHEDULE 06/01/22 - 06/30/22 PAGE 33

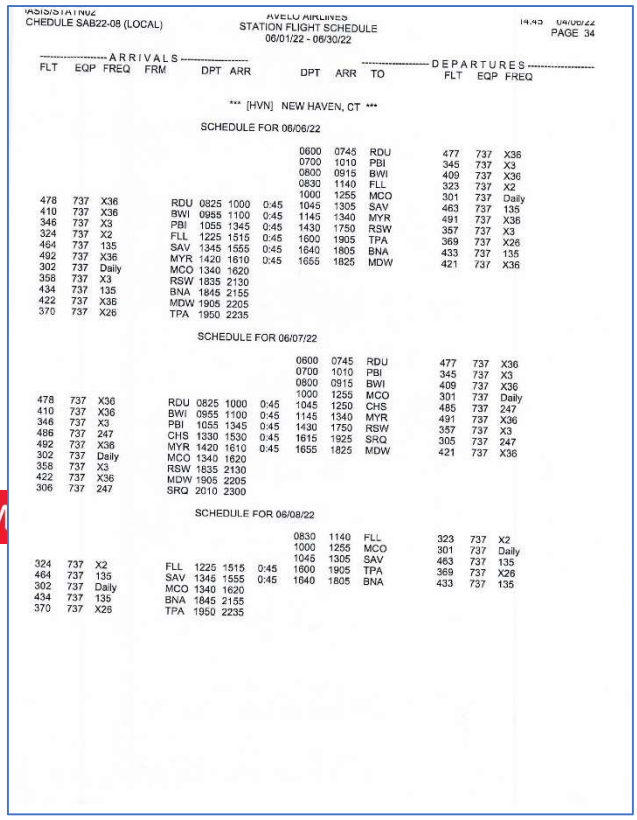
*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 06/04/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0755	MYR	491	737	6
							0630	0850	SAV	463	737	6
							0700	1010	PBI	345	737	X3
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	Daily
492	737	6	MYR	0835	1025	0:45	1110	1315	CHS	485	737	6
464	737	6	SAV	0930	1140	0:45	1225	1350	BNA	433	737	6
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
324	737	X2	FLL	1225	1515	0:45	1600	1910	SRQ	305	737	6
486	737	6	CHS	1355	1555	0:45	1640	1935	MCO	319	737	6
302	737	Daily	MCO	1340	1620							
434	737	6	BNA	1430	1740	0:45	1825	2020	MYR	495	737	6
358	737	X3	RSW	1835	2130							
306	737	6	SRQ	1955	2245							
496	737	6	MYR	2100	2250							
320	737	6	MCO	2020	2300							

SCHEDULE FOR 06/05/22

							0600	0745	RDU	477	737	X36
							0700	1010	PBI	345	737	X3
							0800	0915	BWI	409	737	X36
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	Daily
478	737	X36	RDU	0825	1000	0:45	1045	1250	CHS	485	737	247
410	737	X36	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X36
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
324	737	X2	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X26
486	737	247	CHS	1330	1530	0:45	1615	1925	SRQ	305	737	247
492	737	X36	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X36
302	737	Daily	MCO	1340	1620							
358	737	X3	RSW	1835	2130							
422	737	X36	MDW	1905	2205							
370	737	X26	TPA	1950	2235							
306	737	247	SRQ	2010	2300							



CHEDULE SAB22-08 (LOCAL) AVELO AIRLINES STATION FLIGHT SCHEDULE 06/01/22 - 06/30/22 PAGE 34

*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 06/06/22

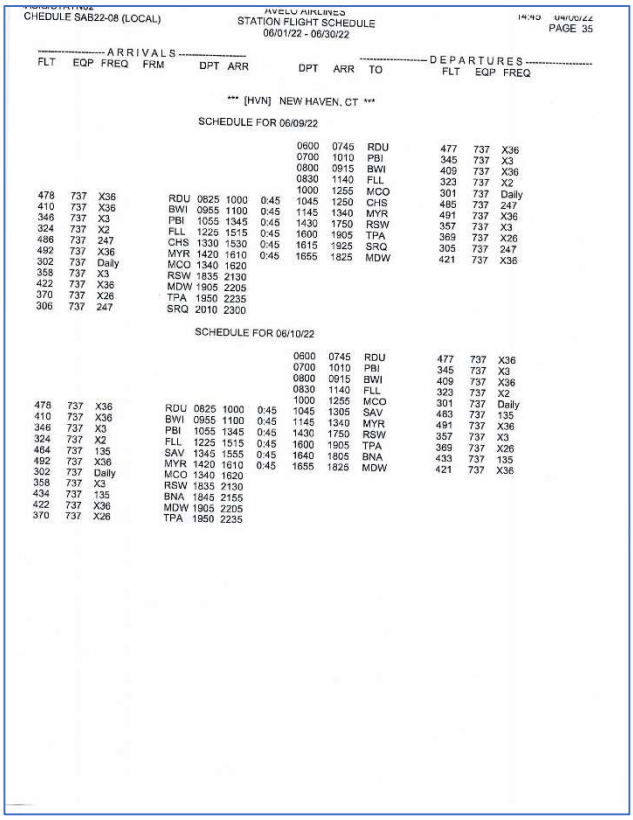
ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X36
							0700	1010	PBI	345	737	X3
							0800	0915	BWI	409	737	X36
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	Daily
478	737	X36	RDU	0825	1000	0:45	1045	1305	SAV	463	737	135
410	737	X36	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X36
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
324	737	X2	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X26
464	737	135	SAV	1345	1555	0:45	1640	1805	BNA	433	737	135
492	737	X36	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X36
302	737	Daily	MCO	1340	1620							
358	737	X3	RSW	1835	2130							
434	737	135	BNA	1845	2155							
422	737	X36	MDW	1905	2205							
370	737	X26	TPA	1950	2235							

SCHEDULE FOR 06/07/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X36
							0700	1010	PBI	345	737	X3
							0800	0915	BWI	409	737	X36
							1000	1255	MCO	301	737	Daily
478	737	X36	RDU	0825	1000	0:45	1045	1250	CHS	485	737	247
410	737	X36	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X36
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
486	737	247	CHS	1330	1530	0:45	1615	1925	SRQ	305	737	247
492	737	X36	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X36
302	737	Daily	MCO	1340	1620							
358	737	X3	RSW	1835	2130							
422	737	X36	MDW	1905	2205							
306	737	247	SRQ	2010	2300							

SCHEDULE FOR 06/08/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	Daily
							1045	1305	SAV	463	737	135
324	737	X2	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X26
464	737	135	SAV	1345	1555	0:45	1640	1805	BNA	433	737	135
302	737	Daily	BNA	1845	2155							
434	737	135	TPA	1950	2235							
370	737	X26										



CHEDULE SAB22-08 (LOCAL) AVELO AIRLINES STATION FLIGHT SCHEDULE 06/01/22 - 06/30/22 PAGE 35

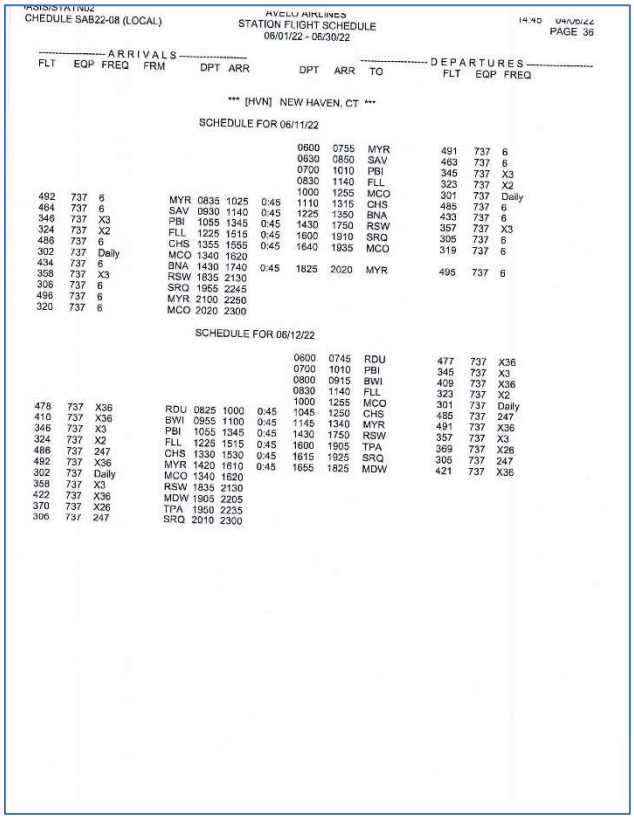
*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 06/09/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X36
							0700	1010	PBI	345	737	X3
							0800	0915	BWI	409	737	X36
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	Daily
478	737	X36	RDU	0825	1000	0:45	1045	1250	CHS	485	737	247
410	737	X36	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X36
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
324	737	X2	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X26
486	737	247	CHS	1330	1530	0:45	1615	1925	SRQ	305	737	247
492	737	X36	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X36
302	737	Daily	MCO	1340	1620							
358	737	X3	RSW	1835	2130							
422	737	X36	MDW	1905	2205							
370	737	X26	TPA	1950	2235							
306	737	247	SRQ	2010	2300							

SCHEDULE FOR 06/10/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X36
							0700	1010	PBI	345	737	X3
							0800	0915	BWI	409	737	X36
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	Daily
478	737	X36	RDU	0825	1000	0:45	1045	1305	SAV	463	737	135
410	737	X36	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X36
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
324	737	X2	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X26
464	737	135	SAV	1345	1555	0:45	1640	1805	BNA	433	737	135
492	737	X36	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X36
302	737	Daily	MCO	1340	1620							
358	737	X3	RSW	1835	2130							
434	737	135	BNA	1845	2155							
422	737	X36	MDW	1905	2205							
370	737	X26	TPA	1950	2235							



CHEDULE SAB22-08 (LOCAL) AVELO AIRLINES STATION FLIGHT SCHEDULE 06/01/22 - 06/30/22 PAGE 36

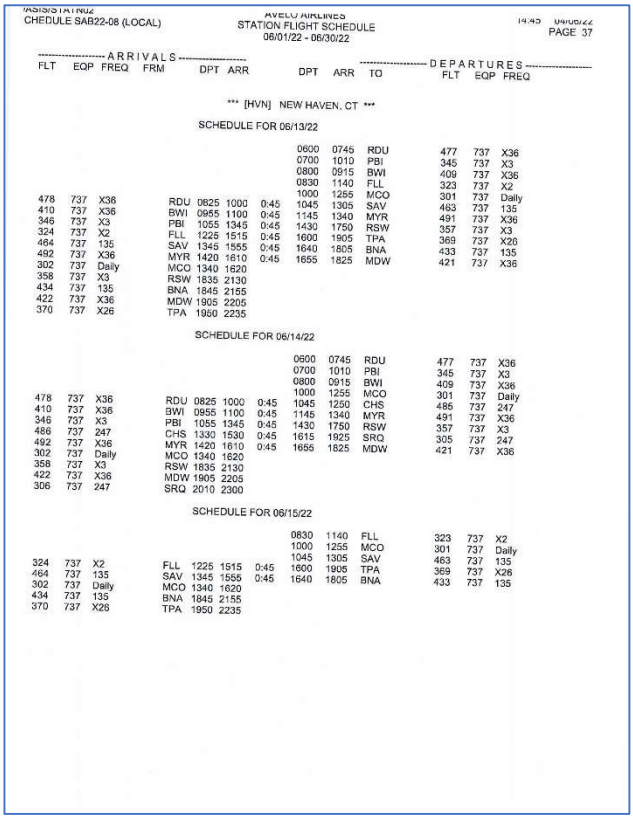
*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 06/11/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0755	MYR	491	737	6
							0630	0850	SAV	463	737	6
							0700	1010	PBI	345	737	X3
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	Daily
492	737	6	MYR	0835	1025	0:45	1110	1315	CHS	485	737	6
464	737	6	SAV	0930	1140	0:45	1225	1350	BNA	433	737	6
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
324	737	X2	FLL	1225	1515	0:45	1600	1910	SRQ	305	737	6
486	737	6	CHS	1355	1555	0:45	1640	1935	MCO	319	737	6
302	737	Daily	MCO	1340	1620							
434	737	6	BNA	1430	1740	0:45	1825	2020	MYR	495	737	6
358	737	X3	RSW	1835	2130							
306	737	6	SRQ	1955	2245							
496	737	6	MYR	2100	2250							
320	737	6	MCO	2020	2300							

SCHEDULE FOR 06/12/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X36
							0700	1010	PBI	345	737	X3
							0800	0915	BWI	409	737	X36
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	Daily
478	737	X36	RDU	0825	1000	0:45	1045	1250	CHS	485	737	247
410	737	X36	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X36
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
324	737	X2	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X26
486	737	247	CHS	1330	1530	0:45	1615	1925	SRQ	305	737	247
492	737	X36	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X36
302	737	Daily	MCO	1340	1620							
358	737	X3	RSW	1835	2130							
422	737	X36	MDW	1905	2205							
370	737	X26	TPA	1950	2235							
306	737	247	SRQ	2010	2300							



CHEDULE SAB22-08 (LOCAL) AVELO AIRLINES STATION FLIGHT SCHEDULE 06/01/22 - 06/30/22 PAGE 37

*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 06/13/22

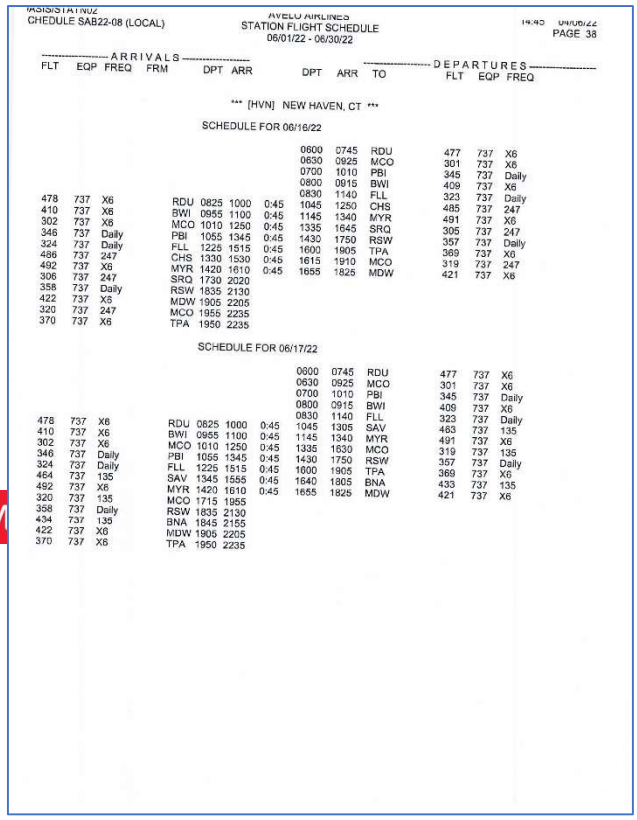
ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X36
							0700	1010	PBI	345	737	X3
							0800	0915	BWI	409	737	X36
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	Daily
478	737	X36	RDU	0825	1000	0:45	1045	1305	SAV	463	737	135
410	737	X36	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X36
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
324	737	X2	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X26
464	737	135	SAV	1345	1555	0:45	1640	1805	BNA	433	737	135
492	737	X36	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X36
302	737	Daily	MCO	1340	1620							
358	737	X3	RSW	1835	2130							
434	737	135	BNA	1845	2155							
422	737	X36	MDW	1905	2205							
370	737	X26	TPA	1950	2235							

SCHEDULE FOR 06/14/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X36
							0700	1010	PBI	345	737	X3
							0800	0915	BWI	409	737	X36
							1000	1255	MCO	301	737	Daily
478	737	X36	RDU	0825	1000	0:45	1045	1250	CHS	486	737	247
410	737	X36	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X36
346	737	X3	PBI	1055	1345	0:45	1430	1750	RSW	357	737	X3
486	737	247	CHS	1330	1530	0:45	1615	1925	SRQ	305	737	247
492	737	X36	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X36
302	737	Daily	MCO	1340	1620							
358	737	X3	RSW	1835	2130							
422	737	X36	MDW	1905	2205							
306	737	247	SRQ	2010	2300							

SCHEDULE FOR 06/15/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0830	1140	FLL	323	737	X2
							1000	1255	MCO	301	737	Daily
							1045	1305	SAV	463	737	135
324	737	X2	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X26
464	737	135	SAV	1345	1555	0:45	1640	1805	BNA	433	737	135
302	737	Daily	MCO	1340	1620							
434	737	135	BNA	1845	2155							
370	737	X26	TPA	1950	2235							



ASSISTANT
CHEDULE SAB22-08 (LOCAL) AVELO AIRLINES STATION FLIGHT SCHEDULE 06/01/22 - 06/30/22 PAGE 38

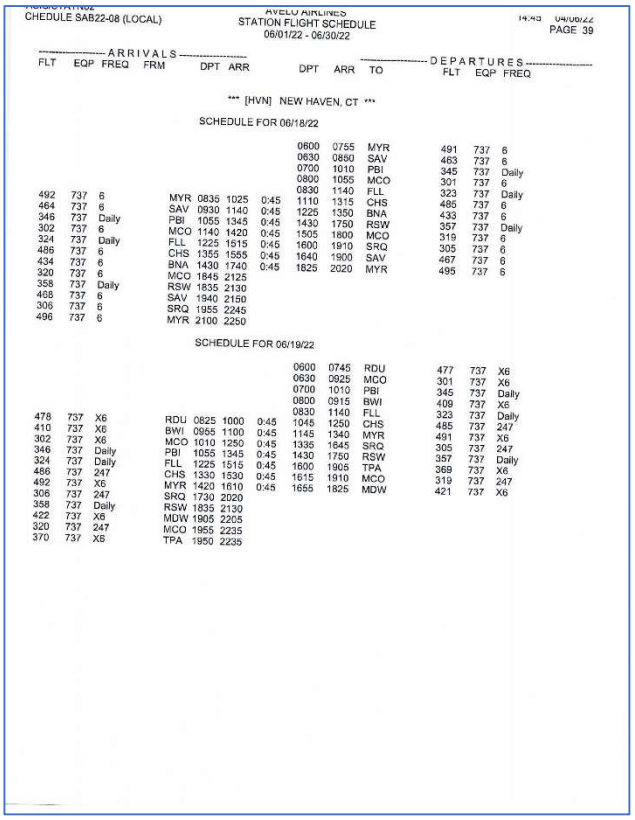
*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 06/16/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X6
							0630	0925	MCO	301	737	X6
							0700	1010	PBI	345	737	Daily
							0800	0915	BWI	409	737	X6
							0830	1140	FLL	323	737	Daily
478	737	X6	RDU	0825	1000	0:45	1045	1250	CHS	485	737	247
410	737	X6	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X6
302	737	X6	MCO	1010	1250	0:45	1335	1645	SRQ	305	737	247
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
324	737	Daily	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X6
486	737	247	CHS	1330	1530	0:45	1615	1910	MCO	319	737	247
492	737	X6	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X6
306	737	247	SRQ	1730	2020							
358	737	Daily	RSW	1835	2130							
422	737	X6	MDW	1905	2205							
320	737	247	MCO	1955	2235							
370	737	X6	TPA	1950	2235							

SCHEDULE FOR 06/17/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X6
							0630	0925	MCO	301	737	X6
							0700	1010	PBI	345	737	Daily
							0800	0915	BWI	409	737	X6
							0830	1140	FLL	323	737	Daily
478	737	X6	RDU	0825	1000	0:45	1045	1305	SAV	463	737	135
410	737	X6	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X6
302	737	X6	MCO	1010	1250	0:45	1335	1630	MCO	319	737	135
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
324	737	Daily	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X6
464	737	135	SAV	1345	1555	0:45	1640	1805	BNA	433	737	135
492	737	X6	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X6
320	737	135	MCO	1715	1955							
358	737	Daily	RSW	1835	2130							
434	737	135	BNA	1845	2155							
422	737	X6	MDW	1905	2205							
370	737	X6	TPA	1950	2235							



ASSISTANT
CHEDULE SAB22-08 (LOCAL) AVELO AIRLINES STATION FLIGHT SCHEDULE 06/01/22 - 06/30/22 PAGE 39

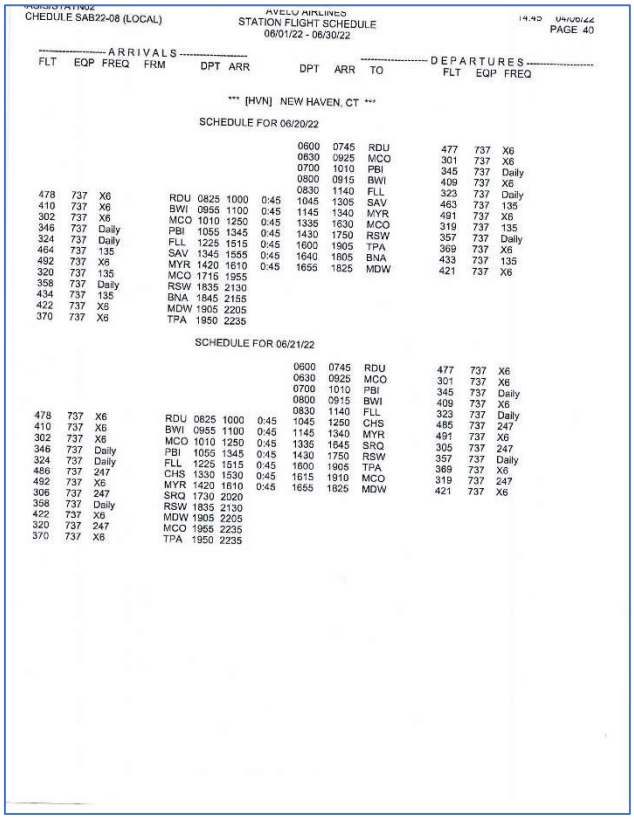
*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 06/18/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0755	MYR	491	737	6
							0630	0850	SAV	463	737	6
							0700	1010	PBI	345	737	Daily
							0800	1055	MCO	301	737	6
							0830	1140	FLL	323	737	Daily
492	737	6	MYR	0836	1025	0:45	1110	1315	CHS	485	737	6
464	737	6	SAV	0930	1140	0:45	1225	1350	BNA	433	737	6
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
302	737	6	MCO	1140	1420	0:45	1505	1800	MCO	319	737	6
324	737	Daily	FLL	1225	1515	0:45	1600	1910	SRQ	305	737	6
486	737	6	CHS	1355	1555	0:45	1640	1900	SAV	467	737	6
434	737	6	BNA	1430	1740	0:45	1825	2020	MYR	495	737	6
320	737	6	MCO	1845	2125							
358	737	Daily	RSW	1835	2130							
468	737	6	SAV	1940	2150							
306	737	6	SRQ	1955	2245							
496	737	6	MYR	2100	2250							

SCHEDULE FOR 06/19/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X6
							0630	0925	MCO	301	737	X6
							0700	1010	PBI	345	737	Daily
							0800	0915	BWI	409	737	X6
							0830	1140	FLL	323	737	Daily
478	737	X6	RDU	0825	1000	0:45	1045	1250	CHS	485	737	247
410	737	X6	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X6
302	737	X6	MCO	1010	1250	0:45	1335	1645	SRQ	305	737	247
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
324	737	Daily	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X6
486	737	247	CHS	1330	1530	0:45	1615	1910	MCO	319	737	247
492	737	X6	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X6
306	737	247	SRQ	1730	2020							
358	737	Daily	RSW	1835	2130							
422	737	X6	MDW	1905	2205							
320	737	247	MCO	1955	2235							
370	737	X6	TPA	1950	2235							



ASSISTANT
CHEDULE SAB22-08 (LOCAL) AVELO AIRLINES STATION FLIGHT SCHEDULE 06/01/22 - 06/30/22 PAGE 40

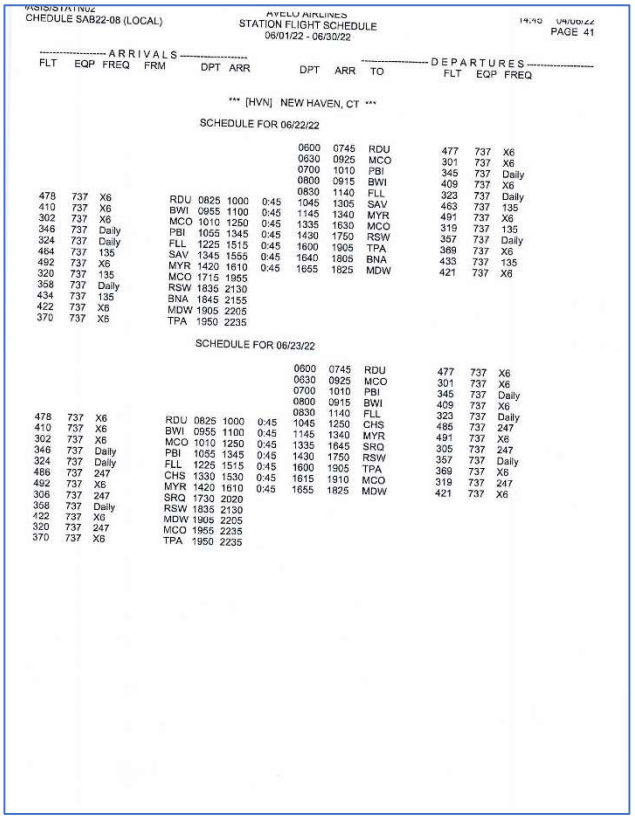
*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 06/20/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X6
							0630	0925	MCO	301	737	X6
							0700	1010	PBI	345	737	Daily
							0800	0915	BWI	409	737	X6
							0830	1140	FLL	323	737	Daily
478	737	X6	RDU	0825	1000	0:45	1045	1305	SAV	463	737	135
410	737	X6	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X6
302	737	X6	MCO	1010	1250	0:45	1335	1630	MCO	319	737	135
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
324	737	Daily	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X6
464	737	135	SAV	1345	1555	0:45	1640	1805	BNA	433	737	135
492	737	X6	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X6
320	737	135	MCO	1715	1955							
358	737	Daily	RSW	1835	2130							
434	737	135	BNA	1845	2155							
422	737	X6	MDW	1905	2205							
370	737	X6	TPA	1950	2235							

SCHEDULE FOR 06/21/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X6
							0630	0925	MCO	301	737	X6
							0700	1010	PBI	345	737	Daily
							0800	0915	BWI	409	737	X6
							0830	1140	FLL	323	737	Daily
478	737	X6	RDU	0825	1000	0:45	1045	1250	CHS	485	737	247
410	737	X6	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X6
302	737	X6	MCO	1010	1250	0:45	1335	1645	SRQ	305	737	247
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
324	737	Daily	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X6
486	737	247	CHS	1330	1530	0:45	1615	1910	MCO	319	737	247
492	737	X6	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X6
306	737	247	SRQ	1730	2020							
358	737	Daily	RSW	1835	2130							
422	737	X6	MDW	1905	2205							
320	737	247	MCO	1955	2235							
370	737	X6	TPA	1950	2235							



ASSISTANT
CHEDULE SAB22-08 (LOCAL) AVELO AIRLINES STATION FLIGHT SCHEDULE 06/01/22 - 06/30/22 PAGE 41

*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 06/22/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X6
							0630	0925	MCO	301	737	X6
							0700	1010	PBI	345	737	Daily
							0800	0915	BWI	409	737	X6
							0830	1140	FLL	323	737	Daily
478	737	X6	RDU	0825	1000	0:45	1045	1305	SAV	463	737	135
410	737	X6	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X6
302	737	X6	MCO	1010	1250	0:45	1335	1630	MCO	319	737	135
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
324	737	Daily	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X6
464	737	135	SAV	1345	1555	0:45	1640	1805	BNA	433	737	135
492	737	X6	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X6
320	737	135	MCO	1715	1955							
358	737	Daily	RSW	1835	2130							
434	737	135	BNA	1845	2155							
422	737	X6	MDW	1905	2205							
370	737	X6	TPA	1950	2235							

SCHEDULE FOR 06/23/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X6
							0630	0925	MCO	301	737	X6
							0700	1010	PBI	345	737	Daily
							0800	0915	BWI	409	737	X6
							0830	1140	FLL	323	737	Daily
478	737	X6	RDU	0825	1000	0:45	1045	1250	CHS	485	737	247
410	737	X6	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X6
302	737	X6	MCO	1010	1250	0:45	1335	1645	SRQ	305	737	247
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
324	737	Daily	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X6
486	737	247	CHS	1330	1530	0:45	1615	1910	MCO	319	737	247
492	737	X6	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X6
306	737	247	SRQ	1730	2020							
358	737	Daily	RSW	1835	2130							
422	737	X6	MDW	1905	2205							
320	737	247	MCO	1955	2235							
370	737	X6	TPA	1950	2235							

CHEDULE SAB22-08 (LOCAL) AVELO AIRLINES STATION FLIGHT SCHEDULE 06/01/22 - 06/30/22 PAGE 42

*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 06/24/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X6
							0630	0925	MCO	301	737	X6
							0700	1010	PBI	345	737	Daily
							0800	0915	BWI	409	737	X6
478	737	X6	RDU	0825	1000	0:45	0830	1140	FLL	323	737	Daily
410	737	X6	BWI	0955	1100	0:45	1045	1305	SAV	463	737	135
302	737	X6	MCO	1010	1250	0:45	1145	1340	MYR	491	737	X6
346	737	Daily	PBI	1055	1345	0:45	1335	1630	MCO	319	737	135
324	737	Daily	FLL	1225	1515	0:45	1430	1750	RSW	357	737	Daily
464	737	135	SAV	1345	1555	0:45	1600	1905	TPA	369	737	X6
492	737	X6	MYR	1420	1610	0:45	1640	1805	BNA	433	737	135
320	737	135	MCO	1715	1955		1655	1825	MDW	421	737	X6
358	737	Daily	RSW	1835	2130							
434	737	135	BNA	1845	2155							
422	737	X6	MDW	1905	2205							
370	737	X6	TPA	1950	2235							

SCHEDULE FOR 06/25/22

							0600	0755	MYR	491	737	6
							0630	0850	SAV	463	737	6
							0700	1010	PBI	345	737	Daily
							0800	1055	MCO	301	737	6
492	737	6	MYR	0835	1025	0:45	0830	1140	FLL	323	737	Daily
464	737	6	SAV	0930	1140	0:45	1110	1315	CHS	485	737	6
346	737	Daily	PBI	1055	1345	0:45	1225	1350	BNA	433	737	6
302	737	6	MCO	1140	1420	0:45	1430	1750	RSW	357	737	Daily
324	737	Daily	FLL	1225	1515	0:45	1506	1800	MCO	319	737	6
486	737	6	CHS	1355	1555	0:45	1600	1910	SRQ	305	737	6
434	737	6	BNA	1430	1740	0:45	1640	1900	SAV	467	737	6
320	737	6	MCO	1845	2125		1825	2020	MYR	495	737	6
358	737	Daily	RSW	1835	2130							
468	737	6	SAV	1940	2150							
306	737	6	SRQ	1955	2245							
496	737	6	MYR	2100	2250							

CHEDULE SAB22-08 (LOCAL) AVELO AIRLINES STATION FLIGHT SCHEDULE 06/01/22 - 06/30/22 PAGE 43

*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 06/26/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X6
							0630	0925	MCO	301	737	X6
							0700	1010	PBI	345	737	Daily
							0800	0915	BWI	409	737	X6
478	737	X6	RDU	0825	1000	0:45	0830	1140	FLL	323	737	Daily
410	737	X6	BWI	0955	1100	0:45	1045	1250	CHS	485	737	247
302	737	X6	MCO	1010	1250	0:45	1145	1340	MYR	491	737	X6
346	737	Daily	PBI	1055	1345	0:45	1335	1645	SRQ	305	737	247
324	737	Daily	FLL	1225	1515	0:45	1430	1750	RSW	357	737	Daily
486	737	247	CHS	1330	1530	0:45	1600	1905	TPA	369	737	X6
492	737	X6	MYR	1420	1610	0:45	1615	1910	MCO	319	737	247
306	737	247	SRQ	1730	2020	0:45	1655	1825	MDW	421	737	X6
358	737	Daily	RSW	1835	2130							
422	737	X6	MDW	1905	2205							
320	737	247	MCO	1955	2235							
370	737	X6	TPA	1950	2235							

SCHEDULE FOR 06/27/22

							0600	0745	RDU	477	737	X6
							0630	0925	MCO	301	737	X6
							0700	1010	PBI	345	737	Daily
							0800	0915	BWI	409	737	X6
478	737	X6	RDU	0825	1000	0:45	0830	1140	FLL	323	737	Daily
410	737	X6	BWI	0955	1100	0:45	1045	1305	SAV	463	737	135
302	737	X6	MCO	1010	1250	0:45	1145	1340	MYR	491	737	X6
346	737	Daily	PBI	1055	1345	0:45	1335	1630	MCO	319	737	135
324	737	Daily	FLL	1225	1515	0:45	1430	1750	RSW	357	737	Daily
464	737	135	SAV	1345	1555	0:45	1600	1905	TPA	369	737	X6
492	737	X6	MYR	1420	1610	0:45	1640	1805	BNA	433	737	135
320	737	135	MCO	1715	1955		1655	1825	MDW	421	737	X6
358	737	Daily	RSW	1835	2130							
434	737	135	BNA	1845	2155							
422	737	X6	MDW	1905	2205							
370	737	X6	TPA	1950	2235							

CHEDULE SAB22-08 (LOCAL) AVELO AIRLINES STATION FLIGHT SCHEDULE 06/01/22 - 06/30/22 PAGE 44

*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 06/28/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X6
							0630	0925	MCO	301	737	X6
							0700	1010	PBI	345	737	Daily
							0800	0915	BWI	409	737	X6
478	737	X6	RDU	0825	1000	0:45	0830	1140	FLL	323	737	Daily
410	737	X6	BWI	0955	1100	0:45	1045	1250	CHS	485	737	247
302	737	X6	MCO	1010	1250	0:45	1145	1340	MYR	491	737	X6
346	737	Daily	PBI	1055	1345	0:45	1335	1645	SRQ	305	737	247
324	737	Daily	FLL	1225	1515	0:45	1430	1750	RSW	357	737	Daily
486	737	247	CHS	1330	1530	0:45	1600	1905	TPA	369	737	X6
492	737	X6	MYR	1420	1610	0:45	1615	1910	MCO	319	737	247
306	737	247	SRQ	1730	2020	0:45	1655	1825	MDW	421	737	X6
358	737	Daily	RSW	1835	2130							
422	737	X6	MDW	1905	2205							
320	737	247	MCO	1955	2235							
370	737	X6	TPA	1950	2235							

SCHEDULE FOR 06/29/22

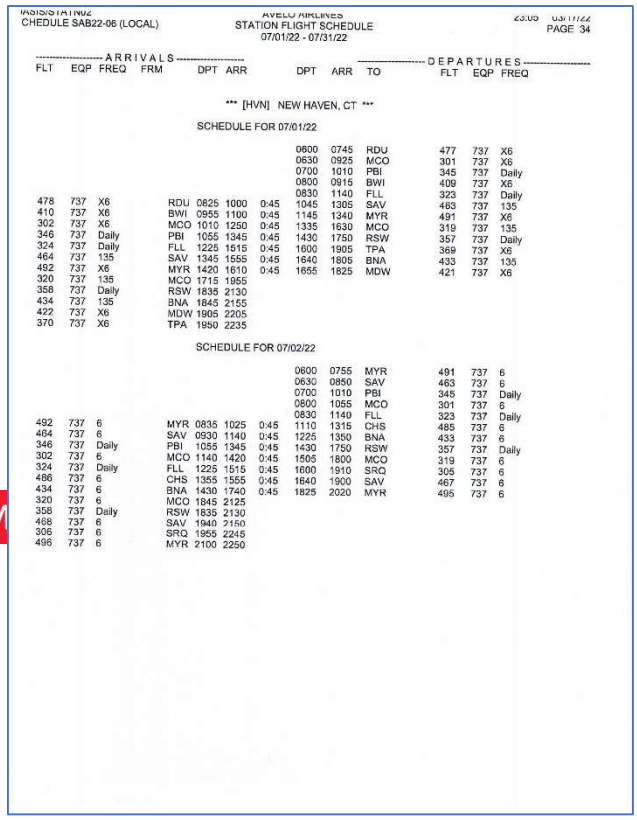
							0600	0745	RDU	477	737	X6
							0630	0925	MCO	301	737	X6
							0700	1010	PBI	345	737	Daily
							0800	0915	BWI	409	737	X6
478	737	X6	RDU	0825	1000	0:45	0830	1140	FLL	323	737	Daily
410	737	X6	BWI	0955	1100	0:45	1045	1305	SAV	463	737	135
302	737	X6	MCO	1010	1250	0:45	1145	1340	MYR	491	737	X6
346	737	Daily	PBI	1055	1345	0:45	1335	1630	MCO	319	737	135
324	737	Daily	FLL	1225	1515	0:45	1430	1750	RSW	357	737	Daily
464	737	135	SAV	1345	1555	0:45	1600	1905	TPA	369	737	X6
492	737	X6	MYR	1420	1610	0:45	1640	1805	BNA	433	737	135
320	737	135	MCO	1715	1955		1655	1825	MDW	421	737	X6
358	737	Daily	RSW	1835	2130							
434	737	135	BNA	1845	2155							
422	737	X6	MDW	1905	2205							
370	737	X6	TPA	1950	2235							

CHEDULE SAB22-08 (LOCAL) AVELO AIRLINES STATION FLIGHT SCHEDULE 06/01/22 - 06/30/22 PAGE 45

*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 06/30/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X6
							0630	0925	MCO	301	737	X6
							0700	1010	PBI	346	737	Daily
							0800	0915	BWI	409	737	X6
478	737	X6	RDU	0825	1000	0:45	0830	1140	FLL	323	737	Daily
410	737	X6	BWI	0955	1100	0:45	1045	1250	CHS	485	737	247
302	737	X6	MCO	1010	1250	0:45	1145	1340	MYR	491	737	X6
346	737	Daily	PBI	1055	1345	0:45	1335	1645	SRQ	305	737	247
324	737	Daily	FLL	1225	1515	0:45	1430	1750	RSW	357	737	Daily
486	737	247	CHS	1330	1530	0:45	1600	1905	TPA	369	737	X6
492	737	X6	MYR	1420	1610	0:45	1615	1910	MCO	319	737	247
306	737	247	SRQ	1730	2020	0:45	1655	1825	MDW	421	737	X6
358	737	Daily	RSW	1835	2130							
422	737	X6	MDW	1905	2205							
320	737	247	MCO	1955	2235							
370	737	X6	TPA	1950	2235							



CHEDULE SAB22-06 (LOCAL) — AVELO AIRLINES — STATION FLIGHT SCHEDULE — 07/01/22 - 07/31/22 — PAGE 34

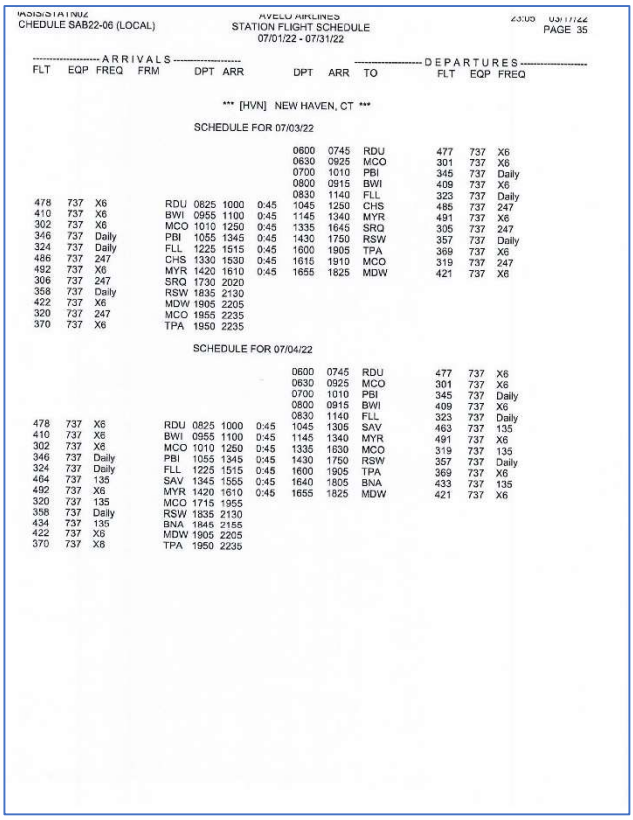
*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 07/01/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X6
							0630	0925	MCO	301	737	X6
							0700	1010	PBI	345	737	Daily
							0800	0915	BWI	409	737	X6
							0830	1140	FLL	323	737	Daily
478	737	X6	RDU	0825	1000	0:45	1045	1305	SAV	463	737	135
410	737	X6	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X6
302	737	X6	MCO	1010	1250	0:45	1335	1630	MCO	319	737	135
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
324	737	Daily	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X6
464	737	135	SAV	1345	1555	0:45	1640	1805	BNA	433	737	135
492	737	X6	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X6
320	737	135	MCO	1715	1955							
358	737	Daily	RSW	1835	2130							
434	737	135	BNA	1845	2155							
422	737	X6	MDW	1905	2205							
370	737	X6	TPA	1950	2235							

SCHEDULE FOR 07/02/22

							0600	0755	MYR	491	737	6
							0630	0850	SAV	463	737	6
							0700	1010	PBI	345	737	Daily
							0800	1055	MCO	301	737	6
							0830	1140	FLL	323	737	Daily
492	737	6	MYR	0835	1025	0:45	1110	1315	CHS	485	737	6
464	737	6	SAV	0930	1140	0:45	1225	1350	BNA	433	737	6
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
302	737	6	MCO	1140	1420	0:45	1505	1800	MCO	319	737	6
324	737	Daily	FLL	1225	1515	0:45	1600	1910	SRQ	305	737	6
486	737	6	CHS	1355	1555	0:45	1640	1900	SAV	467	737	6
434	737	6	BNA	1430	1740	0:45	1825	2020	MYR	495	737	6
320	737	6	MCO	1845	2125							
358	737	Daily	RSW	1835	2130							
468	737	6	SAV	1940	2150							
306	737	6	SRQ	1955	2245							
496	737	6	MYR	2100	2250							



CHEDULE SAB22-06 (LOCAL) — AVELO AIRLINES — STATION FLIGHT SCHEDULE — 07/01/22 - 07/31/22 — PAGE 35

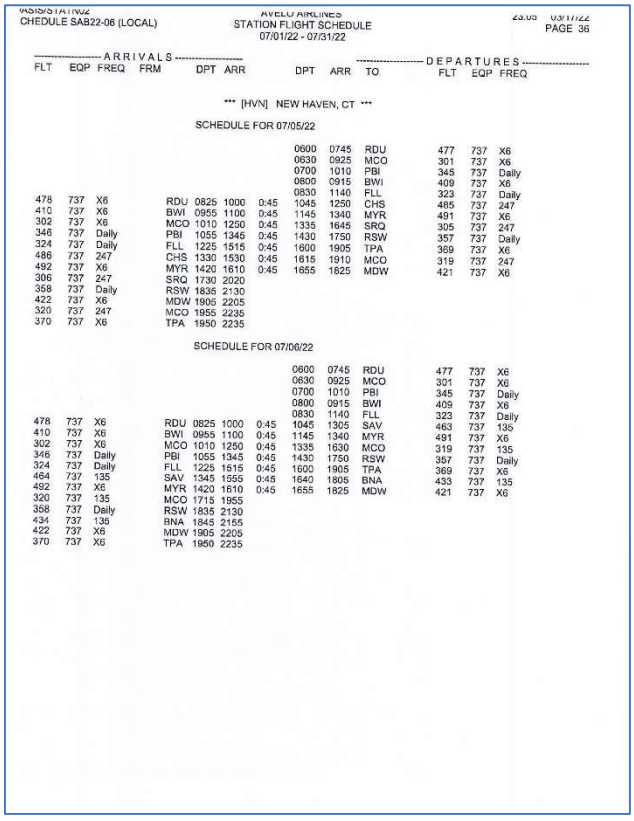
*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 07/03/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X6
							0630	0925	MCO	301	737	X6
							0700	1010	PBI	345	737	Daily
							0800	0915	BWI	409	737	X6
							0830	1140	FLL	323	737	Daily
478	737	X6	RDU	0825	1000	0:45	1045	1250	CHS	485	737	247
410	737	X6	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X6
302	737	X6	MCO	1010	1250	0:45	1335	1645	SRQ	305	737	247
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
324	737	Daily	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X6
486	737	247	CHS	1330	1530	0:45	1615	1910	MCO	319	737	247
492	737	X6	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X6
306	737	247	SRQ	1730	2020							
358	737	Daily	RSW	1835	2130							
422	737	X6	MDW	1905	2205							
320	737	247	MCO	1955	2235							
370	737	X6	TPA	1950	2235							

SCHEDULE FOR 07/04/22

							0600	0745	RDU	477	737	X6
							0630	0925	MCO	301	737	X6
							0700	1010	PBI	345	737	Daily
							0800	0915	BWI	409	737	X6
							0830	1140	FLL	323	737	Daily
478	737	X6	RDU	0825	1000	0:45	1045	1305	SAV	463	737	135
410	737	X6	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X6
302	737	X6	MCO	1010	1250	0:45	1335	1630	MCO	319	737	135
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
324	737	Daily	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X6
464	737	135	SAV	1345	1555	0:45	1640	1805	BNA	433	737	135
492	737	X6	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X6
320	737	135	MCO	1715	1955							
358	737	Daily	RSW	1835	2130							
434	737	135	BNA	1845	2155							
422	737	X6	MDW	1905	2205							
370	737	X6	TPA	1950	2235							



CHEDULE SAB22-06 (LOCAL) — AVELO AIRLINES — STATION FLIGHT SCHEDULE — 07/01/22 - 07/31/22 — PAGE 36

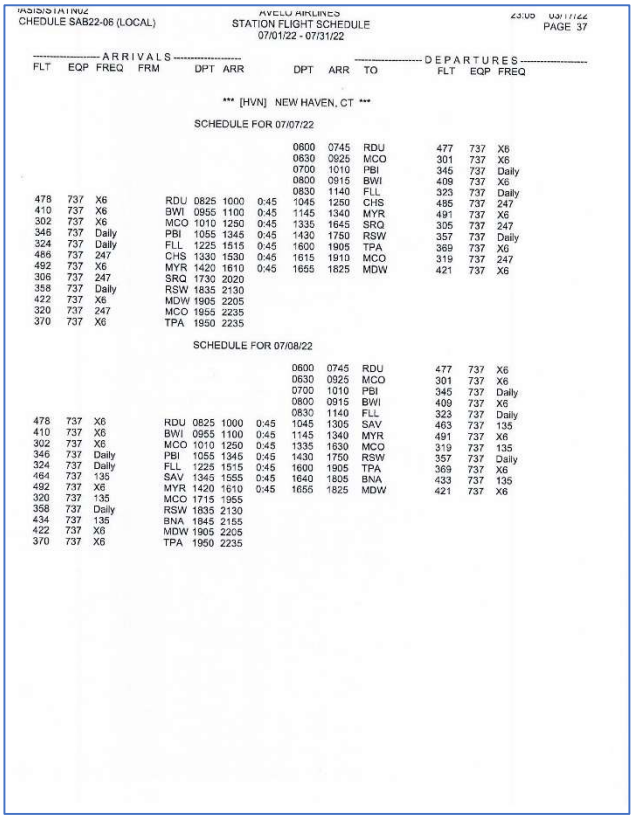
*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 07/05/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X6
							0630	0925	MCO	301	737	X6
							0700	1010	PBI	345	737	Daily
							0800	0915	BWI	409	737	X6
							0830	1140	FLL	323	737	Daily
478	737	X6	RDU	0825	1000	0:45	1045	1250	CHS	485	737	247
410	737	X6	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X6
302	737	X6	MCO	1010	1250	0:45	1335	1645	SRQ	305	737	247
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
324	737	Daily	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X6
486	737	247	CHS	1330	1530	0:45	1615	1910	MCO	319	737	247
492	737	X6	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X6
306	737	247	SRQ	1730	2020							
358	737	Daily	RSW	1835	2130							
422	737	X6	MDW	1905	2205							
320	737	247	MCO	1955	2235							
370	737	X6	TPA	1950	2235							

SCHEDULE FOR 07/06/22

							0600	0745	RDU	477	737	X6
							0630	0925	MCO	301	737	X6
							0700	1010	PBI	345	737	Daily
							0800	0915	BWI	409	737	X6
							0830	1140	FLL	323	737	Daily
478	737	X6	RDU	0825	1000	0:45	1045	1305	SAV	463	737	135
410	737	X6	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X6
302	737	X6	MCO	1010	1250	0:45	1335	1630	MCO	319	737	135
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
324	737	Daily	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X6
464	737	135	SAV	1345	1555	0:45	1640	1805	BNA	433	737	135
492	737	X6	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X6
320	737	135	MCO	1715	1955							
358	737	Daily	RSW	1835	2130							
434	737	135	BNA	1845	2155							
422	737	X6	MDW	1905	2205							
370	737	X6	TPA	1950	2235							



CHEDULE SAB22-06 (LOCAL) — AVELO AIRLINES — STATION FLIGHT SCHEDULE — 07/01/22 - 07/31/22 — PAGE 37

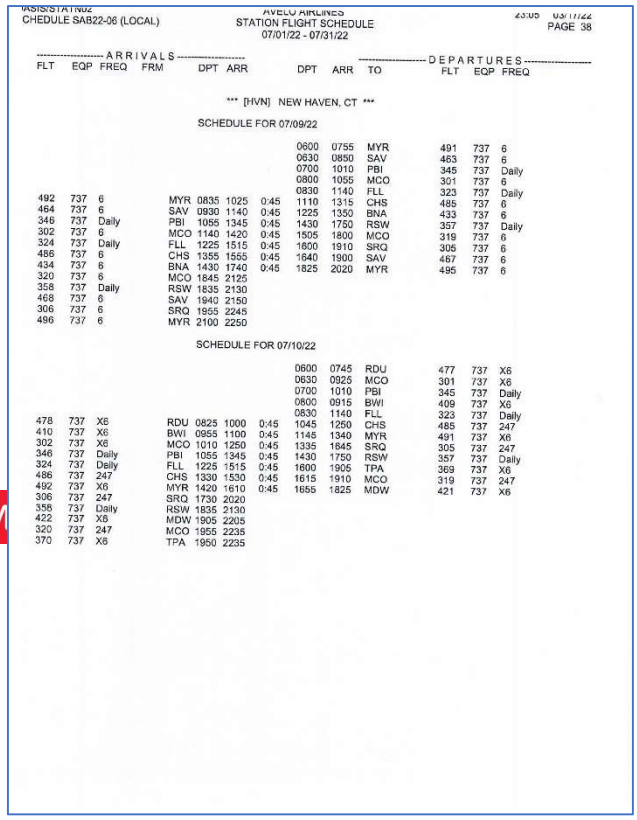
*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 07/07/22

ARRIVALS FLT	EQP	FREQ	FRM	DPT	ARR		DEPARTURES DPT	ARR	TO	FLT	EQP	FREQ
							0600	0745	RDU	477	737	X6
							0630	0925	MCO	301	737	X6
							0700	1010	PBI	345	737	Daily
							0800	0915	BWI	409	737	X6
							0830	1140	FLL	323	737	Daily
478	737	X6	RDU	0825	1000	0:45	1045	1250	CHS	485	737	247
410	737	X6	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X6
302	737	X6	MCO	1010	1250	0:45	1335	1645	SRQ	305	737	247
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
324	737	Daily	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X6
486	737	247	CHS	1330	1530	0:45	1615	1910	MCO	319	737	247
492	737	X6	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X6
306	737	247	SRQ	1730	2020							
358	737	Daily	RSW	1835	2130							
422	737	X6	MDW	1905	2205							
320	737	247	MCO	1955	2235							
370	737	X6	TPA	1950	2235							

SCHEDULE FOR 07/08/22

							0600	0745	RDU	477	737	X6
							0630	0925	MCO	301	737	X6
							0700	1010	PBI	345	737	Daily
							0800	0915	BWI	409	737	X6
							0830	1140	FLL	323	737	Daily
478	737	X6	RDU	0825	1000	0:45	1045	1305	SAV	463	737	135
410	737	X6	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X6
302	737	X6	MCO	1010	1250	0:45	1335	1630	MCO	319	737	135
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
324	737	Daily	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X6
464	737	135	SAV	1345	1555	0:45	1640	1805	BNA	433	737	135
492	737	X6	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X6
320	737	135	MCO	1715	1955							
358	737	Daily	RSW	1835	2130							
434	737	135	BNA	1845	2155							
422	737	X6	MDW	1905	2205							
370	737	X6	TPA	1950	2235							



VASISSTATN02 AVELO AIRLINES 23:05 03/17/22
CHEDULE SAB22-06 (LOCAL) STATION FLIGHT SCHEDULE PAGE 38
07/01/22 - 07/31/22

ARRIVALS						DEPARTURES			
FLT	EQP	FREQ	FRM	DPT	ARR	DPT	ARR	TO	FLT	EQP	FREQ

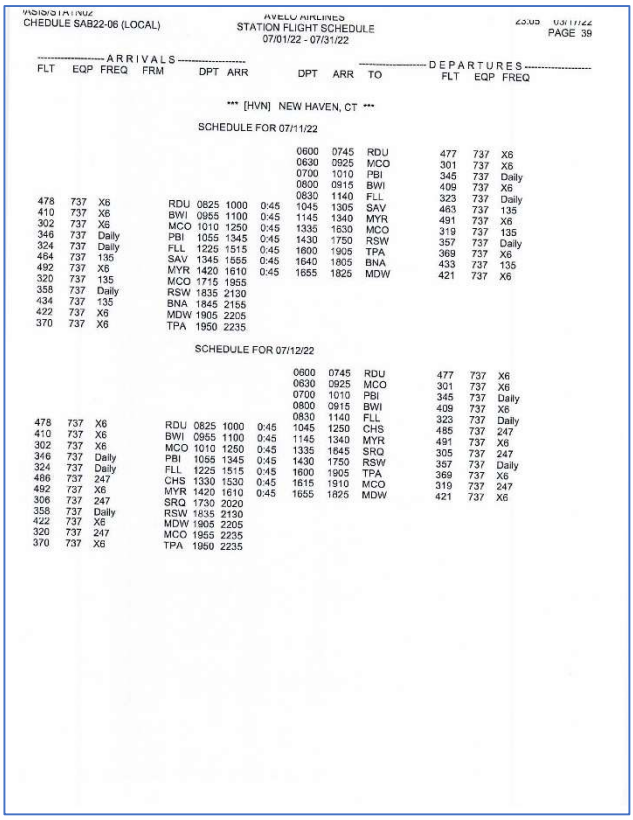
*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 07/09/22

						0600	0755	MYR	491	737	6
						0630	0850	SAV	463	737	6
						0700	1010	PBI	345	737	Daily
						0800	1055	MCO	301	737	6
						0830	1140	FLL	323	737	Daily
492	737	6	MYR	0835	1025	0:45	1110	1315	CHS	485	737	6
464	737	6	SAV	0930	1140	0:45	1225	1350	BNA	433	737	6
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
302	737	6	MCO	1140	1420	0:45	1505	1800	MCO	319	737	6
324	737	Daily	FLL	1225	1515	0:45	1600	1910	SRQ	305	737	6
486	737	6	CHS	1355	1555	0:45	1640	1900	SAV	467	737	6
434	737	6	BNA	1430	1740	0:45	1825	2020	MYR	495	737	6
320	737	6	MCO	1845	2125						
358	737	Daily	RSW	1835	2130						
468	737	6	SAV	1940	2150						
306	737	6	SRQ	1955	2245						
496	737	6	MYR	2100	2250						

SCHEDULE FOR 07/10/22

						0600	0745	RDU	477	737	X6
						0630	0925	MCO	301	737	X6
						0700	1010	PBI	345	737	Daily
						0800	0915	BWI	409	737	X6
						0830	1140	FLL	323	737	Daily
478	737	X6	RDU	0825	1000	0:45	1045	1250	CHS	485	737	247
410	737	X6	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X6
302	737	X6	MCO	1010	1250	0:45	1335	1645	SRQ	305	737	247
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
324	737	Daily	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X6
486	737	247	CHS	1330	1530	0:45	1615	1910	MCO	319	737	247
492	737	X6	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X6
306	737	247	SRQ	1730	2020						
358	737	Daily	RSW	1835	2130						
422	737	X6	MDW	1905	2205						
320	737	247	MCO	1955	2235						
370	737	X6	TPA	1950	2235						



VASISSTATN02 AVELO AIRLINES 23:05 03/17/22
CHEDULE SAB22-06 (LOCAL) STATION FLIGHT SCHEDULE PAGE 39
07/01/22 - 07/31/22

ARRIVALS						DEPARTURES			
FLT	EQP	FREQ	FRM	DPT	ARR	DPT	ARR	TO	FLT	EQP	FREQ

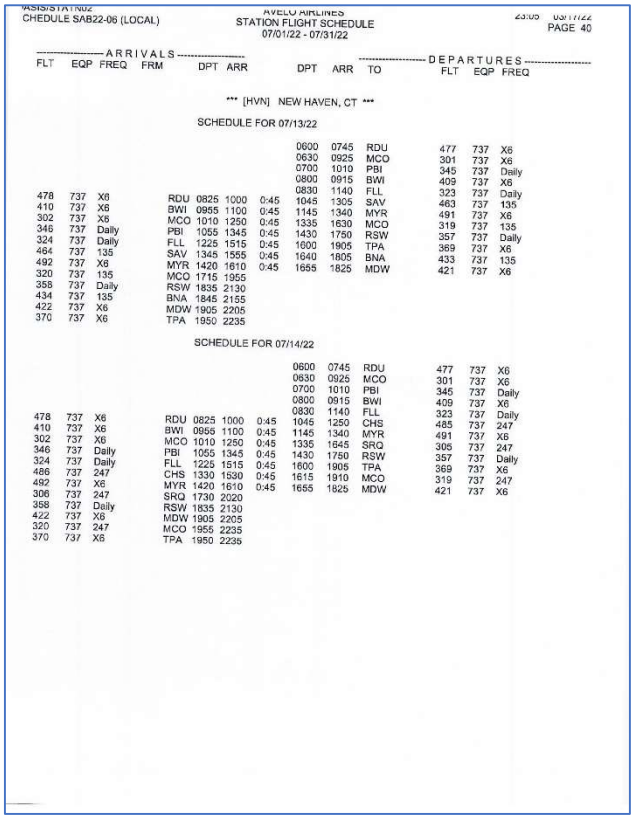
*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 07/11/22

						0600	0745	RDU	477	737	X6
						0630	0925	MCO	301	737	X6
						0700	1010	PBI	345	737	Daily
						0800	0915	BWI	409	737	X6
						0830	1140	FLL	323	737	Daily
478	737	X6	RDU	0825	1000	0:45	1045	1305	SAV	463	737	135
410	737	X6	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X6
302	737	X6	MCO	1010	1250	0:45	1335	1630	MCO	319	737	135
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
324	737	Daily	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X6
464	737	135	SAV	1345	1555	0:45	1640	1805	BNA	433	737	135
492	737	X6	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X6
320	737	135	MCO	1715	1955						
358	737	Daily	RSW	1835	2130						
434	737	135	BNA	1845	2155						
422	737	X6	MDW	1905	2205						
370	737	X6	TPA	1950	2235						

SCHEDULE FOR 07/12/22

						0600	0745	RDU	477	737	X6
						0630	0925	MCO	301	737	X6
						0700	1010	PBI	345	737	Daily
						0800	0915	BWI	409	737	X6
						0830	1140	FLL	323	737	Daily
478	737	X6	RDU	0825	1000	0:45	1045	1250	CHS	485	737	247
410	737	X6	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X6
302	737	X6	MCO	1010	1250	0:45	1335	1645	SRQ	305	737	247
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
324	737	Daily	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X6
486	737	247	CHS	1330	1530	0:45	1615	1910	MCO	319	737	247
492	737	X6	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X6
306	737	247	SRQ	1730	2020						
358	737	Daily	RSW	1835	2130						
422	737	X6	MDW	1905	2205						
320	737	247	MCO	1955	2235						
370	737	X6	TPA	1950	2235						



VASISSTATN02 AVELO AIRLINES 23:05 03/17/22
CHEDULE SAB22-06 (LOCAL) STATION FLIGHT SCHEDULE PAGE 40
07/01/22 - 07/31/22

ARRIVALS						DEPARTURES			
FLT	EQP	FREQ	FRM	DPT	ARR	DPT	ARR	TO	FLT	EQP	FREQ

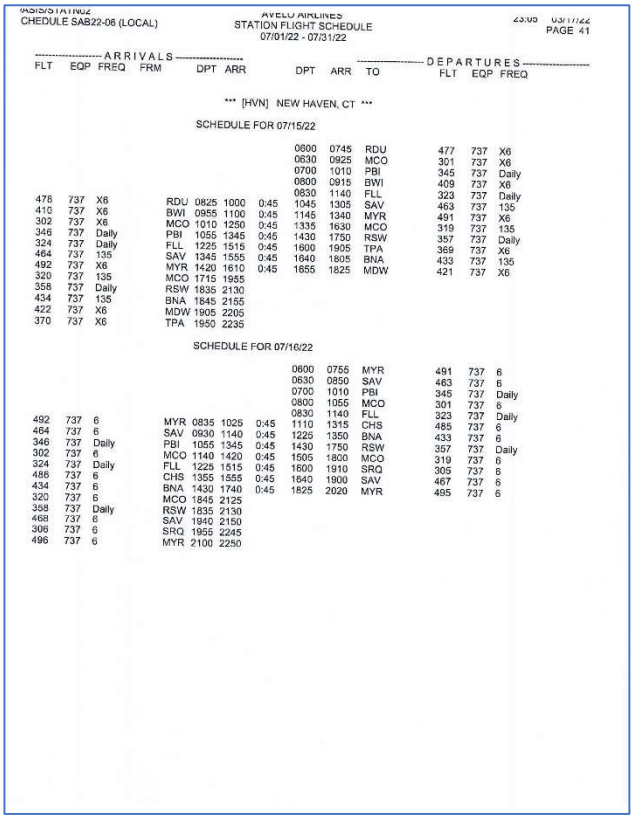
*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 07/13/22

						0600	0745	RDU	477	737	X6
						0630	0925	MCO	301	737	X6
						0700	1010	PBI	345	737	Daily
						0800	0915	BWI	409	737	X6
						0830	1140	FLL	323	737	Daily
478	737	X6	RDU	0825	1000	0:45	1045	1305	SAV	463	737	135
410	737	X6	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X6
302	737	X6	MCO	1010	1250	0:45	1335	1630	MCO	319	737	135
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
324	737	Daily	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X6
464	737	135	SAV	1345	1555	0:45	1640	1805	BNA	433	737	135
492	737	X6	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X6
320	737	135	MCO	1715	1955						
358	737	Daily	RSW	1835	2130						
434	737	135	BNA	1845	2155						
422	737	X6	MDW	1905	2205						
370	737	X6	TPA	1950	2235						

SCHEDULE FOR 07/14/22

						0600	0745	RDU	477	737	X6
						0630	0925	MCO	301	737	X6
						0700	1010	PBI	345	737	Daily
						0800	0915	BWI	409	737	X6
						0830	1140	FLL	323	737	Daily
478	737	X6	RDU	0825	1000	0:45	1045	1250	CHS	485	737	247
410	737	X6	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X6
302	737	X6	MCO	1010	1250	0:45	1335	1645	SRQ	305	737	247
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
324	737	Daily	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X6
486	737	247	CHS	1330	1530	0:45	1615	1910	MCO	319	737	247
492	737	X6	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X6
306	737	247	SRQ	1730	2020						
358	737	Daily	RSW	1835	2130						
422	737	X6	MDW	1905	2205						
320	737	247	MCO	1955	2235						
370	737	X6	TPA	1950	2235						



VASISSTATN02 AVELO AIRLINES 23:05 03/17/22
CHEDULE SAB22-06 (LOCAL) STATION FLIGHT SCHEDULE PAGE 41
07/01/22 - 07/31/22

ARRIVALS						DEPARTURES			
FLT	EQP	FREQ	FRM	DPT	ARR	DPT	ARR	TO	FLT	EQP	FREQ

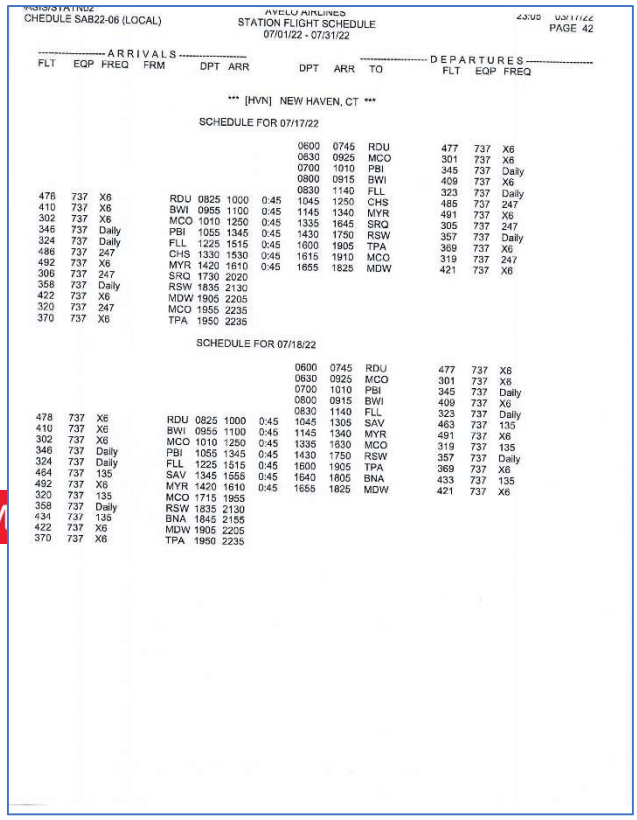
*** [HVN] NEW HAVEN, CT ***

SCHEDULE FOR 07/15/22

						0600	0745	RDU	477	737	X6
						0630	0925	MCO	301	737	X6
						0700	1010	PBI	345	737	Daily
						0800	0915	BWI	409	737	X6
						0830	1140	FLL	323	737	Daily
478	737	X6	RDU	0825	1000	0:45	1045	1305	SAV	463	737	135
410	737	X6	BWI	0955	1100	0:45	1145	1340	MYR	491	737	X6
302	737	X6	MCO	1010	1250	0:45	1335	1630	MCO	319	737	135
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
324	737	Daily	FLL	1225	1515	0:45	1600	1905	TPA	369	737	X6
464	737	135	SAV	1345	1555	0:45	1640	1805	BNA	433	737	135
492	737	X6	MYR	1420	1610	0:45	1655	1825	MDW	421	737	X6
320	737	135	MCO	1715	1955						
358	737	Daily	RSW	1835	2130						
434	737	135	BNA	1845	2155						
422	737	X6	MDW	1905	2205						
370	737	X6	TPA	1950	2235						

SCHEDULE FOR 07/16/22

						0600	0755	MYR	491	737	6
						0630	0850	SAV	463	737	6
						0700	1010	PBI	345	737	Daily
						0800	1055	MCO	301	737	6
						0830	1140	FLL	323	737	Daily
492	737	6	MYR	0835	1025	0:45	1110	1315	CHS	485	737	6
464	737	6	SAV	0930	1140	0:45	1225	1350	BNA	433	737	6
346	737	Daily	PBI	1055	1345	0:45	1430	1750	RSW	357	737	Daily
302	737	6	MCO	1140	1420	0:45	1505	1800	MCO	319	737	6
324	737	Daily	FLL	1225	1515	0:45	1600	1910	SRQ	305	737	6
486	737	6	CHS	1355	1555	0:45	1640	1900	SAV	467	737	6
434	737	6	BNA	1430	1740	0:45	1825	2020	MYR	495	737	6
320	737	6	MCO	1845	2125							
358	737	Daily	RSW	1835	2130							
468	737	6	SAV	1940	2150							
306	737	6	SRQ	1955	2245							
496	737	6	MYR	2100	2250							



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CHEDULE SAB22-06 (LOCAL)        AVELO AIRLINES                    PAGE 42
                          STATION FLIGHT SCHEDULE
                          07/01/22 - 07/31/22

          ARRIVALS                                    DEPARTURES
FLT  EQP FREQ  FRM   DPT  ARR                 DPT  ARR  TO    FLT  EQP FREQ

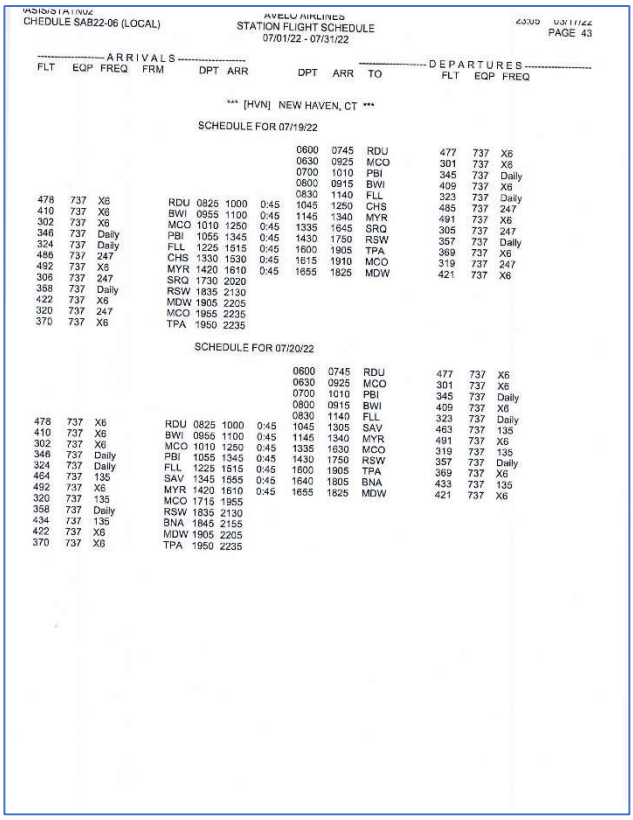
                        *** [HVN]  NEW HAVEN, CT ***

                        SCHEDULE FOR 07/17/22

                                              0600 0745 RDU   477  737 X6
                                              0630 0925 MCO   301  737 X6
                                              0700 1010 PBI   345  737 Daily
                                              0800 0915 BWI   409  737 X6
                                              0830 1140 FLL   323  737 Daily
478  737 X6    RDU  0825 1000  0:45  1045 1250 CHS   485  737 247
410  737 X6    BWI  0955 1100  0:45  1145 1340 MYR   491  737 X6
302  737 X6    MCO  1010 1250  0:45  1335 1645 SRQ   305  737 247
346  737 Daily PBI  1055 1345  0:45  1430 1750 RSW   357  737 Daily
324  737 Daily FLL  1225 1515  0:45  1600 1905 TPA   369  737 X6
486  737 247   CHS  1330 1530  0:45  1615 1910 MCO   319  737 247
492  737 X6    MYR  1420 1610  0:45  1655 1825 MDW   421  737 X6
306  737 247   SRQ  1730 2020
358  737 Daily RSW  1835 2130
422  737 X6    MDW  1905 2205
320  737 247   MCO  1955 2235
370  737 X6    TPA  1950 2235

                        SCHEDULE FOR 07/18/22

                                              0600 0745 RDU   477  737 X6
                                              0630 0925 MCO   301  737 X6
                                              0700 1010 PBI   345  737 Daily
                                              0800 0915 BWI   409  737 X6
                                              0830 1140 FLL   323  737 Daily
478  737 X6    RDU  0825 1000  0:45  1045 1305 SAV   463  737 135
410  737 X6    BWI  0955 1100  0:45  1145 1340 MYR   491  737 X6
302  737 X6    MCO  1010 1250  0:45  1335 1630 MCO   319  737 135
346  737 Daily PBI  1055 1345  0:45  1430 1750 RSW   357  737 Daily
324  737 Daily FLL  1225 1515  0:45  1600 1905 TPA   369  737 X6
464  737 135   SAV  1345 1555  0:45  1640 1805 BNA   433  737 135
492  737 X6    MYR  1420 1610  0:45  1655 1825 MDW   421  737 X6
320  737 135   MCO  1715 1955
358  737 Daily RSW  1835 2130
434  737 135   BNA  1845 2155
422  737 X6    MDW  1905 2205
370  737 X6    TPA  1950 2235
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ASISSTATNOZ
CHEDULE SAB22-06 (LOCAL)        AVELO AIRLINES                    PAGE 43
                          STATION FLIGHT SCHEDULE
                          07/01/22 - 07/31/22

          ARRIVALS                                    DEPARTURES
FLT  EQP FREQ  FRM   DPT  ARR                 DPT  ARR  TO    FLT  EQP FREQ

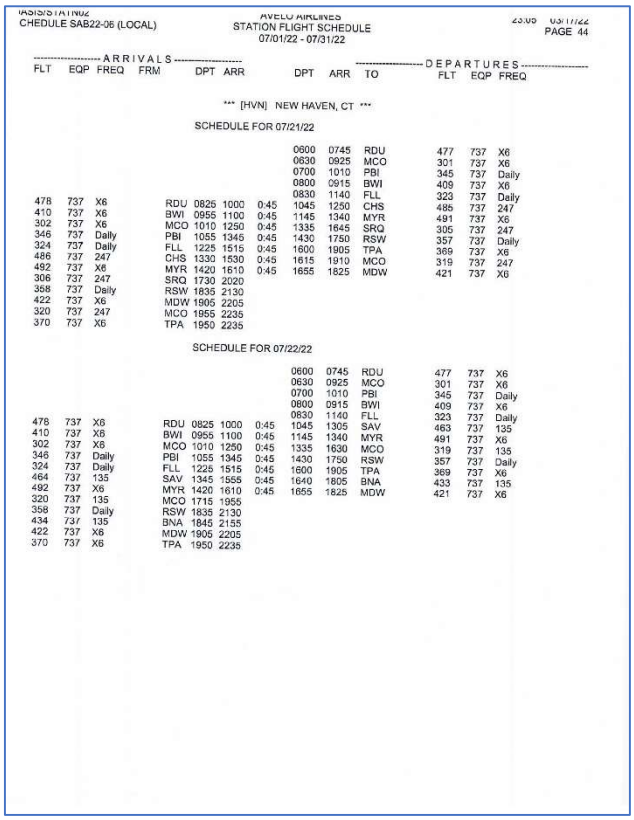
                        *** [HVN]  NEW HAVEN, CT ***

                        SCHEDULE FOR 07/19/22

                                              0600 0745 RDU   477  737 X6
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                                              0700 1010 PBI   345  737 Daily
                                              0800 0915 BWI   409  737 X6
                                              0830 1140 FLL   323  737 Daily
478  737 X6    RDU  0826 1000  0:45  1045 1250 CHS   485  737 247
410  737 X6    BWI  0955 1100  0:45  1145 1340 MYR   491  737 X6
302  737 X6    MCO  1010 1250  0:45  1335 1645 SRQ   305  737 247
346  737 Daily PBI  1055 1345  0:45  1430 1750 RSW   357  737 Daily
324  737 Daily FLL  1225 1515  0:45  1600 1905 TPA   369  737 X6
486  737 247   CHS  1330 1530  0:45  1615 1910 MCO   319  737 247
492  737 X6    MYR  1420 1610  0:45  1655 1825 MDW   421  737 X6
306  737 247   SRQ  1730 2020
358  737 Daily RSW  1835 2130
422  737 X6    MDW  1905 2205
320  737 247   MCO  1955 2235
370  737 X6    TPA  1950 2235

                        SCHEDULE FOR 07/20/22

                                              0600 0745 RDU   477  737 X6
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                                              0700 1010 PBI   345  737 Daily
                                              0800 0915 BWI   409  737 X6
                                              0830 1140 FLL   323  737 Daily
478  737 X6    RDU  0825 1000  0:45  1045 1305 SAV   463  737 135
410  737 X6    BWI  0955 1100  0:45  1145 1340 MYR   491  737 X6
302  737 X6    MCO  1010 1250  0:45  1335 1630 MCO   319  737 135
346  737 Daily PBI  1055 1345  0:45  1430 1750 RSW   357  737 Daily
324  737 Daily FLL  1225 1515  0:45  1600 1905 TPA   369  737 X6
464  737 135   SAV  1345 1555  0:45  1640 1805 BNA   433  737 135
492  737 X6    MYR  1420 1610  0:45  1655 1825 MDW   421  737 X6
320  737 135   MCO  1715 1955
358  737 Daily RSW  1835 2130
434  737 135   BNA  1845 2155
422  737 X6    MDW  1905 2205
370  737 X6    TPA  1950 2235
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ASISSTATNOZ
CHEDULE SAB22-06 (LOCAL)        AVELO AIRLINES                    PAGE 44
                          STATION FLIGHT SCHEDULE
                          07/01/22 - 07/31/22

          ARRIVALS                                    DEPARTURES
FLT  EQP FREQ  FRM   DPT  ARR                 DPT  ARR  TO    FLT  EQP FREQ

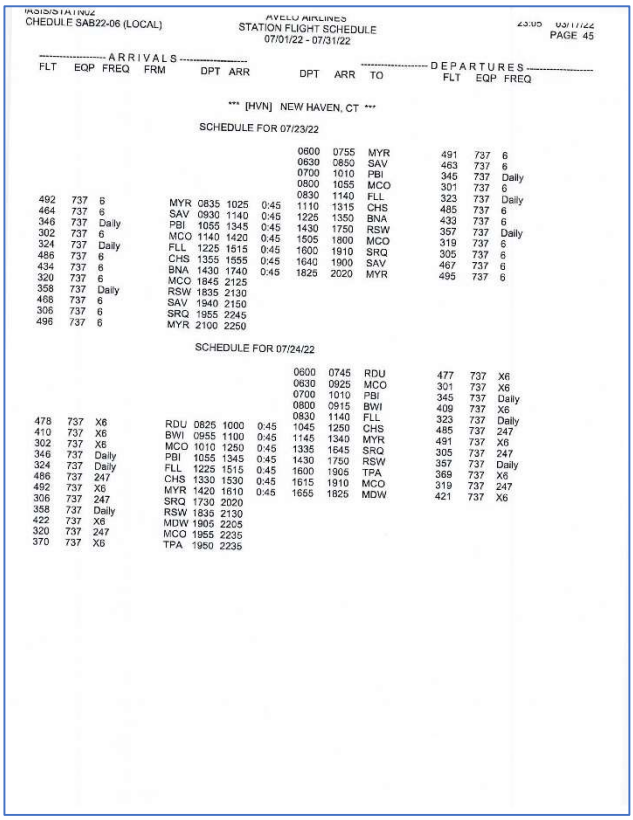
                        *** [HVN]  NEW HAVEN, CT ***

                        SCHEDULE FOR 07/21/22

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                                              0630 0925 MCO   301  737 X6
                                              0700 1010 PBI   345  737 Daily
                                              0800 0915 BWI   409  737 X6
                                              0830 1140 FLL   323  737 Daily
478  737 X6    RDU  0826 1000  0:45  1045 1250 CHS   485  737 247
410  737 X6    BWI  0955 1100  0:45  1145 1340 MYR   491  737 X6
302  737 X6    MCO  1010 1250  0:45  1335 1645 SRQ   305  737 247
346  737 Daily PBI  1055 1345  0:45  1430 1750 RSW   357  737 Daily
324  737 Daily FLL  1225 1515  0:45  1600 1905 TPA   369  737 X6
486  737 247   CHS  1330 1530  0:45  1615 1910 MCO   319  737 247
492  737 X6    MYR  1420 1610  0:45  1655 1825 MDW   421  737 X6
306  737 247   SRQ  1730 2020
358  737 Daily RSW  1835 2130
422  737 X6    MDW  1905 2205
320  737 247   MCO  1955 2235
370  737 X6    TPA  1950 2235

                        SCHEDULE FOR 07/22/22

                                              0600 0745 RDU   477  737 X6
                                              0630 0925 MCO   301  737 X6
                                              0700 1010 PBI   345  737 Daily
                                              0800 0915 BWI   409  737 X6
                                              0830 1140 FLL   323  737 Daily
478  737 X6    RDU  0825 1000  0:45  1045 1305 SAV   463  737 135
410  737 X6    BWI  0955 1100  0:45  1145 1340 MYR   491  737 X6
302  737 X6    MCO  1010 1250  0:45  1335 1630 MCO   319  737 135
346  737 Daily PBI  1055 1345  0:45  1430 1750 RSW   357  737 Daily
324  737 Daily FLL  1225 1515  0:45  1600 1905 TPA   369  737 X6
464  737 135   SAV  1345 1555  0:45  1640 1805 BNA   433  737 135
492  737 X6    MYR  1420 1610  0:45  1655 1825 MDW   421  737 X6
320  737 135   MCO  1715 1955
358  737 Daily RSW  1835 2130
434  737 135   BNA  1845 2155
422  737 X6    MDW  1905 2205
370  737 X6    TPA  1950 2235
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ASISSTATNOZ
CHEDULE SAB22-06 (LOCAL)        AVELO AIRLINES                    PAGE 45
                          STATION FLIGHT SCHEDULE
                          07/01/22 - 07/31/22

          ARRIVALS                                    DEPARTURES
FLT  EQP FREQ  FRM   DPT  ARR                 DPT  ARR  TO    FLT  EQP FREQ

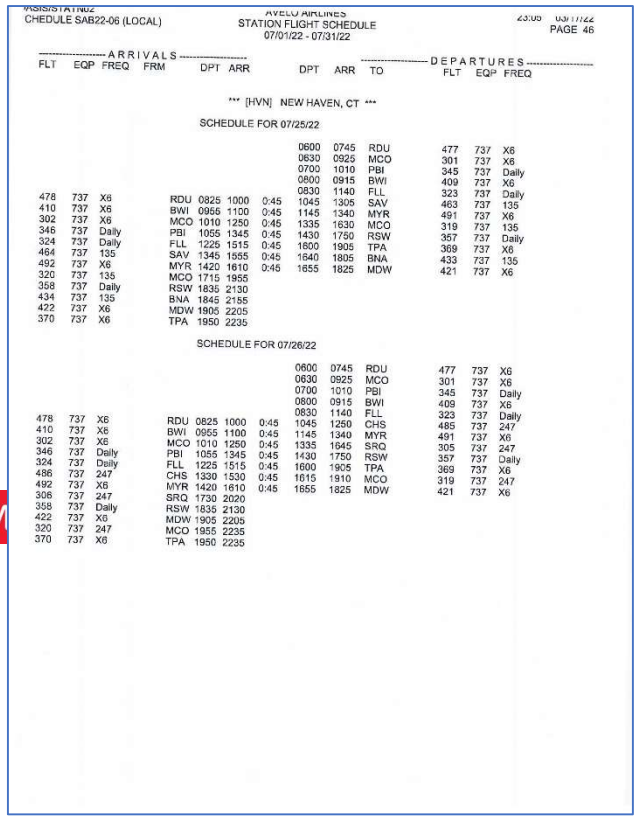
                        *** [HVN]  NEW HAVEN, CT ***

                        SCHEDULE FOR 07/23/22

                                              0600 0755 MYR   491  737 6
                                              0630 0850 SAV   463  737 6
                                              0700 1010 PBI   345  737 Daily
                                              0800 1055 MCO   301  737 6
                                              0830 1140 FLL   323  737 Daily
492  737 6     MYR  0835 1025  0:45  1110 1315 CHS   485  737 6
464  737 6     SAV  0930 1140  0:45  1225 1350 BNA   433  737 6
346  737 Daily PBI  1055 1345  0:45  1430 1750 RSW   357  737 Daily
302  737 6     MCO  1140 1420  0:45  1505 1800 MCO   319  737 6
324  737 Daily FLL  1225 1515  0:45  1600 1910 SRQ   305  737 6
486  737 6     CHS  1355 1555  0:45  1640 1900 SAV   467  737 6
434  737 6     BNA  1430 1740  0:45  1825 2020 MYR   495  737 6
320  737 6     MCO  1845 2125
358  737 Daily RSW  1835 2130
468  737 6     SAV  1940 2150
306  737 6     SRQ  1955 2245
498  737 6     MYR  2100 2250

                        SCHEDULE FOR 07/24/22

                                              0600 0745 RDU   477  737 X6
                                              0630 0925 MCO   301  737 X6
                                              0700 1010 PBI   345  737 Daily
                                              0800 0915 BWI   409  737 X6
                                              0830 1140 FLL   323  737 Daily
478  737 X6    RDU  0826 1000  0:45  1045 1250 CHS   485  737 247
410  737 X6    BWI  0955 1100  0:45  1145 1340 MYR   491  737 X6
302  737 X6    MCO  1010 1250  0:45  1335 1645 SRQ   305  737 247
346  737 Daily PBI  1055 1345  0:45  1430 1750 RSW   357  737 Daily
324  737 Daily FLL  1225 1515  0:45  1600 1905 TPA   369  737 X6
486  737 247   CHS  1330 1530  0:45  1615 1910 MCO   319  737 247
492  737 X6    MYR  1420 1610  0:45  1655 1825 MDW   421  737 X6
306  737 247   SRQ  1730 2020
358  737 Daily RSW  1835 2130
422  737 X6    MDW  1905 2205
320  737 247   MCO  1955 2235
370  737 X6    TPA  1950 2235
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CHEDULE SAB22-06 (LOCAL)        AVELO AIRLINES                    PAGE 46
                        STATION FLIGHT SCHEDULE
                        07/01/22 - 07/31/22

          ARRIVALS                                  DEPARTURES
FLT  EQP FREQ  FRM      DPT  ARR          DPT  ARR  TO      FLT  EQP FREQ

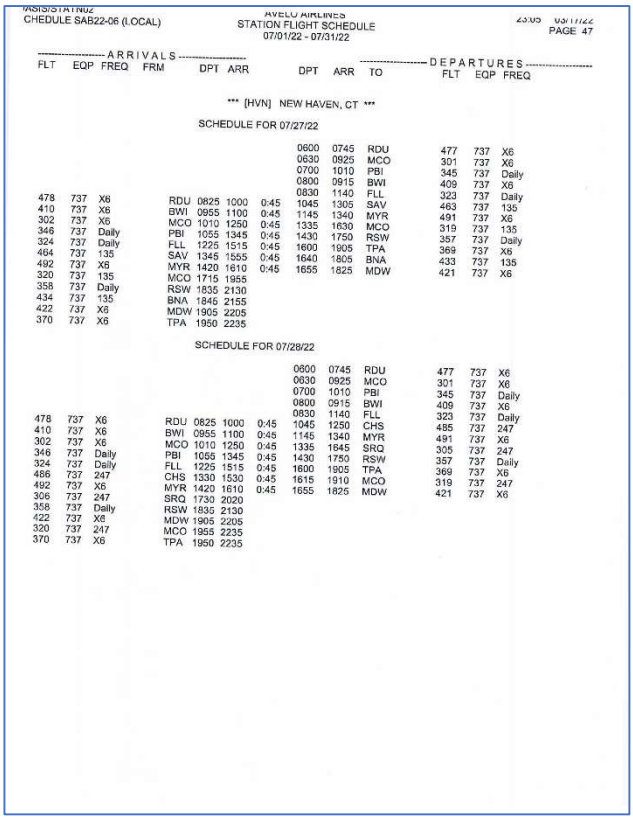
                        *** [HVN]  NEW HAVEN, CT ***

                        SCHEDULE FOR 07/25/22

                                          0600 0745 RDU     477  737 X6
                                          0630 0925 MCO     301  737 X6
                                          0700 1010 PBI     345  737 Daily
                                          0800 0915 BWI     409  737 X6
                                          0830 1140 FLL     323  737 Daily
478  737 X6     RDU 0825 1000  0:45      1045 1305 SAV     463  737 135
410  737 X6     BWI 0955 1100  0:45      1145 1340 MYR     491  737 X6
302  737 X6     MCO 1010 1250  0:45      1335 1630 MCO     319  737 135
346  737 Daily  PBI 1055 1345  0:45      1430 1750 RSW     357  737 Daily
324  737 Daily  FLL 1225 1515  0:45      1600 1905 TPA     369  737 X6
464  737 135    SAV 1345 1555  0:45      1640 1805 BNA     433  737 135
492  737 X6     MYR 1420 1610  0:45      1655 1825 MDW     421  737 X6
320  737 135    MCO 1715 1955
358  737 Daily  RSW 1835 2130
434  737 135    BNA 1845 2155
422  737 X6     MDW 1905 2205
370  737 X6     TPA 1950 2235

                        SCHEDULE FOR 07/26/22

                                          0600 0745 RDU     477  737 X6
                                          0630 0925 MCO     301  737 X6
                                          0700 1010 PBI     345  737 Daily
                                          0800 0915 BWI     409  737 X6
                                          0830 1140 FLL     323  737 Daily
478  737 X6     RDU 0825 1000  0:45      1045 1250 CHS     485  737 247
410  737 X6     BWI 0955 1100  0:45      1145 1340 MYR     491  737 X6
302  737 X6     MCO 1010 1250  0:45      1335 1645 SRQ     305  737 247
346  737 Daily  PBI 1055 1345  0:45      1430 1750 RSW     357  737 Daily
324  737 Daily  FLL 1225 1515  0:45      1600 1905 TPA     369  737 X6
486  737 247    CHS 1330 1530  0:45      1615 1910 MCO     319  737 247
492  737 X6     MYR 1420 1610  0:45      1655 1825 MDW     421  737 X6
306  737 247    SRQ 1730 2020
358  737 Daily  RSW 1835 2130
422  737 X6     MDW 1905 2205
320  737 247    MCO 1955 2235
370  737 X6     TPA 1950 2235
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CHEDULE SAB22-06 (LOCAL)        AVELO AIRLINES                    PAGE 47
                        STATION FLIGHT SCHEDULE
                        07/01/22 - 07/31/22

          ARRIVALS                                  DEPARTURES
FLT  EQP FREQ  FRM      DPT  ARR          DPT  ARR  TO      FLT  EQP FREQ

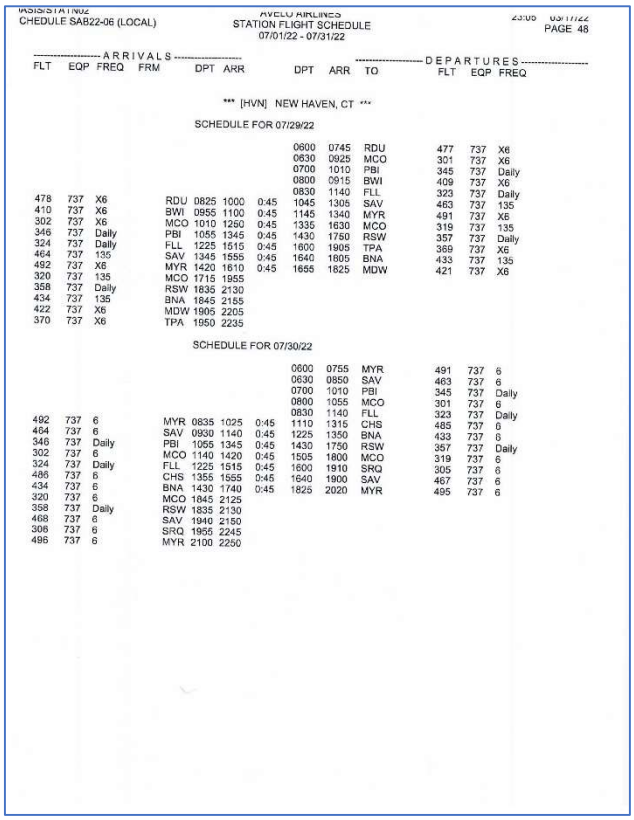
                        *** [HVN]  NEW HAVEN, CT ***

                        SCHEDULE FOR 07/27/22

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                                          0630 0925 MCO     301  737 X6
                                          0700 1010 PBI     345  737 Daily
                                          0800 0915 BWI     409  737 X6
                                          0830 1140 FLL     323  737 Daily
478  737 X6     RDU 0825 1000  0:45      1045 1305 SAV     463  737 135
410  737 X6     BWI 0955 1100  0:45      1145 1340 MYR     491  737 X6
302  737 X6     MCO 1010 1250  0:45      1335 1630 MCO     319  737 135
346  737 Daily  PBI 1055 1345  0:45      1430 1750 RSW     357  737 Daily
324  737 Daily  FLL 1225 1515  0:45      1600 1905 TPA     369  737 X6
464  737 135    SAV 1345 1555  0:45      1640 1805 BNA     433  737 135
492  737 X6     MYR 1420 1610  0:45      1655 1825 MDW     421  737 X6
320  737 135    MCO 1715 1955
358  737 Daily  RSW 1835 2130
434  737 135    BNA 1845 2155
422  737 X6     MDW 1905 2205
370  737 X6     TPA 1950 2235

                        SCHEDULE FOR 07/28/22

                                          0600 0745 RDU     477  737 X6
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                                          0700 1010 PBI     345  737 Daily
                                          0800 0915 BWI     409  737 X6
                                          0830 1140 FLL     323  737 Daily
478  737 X6     RDU 0825 1000  0:45      1045 1250 CHS     485  737 247
410  737 X6     BWI 0955 1100  0:45      1145 1340 MYR     491  737 X6
302  737 X6     MCO 1010 1250  0:45      1335 1645 SRQ     305  737 247
346  737 Daily  PBI 1055 1345  0:45      1430 1750 RSW     357  737 Daily
324  737 Daily  FLL 1225 1515  0:45      1600 1905 TPA     369  737 X6
486  737 247    CHS 1330 1530  0:45      1615 1910 MCO     319  737 247
492  737 X6     MYR 1420 1610  0:45      1655 1825 MDW     421  737 X6
306  737 247    SRQ 1730 2020
358  737 Daily  RSW 1835 2130
422  737 X6     MDW 1905 2205
320  737 247    MCO 1955 2235
370  737 X6     TPA 1950 2235
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CHEDULE SAB22-06 (LOCAL)        AVELO AIRLINES                    PAGE 48
                        STATION FLIGHT SCHEDULE
                        07/01/22 - 07/31/22

          ARRIVALS                                  DEPARTURES
FLT  EQP FREQ  FRM      DPT  ARR          DPT  ARR  TO      FLT  EQP FREQ

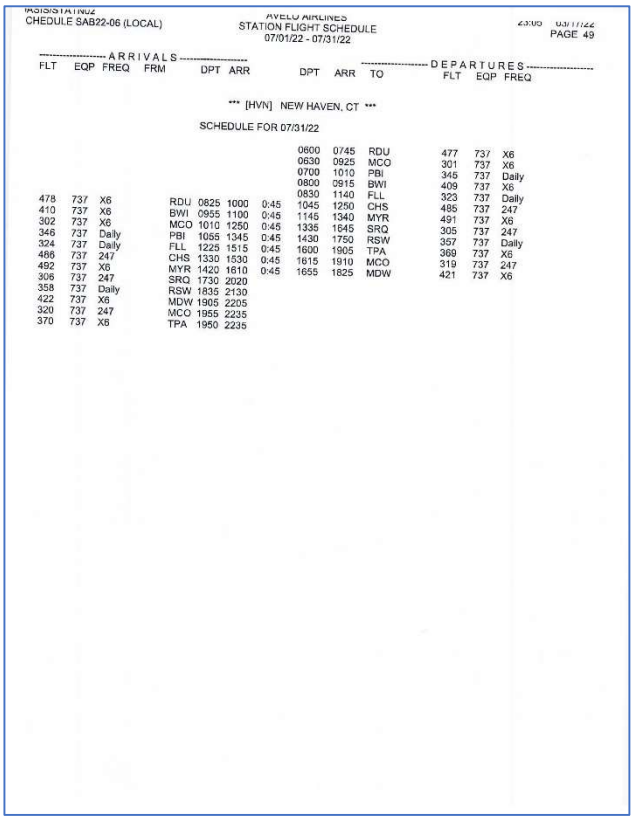
                        *** [HVN]  NEW HAVEN, CT ***

                        SCHEDULE FOR 07/29/22

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                                          0700 1010 PBI     345  737 Daily
                                          0800 0915 BWI     409  737 X6
                                          0830 1140 FLL     323  737 Daily
478  737 X6     RDU 0825 1000  0:45      1045 1305 SAV     463  737 135
410  737 X6     BWI 0955 1100  0:45      1145 1340 MYR     491  737 X6
302  737 X6     MCO 1010 1250  0:45      1335 1630 MCO     319  737 135
346  737 Daily  PBI 1055 1345  0:45      1430 1750 RSW     357  737 Daily
324  737 Daily  FLL 1225 1515  0:45      1600 1905 TPA     369  737 X6
464  737 135    SAV 1345 1555  0:45      1640 1805 BNA     433  737 135
492  737 X6     MYR 1420 1610  0:45      1655 1825 MDW     421  737 X6
320  737 135    MCO 1715 1955
358  737 Daily  RSW 1835 2130
434  737 135    BNA 1845 2155
422  737 X6     MDW 1905 2205
370  737 X6     TPA 1950 2235

                        SCHEDULE FOR 07/30/22

                                          0600 0755 MYR     491  737 6
                                          0630 0850 SAV     463  737 6
                                          0700 1010 PBI     345  737 Daily
                                          0800 1055 MCO     301  737 6
                                          0830 1140 FLL     323  737 Daily
492  737 6      MYR 0835 1025  0:45      1110 1315 CHS     485  737 6
464  737 6      SAV 0930 1140  0:45      1225 1350 BNA     433  737 6
346  737 Daily  PBI 1055 1345  0:45      1430 1750 RSW     357  737 Daily
302  737 6      MCO 1140 1420  0:45      1505 1800 MCO     319  737 6
324  737 Daily  FLL 1225 1515  0:45      1600 1910 SRQ     305  737 6
486  737 6      CHS 1355 1555  0:45      1640 1900 SAV     467  737 6
434  737 6      BNA 1430 1740  0:45      1825 2020 MYR     495  737 6
320  737 6      MCO 1845 2125
358  737 Daily  RSW 1835 2130
468  737 6      SAV 1940 2150
306  737 6      SRQ 1955 2245
496  737 6      MYR 2100 2250
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CHEDULE SAB22-06 (LOCAL)        AVELO AIRLINES                    PAGE 49
                        STATION FLIGHT SCHEDULE
                        07/01/22 - 07/31/22

          ARRIVALS                                  DEPARTURES
FLT  EQP FREQ  FRM      DPT  ARR          DPT  ARR  TO      FLT  EQP FREQ

                        *** [HVN]  NEW HAVEN, CT ***

                        SCHEDULE FOR 07/31/22

                                          0600 0745 RDU     477  737 X6
                                          0630 0925 MCO     301  737 X6
                                          0700 1010 PBI     345  737 Daily
                                          0800 0915 BWI     409  737 X6
                                          0830 1140 FLL     323  737 Daily
478  737 X6     RDU 0825 1000  0:45      1045 1250 CHS     485  737 247
410  737 X6     BWI 0955 1100  0:45      1145 1340 MYR     491  737 X6
302  737 X6     MCO 1010 1250  0:45      1335 1645 SRQ     305  737 247
346  737 Daily  PBI 1055 1345  0:45      1430 1750 RSW     357  737 Daily
324  737 Daily  FLL 1225 1515  0:45      1600 1905 TPA     369  737 X6
486  737 247    CHS 1330 1530  0:45      1615 1910 MCO     319  737 247
492  737 X6     MYR 1420 1610  0:45      1655 1825 MDW     421  737 X6
306  737 247    SRQ 1730 2020
358  737 Daily  RSW 1835 2130
422  737 X6     MDW 1905 2205
320  737 247    MCO 1955 2235
370  737 X6     TPA 1950 2235
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Avelo Airlines Technical Memorandum in Support of Project

avelo
www.aveloair.com

02/15/2022

Sean Scanlon
Executive Director
Tweed-New Haven Airport
155 Burr Street
New Haven, CT 06512

RE: Technical Memorandum Support for Project 18839.00, Revision 1(Performance)

Dear Mr. Scanlon:

Please use this letter as our further support to the Technical Memorandum dated December 10, 2021, for the Tweed (HVN) Airport Runway 2-20 Length Eligibility.

This revision is being provided to give accurate takeoff and landing data with the FAA requested format. Avelo has calculated the following utilizing our aircraft performance partner, AeroData for the following:

Input Criteria Aircraft

1. Farthest existing B737-700 destination, KRSW
2. Farthest existing B737-800 destination, no current destination (performance calculated for KRSW to show performance)
3. Farthest planned B737-700 and -800 destination, KDFW

Aircraft Weight

All aircraft weights have been calculated for maximum MRTW (Maximum Runway Takeoff Length) for each runway length. All obstacles have been identified for runway lengths of 5600 and 6635. For runway lengths of 7,000, 7,500, and 8,000 obstacles have been interpolated.

Runways and Runway Condition

All performance was calculated with runways 02 and 20 separately, utilizing a Dry runway RCC 6 for takeoff, and a Wet runway RCC 5 for landing. All performance follows the guidelines of 14 CFR Part 121 regulatory guidance.

Note: Performance that was calculated for the 6635-foot runway is the actual planned distances added to each respective runway end.

Temperature and Wind

Avelo has made all calculations with calm winds and temperature of 86F. For flight plan enroute time Avelo has utilized Q4 average winds.

Note: Avelo has utilized standard atmospheric barometric pressure of 29.92" inches of mercury.

Elevation and Thrust

Avelo has utilized the KHVN field elevation of 13' MSL and maximum thrust for each engine type. No derate was utilized.

Engines used for calculations are as follows:

- B737-700, CFM56-7B22
- B737-800, CFM56-7B26

Flaps

For all performance calculations, takeoff and landing, Avelo has utilized optimum flap settings per AeroData.

Performance

Takeoff all Runway Lengths

5600 Feet

B737-800	MTOW	DFW Payload	RSW Payload
RWY 02	143000	24920 (112)	28624 (129)
RWY 20	145800	27422 (124)	31122 (140)

5600 Feet

B737-700	MTOW	DFW Payload	RSW Payload
RWY 02	133500	25889 (117)	28998 (131)
RWY 20	137200	29198 (132)	32449 (147)

6635 Feet

B737-800	MTOW	DFW Payload	RSW Payload
RWY 02	153000	34920 (156)	38156 (171)
RWY 20	155200	37120 (166)	40356 (181)

6635 Feet

B737-700	MTOW	DFW Payload	RSW Payload
RWY 02	142300	MAX	MAX
RWY 20	147199	MAX	MAX

7000 Feet

B737-800	MTOW	DFW Payload	RSW Payload
RWY 02	163000	MAX	MAX
RWY 20	165000	MAX	MAX

7000 Feet

B737-700	MTOW	DFW Payload	RSW Payload
RWY 02	MAX	MAX	MAX
RWY 20	MAX	MAX	MAX

7500 Feet

B737-800	MTOW	DFW Payload	RSW Payload
RWY 02	MAX	MAX	MAX
RWY 20	MAX	MAX	MAX

7500 Feet

B737-700	MTOW	DFW Payload	RSW Payload
RWY 02	MAX	MAX	MAX
RWY 20	MAX	MAX	MAX

8000 Feet

B737-800	MTOW	DFW Payload	RSW Payload
RWY 02	MAX	MAX	MAX
RWY 20	MAX	MAX	MAX

8000 Feet

B737-700	MTOW	DFW Payload	RSW Payload
RWY 02	MAX	MAX	MAX
RWY 20	MAX	MAX	MAX

Note: Maximum seating configurations for the B737-800 is 189 and for the B737-700 it is 147. The MTOW for the B737-800 is 174,200 and for the B737-700 it is 154,500.

Anytime the aircraft performance reaches a certificated limit, MAX was inserted in the table.
All calculations equate one passenger to one bag.

Landing

5600 Feet

B737-800	MLDW WET	Payload	Count
RWY 02	130900	31450	142
RWY 20	119400	19969	90

5600 Feet

B737-700	MLDW WET	Payload	Count
RWY 02	MAX	MAX	MAX
RWY 20	125600	MAX	MAX

6635 Feet

B737-800	MLDW WET	Payload	Count
RWY 02	139421	40023	MAX
RWY 20	127865	28434	127

6635 Feet

B737-700	MLDW WET	Payload	Count
RWY 02	MAX	MAX	MAX
RWY 20	MAX	MAX	MAX

7000 Feet

B737-800	MLDW WET	Payload	Count
RWY 02	MAX	MAX	MAX
RWY 20	135000	35569	159

7000 Feet

B737-700	MLDW WET	Payload	Count
RWY 02	MAX	MAX	MAX
RWY 20	MAX	MAX	MAX

7500 Feet

B737-800	MLDW WET	Payload	Count
RWY 02	MAX	MAX	MAX
RWY 20	MAX	MAX	MAX

7500 Feet

B737-700	MLDW WET	Payload	Count
RWY 02	MAX	MAX	MAX
RWY 20	MAX	MAX	MAX

8000 Feet

B737-800	MLDW WET	Payload	Count
RWY 02	MAX	MAX	MAX
RWY 20	MAX	MAX	MAX

8000 Feet

B737-700	MLDW WET	Payload	Count
RWY 02	MAX	MAX	MAX
RWY 20	MAX	MAX	MAX

Note: Maximum landing weight for the B737-800 is 146,300 and for the B737-700 it is 128,000.

Anytime the aircraft performance reaches a certificated limit, MAX was inserted in the table.

Reduced Thrust Departures

Avelo has reviewed the McFarland and Johnson reduced thrust profiles and agrees with the following:

1. Avelo will operate the B737-700 with a 5% reduced thrust for our 22K engines.
2. Avelo will operate the B737-700 with a 15% reduced thrust for all runway extensions.
3. Avelo intends to utilize reduced thrust for all B737-800 departures.

In closing, as previously stated Avelo intends to grow our fleet in HVN and the runway extension will allow Avelo to grow the market and maintain FAA Safety Standards.

If any other information is needed, please feel free to ask.

Sincerely,

Andrew Lotter
VP Flight Operations
Avelo Airlines

Non-Standard Modeling Approval Request

HMMH
700 District Avenue, Suite 800
Burlington, MA 01803
781.229.0707

MEMORANDUM

To:	Richard Doucette Environmental Program Manager FAA, New England Region Burlington, MA 01803
From:	Kate Larson, Senior Consultant Robert C. Mentzer, Jr., Principal Consultant Mihir Rimjha, Senior Consultant
Date:	February 28, 2022
Subject:	Tweed New Haven Proposed Airport Improvements Environmental Assessment - Requested Review and Approval of AEDT Non-Standard Departure Profiles
Reference:	HMMH Project Number 312830

Introduction

Harris Miller Miller & Hanson Inc. (HMMH) is assisting McFarland Johnson, Inc. (MJ) to prepare an Environmental Assessment for the proposed improvements at Tweed New Haven Airport (HVN). We are using the Aviation Environmental Design Tool (AEDT) version 3d for all aircraft noise modeling.

Tweed New Haven Airport currently has commercial operations by Avelo Airlines' B737-700W (B737W) to six Florida destinations. As stated in the Runway Length Eligibility memo submitted to the FAA by MJ on December 17, 2021, "the longer runway would allow the B737W to operate at a lower thrust setting (meeting Avelo's noise policy to use the lowest safe thrust settings), reducing the noise to the local community." Avelo is currently HVN's only scheduled passenger carrier, and the only scheduled passenger carrier in the forecast scenarios for the EA.

Consistent with Federal Aviation Administration (FAA) policies and procedures, any changes to the standard AEDT arrival and departure profiles require prior written approval from the Office of Environment and Energy Noise Division (AEE-100). This requirement applies to the use of the reduced-thrust profiles contained in the AEDT database.[1]

Non-Standard Departure Profiles

In consultation with Avelo, HMMH has determined that the 5-percent reduced thrust profile for the AEDT aircraft type 737700 most closely resembles the departure parameters in use currently for their B737W aircraft at HVN. Avelo has stated their intent to use further reduced thrust settings for B737W departures if and when the proposed runway extension is constructed, as the additional available runway length would allow that as regular procedure. Avelo personnel indicate that the 737700 15-percent reduced thrust profile resembles their expected departure parameters from the extended runway.

Avelo has also stated their intent to begin flying B737-800W (B738W) aircraft at HVN if and when the proposed runway extension is constructed. They intend to routinely use reduced thrust settings for B738W departures, and they indicate that the 737800 5-percent reduced thrust profile resembles their expected departure parameters for that aircraft from the extended runway.

[1] Appendix J.1 of the Aviation Environmental Design Tool User Manual 3d (pp. 401-402) describes the process for requesting FAA approval for the reduced thrust profiles (https://aedt.faa.gov/Documents/AEDT3d_UserManual.pdf)

FAA guidance[2] details the information to include in requests to use non-default methods/data. The following four sections are required for user-defined profiles; although the reduced-thrust profiles we propose to use are not user-defined, we include the four sections in the attachment for ease of comparison and review.

Analysis Demonstrating Change: *For departure tracks, provide Sound Exposure Level (SEL) values for a noise receptor network spaced 0.5 nautical miles apart underneath the flight path, beginning at the start of takeoff roll and ending at the end of the profile, or at 10 nautical miles from the start of takeoff roll (whichever is shorter).*

Concurrence on Aircraft Performance: *Obtain verification from an airline operator or aircraft manufacturer familiar with the performance characteristics of the aircraft. This verification could be either:*

- *A description of the performance characteristics of the aircraft, such as a profile description copied from a flight manual. Or,*
- *A statement by the operator or manufacturer certifying that the proposed profile falls within reasonable bounds of the aircraft's performance for the modeled airport location.*

Performance Characteristics: *State that the aircraft performance characteristics submitted by the operator or manufacturer have been correctly translated into the AEDT formatted profile or procedure. Specifically, certify that: If the new profiles are in terms of profile points: a. Altitude is AFE in feet. B. Speed is true airspeed in knots. C. State the units of thrust-setting (for example, pounds). State that the units match the units of the thrust-setting parameter used in the aircraft's associated noise-power-distance curves. If the new profiles are defined in terms of procedure steps: a. If new aircraft performance coefficient data were developed, separate AEE review is required. In addition, direct manufacturer support or flight test information is required to facilitate that review. b. The procedure step data must conform to the profile rules given in the AEDT ASIF Reference Guide. C. If percent units are used for thrust-setting, give the value of the aircraft's static thrust parameter used in the denominator when calculating percent. State that this value is in units of pounds. D. If the profile thrust setting is in terms of Revolutions per Minute (RPM), Exhaust Pressure Ratio (EPR), N1 or other parameters, show the method for converting thrust to pounds.*

HMMH did not define the reduced thrust profiles. For informational purposes, we present the parameters as copied from the AEDT 3d database.

Graphical and Tabular Comparison: *Provide three graphics for each proposed change in profile in each seat class: a. Altitude vs. Distance b. Speed vs. Distance c. Thrust vs. Distance Plot the default profiles and the proposed user-defined profiles on the same graph. Also, submit tables of information used to plot the graphs. Quantitative comparison, such as an estimate of the least mean square of differences, should be provided and explained*

For the HVN EA, we are requesting FAA approval for the use of reduced thrust profiles in AEDT version 3d for the B737W and B738W, as outlined above, which are not included in the AEDT standard modeling data.

Details of the reduced thrust profiles and how they compare to the AEDT standard profiles are provided in Attachment A.

[2] Section 5 (Non-Default Methods and Data) of the document "Guidance on Using the Aviation Environmental Design Tool (AEDT) to Conduct Environmental Modeling for FAA Actions Subject to NEPA"
https://aedt.faa.gov/Documents/guidance_aedt_nepa.pdf

Attachment A

Analysis Demonstrating Change

Table 1 presents a comparison of SEL values for a series of ground points along a straight-out departure flight track. The distance 0.0 represents the start of takeoff roll, and the subsequent points are spaced 0.5 nautical miles apart. The Standard profile shown is for the ANP type 737700 stage length 2; those SEL values are compared to the SEL results for stage length 2 departures using the 5 percent (MODIFIED_RT05) and the 15 percent (MODIFIED_RT15) reduced-thrust profiles, respectively, for the 737700. The far-right column compares the two reduced-thrust profile noise results to each other.

As the table shows, the reduced-thrust departures are quieter (shown as negative values in the difference columns) than the standard along the runway itself, but SEL values are very close (within a half decibel) for most of the flight track. The aircraft lifts off the runway between the second and the third points in the table (0.5 and 1.0 nmi from start of takeoff roll). The 15 percent reduced thrust departure is louder than the standard departure at 1.0 nmi from brake release (just off the end of the runway) because the aircraft climbs out more slowly.

SEL contours illustrate that a sideline noise reduction occurs for both reduced-thrust profiles as compared to the standard profile. The left side of Figure 1 compares a standard profile departure to a 5% reduced thrust departure while the right side compares a standard profile departure to a departure with 15% reduced thrust.



Figure 1. SEL contour comparison

Table 1 – ANP type 737700 Departure SEL Comparison

Grid Spacing (Nmi)	Modeled SEL Values (dB)					
	Standard	MODIFIED_RT05	Difference (RT5 - Standard)	MODIFIED_RT15	Difference (RT15 – Standard)	Difference (RT15 - RT5)
0.0	131.50	130.32	-1.18	127.97	-3.53	-2.35
0.5	118.85	118.66	-0.19	117.34	-1.51	-1.32
1.0	99.84	99.85	0.01	100.89	1.05	1.04
1.5	94.82	95.08	0.26	94.69	-0.13	-0.39
2.0	91.93	92.36	0.43	92.16	0.23	-0.20
2.5	89.64	89.88	0.24	89.91	0.27	0.03
3.0	87.80	88.08	0.28	88.00	0.20	-0.08
3.5	86.47	86.68	0.21	86.34	-0.13	-0.34
4.0	85.10	85.33	0.23	85.13	0.03	-0.20
4.5	83.96	84.19	0.23	83.97	0.01	-0.22
5.0	82.95	83.15	0.20	82.98	0.03	-0.17
5.5	82.00	82.10	0.10	82.00	0.00	-0.10
6.0	81.29	81.41	0.12	81.04	-0.25	-0.37
6.5	80.69	80.80	0.11	80.35	-0.34	-0.45
7.0	80.13	80.22	0.09	79.71	-0.42	-0.51
7.5	79.60	79.69	0.09	79.19	-0.41	-0.50
8.0	79.04	79.14	0.10	78.69	-0.35	-0.45
8.5	78.50	78.59	0.09	78.19	-0.31	-0.40
9.0	77.97	78.06	0.09	77.73	-0.24	-0.33
9.5	77.48	77.57	0.09	77.22	-0.26	-0.35
10.0	77.01	77.10	0.09	76.79	-0.22	-0.31
Data source: HMMH analysis, 2022						

Table 2 presents a similar comparison of SEL values for the ANP type 737800. The Standard profile is again stage length 2; those SEL values are compared to the SEL results for a stage length 2 departure using the 5 percent (MODIFIED_RT5) reduced-thrust profile for the 737800.

Table 2 – ANP type 737800 Departure SEL Comparison

Grid Spacing (Nmi)	Modeled SEL Values (dB)		
	Standard	MODIFIED_RT5	Difference (RT5 - Standard)
0.0	133.72	132.41	-1.31
0.5	121.70	120.68	-1.02
1.0	103.31	103.4	0.09
1.5	97.79	97.20	-0.59
2.0	94.78	94.18	-0.60
2.5	92.21	91.94	-0.27
3.0	88.58	89.75	1.17
3.5	86.63	87.01	0.38
4.0	85.63	85.97	0.34
4.5	84.52	84.83	0.31
5.0	83.53	83.85	0.32
5.5	82.60	82.99	0.39
6.0	81.95	82.17	0.22
6.5	81.31	81.53	0.22
7.0	80.82	80.99	0.17
7.5	80.33	80.51	0.18
8.0	79.88	80.07	0.19
8.5	79.44	79.59	0.15
9.0	78.93	79.11	0.18
9.5	78.49	78.65	0.16
10.0	78.04	78.20	0.16

Data source: HMMH analysis, 2022

Concurrence of Aircraft Performance

Statement by the aircraft operator, Avelo Airlines, certifying that the proposed profiles fall within reasonable bounds of the aircraft's performance at HVN

I, Andrew Lotter, the undersigned representative of Avelo Airlines, certify that I have reviewed the data for the proposed departure profiles contained in this memorandum and agree that the profiles fall within reasonable bounds of HVN aircraft performance at HVN.

Andrew Lotter — *Signature*
VP Flight Operations — *Title*
03/01/22 — *date*

Performance Characteristics

HMMH did not define the reduced thrust profiles. For informational purposes, we present the parameters as copied from the AEDT 3d database. Table 3 presents the AEDT standard profile procedure steps for a stage length 2 departure by ANP type 737700, followed by first the 5 percent reduced thrust and then the 15 percent reduced thrust profiles for that aircraft. Table 4 contains the AEDT standard profile procedure steps for a stage length 2 departure by ANP type 737800, followed by its 5 percent reduced thrust profile.

Table 3. AEDT 737700 Departure Profiles

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	STEP_NUM	FLAP_ID	STEP_TYPE	THR_TYPE	PARAM1	PARAM2	PARAM3
Standard 737700 Stage length 2 Departure										
737700	D	STANDARD	2	1	T_5	T	T	0	0	0
737700	D	STANDARD	2	2	T_5	C	T	1000	0	0
737700	D	STANDARD	2	3	T_ZERO	A	C	1710.1	197.7	0
737700	D	STANDARD	2	4	T_ZERO	C	C	3000	0	0
737700	D	STANDARD	2	5	T_ZERO	A	C	2056.7	250	0
737700	D	STANDARD	2	6	T_ZERO	C	C	5500	0	0
737700	D	STANDARD	2	7	T_00H	C	C	7500	0	0
737700	D	STANDARD	2	8	T_00H	C	C	10000	0	0
5 Percent Reduced Thrust 737700 Stage length 2 Departure										
737700	D	MODIFIED_RT05	2	1	T_5	T	F	0	0	0
737700	D	MODIFIED_RT05	2	2	T_5	C	F	1000	0	0
737700	D	MODIFIED_RT05	2	3	T_ZERO	P	C	55	197.7	0
737700	D	MODIFIED_RT05	2	4	T_ZERO	C	C	3000	0	0
737700	D	MODIFIED_RT05	2	5	T_ZERO	P	C	55	250	0
737700	D	MODIFIED_RT05	2	6	T_ZERO	C	C	5500	0	0
737700	D	MODIFIED_RT05	2	7	T_00H	C	C	7500	0	0
737700	D	MODIFIED_RT05	2	8	T_00H	C	C	10000	0	0
15 Percent Reduced Thrust 737700 Stage length 2 Departure										
737700	D	MODIFIED_RT15	2	1	T_5	T	Z	0	0	0
737700	D	MODIFIED_RT15	2	2	T_5	C	Z	1000	0	0
737700	D	MODIFIED_RT15	2	3	T_ZERO	P	D	55	197.7	0
737700	D	MODIFIED_RT15	2	4	T_ZERO	C	D	3000	0	0
737700	D	MODIFIED_RT15	2	5	T_ZERO	P	D	55	250	0
737700	D	MODIFIED_RT15	2	6	T_ZERO	C	D	5500	0	0
737700	D	MODIFIED_RT15	2	7	T_00H	C	D	7500	0	0
737700	D	MODIFIED_RT15	2	8	T_00H	C	D	10000	0	0

Step Types: T= Takeoff, C= Climb, A= Accelerate, P= Accel-Percent
Thrust Types: T= MaxTakeoff, C= MaxClimb, F= MaxTakeoffReduce05 , D= MaxClimbReduce10, Z= MaxTakeoffReduce15
PARAM1 values may be altitude (ft AFE), distance (ft), climb rate (ft/min) or percent, depending on combination of Step Type and Thrust Type
PARAM2 values are speed (KCAS)
PARAM3 values may be distance (ft), thrust (lbs) or percent, depending on combination of Step Type and Thrust Type
Data source: AEDT version 3d database

Table 4. AEDT 7378000 Departure Profiles

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	STEP_NUM	FLAP_ID	STEP_TYPE	THR_TYPE	PARAM1	PARAM2	PARAM3
Standard 737800 Stage length 2 Departure										
737800	D	STANDARD	2	1	T_05	T	T	0	0	0
737800	D	STANDARD	2	2	T_05	C	T	1000	0	0
737800	D	STANDARD	2	3	T_05	A	T	1786.4	183.9	0
737800	D	STANDARD	2	4	T_01	A	T	2016.2	208	0
737800	D	STANDARD	2	5	T_00	C	T	2000	0	0
737800	D	STANDARD	2	6	T_00	C	C	3000	0	0
737800	D	STANDARD	2	7	T_00	A	C	1793.4	250	0
737800	D	STANDARD	2	8	T_00	C	C	5500	0	0
737800	D	STANDARD	2	9	T_00	C	C	7500	0	0
737800	D	STANDARD	2	10	T_00	C	C	10000	0	0
5 Percent Reduced Thrust 737800 Stage length 2 Departure										
737800	D	MODIFIED_RT05	2	1	T_05	T	F	0	0	0
737800	D	MODIFIED_RT05	2	2	T_05	C	F	1000	0	0
737800	D	MODIFIED_RT05	2	3	T_05	P	F	55	183.9	0
737800	D	MODIFIED_RT05	2	4	T_01	P	F	55	208	0
737800	D	MODIFIED_RT05	2	5	T_00	C	F	2000	0	0
737800	D	MODIFIED_RT05	2	6	T_00	C	C	3000	0	0
737800	D	MODIFIED_RT05	2	7	T_00	P	C	55	250	0
737800	D	MODIFIED_RT05	2	8	T_00	C	C	5500	0	0
737800	D	MODIFIED_RT05	2	9	T_00	C	C	7500	0	0
737800	D	MODIFIED_RT05	2	10	T_00	C	C	10000	0	0

Step Types: T= Takeoff, C= Climb, A= Accelerate, P= Accel-Percent
Thrust Types: T= MaxTakeoff, C= MaxClimb, F= MaxTakeoffReduce05
PARAM1 values may be altitude (ft AFE), distance (ft), climb rate (ft/min) or percent, depending on combination of Step Type and Thrust Type
PARAM2 values are speed (KCAS)
PARAM3 values may be distance (ft), thrust (lbs) or percent, depending on combination of Step Type and Thrust Type
Data source: AEDT version 3d database

Graphical and Tabular Comparison

The following pages present comparisons of the reduced thrust profiles to the AEDT standard profiles in terms of computed altitude, speed and thrust.

Figures 2 through 4 represent stage length 2 departures by the ANP type 737700, comparing the standard, the 5 percent reduced thrust, and the 15 percent reduced thrust profiles. Figure 2 depicts the aircraft altitude as a function of distance along the flight path, Figure 3 shows speed, and Figure 4 shows thrust. Table 5 presents the data used to create the graphs: the left columns contain altitude, speed, and thrust values for the 737700 standard profile, while the center and right columns hold data for the 5 percent and 15 percent reduced thrust profiles, respectively.

Similarly, Figures 5 through 7 represent stage length 2 departures by the ANP type 737800, comparing the standard and the 5 percent reduced thrust profiles. Table 6 presents the corresponding data in tabular form: the left side contains altitude, speed, and thrust values for the 737800 standard profile, while the right side provides data for the 5 percent reduced thrust profiles.

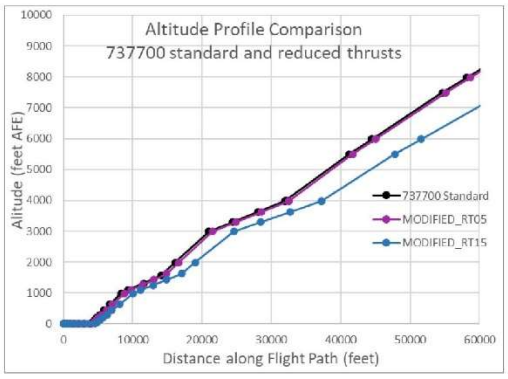


Figure 2. 737700 Stage Length 2 Departure Altitude Comparisons

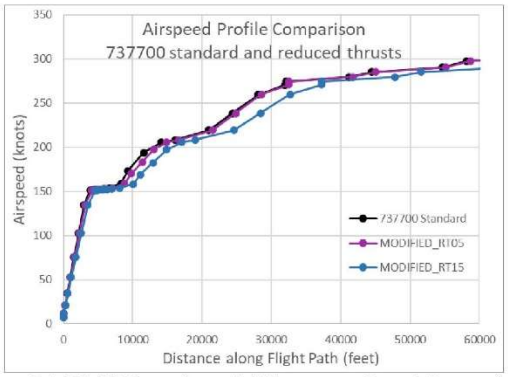


Figure 3. 737700 Stage Length 2 Departure Speed Comparisons

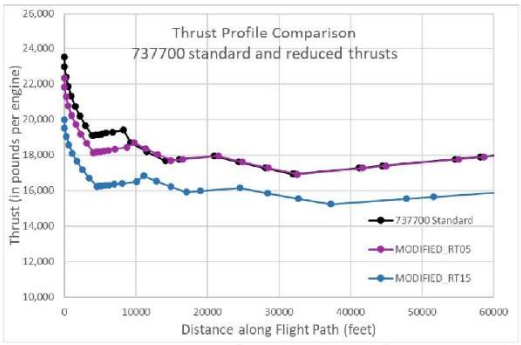


Figure 4. 737700 Stage Length 2 Departure Thrust Comparisons

Table 5 – AEDT-Generated Departure Profile Data for ANP type 737700

Standard profile					5 percent reduced thrust profile					15 percent reduced thrust profile				
Point #	Distance along Flight Path (ft)	Altitude (ft AFE)	Airspeed (knots)	Corrected Net Thrust (lbs)	Point #	Distance along Flight Path (ft)	Altitude (ft AFE)	Airspeed (knots)	Corrected Net Thrust (lbs)	Point #	Distance along Flight Path (ft)	Altitude (ft AFE)	Airspeed (knots)	Corrected Net Thrust (lbs)
1	0	0	0	0	1	0	0	0	0	1	0	0	0	0
2	61	0	7	23510	2	64	0	7	22334	2	72	0	7	19983
3	244	0	12	22958	3	256	0	12	21810	3	287	0	12	19515
4	548	0	21	22407	4	577	0	21	21286	4	646	0	21	19046
5	974	0	34	21855	5	1026	0	34	20763	5	1148	0	34	18577
6	1522	0	53	21304	6	1603	0	53	20239	6	1794	0	53	18108
7	2192	0	75	20752	7	2308	0	75	19715	7	2584	0	75	17639
8	2983	0	102	20201	8	3142	0	102	19191	8	3517	0	102	17171
9	3896	0	134	19649	9	4104	0	134	18667	9	4593	0	134	16702
10	4144	0	151	19098	10	4369	0	151	18143	10	4903	0	151	16233
11	4440	51	152	19115	11	4686	51	152	18160	11	5273	51	152	16248
12	4792	118	152	19136	12	5064	118	152	18180	12	5713	118	152	16266
13	5236	199	152	19161	13	5539	199	152	18203	13	6267	199	152	16287
14	5832	300	152	19192	14	6178	300	152	18233	14	7011	300	152	16314
15	6716	435	153	19234	15	7125	435	153	18273	15	8116	435	153	16349
16	8289	637	154	19296	16	8809	637	154	18332	16	10079	637	154	16402
17	9294	995	159	19406	17	9814	995	159	18436	17	11083	995	158	16495
18	11578	1094	173	18700	18	11383	1099	170	18700	18	12913	1086	169	16830
19	14139	1321	194	18191	19	13083	1262	183	18364	19	14900	1253	183	16527
20	16102	1575	206	17681	20	14914	1439	198	18027	20	17046	1434	197	16225
21	20974	1983	208	17760	21	16618	1629	206	17691	21	18997	1629	206	15922
22	24371	2995	219	17957	22	21494	1983	208	17760	22	24579	1983	208	15984
23	28084	3300	239	17614	23	24865	2995	219	17957	23	28445	2995	219	16161
24	31946	3635	259	17270	24	28548	3296	239	17613	24	32670	3296	239	15851
25	32112	3983	270	16941	25	32545	3625	260	17268	25	37253	3625	260	15541
26	41182	3997	275	16927	26	32547	3982	271	16924	26	37255	3982	271	15232
27	44460	5495	280	17266	27	41705	3983	275	16924	27	47800	3983	275	15232
28	54619	5983	285	17387	28	44984	5495	280	17266	28	51612	5495	280	15539
29	58150	7495	291	17764	29	55142	5983	285	17387	29	63423	5983	285	15649
30	72622	7983	298	17900	30	58673	7495	291	17764	30	67543	7495	291	15988
31	72662	9983	303	18456	31	73145	7983	298	17900	31	84429	7983	298	16110
32	72834	9988	304	18458	32	73185	9983	303	18456	32	84475	9983	303	16611

Data source: AEDT version 3d database

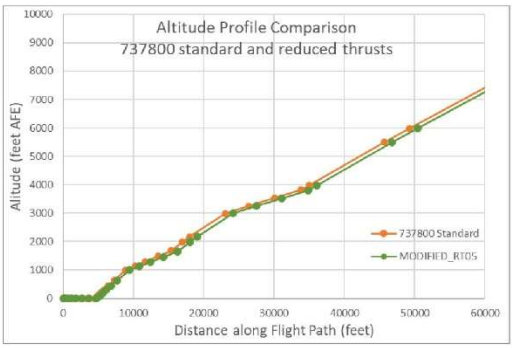


Figure 5. 737800 Stage Length 2 Departure Altitude Comparison

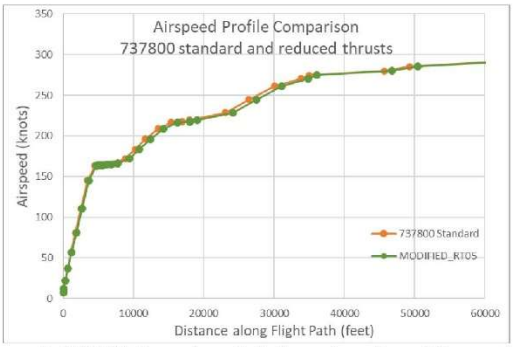


Figure 6. 737800 Stage Length 2 Departure Speed Comparison

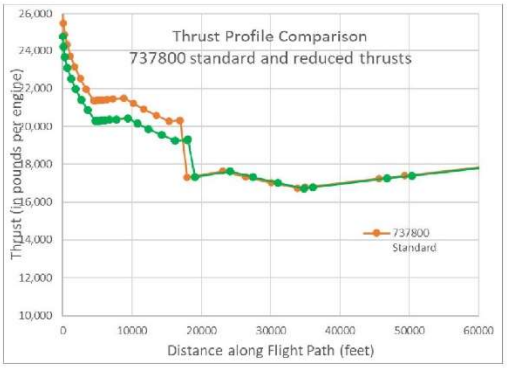


Figure 7. 737800 Stage Length 2 Departure Thrust Comparison

Table 6 – AEDT-Generated Departure Profile Data for ANP type 737800

Standard profile					5 percent reduced thrust profile				
Point #	Distance along Flight Path (ft)	Altitude (ft AFE)	Airspeed (knots)	Corrected Net Thrust (lbs)	Point #	Distance along Flight Path (ft)	Altitude (ft AFE)	Airspeed (knots)	Corrected Net Thrust (lbs)
1	0	0	0	0	1	0	0	0	0
2	70	0	7	26077	2	73	0	7	24774
3	279	0	12	25487	3	294	0	12	24212
4	628	0	22	24896	4	661	0	22	23651
5	1116	0	37	24306	5	1176	0	37	23090
6	1744	0	56	23715	6	1837	0	56	22529
7	2512	0	81	23124	7	2646	0	81	21968
8	3419	0	111	22534	8	3601	0	111	21407
9	4465	0	145	21943	9	4703	0	145	20846
10	4712	0	163	21353	10	4968	0	163	20285
11	5007	51	164	21361	11	5283	51	164	20293
12	5357	118	164	21370	12	5658	118	164	20302
13	5798	199	164	21382	13	6131	199	164	20313
14	6391	300	164	21397	14	6766	300	164	20327
15	7271	435	165	21416	15	7707	435	165	20345
16	8834	637	166	21445	16	9382	637	166	20373
17	10213	995	172	21496	17	10828	995	172	20421
18	11686	1138	184	21203	18	12375	1133	183	20142
19	13461	1292	196	20910	19	14239	1280	196	19863
20	15359	1476	209	20587	20	16231	1458	209	19555
21	16875	1673	216	20264	21	17976	1648	216	19247
22	16934	1983	217	20308	22	18039	1983	217	19293
23	17947	1995	217	20310	23	19052	1995	217	19294
24	23057	2160	219	17319	24	24162	2160	219	17319
25	26422	2995	229	17624	25	27482	2995	229	17624
26	30027	3253	244	17328	26	31040	3247	244	17325
27	33874	3531	261	17031	27	34836	3517	261	17026
28	34973	3827	270	16734	28	36087	3806	270	16727
29	45670	3983	275	16781	29	46781	3983	275	16781
30	49301	5495	280	17243	30	50412	5495	280	17243
31	60552	5983	285	17392	31	61662	5983	285	17392
32	64433	7495	291	17855	32	65544	7495	291	17855
Data source: AEDT version 3d database									

FAA Approval of Non-Standard Modeling Methodology

U.S. Department of Transportation
Federal Aviation Administration

Office of Environment and Energy

800 Independence Ave., S.W.
Washington, D.C. 20591

3/31/2022

Richard Doucette
Environmental Protection Specialist
FAA New England Region
12000 District Avenue
Burlington, MA 01803

Dear Richard,

The Office of Environment and Energy (AEE) has received the memo from HMMH on behalf of Tweed New Haven Airport, dated February 28, 2022 proposing use of non-standard departure profiles in AEDT 3d to be used for modeling reduced thrust departure operations by Avelo Airlines. This request is in support of an Environmental Assessment (EA) for the HVN Runway Extension and Terminal Expansion Program.

The Proposed Action related to this letter is the Runway 2-20 extension, which would allow Avelo Airlines' Boeing 737-700W (B737W) and 737-800W (B738W) to use the reduced thrust for departures. Avelo Airlines proposed to use 5% and 15% reduced thrust departure profiles for B737W and 5% reduced thrust departure profile for B738W. It should be noted that pre-defined reduced thrust departure profiles are included in AEDT 3d.

In accordance with FAA guidance as detailed in the document "Guidance on Using the Aviation Environmental Design Tool (AEDT) to Conduct Environmental Modeling for FAA Actions Subject to NEPA"[1], use of non-default methods or data for environmental analysis of FAA actions within AEDT must be approved by AEE.

As provided in the request, Avelo Airlines has certified their intended use reduced thrust departures. AEE therefore approves the proposed use of reduced thrust profiles for this project. Please understand that this approval is limited to this particular EA for the HVN Runway Extension and Terminal Expansion Program and for use with AEDT 3d only. Further non-standard AEDT inputs or methodologies for additional projects at this or any other site will require separate approval.

Sincerely,

Digitally signed by
DONALD S SCATA
Date: 2022.03.31
14:56:28 -04'00'

Donald Scata
Manager
AEE-100/Noise Division

cc: APP-400 Jean Wolfers-Lawrence, Susan Staehle

[1] Federal Aviation Administration, *Guidance on Using the Aviation Environmental Design Tool (AEDT) to Conduct Environmental Modeling for FAA Actions Subject to NEPA*, Retrieved from https://aedt.faa.gov/Documents/guidance_aedt_nepa.pdf on January 31, 2022

APPENDIX C DETAILED MODELED OPERATIONS BY NON-AIR CARRIER AIRCRAFT

Table C-1. Flight Operations by Non-Air Carrier Aircraft: Existing Conditions

Source: HVN Master Plan, 2021

GROUP	AEDT Aircraft Type	Arrivals		Departures				Total Operations
		Day	Night	Day		Night		
				SL 1	SL 2	SL 1	SL 2	
Air Taxi	BD-700-1A10	22.4	5.8	15.9	7.2	3.6	1.6	56.5
	CL601	15.0	3.9	15.4	0.0	3.4	0.0	37.7
	CL600	26.2	6.8	15.6	11.3	3.5	2.5	65.9
	CNA510	24.3	6.3	25.0	0.0	5.6	0.0	61.2
	CNA525C	142.2	36.7	146.3	0.0	32.7	0.0	357.9
	CNA55B	134.7	34.8	138.6	0.0	30.9	0.0	339
	CNA560U	114.1	29.5	117.4	0.0	26.2	0.0	287.2
	CNA560XL	20.6	5.3	21.2	0.0	4.7	0.0	51.8
	CNA680	129.1	33.4	132.8	0.0	29.7	0.0	324.9
	CNA750	72.9	18.9	75.0	0.0	16.8	0.0	183.6
	FAL900EX	3.7	1.0	2.5	1.4	0.5	0.3	9.4
	G650ER	5.6	1.4	4.3	1.5	1.0	0.3	14.1
	GIV	28.1	7.2	28.9	0.0	6.4	0.0	70.6
	GV	5.6	1.4	5.8	0.0	1.3	0.0	14.1
	LEAR35	136.6	35.3	140.5	0.0	31.4	0.0	343.7
	MU3001	56.1	14.5	57.8	0.0	12.9	0.0	141.3
	CNA208	239.5	61.9	246.3	0.0	55.0	0.0	602.7
	DHC6	78.6	20.3	80.8	0.0	18.1	0.0	197.8
	BEC58P	69.2	17.9	71.2	0.0	15.9	0.0	174.2
	CNA182	11.2	2.9	11.6	0.0	2.6	0.0	28.3
	GASEPV	5.6	1.4	5.8	0.0	1.3	0.0	14.1
	EC130	13.1	3.4	13.5	0.0	3.0	0.0	33
Air Taxi Total		**1354.5**	**350.0**	**1372.0**	**21.4**	**306.4**	**4.8**	**3409.0**
GA & Mil Itinerant	BD-700-1A10	45.9	11.8	32.5	14.6	7.3	3.3	115.4
	CL600	97.1	25.1	99.9	0.0	22.3	0.0	244.4
	CL601	48.6	12.5	49.9	0.0	11.2	0.0	122.2
	CNA500	32.4	8.4	33.3	0.0	7.4	0.0	81.5
	CNA510	21.6	5.6	22.2	0.0	5.0	0.0	54.3
	CNA525C	67.4	17.4	69.4	0.0	15.5	0.0	169.7
	CNA55B	143.0	37.0	147.1	0.0	32.9	0.0	359.9
	CNA560U	129.5	33.5	133.2	0.0	29.7	0.0	325.9
	CNA560XL	70.1	18.1	72.1	0.0	16.1	0.0	176.5
	CNA680	80.9	20.9	83.3	0.0	18.6	0.0	203.7
	CNA750	75.5	19.5	77.7	0.0	17.4	0.0	190.1

	ECLIPSE50	16.2	4.2	16.6	0.0	3.7	0.0	40.7
	FAL900EX	113.3	29.3	74.6	42.0	16.7	9.4	285.2
	G650ER	24.3	6.3	18.5	6.5	4.1	1.5	61.1
	GIIB	8.1	2.1	8.3	0.0	1.9	0.0	20.4
	GIV	121.4	31.4	124.9	0.0	27.9	0.0	305.5
	GV	78.2	20.2	80.5	0.0	18.0	0.0	196.9
	IA1125	56.7	14.6	58.3	0.0	13.0	0.0	142.6
	LEAR35	194.3	50.2	199.8	0.0	44.6	0.0	488.9
	MU3001	27.0	7.0	27.8	0.0	6.2	0.0	67.9
	CNA208	159.2	41.1	163.7	0.0	36.6	0.0	400.6
	CNA441	18.9	4.9	19.4	0.0	4.3	0.0	47.5
	DHC6	288.7	74.6	296.9	0.0	66.3	0.0	726.5
	BEC58P	218.5	56.5	224.8	0.0	50.2	0.0	550
	CNA172	364.2	94.1	374.6	0.0	83.7	0.0	916.6
	CNA182	102.5	26.5	105.4	0.0	23.6	0.0	258
	CNA206	16.2	4.2	16.6	0.0	3.7	0.0	40.7
	COMSEP	388.5	100.4	399.6	0.0	89.2	0.0	977.7
	GASEPF	140.3	36.3	144.3	0.0	32.2	0.0	353.1
	GASEPV	437.0	112.9	449.5	0.0	100.4	0.0	1099.9
	PA28	544.9	140.8	560.6	0.0	125.2	0.0	1371.5
	PA30	5.4	1.4	5.6	0.0	1.2	0.0	13.6
	PA31	37.8	9.8	38.9	0.0	8.7	0.0	95.1
	B429	8.1	2.1	8.3	0.0	1.9	0.0	20.4
	S76	32.4	8.4	33.3	0.0	7.4	0.0	81.5
	SA330J	10.8	2.8	11.1	0.0	2.5	0.0	27.2
GA & Mil Itinerant Total		**4224.6**	**1091.8**	**4280.3**	**65.4**	**956.0**	**14.6**	**10632.7**
GA Local	BEC58P	778.2	201.1	800.5	0.0	178.8	0.0	1958.6
	CNA172	534.5	138.1	549.8	0.0	122.8	0.0	1345.3
	CNA182	188.6	48.8	194.1	0.0	43.3	0.0	474.8
	CNA206	39.3	10.2	40.4	0.0	9.0	0.0	98.9
	COMSEP	841.1	217.4	865.2	0.0	193.2	0.0	2116.9
	GASEPF	424.5	109.7	436.6	0.0	97.5	0.0	1068.3
	GASEPV	966.9	249.9	994.6	0.0	222.1	0.0	2433.5
GA Local		**3773.1**	**975.1**	**3881.3**	**0.0**	**866.9**	**0.0**	**9496.3**
Non-Air Carrier Total		**5127.6**	**1325.1**	**5253.3**	**21.4**	**1173.3**	**4.8**	**12905.3**

Table C-2. Flight Operations by Non-Air Carrier Aircraft: 2024 Forecast

GROUP	AEDT Aircraft Type	Arrivals		Departures				Total Operations
		Day	Night	Day		Night		
				SL 1	SL 2	SL 1	SL 2	
Air Taxi	BD-700-1A10	22.0	5.7	15.6	7.0	3.5	1.6	55.3
	CL601	14.6	3.8	15.0	0.0	3.4	0.0	36.8
	CL600	25.6	6.6	15.3	11.1	3.4	2.5	64.5
	CNA510	23.8	6.2	24.5	0.0	5.5	0.0	59.9
	CNA525C	139.1	35.9	143.1	0.0	32.0	0.0	350.1
	CNA55B	131.8	34.0	135.5	0.0	30.3	0.0	331.6
	CNA560U	111.6	28.9	114.8	0.0	25.7	0.0	281
	CNA560XL	20.1	5.2	20.7	0.0	4.6	0.0	50.7
	CNA680	126.3	32.6	129.9	0.0	29.0	0.0	317.8
	CNA750	71.4	18.4	73.4	0.0	16.4	0.0	179.6
	FAL900EX	3.7	0.9	2.4	1.4	0.5	0.3	9.2
	G650ER	5.5	1.4	4.2	1.5	0.9	0.3	13.8
	GIV	27.5	7.1	28.2	0.0	6.3	0.0	69.1
	GV	5.5	1.4	5.6	0.0	1.3	0.0	13.8
	LEAR35	133.6	34.5	137.4	0.0	30.7	0.0	336.2
	MU3001	54.9	14.2	56.5	0.0	12.6	0.0	138.2
	CNA208	234.3	60.5	241.0	0.0	53.8	0.0	589.6
	DHC6	76.9	19.9	79.1	0.0	17.7	0.0	193.5
	BEC58P	67.7	17.5	69.6	0.0	15.6	0.0	170.4
	CNA182	11.0	2.8	11.3	0.0	2.5	0.0	27.6
	GASEPV	5.5	1.4	5.6	0.0	1.3	0.0	13.8
	EC130	12.8	3.3	13.2	0.0	2.9	0.0	32.2
Air Taxi Total		**1324.9**	**342.4**	**1342.0**	**20.9**	**299.7**	**4.7**	**3334.7**
GA & Mil Itinerant	BD-700-1A10	46.2	12.0	32.8	14.7	7.3	3.3	116.4
	CL600	97.9	25.3	100.7	0.0	22.5	0.0	246.5
	CL601	49.0	12.7	50.4	0.0	11.3	0.0	123.3
	CNA500	32.7	8.4	33.6	0.0	7.5	0.0	82.2
	CNA510	21.8	5.6	22.4	0.0	5.0	0.0	54.8
	CNA525C	68.0	17.6	70.0	0.0	15.6	0.0	171.2
	CNA55B	144.2	37.3	148.4	0.0	33.1	0.0	363
	CNA560U	130.6	33.8	134.3	0.0	30.0	0.0	328.7
	CNA560XL	70.8	18.3	72.8	0.0	16.3	0.0	178.1
	CNA680	81.6	21.1	84.0	0.0	18.7	0.0	205.4
	CNA750	76.2	19.7	78.4	0.0	17.5	0.0	191.8
	ECLIPSE50	16.3	4.2	16.8	0.0	3.8	0.0	41.1
	FAL900EX	114.3	29.5	75.2	42.3	16.8	9.5	287.6
	G650ER	24.5	6.3	18.6	6.5	4.2	1.5	61.6

	GIIB	8.1	2.1	8.4	0.0	1.9	0.0	20.5
	GIV	122.5	31.6	126.0	0.0	28.1	0.0	308.2
	GV	78.9	20.4	81.2	0.0	18.1	0.0	198.6
	IA1125	57.1	14.8	58.8	0.0	13.1	0.0	143.8
	LEAR35	195.9	50.6	201.5	0.0	45.0	0.0	493.1
	MU3001	27.2	7.0	28.0	0.0	6.3	0.0	68.5
	CNA208	160.5	41.5	165.1	0.0	36.9	0.0	404
	CNA441	19.0	4.9	19.6	0.0	4.4	0.0	47.9
	DHC6	291.2	75.2	299.5	0.0	66.9	0.0	732.8
	BEC58P	220.4	57.0	226.7	0.0	50.6	0.0	554.7
	CNA172	367.3	94.9	377.9	0.0	84.4	0.0	924.5
	CNA182	103.4	26.7	106.3	0.0	23.8	0.0	260.2
	CNA206	16.3	4.2	16.8	0.0	3.8	0.0	41.1
	COMSEP	391.8	101.3	403.1	0.0	90.0	0.0	986.2
	GASEPF	141.5	36.6	145.5	0.0	32.5	0.0	356.1
	GASEPV	440.8	113.9	453.4	0.0	101.3	0.0	1109.4
	PA28	549.7	142.0	565.4	0.0	126.3	0.0	1383.4
	PA30	5.4	1.4	5.6	0.0	1.3	0.0	13.7
	PA31	38.1	9.8	39.2	0.0	8.8	0.0	95.9
	B429	8.1	2.1	8.4	0.0	1.9	0.0	20.5
	S76	32.7	8.4	33.6	0.0	7.5	0.0	82.2
	SA330J	10.9	2.8	11.2	0.0	2.5	0.0	27.4
GA & Mil Itinerant Total		**4261.0**	**1101.2**	**4317.3**	**66.0**	**964.2**	**14.7**	**10724.4**
GA Local	BEC58P	785.2	202.9	807.7	0.0	180.4	0.0	1976.2
	CNA172	539.3	139.4	554.8	0.0	123.9	0.0	1357.4
	CNA182	190.4	49.2	195.8	0.0	43.7	0.0	479.1
	CNA206	39.7	10.2	40.8	0.0	9.1	0.0	99.8
	COMSEP	848.6	219.3	873.0	0.0	195.0	0.0	2135.9
	GASEPF	428.3	110.7	440.6	0.0	98.4	0.0	1077.9
	GASEPV	975.5	252.1	1003.5	0.0	224.1	0.0	2455.3
GA Local		**3807.0**	**983.8**	**3916.2**	**0.0**	**874.6**	**0.0**	**9581.6**
Non-Air Carrier Total		**5131.9**	**1326.2**	**5258.2**	**20.9**	**1174.4**	**4.7**	**12916.3**

Table C-3. Flight Operations by Non-Air Carrier Aircraft: 2029 Forecast

GROUP	AEDT Aircraft Type	Arrivals		Departures				Total Operations
		Day	Night	Day		Night		
				SL 1	SL 2	SL 1	SL 2	
Air Taxi	BD-700-1A10	21.3	5.5	15.1	6.8	3.4	1.5	53.7
	CL601	14.2	3.7	14.6	0.0	3.3	0.0	35.8
	CL600	24.9	6.4	14.9	10.8	3.3	2.4	62.7
	CNA510	23.1	6.0	23.8	0.0	5.3	0.0	58.2
	CNA525C	135.2	34.9	139.0	0.0	31.1	0.0	340.2
	CNA55B	128.1	33.1	131.7	0.0	29.4	0.0	322.3
	CNA560U	108.5	28.0	111.6	0.0	24.9	0.0	273.1
	CNA560XL	19.5	5.1	20.1	0.0	4.5	0.0	49.2
	CNA680	122.7	31.7	126.3	0.0	28.2	0.0	308.9
	CNA750	69.4	17.9	71.4	0.0	15.9	0.0	174.6
	FAL900EX	3.6	0.9	2.4	1.3	0.5	0.3	9
	G650ER	5.3	1.4	4.1	1.4	0.9	0.3	13.4
	GIV	26.7	6.9	27.5	0.0	6.1	0.0	67.2
	GV	5.3	1.4	5.5	0.0	1.2	0.0	13.4
	LEAR35	129.8	33.6	133.6	0.0	29.8	0.0	326.8
	MU3001	53.4	13.8	54.9	0.0	12.3	0.0	134.3
	CNA208	227.7	58.8	234.2	0.0	52.3	0.0	573
	DHC6	74.7	19.3	76.8	0.0	17.2	0.0	188
	BEC58P	65.8	17.0	67.7	0.0	15.1	0.0	165.6
	CNA182	10.7	2.8	11.0	0.0	2.5	0.0	26.9
	GASEPV	5.3	1.4	5.5	0.0	1.2	0.0	13.4
	EC130	12.4	3.2	12.8	0.0	2.9	0.0	31.3
Air Taxi Total		**1287.7**	**332.8**	**1304.3**	**20.3**	**291.3**	**4.5**	**3241.0**
GA & Mil Itinerant	BD-700-1A10	46.9	12.1	33.3	15.0	7.4	3.3	118.1
	CL600	99.4	25.7	102.2	0.0	22.8	0.0	250.1
	CL601	49.7	12.8	51.1	0.0	11.4	0.0	125
	CNA500	33.1	8.6	34.1	0.0	7.6	0.0	83.4
	CNA510	22.1	5.7	22.7	0.0	5.1	0.0	55.6
	CNA525C	69.0	17.8	71.0	0.0	15.9	0.0	173.7
	CNA55B	146.3	37.8	150.5	0.0	33.6	0.0	368.2
	CNA560U	132.5	34.2	136.3	0.0	30.4	0.0	333.5
	CNA560XL	71.8	18.5	73.8	0.0	16.5	0.0	180.6
	CNA680	82.8	21.4	85.2	0.0	19.0	0.0	208.4
	CNA750	77.3	20.0	79.5	0.0	17.8	0.0	194.5
	ECLIPSE50	16.6	4.3	17.0	0.0	3.8	0.0	41.7
	FAL900EX	115.9	30.0	76.3	42.9	17.0	9.6	291.8
	G650ER	24.8	6.4	18.9	6.6	4.2	1.5	62.5

	GIIB	8.3	2.1	8.5	0.0	1.9	0.0	20.8
	GIV	124.2	32.1	127.8	0.0	28.5	0.0	312.6
	GV	80.1	20.7	82.4	0.0	18.4	0.0	201.5
	IA1125	58.0	15.0	59.6	0.0	13.3	0.0	145.9
	LEAR35	198.7	51.4	204.4	0.0	45.7	0.0	500.2
	MU3001	27.6	7.1	28.4	0.0	6.3	0.0	69.5
	CNA208	162.9	42.1	167.5	0.0	37.4	0.0	409.9
	CNA441	19.3	5.0	19.9	0.0	4.4	0.0	48.6
	DHC6	295.3	76.3	303.8	0.0	67.9	0.0	743.3
	BEC58P	223.6	57.8	230.0	0.0	51.4	0.0	562.7
	CNA172	372.6	96.3	383.3	0.0	85.6	0.0	937.8
	CNA182	104.9	27.1	107.9	0.0	24.1	0.0	264
	CNA206	16.6	4.3	17.0	0.0	3.8	0.0	41.7
	COMSEP	397.5	102.7	408.9	0.0	91.3	0.0	1000.4
	GASEPF	143.5	37.1	147.6	0.0	33.0	0.0	361.2
	GASEPV	447.1	115.6	460.0	0.0	102.7	0.0	1125.4
	PA28	557.6	144.1	573.6	0.0	128.1	0.0	1403.3
	PA30	5.5	1.4	5.7	0.0	1.3	0.0	13.9
	PA31	38.7	10.0	39.8	0.0	8.9	0.0	97.3
	B429	8.3	2.1	8.5	0.0	1.9	0.0	20.8
	S76	33.1	8.6	34.1	0.0	7.6	0.0	83.4
	SA330J	11.0	2.9	11.4	0.0	2.5	0.0	27.8
GA & Mil Itinerant Total		**4322.5**	**1117.1**	**4379.5**	**66.9**	**978.1**	**14.9**	**10879.1**
GA Local	BEC58P	797.0	206.0	819.9	0.0	183.1	0.0	2006
	CNA172	547.5	141.5	563.2	0.0	125.8	0.0	1377.9
	CNA182	193.2	49.9	198.8	0.0	44.4	0.0	486.3
	CNA206	40.2	10.4	41.4	0.0	9.2	0.0	101.3
	COMSEP	861.4	222.6	886.1	0.0	197.9	0.0	2168.1
	GASEPF	434.7	112.4	447.2	0.0	99.9	0.0	1094.2
	GASEPV	990.2	255.9	1018.6	0.0	227.5	0.0	2492.3
GA Local		**3864.4**	**998.7**	**3975.2**	**0.0**	**887.8**	**0.0**	**9726.1**
Non-Air Carrier Total		**5152.1**	**1331.4**	**5279.5**	**20.3**	**1179.1**	**4.5**	**12967.1**

APPENDIX D FLIGHT TRACK MAPS AND TABLES FOR MODELED NON-AIR CARRIER OPERATIONS

For the noise analysis relating to HVN's recent Master Plan Update (MPU), HMMH developed flight track geometry and utilization rates using track and aircraft identification information from a full year (2019) of FAA radar data. The radar flight tracks were first sorted into six groups: jet arrivals, jet departures, non-jet fixed-wing aircraft arrivals, non-jet fixed-wing aircraft departures, local circuit operations (all of which were by non-jets) and helicopters. Each group of flight tracks was then separated into "bundles" by general direction and waypoints, except for the helicopter group, due to lack of data. Statistical analysis of each bundle produced a "backbone" track with an equal number of dispersion tracks to either side. This process led to the development of 74 bundles of model tracks, each consisting of 3 or 5 individual model flight tracks, for a total of 262 tracks overall.

For the current Environmental Assessment (EA) of proposed improvements at Tweed New Haven (HVN), the flight tracks and usage rates for air taxi and GA jets and for all non-jet aircraft are assumed to be unchanged from the MPU noise model inputs and applied all EA scenarios.

Tables C-1 through C-3 provide the distribution information regarding the modeling of flights to and from HVN, separating departures, arrivals, and local circuits into separate tables, separating jets from non-jets, and then splitting track groups by runway direction. Each resulting group is mapped in its own flight track map figure **(Figures C-1 through C-9)** on which the radar tracks are overlaid by the model tracks. The backbone track for each bundle is portrayed by a bold line, the associated dispersion tracks by dashed lines. The name of the bundle is marked on each backbone track. **Table C-1** lists the departure flight track bundle names, the percentage of operations assigned to each bundle, and the number of model tracks within the bundle. **Table C-2** presents similar information for the arrival model tracks. Local circuit pattern model flight track information is given in **Table C-3.**

Very few helicopter operations could be identified in the flight track and aircraft identification data; the few helicopter operations that will be modelled will be placed equally on north-bound and south-bound paths. All helicopter operations will be modeled as arriving to or departing from the location identified as a "helipad" on the East Ramp.

Table C-1. Model Departure Flight Tracks for Non-Air Carrier Operations

Source: 2019 HVN radar flight track data, HMMH, 2021

Aircraft Category	Departure Track Bundles					
	Runway	Flight Track Map	# of Bundles	Bundle Names	# tracks	Percent Usage
Jet	2	Figure C-1	4	DJ02E010	3	6.0%
				DJ02N010	5	44.2%
				DJ02S010	3	31.9%
				DJ02W010	3	17.9%
Jet	20	Figure C-2	10	DJ20E010	3	1.4%
				DJ20E02C0	3	2.9%
				DJ20E040	3	2.2%
				DJ20N010	3	3.8%
				DJ20S010	5	51.5%
				DJ20S02C0	3	10.1%
				DJ20S04C0	3	5.5%
				DJ20S070	3	1.4%
				DJ20S080	3	8.8%
				DJ20W010	3	12.3%
Non-jet	2	Figure C-3	13	DP02E010	3	7.6%
				DP02E020	5	19.3%
				DP02E040	3	6.8%
				DP02N010	3	7.3%
				DP02N020	3	12.6%
				DP02N030	3	1.4%
				DP02S010	3	5.7%
				DP02S020	3	2.9%
				DP02W010	3	12.4%
				DP02W020	3	3.0%
				DP02W030	3	6.5%
				DP02W040	3	2.9%
				DP02W050	3	11.7%
Non-jet	20	Figure C-4	10	DP20E01C0	5	14.0%
				DP20E02C0	5	11.0%
				DP20E030	5	13.2%
				DP20N01C0	5	7.7%
				DP20N030	3	4.6%
				DP20N040	3	2.8%
				DP20S010	5	11.0%
				DP20S020	3	5.0%
				DP20W010	5	23.9%
				DP20W02C0	3	6.8%

Note: Totals may not add to exactly 100% due to rounding

Table C-2. Model Arrival Flight Tracks for Non-Air Carrier Operations

Source: 2019 HVN radar flight track data, HMMH, 2021

Aircraft Category	Arrival Track Bundles					
	Runway	Flight Track Map	# of Bundles	Bundle Names	# tracks	Percent Usage
Jet	2	Figure C-5	7	AJ02N010	3	1.9%
				AJ02N020	3	3.6%
				AJ02S010	5	73.4%
				AJ02W010	3	5.3%
				AJ02W020	3	3.0%
				AJ02W03C0	3	5.7%
				AJ02W050	3	7.1%
Jet	20	Figure C-6	9	AJ20E010	3	3.0%
				AJ20N01C0	3	3.5%
				AJ20N030	3	12.5%
				AJ20S01C0	5	25.8%
				AJ20S020	5	22.4%
				AJ20S030	3	9.9%
				AJ20W010	3	9.9%
				AJ20W020	3	6.1%
				AJ20W030	3	6.8%
Non-jet	2	Figure C-7	5	AP02N110	3	9.5%
				AP02N010	3	10.8%
				AP02S010	3	31.9%
				AP02E010	3	22.6%
				AP02W010	3	25.2%
Non-jet	20	Figure C-8	12	AP20E010	5	24.1%
				AP20E020	3	3.7%
				AP20E030	5	8.3%
				AP20N010	5	20.1%
				AP20N020	3	3.8%
				AP20S010	3	3.0%
				AP20S020	3	7.2%
				AP20W010	5	15.4%
				AP20W020	3	4.7%
				AP20W030	3	4.0%
				AP20w040	3	3.7%
				AP20W050	3	1.9%
Note: Totals may not add to exactly 100% due to rounding						

Table C-3. Model Circuit Flight Tracks for GA Aircraft

Source: 2019 HVN radar flight track data, HMMH, 2021

Aircraft Category	Circuit Track Bundles					
	Runway	Flight Track Map	# of Bundles	Bundle Names	# tracks	Percent Usage
Non-jet	2	Figure C-9	2	CP02C010	5	88.7%
				CP02C020	5	11.3%
Non-jet	20		2	CP20C010	5	60.3%
				CP20C020	5	39.7%

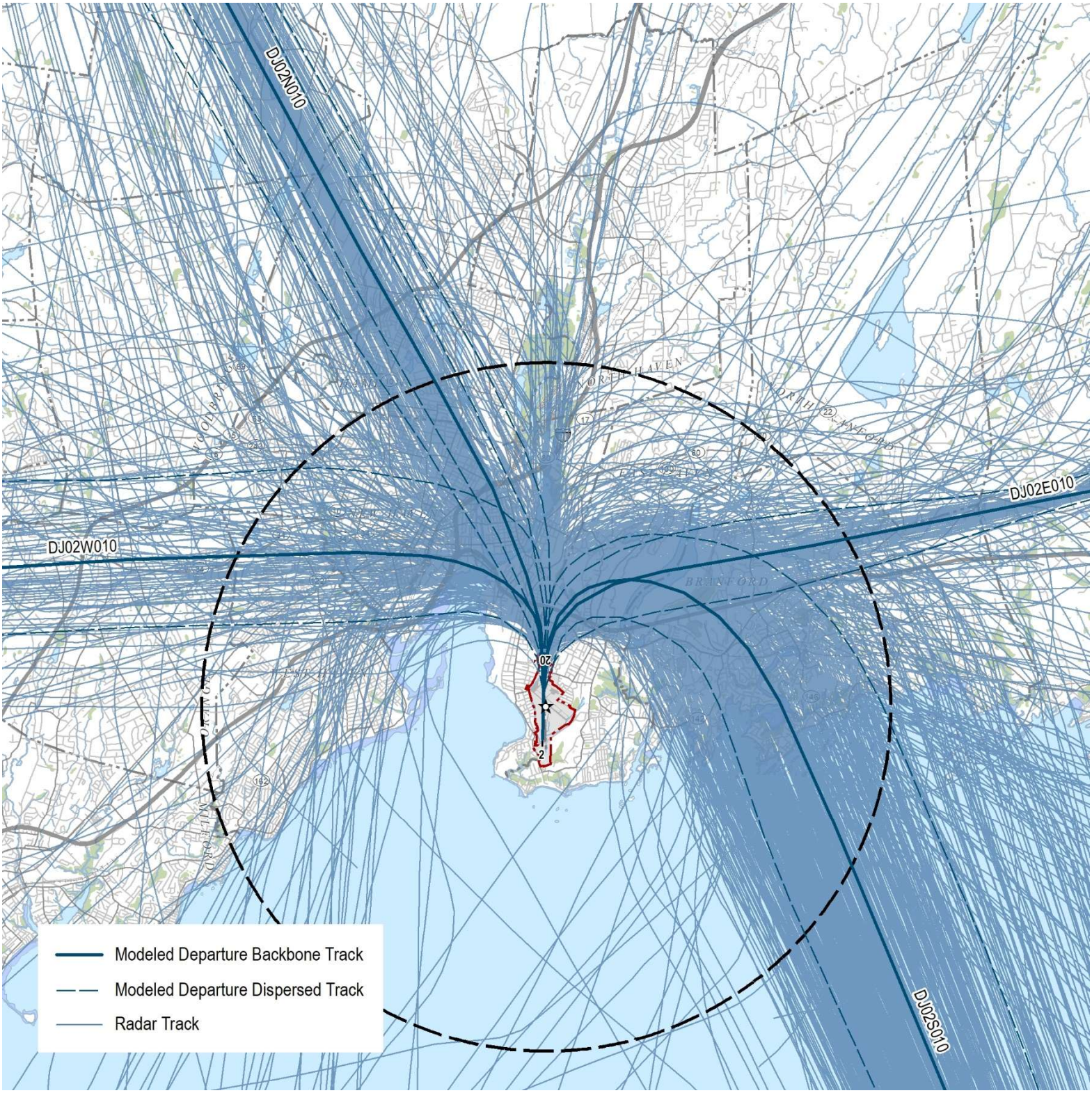


Figure C-1. Jet Departure Flight Tracks from Runway 2

Source: HMMH, 2020

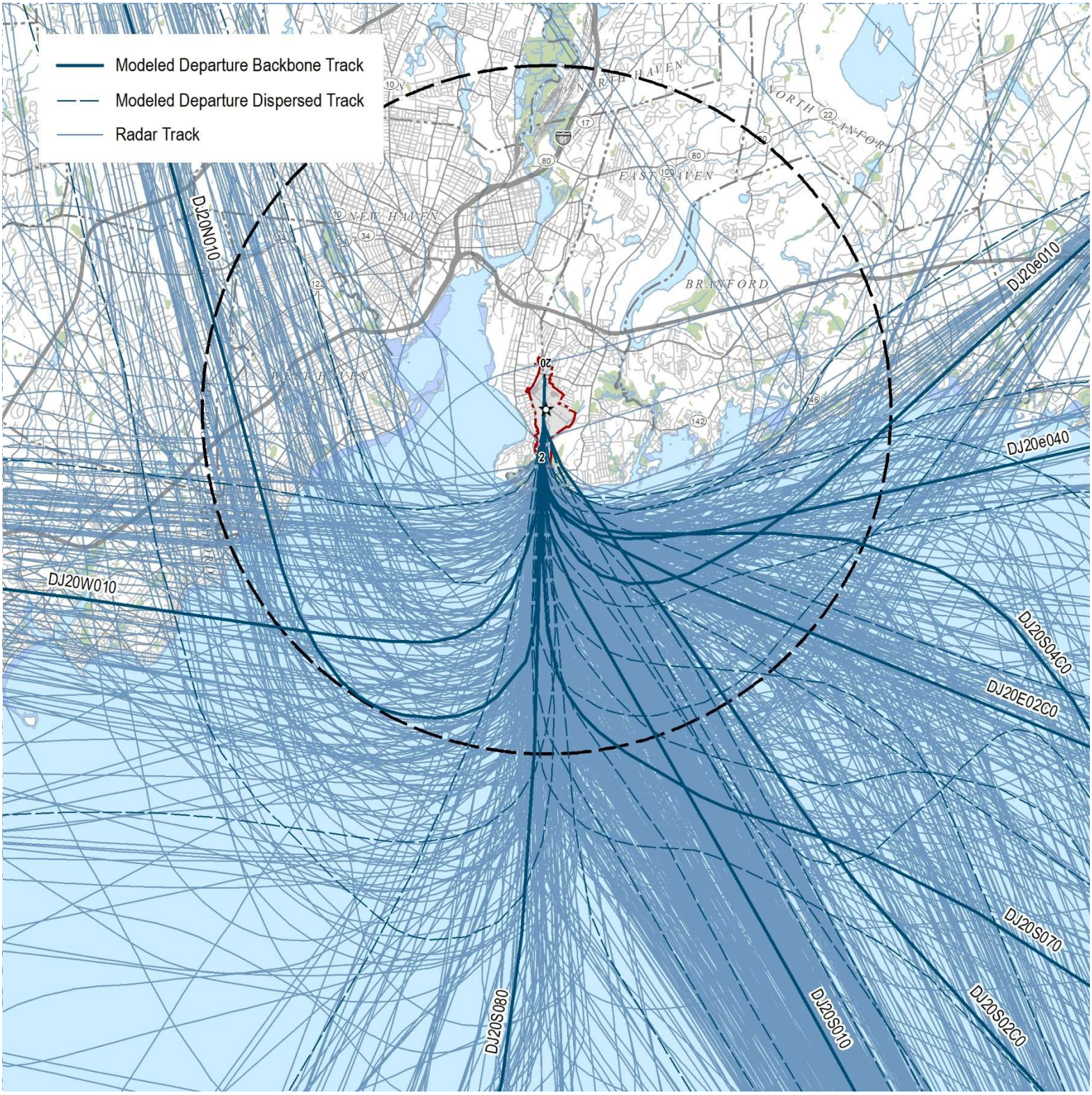


Figure C-2. Jet Departure Flight Tracks from Runway 20

Source: HMMH, 2020

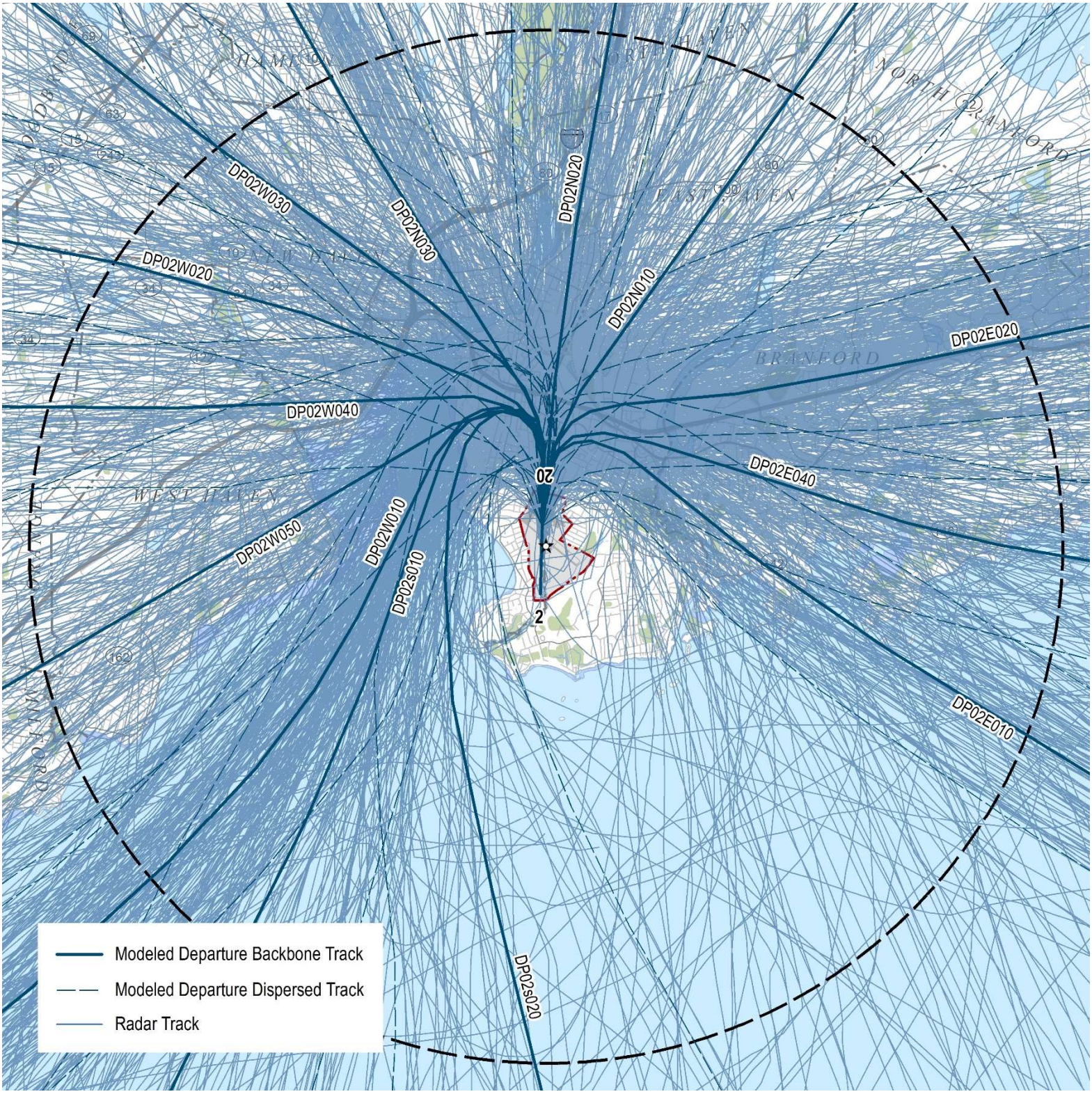


Figure C-3. Non-Jet Departure Flight Tracks from Runway 2

Source: HMMH, 2020

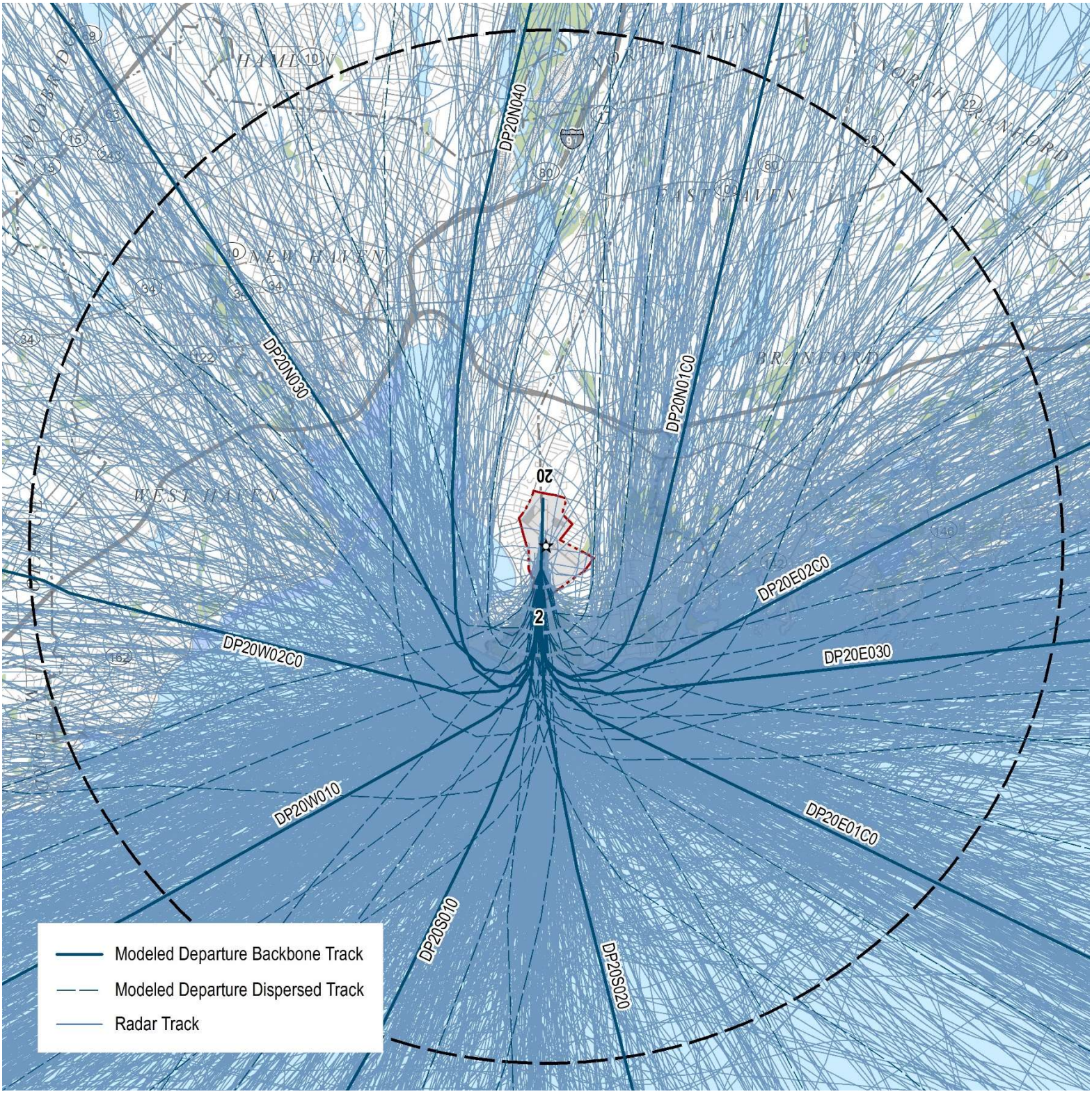


Figure C-4. Non-Jet Departure Flight Tracks from Runway 20

Source: HMMH, 2020

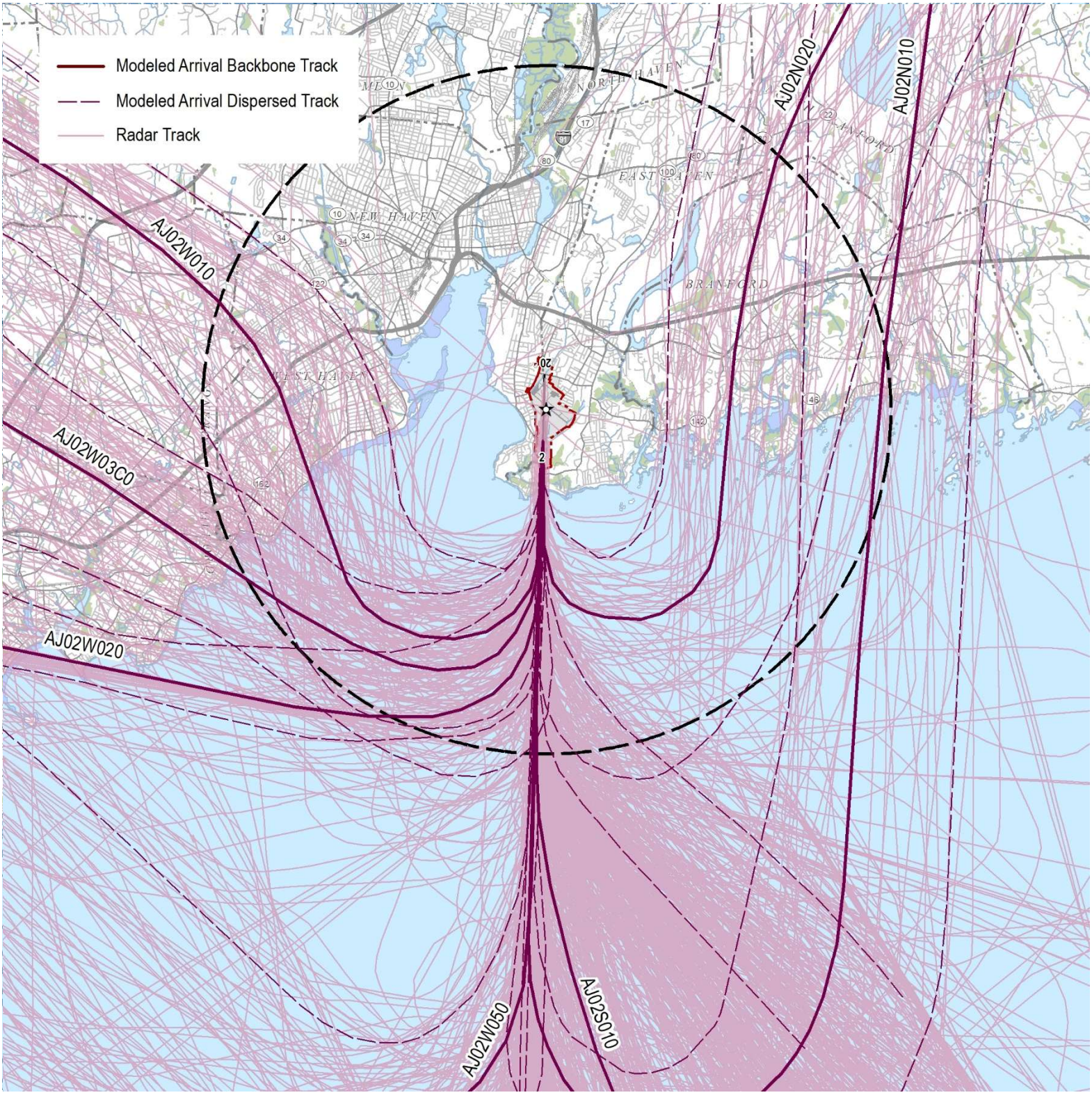


Figure C-5. Jet Arrival Flight Tracks to Runway 2

Source: HMMH, 2020

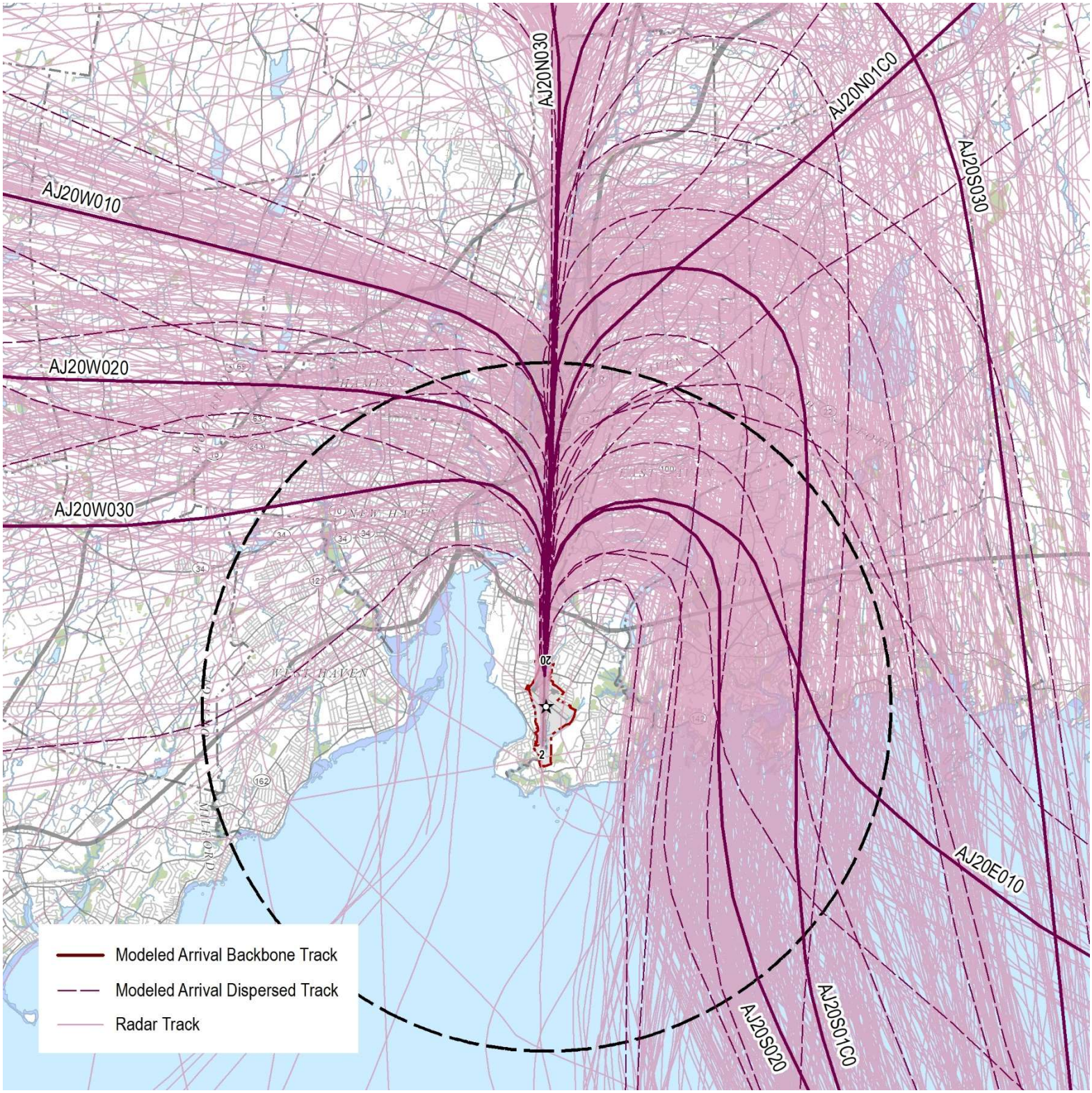


Figure C-6. Jet Arrival Flight Tracks to Runway 20

Source: HMMH, 2020

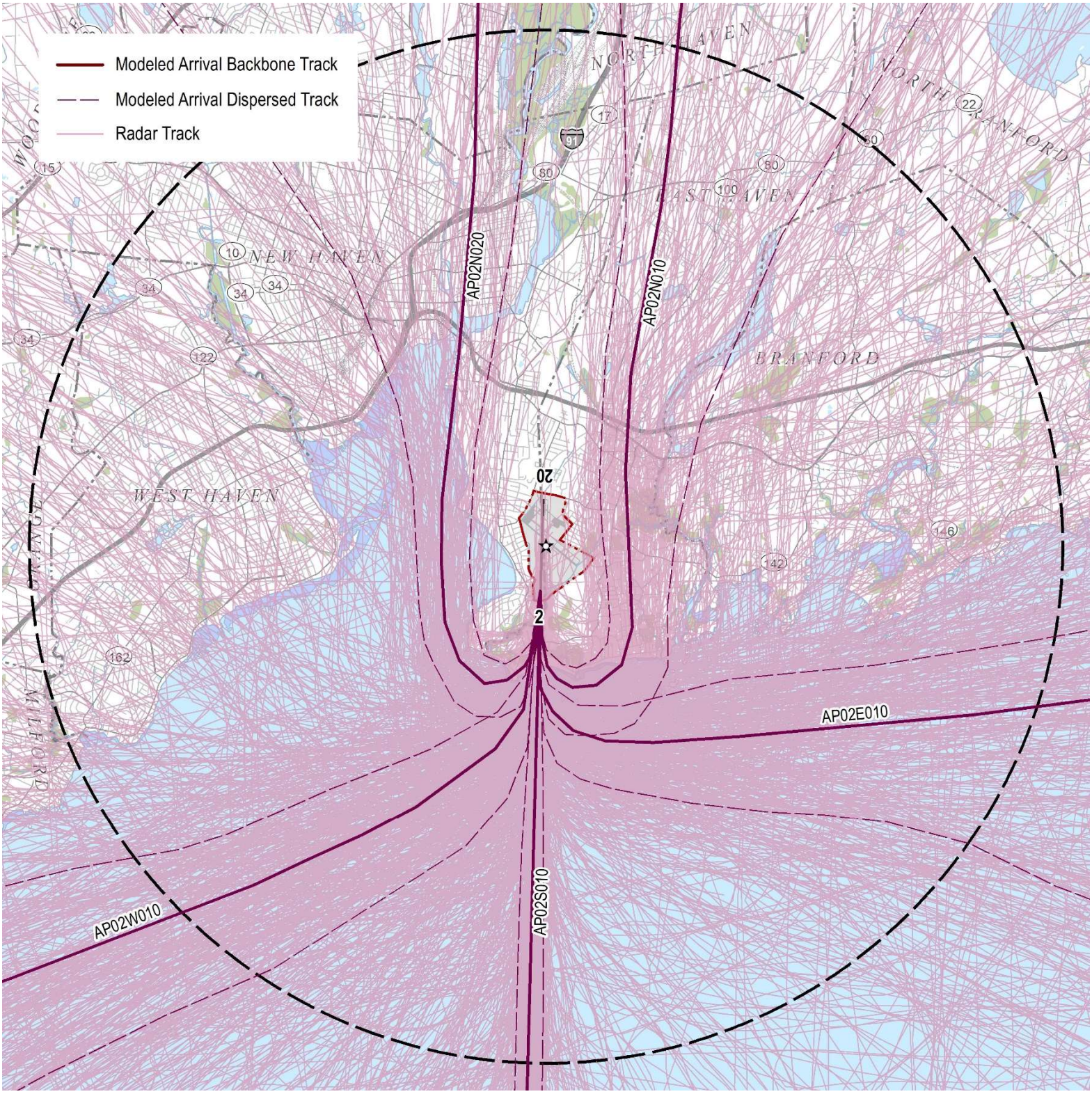


Figure C-7. Non-Jet Arrival Flight Tracks to Runway 2

Source: HMMH, 2020

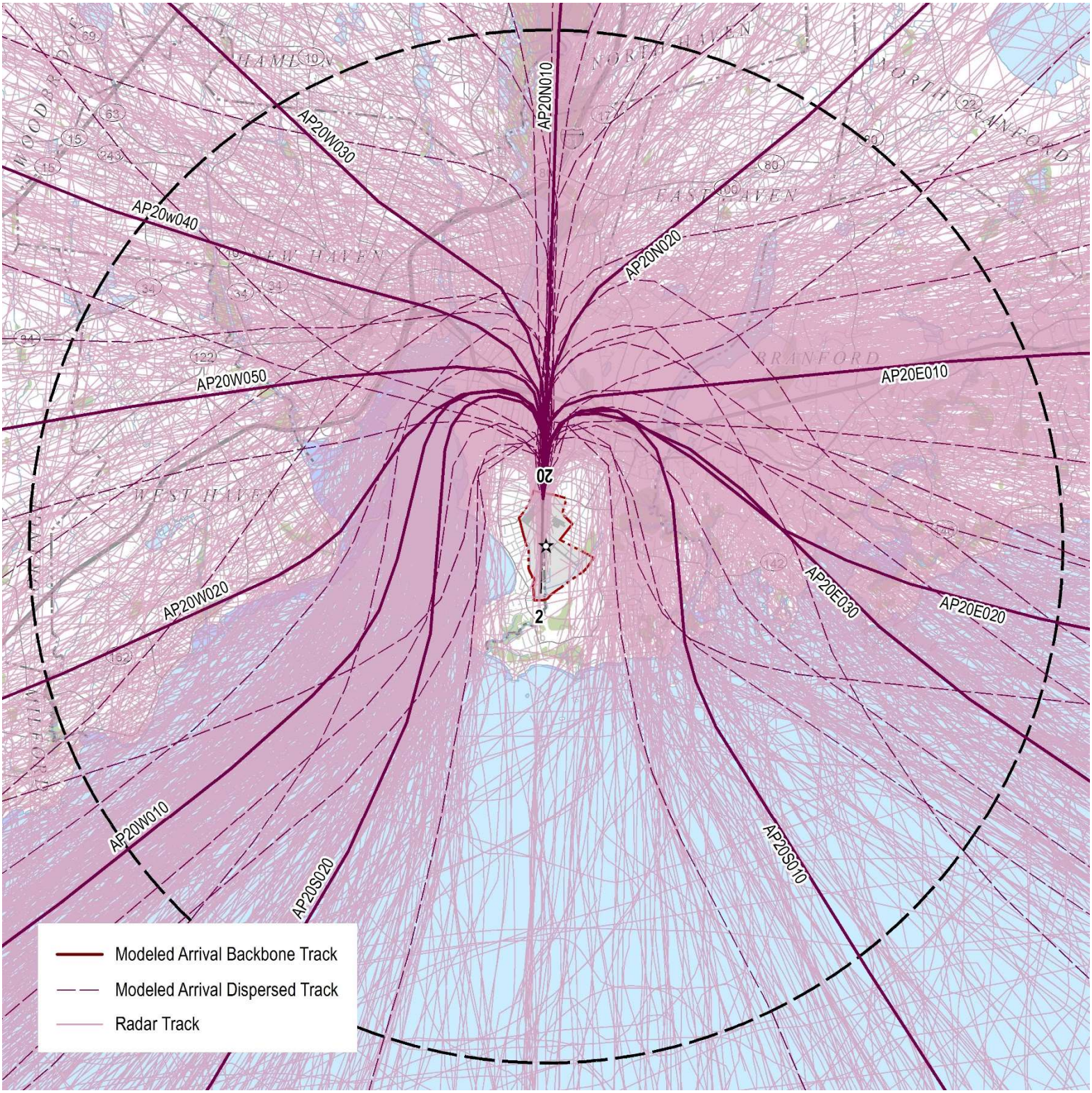


Figure C-8. Non-Jet Arrival Flight Tracks to Runway 20

Source: HMMH, 2020

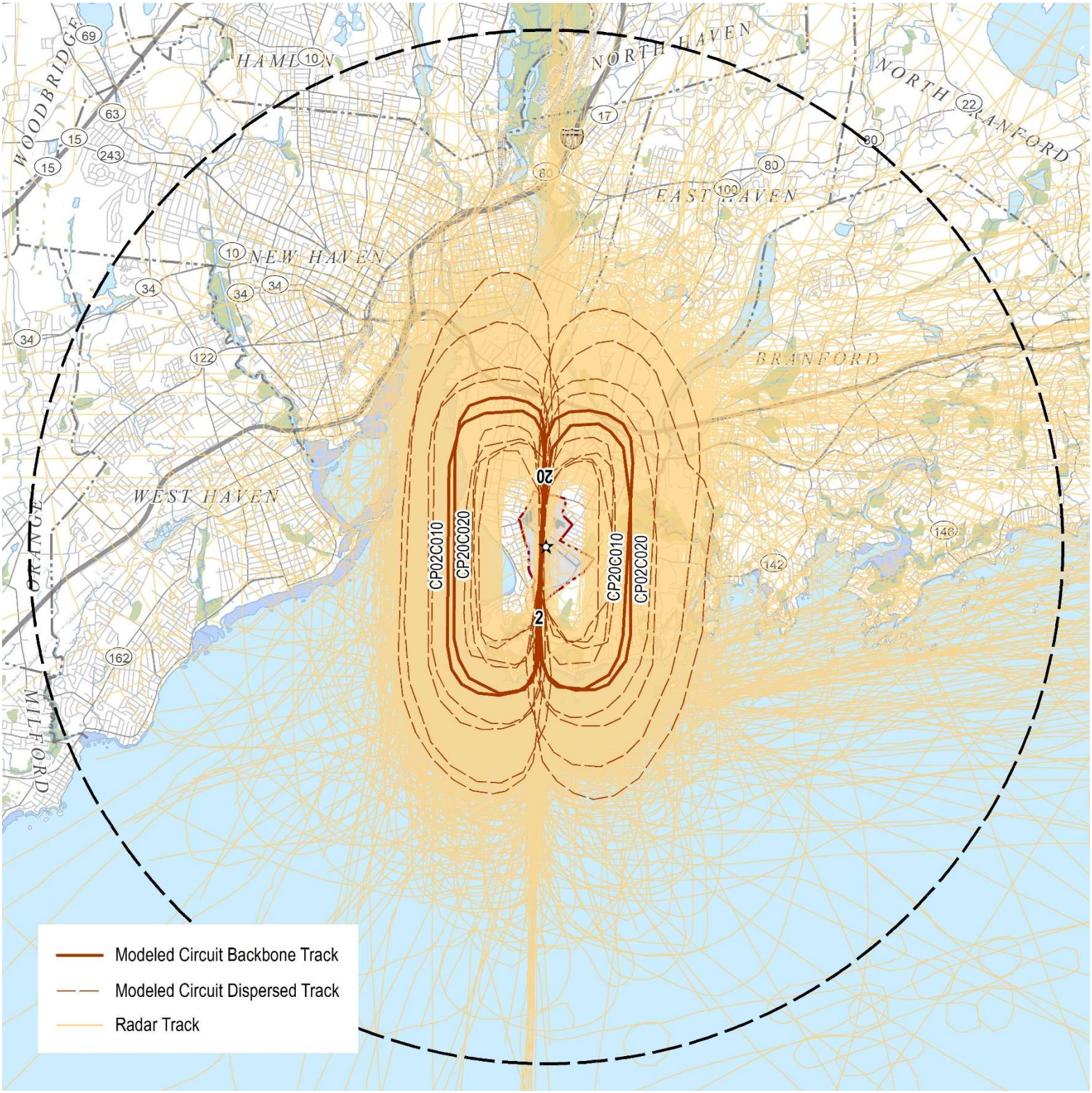


Figure C-9. Local Pattern Flight Tracks

Source: HMMH, 2020

APPENDIX E EMISSIONS CALCULATIONS





Airport Construction Emissions Inventory Tool (ACEIT)
Version 1.0
Run Date & Time: 3/2/2022 11:59:22 AM

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STUDY

Study Name

HVN EA

Study Description

Construction Schedule 2023

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EMISSIONS INVENTORY - DETAILS:

Non-Road Sources
Units for Non-Greenhouse Gases Emission: Short Ton
Units for Greenhouse Gases (CO2, CH4, and N2O) Emission: Metric Ton

											MOVES3 Emission Factors (g-hp-hr)							NONROAD Emissions (TPY)						
											3	6	9	7	8	11	2							
Scenario ID	Year	Project	Construction Activity	Equipment	MovesLookup	Fuel	HP Average	Load Factor	Hours of Activity	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CO (tpy)	NOx (tpy)	SO2 (tpy)	PM10 (tpy)	PM2.5 (tpy)	VOC (tpy)	CO2 Exhaust (tpy)
1	2023	Building - 100000 sqft- 10 stories	Concrete Foundations	Backhoe	Tractors/Loaders/Backhoes100	Diesel	100	0.21	480	3.715337	3.506303	0.002216	0.499158	0.484183	0.6415	694.1322	0.0413	0.0390	0.0000	0.0055	0.0054	0.0071	7.7127
1	2023	Building - 100000 sqft- 10 stories	Concrete Foundations	Concrete Pump	Other Construction Equipment11	Diesel	11	0.43	180	2.479325	4.183653	0.002183	0.242356	0.235085	0.837221	593.7583	0.0023	0.0039	0.0000	0.0002	0.0002	0.0008	0.5572
1	2023	Building - 100000 sqft- 10 stories	Concrete Foundations	Concrete Ready Mix Trucks	Off-highway Trucks600	Diesel	600	0.59	360	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0102	0.0313	0.0002	0.0022	0.0021	0.0022	75.4070
1	2023	Building - 100000 sqft- 10 stories	Concrete Foundations	Excavator	Excavators175	Diesel	175	0.59	160	0.115123	0.339123	0.001438	0.028883	0.028017	0.017385	536.7821	0.0021	0.0062	0.0000	0.0005	0.0005	0.0003	9.7750
1	2023	Building - 100000 sqft- 10 stories	Concrete Foundations	Fork Truck	Other Construction Equipment100	Diesel	100	0.59	480	0.646673	1.449033	0.001664	0.090863	0.088137	0.075542	595.9393	0.0202	0.0452	0.0001	0.0028	0.0028	0.0024	18.6038
1	2023	Building - 100000 sqft- 10 stories	Concrete Foundations	Tool Truck	Off-highway Trucks600	Diesel	600	0.59	120	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0034	0.0104	0.0001	0.0007	0.0007	0.0007	25.1357
1	2023	Building - 100000 sqft- 10 stories	Concrete Foundations	Tractor Trailer- Material Delivery	Off-highway Trucks600	Diesel	600	0.59	240	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0068	0.0209	0.0001	0.0014	0.0014	0.0015	50.2714
1	2023	Building - 100000 sqft- 10 stories	Construction Mob & Layout	Survey Crew Trucks	Off-highway Trucks600	Diesel	600	0.59	10	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0003	0.0009	0.0000	0.0001	0.0001	0.0001	2.0946
1	2023	Building - 100000 sqft- 10 stories	Construction Mob & Layout	Tractor Trailers Temp Fac.	Off-highway Trucks600	Diesel	600	0.59	4	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0001	0.0003	0.0000	0.0000	0.0000	0.0000	0.8379
1	2023	Building - 100000 sqft- 10 stories	Exterior Wall Framing	Fork Truck	Other Construction Equipment100	Diesel	100	0.59	840	0.646673	1.449033	0.001664	0.090863	0.088137	0.075542	595.9393	0.0353	0.0792	0.0001	0.0050	0.0048	0.0041	32.5567
1	2023	Building - 100000 sqft- 10 stories	Exterior Wall Framing	Generator	Other Construction Equipment40	Diesel	40	0.43	80	0.33551	2.580164	0.001588	0.032782	0.031799	0.100868	595.8573	0.0005	0.0039	0.0000	0.0000	0.0000	0.0002	0.9038
1	2023	Building - 100000 sqft- 10 stories	Exterior Wall Framing	Grout Mixer	Other Construction Equipment600	Diesel	600	0.59	420	0.933332	2.340165	0.001713	0.131312	0.127373	0.126633	536.4645	0.1530	0.3835	0.0003	0.0215	0.0209	0.0208	87.9225
1	2023	Building - 100000 sqft- 10 stories	Exterior Wall Framing	Grout Wheel Truck	Off-highway Trucks600	Diesel	600	0.59	160	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0045	0.0139	0.0001	0.0010	0.0009	0.0010	33.5142
1	2023	Building - 100000 sqft- 10 stories	Exterior Wall Framing	Man Lift	Rough Terrain Forklifts75	Diesel	75	0.21	1680	0.573472	2.762231	0.001634	0.064267	0.062339	0.09444	595.8736	0.0167	0.0806	0.0000	0.0019	0.0018	0.0028	17.3800
1	2023	Building - 100000 sqft- 10 stories	Exterior Wall Framing	Tool Truck	Off-highway Trucks600	Diesel	600	0.59	420	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0119	0.0365	0.0002	0.0025	0.0025	0.0026	87.9749
1	2023	Building - 100000 sqft- 10 stories	Exterior Wall Framing	Tractor Trailer- Material Delivery	Off-highway Trucks600	Diesel	600	0.59	840	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0238	0.0730	0.0005	0.0051	0.0049	0.0052	######
1	2023	Building - 100000 sqft- 10 stories	Exterior Wall Framing	Truck Tower (Mantiwoc type)	Off-highway Trucks300	Diesel	300	0.43	80	0.028107	0.129178	0.001417	0.008168	0.007923	0.010903	536.8006	0.0003	0.0015	0.0000	0.0001	0.0001	0.0001	6.1066
1	2023	Building - 100000 sqft- 10 stories	Interior Build-Out/ Finishes	Fork Truck	Other Construction Equipment100	Diesel	100	0.59	1600	0.646673	1.449033	0.001664	0.090863	0.088137	0.075542	595.9393	0.0673	0.1508	0.0002	0.0095	0.0092	0.0079	62.0127
1	2023	Building - 100000 sqft- 10 stories	Interior Build-Out/ Finishes	Man Lift	Rough Terrain Forklifts75	Diesel	75	0.21	3200	0.573472	2.762231	0.001634	0.064267	0.062339	0.09444	595.8736	0.0319	0.1535	0.0001	0.0036	0.0035	0.0052	33.1048
1	2023	Building - 100000 sqft- 10 stories	Interior Build-Out/ Finishes	Tool Truck	Off-highway Trucks600	Diesel	600	0.59	1600	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0453	0.1391	0.0009	0.0097	0.0094	0.0099	######
1	2023	Building - 100000 sqft- 10 stories	Interior Build-Out/ Finishes	Tractor Trailer- Material Delivery	Off-highway Trucks600	Diesel	600	0.59	1600	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0453	0.1391	0.0009	0.0097	0.0094	0.0099	######
1	2023	Building - 100000 sqft- 10 stories	Roofing	High Lift	Rough Terrain Forklifts100	Diesel	100	0.59	160	0.651785	1.379783	0.001663	0.092049	0.089288	0.064113	595.9732	0.0068	0.0144	0.0000	0.0010	0.0009	0.0007	6.2016
1	2023	Building - 100000 sqft- 10 stories	Roofing	Man Lift	Rough Terrain Forklifts75	Diesel	75	0.21	40	0.573472	2.762231	0.001634	0.064267	0.062339	0.09444	595.8736	0.0004	0.0019	0.0000	0.0000	0.0000	0.0001	0.4138
1	2023	Building - 100000 sqft- 10 stories	Roofing	Material Deliveries	Off-highway Trucks600	Diesel	600	0.59	60	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0017	0.0052	0.0000	0.0004	0.0004	0.0004	12.5678
1	2023	Building - 100000 sqft- 10 stories	Roofing	Tractor Trailer- Material Delivery	Off-highway Trucks600	Diesel	600	0.59	40	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0011	0.0035	0.0000	0.0002	0.0002	0.0002	8.3786
1	2023	Building - 100000 sqft- 10 stories	Roofing	Truck Tower (Mantiwoc type)	Off-highway Trucks300	Diesel	300	0.43	120	0.028107	0.129178	0.001417	0.008168	0.007923	0.010903	536.8006	0.0005	0.0022	0.0000	0.0001	0.0001	0.0002	9.1599
1	2023	Building - 100000 sqft- 10 stories	Security & Safety Systems	High Lift	Rough Terrain Forklifts100	Diesel	100	0.59	800	0.651785	1.379783	0.001663	0.092049	0.089288	0.064113	595.9732	0.0339	0.0718	0.0001	0.0048	0.0046	0.0033	31.0081
1	2023	Building - 100000 sqft- 10 stories	Security & Safety Systems	Tool Truck	Off-highway Trucks600	Diesel	600	0.59	800	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0226	0.0696	0.0004	0.0048	0.0047	0.0049	######
1	2023	Building - 100000 sqft- 10 stories	Structural Steel Erection & Decks	90 Ton Crane	Cranes300	Diesel	300	0.43	240	0.111109	0.459421	0.001458	0.023457	0.022753	0.035712	530.9391	0.0038	0.0157	0.0000	0.0008	0.0008	0.0012	18.1198
1	2023	Building - 100000 sqft- 10 stories	Structural Steel Erection & Decks	Concrete Pump	Other Construction Equipment11	Diesel	11	0.43	60	2.479325	4.183653	0.002183	0.242356	0.235085	0.837221	593.7583	0.0008	0.0013	0.0000	0.0001	0.0001	0.0003	0.1857
1	2023	Building - 100000 sqft- 10 stories	Structural Steel Erection & Decks	Concrete Truck	Off-highway Trucks600	Diesel	600	0.59	60	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0017	0.0052	0.0000	0.0004	0.0004	0.0004	12.5678
1	2023	Building - 100000 sqft- 10 stories	Structural Steel Erection & Decks	Fork Truck	Other Construction Equipment100	Diesel	100	0.59	640	0.646673	1.449033	0.001664	0.090863	0.088137	0.075542	595.9393	0.0269	0.0603	0.0001	0.0038	0.0037	0.0031	24.8051
1	2023	Building - 100000 sqft- 10 stories	Structural Steel Erection & Decks	Tool Truck	Off-highway Trucks600	Diesel	600	0.59	160	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0045	0.0139	0.0001	0.0010	0.0009	0.0010	33.5142
1	2023	Building - 100000 sqft- 10 stories	Structural Steel Erection & Decks	Tractor Trailer- Steel Deliveries	Off-highway Trucks600	Diesel	600	0.59	360	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0102	0.0313	0.0002	0.0022	0.0021	0.0022	75.4070
1	2023	Building - 100000 sqft- 10 stories	Structural Steel Erection & Decks	Trowel Machine	Other Construction Equipment600	Diesel	600	0.59	40	0.933332	2.340165	0.001713	0.131312	0.127373	0.126633	536.4645	0.0146	0.0365	0.0000	0.0020	0.0020	0.0020	8.3736
1	2023	Building - 100000 sqft- 10 stories	Structural Steel Erection & Decks	Truck Tower (Mantiwoc type)	Off-highway Trucks300	Diesel	300	0.43	720	0.028107	0.129178	0.001417	0.008168	0.007923	0.010903	536.8006	0.0029	0.0132	0.0001	0.0008	0.0008	0.0011	54.9594
2	2023	Site Work - 10000 sqft	Construction Mob & Layout	Survey Crew Trucks	Off-highway Trucks600	Diesel	600	0.59	10	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0003	0.0009	0.0000	0.0001	0.0001	0.0001	2.0946
2	2023	Site Work - 10000 sqft	Construction Mob & Layout	Tractor Trailers Temp Fac.	Off-highway Trucks600	Diesel	600	0.59	4	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0001	0.0003	0.0000	0.0000	0.0000	0.0000	0.8379
2	2023	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Bulldozer	Crawler Tractor/Dozers175	Diesel	175	0.59	40	0.167241	0.453016	0.001458	0.042992	0.041702	0.024809	536.7599	0.0008	0.0021	0.0000	0.0002	0.0002	0.0001	2.4436
2	2023	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Chain Saws	Other Construction Equipment11	Diesel	11	0.7	40	2.479325	4.183653	0.002183	0.242356	0.235085	0.837221	593.7583	0.0008	0.0014	0.0000	0.0001	0.0001	0.0003	0.2016
2	2023	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Flat Bed or Dump Trucks	Off-highway Trucks600	Diesel	600	0.59	80	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0023	0.0070	0.0000	0.0005	0.0005	0.0005	16.7571
2	2023	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Front Loader	Tractors/Loaders/Backhoes100	Diesel	100	0.21	40	3.715337	3.506303	0.002216	0.499158	0.484183	0.6415	694.1322	0.0034	0.0032	0.0000	0.0005	0.0004	0.0006	0.6427
2	2023	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Grub the site down 2'-0	Other Construction Equipment40	Diesel	40	0.59	40	0.33551	2.580164	0.001588	0.032782	0.031799	0.100868	595.8573	0.0003	0.0027	0.0000	0.0000	0.0000	0.0001	0.6200
2	2023	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Log Chipper	Other Construction Equipment100	Diesel	100	0.43	40	0.646673	1.449033	0.001664	0.090863	0.088137	0.075542	595.9393	0.0012	0.0027	0.0000	0.0002	0.0002	0.0001	1.1299
2	2023	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Mulcher	Other Construction Equipment100	Diesel	100	0.43	40	0.646673	1.449033	0.001664	0.090863	0.088137	0.075542	595.9393	0.0012	0.0027	0.0000	0.0002	0.0002	0.0001	1.1299
2	2023	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Ten Wheelers	Off-highway Trucks600	Diesel	600	0.59	40	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0011	0.0035	0.0000	0.0002	0.0002	0.0002	8.3786
2	2023	Site Work - 10000 sqft	Site Clearing- Remove Trees & Shrubs	Tractor	Tractors/Loaders/Backhoes100	Diesel	100	0.21	80	3.715337	3.506303	0.002216	0.499158	0.484183	0.6415	694.1322	0.0069	0.0065	0.0000	0.0009	0.0009	0.0012	1.2855
2	2023	Site Work - 10000 sqft	Site Restoration- Landscaping (Curbing)	Bob Cat	Tractors/Loaders/Backhoes75	Diesel	75	0.21	24	3.775324	4.285291	0.002216	0.501268	0.48623	0.661175	694.0707	0.0016	0.0018	0.0000	0.0002	0.0002	0.0003	0.2892
2	2023	Site Work - 10000 sqft	Site Restoration- Landscaping (Curbing)	Concrete Ready Mix Trucks	Off-highway Trucks600	Diesel	600	0.59	24	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0007	0.0021	0.0000	0.0001	0.0001	0.0001	5.0271
2	2023	Site Work - 10000 sqft	Site Restoration- Landscaping (Curbing)	ctor Trailer with Boom Hoist- Deliv	Off-highway Trucks600	Diesel	600	0.59	24	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0007	0.0021	0.0000	0.0001	0.0001	0.0001	5.0271
2	2023	Site Work - 10000 sqft	ite Restoration- Landscaping (Rough Grading	Compacting Equipment	Plate Compactors6	Diesel	6	0.43	24	2.608283	4.264213	0.002162	0.267654	0.259625	0.830262	587.9856	0.0002	0.0003	0.0000	0.0000	0.0000	0.0001	0.0401
2	2023	Site Work - 10000 sqft	ite Restoration- Landscaping (Rough Grading	Small Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	24	0.167241	0.453016	0.001458	0.042992	0.041702	0.024809	536.7599	0.0005	0.0012	0.0000	0.0001	0.0001	0.0001	1.4662
2	2023	Site Work - 10000 sqft	storation- Landscaping (Top Soil Seed and Pla	Forktruck (Hoist)	Other Construction Equipment100	Diesel	100	0.59	80	0.646673	1.449033	0.001664	0.090863	0.088137	0.075542	595.9393	0.0034	0.0075	0.0000	0.0005	0.0005	0.0004	3.1006
2	2023	Site Work - 10000 sqft	storation- Landscaping (Top Soil Seed and Pla	Roller	Rollers100	Diesel	100	0.59	40	0.555274	1.30118	0.001645	0.082812	0.080327	0.045423	596.0281	0.0014	0.0034	0.0000	0.0002	0.0002	0.0001	1.5505
2	2023	Site Work - 10000 sqft	storation- Landscaping (Top Soil Seed and Pla	Seed Truck Spreader	Off-highway Trucks600	Diesel	600	0.59	16	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0005	0.0014	0.0000	0.0001	0.0001	0.0001	3.3514
2	2023	Site Work - 10000 sqft	storation- Landscaping (Top Soil Seed and Pla	Tractor Trailer- Material Delivery	Off-highway Trucks600	Diesel	600	0.59	80	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0023	0.0070	0.0000	0.0005	0.0005	0.0005	16.7571
2	2023	Site Work - 10000 sqft	Underground Services to 5 ft. of Building	Backhoe	Tractors/Loaders/Backhoes100	Diesel	100	0.21	120	3.715337	3.506303	0.002216	0.499158	0.484183	0.6415	694.1322	0.0103	0.0097	0.0000	0.0014	0.0013	0.0018	1.9282
2	2023	Site Work - 10000 sqft	Underground Services to 5 ft. of Building	Fork Truck	Other Construction Equipment100	Diesel	100	0.59	60	0.646673	1.449033	0.001664	0.090863	0.088137	0.075542	595.9393	0.0025	0.0057	0.0000	0.0004	0.0003	0.0003	2.3255
2	2023	Site Work - 10000 sqft	Underground Services to 5 ft. of Building	Tractor Trailer- Material Delivery	Off-highway Trucks600	Diesel	600	0.59	30	0.072537	0.222817	0.001433	0.015466	0.015002	0.015797	536.784	0.0008	0.0026	0.0000	0.0002	0.0002	0.0002	6.2839
																		0.70	**1.84**	**0.01**	**0.11**	**0.11**	**0.11**	**1944.01**

On-Road Sources
Units for Non-Greenhouse Gases Emission: Short Ton
Units for Greenhouse Gases (CO2, CH4, and N2O) Emission: Metric Ton

													MOVES Emission Factors (g/mile)									MOVES ONROAD Emissions (tpy)								
													7	10	13	11	12	14	5	8	9	7	10	13	11	12	14	5	8	9
Scenario ID	Year	Project	Equipment	Equipment Category	On-road Activity		Lookup	Fuel	adway Typ	Distance	ber of Veh	VMT	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O
1	2023	Building - 100000 sqft- 10 stories	Cement Mixer	Single Unit Short-haul Truck	Material Delivery	ieselUrban	Unrestricted AccessSingle Unit Shor	Diesel	nrestricte	40	5	2	23125	1.340233	2.145367	0.003539	0.048	0.0438	0.12326	1055.084	0.017295	0.0033	0.0342	0.0547	0.0001	0.0012	0.0011	0.0031	27	0.000441	8.38E-05
1	2023	Building - 100000 sqft- 10 stories	Dump Truck Subbase Material	Single Unit Short-haul Truck	Material Delivery	ieselUrban	Unrestricted AccessSingle Unit Shor	Diesel	nrestricte	40	5	1	12333	1.340233	2.145367	0.003539	0.048	0.0438	0.12326	1055.084	0.017295	0.0033	0.0182	0.0292	0.0000	0.0006	0.0006	0.0017	14	0.000235	4.47E-05
1	2023	Building - 100000 sqft- 10 stories	Passenger Car	Passenger Car	Employee Commute		GasolineUrban Unrestricted AccessPasseng	Gasoline	nrestricte	30	--	250.8	1452132	2.467499	0.095914	0.002124	0.002	0.0019	0.06777	319.7862	0.009027	0.002	3.9498	0.1535	0.0034	0.0035	0.0031	0.1085	512	0.014449	0.003172
1	2023	Building - 100000 sqft- 10 stories	Tractor Trailer	Combination Short-haul Truck	Material Delivery	eselUrban	Unrestricted AccessCombination Sho	Diesel	nrestricte	40	5	1	2400	2.294147	4.486717	0.005715	0.083	0.0768	0.16875	1707.091	0.021732	0.0028	0.0061	0.0119	0.0000	0.0002	0.0002	0.0004	5	5.75E-05	7.41E-06
2	2023	Site Work - 10000 sqft	Dump Truck Subbase Material	Single Unit Short-haul Truck	Material Delivery	ieselUrban	Unrestricted AccessSingle Unit Shor	Diesel	nrestricte	40	5	1	1233	1.340233	2.145367	0.003539	0.048	0.0438	0.12326	1055.084	0.017295	0.0033	0.0018	0.0029	0.0000	0.0001	0.0001	0.0002	1	2.35E-05	4.47E-06
2	2023	Site Work - 10000 sqft	Passenger Car	Passenger Car	Employee Commute		GasolineUrban Unrestricted AccessPasseng	Gasoline	nrestricte	30	--	5.5	3630	2.467499	0.095914	0.002124	0.002	0.0019	0.06777	319.7862	0.009027	0.002	0.0099	0.0004	0.0000	0.0000	0.0000	0.0003	1	3.61E-05	7.93E-06
2	2023	Site Work - 10000 sqft	Tractor Trailer	Combination Short-haul Truck	Material Delivery	eselUrban	Unrestricted AccessCombination Sho	Diesel	nrestricte	40	5	1	800	2.294147	4.486717	0.005715	0.083	0.0768	0.16875	1707.091	0.021732	0.0028	0.0020	0.0040	0.0000	0.0001	0.0001	0.0001	2	1.92E-05	2.47E-06
																							4.0219	**0.2565**	**0.0036**	**0.0057**	**0.00515**	**0.1143**	**561.9**	**0.015261**	**0.003323**

Fugitive Sources
Units for Non-Greenhouse Gases Emission: Short Ton

cenario ID	Year	Project	Fugitive Source Type	Number of Months		CO	NOx	SO2	PM10	VOC
1	2023	Building - 100000 sqft- 10 stories	Concrete Mixing/Batching	9		0	0	0	0.08555	0
1	2023	Building - 100000 sqft- 10 stories	Material Movement (Paved Roads)	9		0	0	0	0.01345	0
1	2023	Building - 100000 sqft- 10 stories	Material Movement (Unpaved Roads)	9		0	0	0	0.041	0
2	2023	Site Work - 10000 sqft	Material Movement (Paved Roads)	1		0	0	0	0.000511	0
2	2023	Site Work - 10000 sqft	Material Movement (Unpaved Roads)	1		0	0	0	0.001849	0
2	2023	Site Work - 10000 sqft	Soil Handling	1		0	0	0	0.002831	0
2	2023	Site Work - 10000 sqft	Unstabilized Land and Wind Erosion	1		0	0	0	3.36E-10	0
					Total	**0**	**0**	**0**	**0.14519**	**0**

2023 Totals

Year	Emission Source	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O	CO2e
2023	NonRoad	0.70	1.84	0.01	0.11	0.11	0.11	1944.01	--	--	

2023	OnRoad	4.021922244	0.256511013	0.003572263	0.005730399	0.005148	0.114328358	561.8592	0.015261	0.003323	
2023	Fugitive	0	0	0	0.1451895	--	0	--	--	--	
2023 TOTAL		4.72	2.09	0.009	0.26	0.11	0.227	2273	0.013845	0.003014	2274

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ASSUMPTIONS

Emission factors were developed from the following models:

On-Road Vehicles: MOVES 3.0.2

Non-Road Equipment: MOVES 3.0.2

In addition to the overall project size dimensions (e.g., Length and width) provided by the user, an additional 10 ft length and 10 ft width is added to account for disturbance areas.

The number of employees is based on the higher of two methods: (1) number of equipment, and (2) multiply the project cost in million by 11.

The average employee travels 30 miles round-trip from home to construction site each day.

The average on-road material delivery round-trip distance per truck is 40 miles per day.

For calculating fugitive, re-entrained PM emissions from on-road and non-road material delivery and handling equipment, a nominal VMT of 5 miles is used for each vehicle per day.

In deriving emission factors from NONROAD, the horsepower for each equipment represents the most popular in each equipment category.

The total length of each modeled scenario is used to define the number of days associated with vehicle/equipment evaporative emissions.

The choice of location and season are assumed to adequately represent differences in fuel characteristics affecting emissions.

The default methods assume that all construction equipment use diesel as well as heavy-duty on-road vehicles, while passenger vehicles (including motorcycles) use gasoline.

Fugitive emissions are only modeled for:

- Asphalt drying
- Asphalt storage and batching
- Concrete mixing/batching
- Soil handling
- Unstabilized land and wind erosion
- Material movement (unpaved roads)
- Material movement (paved roads)

On-Road vehicle speeds are not explicitly modeled. The associated emission factors for each modeled vehicle from MOVES represent averages over the driving cycles, the roadway type, and daily temperature variations.

The default equipment hours-of-use data are developed based on the overall size of the project provided by the user and activity rates based on expert engineering judgment.

Under the Construction Activity Type list (Activity Tab), when a choice between asphalt and concrete materials occurs, asphalt is always selected as default. To choose concrete, de-select the aphalt item and select the corresponding concrete item.

Two trips per day were assumed for each on-road material handling trucks.

Only CO2, CH4, and N2O are used to represent greenhouse gas emissions. Other potential greenhouse gases including air conditioning refrigerants were not included.

The following equipment are always modeled using diesel emission factors since gasoline-based emission factors are not available:

- Asphalt Deliveries/Ten Wheelers
- Bulldozer
- Concrete Ready Mix Trucks
- Concrete Ready Trucks Mix for Cores
- Concrete Truck
- Crack Filler (Trailer Mounted)
- Delivery of Tanks (3)
- Distributing Tanker
- Dozer
- Dump Truck
- Dump Truck (12 cy)
- Excavator
- Excavator for U/G Services/Tanks
- Flat Bed or Dump Trucks
- Flatbed Truck
- Grader
- Grout Wheel Truck
- Hoist Equipment with 40 Ton Rig
- Hydralic Hammer
- Hydroseeder
- Line Painting Truck and Sprayer
- Material Deliveries
- Off-Road Truck
- Pickup Truck
- Scraper
- Seed Truck Spreader
- Small Dozer
- Survey Crew Trucks
- Ten Wheelers
- Ten Wheelers- Material Delivery
- Tool Truck
- Tractor Trailer- Equipment Delivery
- Tractor Trailer- Material Delivery
- Tractor Trailer- Steel Deliveries
- Tractor Trailer- Stone Delivery
- Tractor Trailer- Topsoil & Seed
- Tractor Trailer- Truck Delivery
- Tractor Trailer with Boom Hoist- Curbs Del & Place
- Tractor Trailer with Boom Hoist- Delivery
- Tractor Trailers- Rebar Deliveries
- Tractor Trailers Temp Fac.
- Truck for Topsoil & Seed Del&Spread
- Water Truck
- Excavator with Bucket
- Excavator with Hoe Ram

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Airport Construction Emissions Inventory Tool (ACEIT)
Version 1.0
Run Date & Time: 3/3/2022 8:35:48 AM

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STUDY

Study Name

HVN EA

Study Description

Construction Schedule 2024

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EMISSIONS INVENTORY - DETAILS:

Non-Road Sources
Units for Non-Greenhouse Gases Emission: Short Ton
Units for Greenhouse Gases (CO2, CH4, and N2O) Emission: Metric Ton

											MOVES3 Emission Factors (g-hp-hr)							NONROAD Emissions (TPY)						
											3	6	9	7	8	11	2							
Scenario ID	Year	Project	Construction Activity	Equipment	MovesLookup	Fuel	HP Average	Load Factor	Hours of Activity		CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CO (tpy)	NOx (tpy)	SO2 (tpy)	PM10 (tpy)	PM2.5 (tpy)	VOC (tpy)	CO2 (tpy)
1	2024	Taxiways	Asphalt Placement	Asphalt Paver	Pavers175	Diesel	175	0.59	2.35875		0.18	0.46	0.0015	0.05	0.04	0.03	536.75	5E-05	0.0001	3.9E-07	1E-05	1E-05	7E-06	0.1441
1	2024	Taxiways	Asphalt Placement	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	8.495217		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0002	0.0006	4.7E-06	4E-05	4E-05	4E-05	1.7795
1	2024	Taxiways	Asphalt Placement	Other General Equipment	ther Construction Equipment1	Diesel	175	0.43	4.7175		0.23	0.64	0.0015	0.05	0.05	0.05	536.68	9E-05	0.0002	5.8E-07	2E-05	2E-05	2E-05	0.21
1	2024	Taxiways	Asphalt Placement	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	2.35875		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	5E-05	0.0002	1.3E-06	1E-05	1E-05	1E-05	0.4941
1	2024	Taxiways	Asphalt Placement	Roller	Rollers100	Diesel	100	0.59	2.35875		0.47	1.21	0.0016	0.07	0.07	0.04	596.05	7E-05	0.0002	2.5E-07	1E-05	1E-05	6E-06	0.0914
1	2024	Taxiways	Asphalt Placement	Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	2.35875		5.44	5.26	0.0024	0.78	0.75	1.02	693.01	0.0002	0.0002	9.8E-08	3E-05	3E-05	4E-05	0.0284
1	2024	Taxiways	Asphalt Placement	Surfacing Equipment (Grooving)	ther Construction Equipment2	Diesel	25	0.59	3.0192		1.49	3.76	0.0022	0.17	0.17	0.35	595.15	7E-05	0.0002	1.1E-07	8E-06	8E-06	2E-05	0.0292
1	2024	Taxiways	Clearing and Grubbing	Chain Saw	ther Construction Equipment3	Diesel	11	0.7	6		2.47	4.18	0.0022	0.24	0.23	0.84	593.76	0.0001	0.0002	1.1E-07	1E-05	1E-05	4E-05	0.0302
1	2024	Taxiways	Clearing and Grubbing	Chipper/Stump Grinder	ther Construction Equipment1	Diesel	100	0.43	6		0.55	1.35	0.0016	0.08	0.08	0.06	595.98	0.0002	0.0004	4.7E-07	2E-05	2E-05	2E-05	0.1695
1	2024	Taxiways	Clearing and Grubbing	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	8		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0002	0.0006	4.4E-06	4E-05	4E-05	4E-05	1.6757
1	2024	Taxiways	Drainage - 24 inch SICPP	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	6.72		0.12	0.35	0.0014	0.03	0.03	0.02	536.78	9E-05	0.0003	1.1E-06	2E-05	2E-05	1E-05	0.4105
1	2024	Taxiways	Drainage - 24 inch SICPP	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	6.72		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0001	0.0005	3.7E-06	3E-05	3E-05	3E-05	1.4076
1	2024	Taxiways	Drainage - 24 inch SICPP	Excavator	Excavators175	Diesel	175	0.59	6.72		0.08	0.27	0.0014	0.02	0.02	0.01	536.79	6E-05	0.0002	1.1E-06	2E-05	2E-05	1E-05	0.4106
1	2024	Taxiways	Drainage - 24 inch SICPP	Loader	Tractors/Loaders/Backhoes17	Diesel	175	0.59	6.72		1.25	2.41	0.0019	0.27	0.26	0.40	625.37	0.001	0.0018	1.5E-06	0.0002	0.0002	0.0003	0.4783
1	2024	Taxiways	Drainage - 24 inch SICPP	Other General Equipment	ther Construction Equipment1	Diesel	175	0.43	6.72		0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0001	0.0004	8.3E-07	3E-05	3E-05	3E-05	0.2992
1	2024	Taxiways	Drainage - 24 inch SICPP	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	6.72		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0001	0.0005	3.7E-06	3E-05	3E-05	3E-05	1.4076
1	2024	Taxiways	Drainage - 24 inch SICPP	Roller	Rollers100	Diesel	100	0.59	6.72		0.47	1.21	0.0016	0.07	0.07	0.04	596.05	0.0002	0.0005	7.1E-07	3E-05	3E-05	2E-05	0.2605
1	2024	Taxiways	Drainage - 6 inch Perforated Underdrai	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	3.733333		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	7E-05	0.0003	2.1E-06	2E-05	2E-05	2E-05	0.782
1	2024	Taxiways	Drainage - 6 inch Perforated Underdrai	Loader	Tractors/Loaders/Backhoes17	Diesel	175	0.59	3.733333		1.25	2.41	0.0019	0.27	0.26	0.40	625.37	0.0005	0.001	8.2E-07	0.0001	0.0001	0.0002	0.2657
1	2024	Taxiways	Drainage - 6 inch Perforated Underdrai	Other General Equipment	ther Construction Equipment1	Diesel	175	0.43	3.733333		0.23	0.64	0.0015	0.05	0.05	0.05	536.68	7E-05	0.0002	4.6E-07	2E-05	2E-05	2E-05	0.1662
1	2024	Taxiways	Drainage - 6 inch Perforated Underdrai	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	3.733333		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	7E-05	0.0003	2.1E-06	2E-05	2E-05	2E-05	0.782
1	2024	Taxiways	Drainage - 6 inch Perforated Underdrai	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes10	Diesel	100	0.21	3.733333		3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0.0003	0.0003	1.9E-07	4E-05	4E-05	5E-05	0.06
1	2024	Taxiways	Dust Control	Water Truck	Off-highway Trucks600	Diesel	600	0.59	240		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0048	0.0168	0.00013	0.0011	0.0011	0.0012	50.272
1	2024	Taxiways	Excavation (Borrow)	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	10.484		0.12	0.35	0.0014	0.03	0.03	0.02	536.78	0.0001	0.0004	1.7E-06	4E-05	4E-05	2E-05	0.6405
1	2024	Taxiways	Excavation (Borrow)	Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	10.484		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0002	0.0007	5.8E-06	5E-05	5E-05	5E-05	2.196
1	2024	Taxiways	Excavation (Borrow)	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	10.484		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0002	0.0007	5.8E-06	5E-05	5E-05	5E-05	2.196
1	2024	Taxiways	Excavation (Borrow)	Roller	Rollers100	Diesel	100	0.59	4.838769		0.47	1.21	0.0016	0.07	0.07	0.04	596.05	0.0001	0.0004	5.1E-07	2E-05	2E-05	1E-05	0.1876
1	2024	Taxiways	Excavation (Cut to Fill)	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	7.863		0.12	0.35	0.0014	0.03	0.03	0.02	536.78	0.0001	0.0003	1.3E-06	3E-05	3E-05	2E-05	0.4804
1	2024	Taxiways	Excavation (Cut to Fill)	Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	20.968		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0004	0.0015	1.2E-05	1E-04	9E-05	0.0001	4.3921
1	2024	Taxiways	Excavation (Cut to Fill)	Excavator	Excavators175	Diesel	175	0.59	6.2904		0.08	0.27	0.0014	0.02	0.02	0.01	536.79	6E-05	0.0002	1E-06	1E-05	1E-05	9E-06	0.3843
1	2024	Taxiways	Excavation (Cut to Fill)	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	6.2904		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0001	0.0004	3.5E-06	3E-05	3E-05	3E-05	1.3176
1	2024	Taxiways	Excavation (Cut to Fill)	Roller	Rollers100	Diesel	100	0.59	6.2904		0.47	1.21	0.0016	0.07	0.07	0.04	596.05	0.0002	0.0005	6.7E-07	3E-05	3E-05	1E-05	0.2439
1	2024	Taxiways	Excavation (Cut to Fill)	Scraper	Scrapers600	Diesel	600	0.59	7.863		0.20	0.55	0.0015	0.03	0.03	0.03	536.74	0.0006	0.0017	4.5E-06	0.0001	1E-04	1E-04	1.6469
1	2024	Taxiways	Excavation (Topsoil Stripping)	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	2.96		0.12	0.35	0.0014	0.03	0.03	0.02	536.78	4E-05	0.0001	4.9E-07	1E-05	1E-05	6E-06	0.1808
1	2024	Taxiways	Fencing	Concrete Truck	Off-highway Trucks600	Diesel	600	0.59	2.222222		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	4E-05	0.0002	1.2E-06	1E-05	1E-05	1E-05	0.4655
1	2024	Taxiways	Fencing	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	8.888889		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0002	0.0006	4.9E-06	4E-05	4E-05	5E-05	1.8619
1	2024	Taxiways	Fencing	Other General Equipment	ther Construction Equipment1	Diesel	175	0.43	8.888889		0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0002	0.0005	1.1E-06	4E-05	4E-05	4E-05	0.3957
1	2024	Taxiways	Fencing	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	8.888889		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0002	0.0006	4.9E-06	4E-05	4E-05	5E-05	1.8619
1	2024	Taxiways	Fencing	Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	8.888889		5.44	5.26	0.0024	0.78	0.75	1.02	693.01	0.0008	0.0008	3.7E-07	0.0001	0.0001	0.0002	0.1069
1	2024	Taxiways	Fencing	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes10	Diesel	100	0.21	8.888889		3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0.0006	0.0006	4.4E-07	9E-05	8E-05	0.0001	0.1429
1	2024	Taxiways	Grading	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	2.2145		0.12	0.35	0.0014	0.03	0.03	0.02	536.78	3E-05	9E-05	3.6E-07	8E-06	8E-06	5E-06	0.1353
1	2024	Taxiways	Grading	Grader	Graders300	Diesel	300	0.59	2.2145		0.07	0.22	0.0014	0.02	0.02	0.02	536.78	3E-05	1E-04	6.2E-07	7E-06	7E-06	7E-06	0.2319
1	2024	Taxiways	Grading	Roller	Rollers100	Diesel	100	0.59	2.2145		0.47	1.21	0.0016	0.07	0.07	0.04	596.05	7E-05	0.0002	2.3E-07	1E-05	1E-05	5E-06	0.0858
1	2024	Taxiways	Hydroseeding	Hydroseeder	ther Construction Equipment6	Diesel	600	0.59	1.995		0.78	1.95	0.0017	0.11	0.11	0.11	536.52	0.0006	0.0015	1.3E-06	9E-05	8E-05	8E-05	0.4177
1	2024	Taxiways	Hydroseeding	Off-Road Truck	Off-highway Trucks600	Diesel	600	0.59	1.995		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	4E-05	0.0001	1.1E-06	9E-06	9E-06	1E-05	0.4179
1	2024	Taxiways	Lighting	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	3.8		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	8E-05	0.0003	2.1E-06	2E-05	2E-05	2E-05	0.796
1	2024	Taxiways	Lighting	Loader	Tractors/Loaders/Backhoes17	Diesel	175	0.59	3.8		1.25	2.41	0.0019	0.27	0.26	0.40	625.37	0.0005	0.001	8.4E-07	0.0001	0.0001	0.0002	0.2705
1	2024	Taxiways	Lighting	Other General Equipment	ther Construction Equipment1	Diesel	175	0.43	3.8		0.23	0.64	0.0015	0.05	0.05	0.05	536.68	7E-05	0.0002	4.7E-07	2E-05	2E-05	2E-05	0.1692
1	2024	Taxiways	Lighting	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	3.8		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	8E-05	0.0003	2.1E-06	2E-05	2E-05	2E-05	0.796
1	2024	Taxiways	Lighting	Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	3.8		5.44	5.26	0.0024	0.78	0.75	1.02	693.01	0.0004	0.0003	1.6E-07	5E-05	5E-05	7E-05	0.0457
1	2024	Taxiways	Lighting	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes10	Diesel	100	0.21	3.8		3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0.0003	0.0003	1.9E-07	4E-05	4E-05	5E-05	0.0611
1	2024	Taxiways	Markings	Flatbed Truck	Off-highway Trucks600	Diesel	600	0.59	38.85714		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0008	0.0027	2.2E-05	0.0002	0.0002	0.0002	8.1393
1	2024	Taxiways	Markings	Other General Equipment	ther Construction Equipment1	Diesel	175	0.43	38.85714		0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0007	0.002	4.8E-06	0.0002	0.0002	0.0002	1.7298
1	2024	Taxiways	Markings	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	38.85714		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0008	0.0027	2.2E-05	0.0002	0.0002	0.0002	8.1393
1	2024	Taxiways	Soil Erosion/Sediment Control	Other General Equipment	ther Construction Equipment1	Diesel	175	0.43	2		0.23	0.64	0.0015	0.05	0.05	0.05	536.68	4E-05	0.0001	2.5E-07	9E-06	8E-06	8E-06	0.089
1	2024	Taxiways	Soil Erosion/Sediment Control	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	4		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	8E-05	0.0003	2.2E-06	2E-05	2E-05	2E-05	0.8379
1	2024	Taxiways	Soil Erosion/Sediment Control	Pumps	ther Construction Equipment3	Diesel	11	0.43	2		2.47	4.18	0.0022	0.24	0.23	0.84	593.76	3E-05	4E-05	2.3E-08	3E-06	2E-06	9E-06	0.0062
1	2024	Taxiways	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes10	Diesel	100	0.21	2		3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0.0001	0.0001	1E-07	2E-05	2E-05	2E-05	0.0322
1	2024	Taxiways	Subbase Placement	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	3.972632		0.12	0.35	0.0014	0.03	0.03	0.02	536.78	6E-05	0.0002	6.5E-07	1E-05	1E-05	8E-06	0.2427
1	2024	Taxiways	Subbase Placement	Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	27.95556		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0006	0.002	1.6E-05	0.0001	0.0001	0.0001	5.8558
1	2024	Taxiways	Subbase Placement	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	3.972632		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	8E-05	0.0003	2.2E-06	2E-05	2E-05	2E-05	0.8321
1	2024	Taxiways	Subbase Placement	Roller	Rollers100	Diesel	100	0.59	3.870769		0.47	1.21	0.0016	0.07	0.07	0.04	596.05	0.0001	0.0003	4.1E-07	2E-05	2E-05	9E-06	0.1501
1	2024	Taxiways	Topsoil Placement	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	4.921333		0.12	0.35	0.0014	0.03	0.03	0.02	536.78	7E-05	0.0002	8.1E-07	2E-05	2E-05	1E-05	0.3007
1	2024	Taxiways	Topsoil Placement	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	4.921333		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	1E-04	0.0003	2.7E-06	2E-05	2E-05	3E-05	1.0309
1	2024	Taxiways	Topsoil Placement	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	4.921333		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	1E-04	0.0003	2.7E-06	2E-05	2E-05	3E-05	1.0309
2	2024	uilding - 100000 sqft- 10 stori	Concrete Foundations	Backhoe	Tractors/Loaders/Backhoes10	Diesel	100	0.21	480		3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0.0346	0.0341	2.4E-05	0.0047	0.0045	0.006	7.7161
2	2024	uilding - 100000 sqft- 10 stori	Concrete Foundations	Concrete Pump	ther Construction Equipment3	Diesel	11	0.43	180		2.47	4.18	0.0022	0.24	0.23	0.84	593.76	0.0023	0.0039	2E-06	0.0002	0.0002	0.0008	0.5572
2	2024	uilding - 100000 sqft- 10 stori	Concrete Foundations	Concrete Ready Mix Trucks	Off-highway Trucks600	Diesel	600	0.59	360		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0072	0.0252	0.0002	0.0016	0.0016	0.0019	75.408
2	2024	uilding - 100000 sqft- 10 stori	Concrete Foundations	Excavator	Excavators175	Diesel	175	0.59	160		0.08	0.27	0.0014	0.02	0.02	0.01	536.79	0.0015	0.0049	2.6E-05	0.0004	0.0004	0.0002	9.7752
2	2024	uilding - 100000 sqft- 10 stori	Concrete Foundations	Fork Truck	ther Construction Equipment1	Diesel	100	0.59	480		0.55	1.35	0.0016	0.08	0.08	0.06	595.98	0.0171	0.042	5.1E-05	0.0024	0.0023	0.002	18.605
2	2024	uilding - 100000 sqft- 10 stori	Concrete Foundations	Tool Truck	Off-highway Trucks600	Diesel	600	0.59	120		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0024	0.0084	6.7E-05	0.0005	0.0005	0.0006	25.136
2	2024	uilding - 100000 sqft- 10 stori	Concrete Foundations	Tractor Trailer- Material Delivery	Off-highway Trucks600	Diesel	600	0.59	240		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0048	0.0168	0.00013	0.0011	0.0011	0.0012	50.272
2	2024	uilding - 100000 sqft- 10 stori	Construction Mob & Layout	Survey Crew Trucks	Off-highway Trucks600	Diesel	600	0.59	10		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0002	0.0007	5.6E-06	5E-05	4E-05	5E-05	2.0947
2	2024	uilding - 100000 sqft- 10 stori	Construction Mob & Layout	Tractor Trailers Temp Fac.	Off-highway Trucks600	Diesel	600	0.59	4		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	8E-05	0.0003	2.2E-06	2E-05	2E-05	2E-05	0.8379
2	2024	uilding - 100000 sqft- 10 stori	Exterior Wall Framing	Fork Truck	ther Construction Equipment1	Diesel	100	0.59	840		0.55	1.35	0.0016	0.08	0.08	0.06	595.98	0.0299	0.0735	9E-05	0.0042	0.0041	0.0034	32.559
2	2024	uilding - 100000 sqft- 10 stori	Exterior Wall Framing	Generator	ther Construction Equipment4	Diesel	40	0.43	80		0.31	2.56	0.0016	0.03	0.03	0.10	595.87	0.0005	0.0039	2.4E-06	4E-05	4E-05	0.0001	0.9038
2	2024	uilding - 100000 sqft- 10 stori	Exterior Wall Framing	Grout Mixer	ther Construction Equipment6	Diesel	600	0.59	420		0.78	1.95	0.0017	0.11	0.11	0.11	536.52	0.128	0.3193	0.00027	0.0183	0.0178	0.0175	87.932
2	2024	uilding - 100000 sqft- 10 stori	Exterior Wall Framing	Grout Wheel Truck	Off-highway Trucks600	Diesel	600	0.59	160		0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0032	0.0112	8.9E-05	0.0007	0.0007	0.0008	33.515

2	2024	uilding - 100000 sqft- 10 stori	Exterior Wall Framing	Man Lift	Rough Terrain Forklifts75	Diesel	75	0.21	1680	0.49	2.71	0.0016	0.05	0.05	0.08	595.90	0.0142	0.079	4.7E-05	0.0015	0.0015	0.0024	17.381
2	2024	uilding - 100000 sqft- 10 stori	Exterior Wall Framing	Tool Truck	Off-highway Trucks600	Diesel	600	0.59	420	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0084	0.0294	0.00023	0.0019	0.0019	0.0022	87.976
2	2024	uilding - 100000 sqft- 10 stori	Exterior Wall Framing	Tractor Trailer- Material Delivery	Off-highway Trucks600	Diesel	600	0.59	840	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0167	0.0588	0.00047	0.0038	0.0037	0.0043	175.95
2	2024	uilding - 100000 sqft- 10 stori	Exterior Wall Framing	Truck Tower (Mantiwoc type)	Off-highway Trucks300	Diesel	300	0.43	80	0.02	0.12	0.0014	0.01	0.01	0.01	536.80	0.0003	0.0014	1.6E-05	8E-05	8E-05	0.0001	6.1066
2	2024	uilding - 100000 sqft- 10 stori	Interior Build-Out/ Finishes	Fork Truck	ther Construction Equipment1	Diesel	100	0.59	1600	0.55	1.35	0.0016	0.08	0.08	0.06	595.98	0.057	0.1401	0.00017	0.0081	0.0078	0.0065	62.017
2	2024	uilding - 100000 sqft- 10 stori	Interior Build-Out/ Finishes	Man Lift	Rough Terrain Forklifts75	Diesel	75	0.21	3200	0.49	2.71	0.0016	0.05	0.05	0.08	595.90	0.0271	0.1505	9E-05	0.0029	0.0028	0.0047	33.107
2	2024	uilding - 100000 sqft- 10 stori	Interior Build-Out/ Finishes	Tool Truck	Off-highway Trucks600	Diesel	600	0.59	1600	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0319	0.1121	0.00089	0.0073	0.0071	0.0083	335.15
2	2024	uilding - 100000 sqft- 10 stori	Interior Build-Out/ Finishes	Tractor Trailer- Material Delivery	Off-highway Trucks600	Diesel	600	0.59	1600	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0319	0.1121	0.00089	0.0073	0.0071	0.0083	335.15
2	2024	uilding - 100000 sqft- 10 stori	Roofing	High Lift	Rough Terrain Forklifts100	Diesel	100	0.59	160	0.56	1.28	0.0016	0.08	0.08	0.05	596.01	0.0058	0.0133	1.7E-05	0.0008	0.0008	0.0005	6.202
2	2024	uilding - 100000 sqft- 10 stori	Roofing	Man Lift	Rough Terrain Forklifts75	Diesel	75	0.21	40	0.49	2.71	0.0016	0.05	0.05	0.08	595.90	0.0003	0.0019	1.1E-06	4E-05	4E-05	6E-05	0.4138
2	2024	uilding - 100000 sqft- 10 stori	Roofing	Material Deliveries	Off-highway Trucks600	Diesel	600	0.59	60	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0012	0.0042	3.3E-05	0.0003	0.0003	0.0003	12.568
2	2024	uilding - 100000 sqft- 10 stori	Roofing	Tractor Trailer- Material Delivery	Off-highway Trucks600	Diesel	600	0.59	40	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0008	0.0028	2.2E-05	0.0002	0.0002	0.0002	8.3787
2	2024	uilding - 100000 sqft- 10 stori	Roofing	Truck Tower (Mantiwoc type)	Off-highway Trucks300	Diesel	300	0.43	120	0.02	0.12	0.0014	0.01	0.01	0.01	536.80	0.0004	0.002	2.4E-05	0.0001	0.0001	0.0002	9.1599
2	2024	uilding - 100000 sqft- 10 stori	Security & Safety Systems	High Lift	Rough Terrain Forklifts100	Diesel	100	0.59	800	0.56	1.28	0.0016	0.08	0.08	0.05	596.01	0.0289	0.0666	8.6E-05	0.0041	0.004	0.0027	31.01
2	2024	uilding - 100000 sqft- 10 stori	Security & Safety Systems	Tool Truck	Off-highway Trucks600	Diesel	600	0.59	800	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0159	0.056	0.00044	0.0037	0.0035	0.0041	167.57
2	2024	uilding - 100000 sqft- 10 stori	Structural Steel Erection & Decks	90 Ton Crane	Cranes300	Diesel	300	0.43	240	0.09	0.38	0.0014	0.02	0.02	0.03	530.96	0.0032	0.0128	4.9E-05	0.0007	0.0007	0.001	18.12
2	2024	uilding - 100000 sqft- 10 stori	Structural Steel Erection & Decks	Concrete Pump	ther Construction Equipment1	Diesel	11	0.43	60	2.47	4.18	0.0022	0.24	0.23	0.84	593.76	0.0008	0.0013	6.8E-07	8E-05	7E-05	0.0003	0.1857
2	2024	uilding - 100000 sqft- 10 stori	Structural Steel Erection & Decks	Concrete Truck	Off-highway Trucks600	Diesel	600	0.59	60	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0012	0.0042	3.3E-05	0.0003	0.0003	0.0003	12.568
2	2024	uilding - 100000 sqft- 10 stori	Structural Steel Erection & Decks	Fork Truck	ther Construction Equipment1	Diesel	100	0.59	640	0.55	1.35	0.0016	0.08	0.08	0.06	595.98	0.0228	0.056	6.9E-05	0.0032	0.0031	0.0026	24.807
2	2024	uilding - 100000 sqft- 10 stori	Structural Steel Erection & Decks	Tool Truck	Off-highway Trucks600	Diesel	600	0.59	160	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0032	0.0112	8.9E-05	0.0007	0.0007	0.0008	33.515
2	2024	uilding - 100000 sqft- 10 stori	Structural Steel Erection & Decks	Tractor Trailer- Steel Deliveries	Off-highway Trucks600	Diesel	600	0.59	360	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0072	0.0252	0.0002	0.0016	0.0016	0.0019	75.408
2	2024	uilding - 100000 sqft- 10 stori	Structural Steel Erection & Decks	Trowel Machine	ther Construction Equipment6	Diesel	600	0.59	40	0.78	1.95	0.0017	0.11	0.11	0.11	536.52	0.0122	0.0304	2.6E-05	0.0017	0.0017	0.0017	8.3745
2	2024	uilding - 100000 sqft- 10 stori	Structural Steel Erection & Decks	Truck Tower (Mantiwoc type)	Off-highway Trucks300	Diesel	300	0.43	720	0.02	0.12	0.0014	0.01	0.01	0.01	536.80	0.0024	0.0122	0.00014	0.0007	0.0007	0.001	54.96
3	2024	Parking Lot	Asphalt Placement	Asphalt Paver	Pavers175	Diesel	175	0.59	91.8525	0.18	0.46	0.0015	0.05	0.04	0.03	536.75	0.0019	0.0048	1.5E-05	0.0005	0.0005	0.0003	5.6113
3	2024	Parking Lot	Asphalt Placement	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	330.8137	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0066	0.0232	0.00018	0.0015	0.0015	0.0017	69.294
3	2024	Parking Lot	Asphalt Placement	Other General Equipment	ther Construction Equipment1	Diesel	175	0.43	183.705	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0035	0.0097	2.3E-05	0.0008	0.0008	0.0008	8.1781
3	2024	Parking Lot	Asphalt Placement	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	91.8525	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0018	0.0064	5.1E-05	0.0004	0.0004	0.0005	19.24
3	2024	Parking Lot	Asphalt Placement	Roller	Rollers100	Diesel	100	0.59	91.8525	0.47	1.21	0.0016	0.07	0.07	0.04	596.05	0.0028	0.0072	9.7E-06	0.0004	0.0004	0.0002	3.5607
3	2024	Parking Lot	Asphalt Placement	Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	91.8525	5.44	5.26	0.0024	0.78	0.75	1.02	693.01	0.0087	0.0084	3.8E-06	0.0012	0.0012	0.0016	1.1051
3	2024	Parking Lot	Asphalt Placement	Surfacing Equipment (Grooving)	ther Construction Equipment2	Diesel	25	0.59	117.5712	1.49	3.76	0.0022	0.17	0.17	0.35	595.15	0.0029	0.0072	4.2E-06	0.0003	0.0003	0.0007	1.1377
3	2024	Parking Lot	Clearing and Grubbing	Chain Saw	ther Construction Equipment3	Diesel	11	0.7	201.6	2.47	4.18	0.0022	0.24	0.23	0.84	593.76	0.0042	0.0072	3.7E-06	0.0004	0.0004	0.0014	1.016
3	2024	Parking Lot	Clearing and Grubbing	Chipper/Stump Grinder	ther Construction Equipment1	Diesel	100	0.43	201.6	0.55	1.35	0.0016	0.08	0.08	0.06	595.98	0.0052	0.0129	1.6E-05	0.0007	0.0007	0.0006	5.695
3	2024	Parking Lot	Clearing and Grubbing	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	268.8	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0054	0.0188	0.00015	0.0012	0.0012	0.0014	56.305
3	2024	Parking Lot	Concrete Placement	Air Compressor	ther Construction Equipment1	Diesel	100	0.43	244.94	0.55	1.35	0.0016	0.08	0.08	0.06	595.98	0.0064	0.0156	1.9E-05	0.0009	0.0009	0.0007	6.9193
3	2024	Parking Lot	Concrete Placement	Concrete Saws	ther Construction Equipment4	Diesel	40	0.59	244.94	0.31	2.56	0.0016	0.03	0.03	0.10	595.87	0.002	0.0163	1E-05	0.0002	0.0002	0.0006	3.7969
3	2024	Parking Lot	Concrete Placement	Concrete Truck	Off-highway Trucks600	Diesel	600	0.59	1020.583	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0203	0.0715	0.00057	0.0047	0.0045	0.0053	213.78
3	2024	Parking Lot	Concrete Placement	Other General Equipment	ther Construction Equipment1	Diesel	175	0.43	489.88	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0093	0.0258	6E-05	0.0021	0.002	0.0021	21.808
3	2024	Parking Lot	Concrete Placement	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	734.82	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0146	0.0515	0.00041	0.0034	0.0033	0.0038	153.92
3	2024	Parking Lot	Concrete Placement	Rubber Tired Loader	ractors/Loaders/Backhoes17	Diesel	175	0.59	244.94	1.25	2.41	0.0019	0.27	0.26	0.40	625.37	0.0348	0.0671	5.4E-05	0.0075	0.0072	0.0113	17.434
3	2024	Parking Lot	Concrete Placement	Slip Form Paver	Pavers175	Diesel	175	0.59	244.94	0.18	0.46	0.0015	0.05	0.04	0.03	536.75	0.0049	0.0127	4.1E-05	0.0013	0.0012	0.0008	14.963
3	2024	Parking Lot	Concrete Placement	Surfacing Equipment (Grooving)	ther Construction Equipment2	Diesel	25	0.59	244.94	1.49	3.76	0.0022	0.17	0.17	0.35	595.15	0.006	0.015	8.7E-06	0.0007	0.0007	0.0014	2.3702
3	2024	Parking Lot	Curbing	Concrete Truck	Off-highway Trucks600	Diesel	600	0.59	132.4	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0026	0.0093	7.4E-05	0.0006	0.0006	0.0007	27.733
3	2024	Parking Lot	Curbing	Curb/Gutter Paver	Pavers175	Diesel	175	0.59	132.4	0.18	0.46	0.0015	0.05	0.04	0.03	536.75	0.0027	0.0069	2.2E-05	0.0007	0.0007	0.0004	8.0883
3	2024	Parking Lot	Curbing	Other General Equipment	ther Construction Equipment1	Diesel	175	0.43	132.4	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0025	0.007	1.6E-05	0.0006	0.0006	0.0006	5.8941
3	2024	Parking Lot	Curbing	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	132.4	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0026	0.0093	7.4E-05	0.0006	0.0006	0.0007	27.733
3	2024	Parking Lot	Drainage - 24 inch SICPP	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	212.16	0.12	0.35	0.0014	0.03	0.03	0.02	536.78	0.003	0.0086	3.5E-05	0.0008	0.0007	0.0004	12.962
3	2024	Parking Lot	Drainage - 24 inch SICPP	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	212.16	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0042	0.0149	0.00012	0.001	0.0009	0.0011	44.44
3	2024	Parking Lot	Drainage - 24 inch SICPP	Excavator	Excavators175	Diesel	175	0.59	212.16	0.08	0.27	0.0014	0.02	0.02	0.01	536.79	0.002	0.0065	3.4E-05	0.0005	0.0005	0.0003	12.962
3	2024	Parking Lot	Drainage - 24 inch SICPP	Loader	ractors/Loaders/Backhoes17	Diesel	175	0.59	212.16	1.25	2.41	0.0019	0.27	0.26	0.40	625.37	0.0301	0.0581	4.7E-05	0.0065	0.0063	0.0098	15.101
3	2024	Parking Lot	Drainage - 24 inch SICPP	Other General Equipment	ther Construction Equipment1	Diesel	175	0.43	212.16	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.004	0.0112	2.6E-05	0.0009	0.0009	0.0009	9.4449
3	2024	Parking Lot	Drainage - 24 inch SICPP	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	212.16	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0042	0.0149	0.00012	0.001	0.0009	0.0011	44.44
3	2024	Parking Lot	Drainage - 24 inch SICPP	Roller	Rollers100	Diesel	100	0.59	212.16	0.47	1.21	0.0016	0.07	0.07	0.04	596.05	0.0065	0.0166	2.3E-05	0.001	0.001	0.0005	8.2245
3	2024	Parking Lot	rainage - 6 inch Perforated Underdrai	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	353.6	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.007	0.0248	0.0002	0.0016	0.0016	0.0018	74.067
3	2024	Parking Lot	rainage - 6 inch Perforated Underdrai	Loader	ractors/Loaders/Backhoes17	Diesel	175	0.59	353.6	1.25	2.41	0.0019	0.27	0.26	0.40	625.37	0.0502	0.0968	7.8E-05	0.0108	0.0104	0.0163	25.168
3	2024	Parking Lot	rainage - 6 inch Perforated Underdrai	Other General Equipment	ther Construction Equipment1	Diesel	175	0.43	353.6	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0067	0.0186	4.4E-05	0.0015	0.0015	0.0015	15.741
3	2024	Parking Lot	rainage - 6 inch Perforated Underdrai	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	353.6	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.007	0.0248	0.0002	0.0016	0.0016	0.0018	74.067
3	2024	Parking Lot	rainage - 6 inch Perforated Underdrai	Tractors/Loader/Backhoe	ractors/Loaders/Backhoes10	Diesel	100	0.21	353.6	3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0.0255	0.0251	1.8E-05	0.0034	0.0033	0.0044	5.6842
3	2024	Parking Lot	Excavation (Borrow)	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	408.2333	0.12	0.35	0.0014	0.03	0.03	0.02	536.78	0.0057	0.0165	6.7E-05	0.0014	0.0014	0.0009	24.94
3	2024	Parking Lot	Excavation (Borrow)	Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	408.2333	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0081	0.0286	0.00023	0.0019	0.0018	0.0021	85.511
3	2024	Parking Lot	Excavation (Borrow)	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	408.2333	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0081	0.0286	0.00023	0.0019	0.0018	0.0021	85.511
3	2024	Parking Lot	Excavation (Borrow)	Roller	Rollers100	Diesel	100	0.59	188.4154	0.47	1.21	0.0016	0.07	0.07	0.04	596.05	0.0057	0.0148	2E-05	0.0009	0.0009	0.0004	7.304
3	2024	Parking Lot	Excavation (Cut to Fill)	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	306.175	0.12	0.35	0.0014	0.03	0.03	0.02	536.78	0.0043	0.0123	5E-05	0.0011	0.0011	0.0006	18.705
3	2024	Parking Lot	Excavation (Cut to Fill)	Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	816.4667	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0163	0.0572	0.00045	0.0037	0.0036	0.0042	171.02
3	2024	Parking Lot	Excavation (Cut to Fill)	Excavator	Excavators175	Diesel	175	0.59	244.94	0.08	0.27	0.0014	0.02	0.02	0.01	536.79	0.0023	0.0075	4E-05	0.0006	0.0005	0.0004	14.965
3	2024	Parking Lot	Excavation (Cut to Fill)	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	244.94	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0049	0.0172	0.00014	0.0011	0.0011	0.0013	51.307
3	2024	Parking Lot	Excavation (Cut to Fill)	Roller	Rollers100	Diesel	100	0.59	244.94	0.47	1.21	0.0016	0.07	0.07	0.04	596.05	0.0074	0.0192	2.6E-05	0.0011	0.0011	0.0006	9.4952
3	2024	Parking Lot	Excavation (Cut to Fill)	Scraper	Scrapers600	Diesel	600	0.59	306.175	0.20	0.55	0.0015	0.03	0.03	0.03	536.74	0.0241	0.0654	0.00018	0.0039	0.0038	0.0039	64.127
3	2024	Parking Lot	Excavation (Topsoil Stripping)	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	115.2659	0.12	0.35	0.0014	0.03	0.03	0.02	536.78	0.0016	0.0046	1.9E-05	0.0004	0.0004	0.0002	7.042
3	2024	Parking Lot	Fencing	Concrete Truck	Off-highway Trucks600	Diesel	600	0.59	73.55556	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0015	0.0052	4.1E-05	0.0003	0.0003	0.0004	15.407
3	2024	Parking Lot	Fencing	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	294.2222	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0059	0.0206	0.00016	0.0013	0.0013	0.0015	61.63
3	2024	Parking Lot	Fencing	Other General Equipment	ther Construction Equipment1	Diesel	175	0.43	294.2222	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0056	0.0155	3.6E-05	0.0013	0.0012	0.0012	13.098
3	2024	Parking Lot	Fencing	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	294.2222	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0059	0.0206	0.00016	0.0013	0.0013	0.0015	61.63
3	2024	Parking Lot	Fencing	Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	294.2222	5.44	5.26	0.0024	0.78	0.75	1.02	693.01	0.0278	0.0269	1.2E-05	0.004	0.0038	0.0052	3.54
3	2024	Parking Lot	Fencing	Tractors/Loader/Backhoe	ractors/Loaders/Backhoes10	Diesel	100	0.21	294.2222	3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0.0212	0.0209	1.5E-05	0.0029	0.0028	0.0037	4.7297
3	2024	Parking Lot	Grading	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	80.9523	0.12	0.35	0.0014	0.03	0.03	0.02	536.78	0.0011	0.0033	1.3E-05	0.0003	0.0003	0.0002	4.9456
3	2024	Parking Lot	Grading	Grader	Graders300	Diesel	300	0.59	80.9523	0.07	0.22	0.0014	0.02	0.02	0.02	536.78	0.0011	0.0035	2.3E-05	0.0003	0.0002	0.0003	8.4783
3	2024	Parking Lot	Grading	Roller	Rollers100	Diesel	100	0.59	80.9523	0.47	1.21	0.0016	0.07	0.07	0.04	596.05	0.0025	0.0063	8.6E-06	0.0004	0.0004	0.0002	3.1382
3	2024	Parking Lot	Hydroseeding	Hydroseeder	ther Construction Equipment6	Diesel	600	0.59	72.93	0.78	1.95	0.0017	0.11	0.11	0.11	536.52	0.0222	0.0554	4.7E-05	0.0032	0.0031	0.003	15.269
3	2024	Parking Lot	Hydroseeding	Off-Road Truck	Off-highway Trucks600	Diesel	600	0.59	72.93	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0015	0.0051	4.1E-05	0.0003	0.0003	0.0004	15.276
3	2024	Parking Lot	Markings	Flatbed Truck	Off-highway Trucks600	Diesel	600	0.59	30.72	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0006	0.0022	1.7E-05	0.0001	0.0001	0.0002	6.4348
3	2024	Parking Lot	Markings	Other General Equipment	ther Construction Equipment1	Diesel	175	0.43	30.72	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0006	0.0016	3.8E-06	0.0001	0.0001	0.0001	1.3676
3	2024	Parking Lot	Markings	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	30.72	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0006	0.0022	1.7E-05	0.0001	0.0001	0.0002	6.4348
3	2024	Parking Lot	Sidewalks	Concrete Truck	Off-highway Trucks600	Diesel	600	0.59	264.8	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0053	0.0186	0.00015	0.0012	0.0012	0.0014	55.467
3	2024	Parking Lot	Sidewalks	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	264.8	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0053	0.0186	0.00015	0.0012	0.0012	0.0014	55.467
3	2024	Parking Lot	Sidewalks	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	264.8	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0053	0.0186	0.00015	0.0012	0.0012	0.0014	55.467
3	2024	Parking Lot	Sidewalks	Tractors/Loader/Backhoe	ractors/Loaders/Backhoes10	Diesel	100	0.21	264.8	3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0.0191	0.0188	1.3E-05	0.0026	0.0025	0.0033	4.2567
3	2024	Parking Lot	Sidewalks	Vibratory Compactor	Plate Compactors6	Diesel	6	0.43	264.8	2.58	4.24	0.0022	0.26	0.25	0.83	587.98	0.0019	0.0032	1.6E-06	0.0002	0.0002	0.0006	0.4428
3	2024	Parking Lot	Soil Erosion/Sediment Control	Other General Equipment	ther Construction Equipment1	Diesel	175	0.43	67.2	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0013	0.0035	8.3E-06	0.0003	0.0003	0.0003	2.9916
3	2024	Parking Lot	Soil Erosion/Sediment Control	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	134.4	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0027	0.0094	7.5E-05	0.0006	0.0006	0.0007	28.152
3	2024	Parking Lot	Soil Erosion/Sediment Control	Pumps	ther Construction Equipment3	Diesel	11	0.43	67.2	2.47	4.18	0.0022	0.24	0.23	0.84	593.76	0.0009	0.0015	7.6E-07	8E-05	8E-05	0.0003	0.208
3	2024	Parking Lot	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	ractors/Loaders/Backhoes10	Diesel	100	0.21	67.2	3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0.0048	0.0048	3.3E-06	0.0007	0.0006	0.0008	1.0803
3	2024	Parking Lot	Street Lighting	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	44.26667	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0009	0.0031	2.5E-05	0.0002	0.0002	0.0002	9.2724
3	2024	Parking Lot	Street Lighting	Loader	ractors/Loaders/Backhoes17	Diesel	175	0.59	44.26667	1.25	2.41	0.0019	0.27	0.26	0.40	625.37	0.0063	0.0121	9.8E-06	0.0013	0.0013	0.002	3.1507
3	2024	Parking Lot	Street Lighting	Other General Equipment	ther Construction Equipment1	Diesel	175	0.43	44.26667	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0008	0.0023	5.4E-06	0.0002	0.0002	0.0002	1.9706
3	2024	Parking Lot	Street Lighting	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	44.26667	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0009	0.0031	2.5E-05	0.0002	0.0002	0.0002	9.2724
3	2024	Parking Lot	Street Lighting	Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	44.26667	5.44	5.26	0.0024	0.78	0.75	1.02	693.01	0.0042	0.004	1.8E-06	0.0006	0.0006	0.0008	0.5326
3	2024	Parking Lot	Street Lighting	Tractors/Loader/Backhoe	ractors/Loaders/Backhoes10	Diesel	100	0.21	44.26

3	2024	Parking Lot	Tree Planting	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	0	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0	0	0	0	0	0	0	0	0	0	0
3	2024	Parking Lot	Tree Planting	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes10	Diesel	100	0.21	0	3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0	0	0	0	0	0	0	0	0	0	0
4	2024	Apron (GA)	Asphalt Placement	Asphalt Paver	Pavers175	Diesel	175	0.59	64.935	0.18	0.46	0.0015	0.05	0.04	0.03	536.75	0.0013	0.0034	1.1E-05	0.0003	0.0003	0.0002	0.0002	3.9669
4	2024	Apron (GA)	Asphalt Placement	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	233.8683	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0047	0.0164	0.00013	0.0011	0.001	0.0012	0.0012	48.988
4	2024	Apron (GA)	Asphalt Placement	Other General Equipment	Other Construction Equipment1	Diesel	175	0.43	129.87	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0025	0.0068	1.6E-05	0.0006	0.0005	0.0005	0.0005	5.7815
4	2024	Apron (GA)	Asphalt Placement	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	64.935	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0013	0.0045	3.6E-05	0.0003	0.0003	0.0003	0.0003	13.602
4	2024	Apron (GA)	Asphalt Placement	Roller	Rollers100	Diesel	100	0.59	64.935	0.47	1.21	0.0016	0.07	0.07	0.04	596.05	0.002	0.0051	6.9E-06	0.0003	0.0003	0.0002	0.0002	2.5172
4	2024	Apron (GA)	Asphalt Placement	Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	64.935	5.44	5.26	0.0024	0.78	0.75	1.02	693.01	0.0061	0.0059	2.7E-06	0.0009	0.0008	0.0012	0.0012	0.7813
4	2024	Apron (GA)	Asphalt Placement	Surfacing Equipment (Grooving)	Other Construction Equipment2	Diesel	25	0.59	83.1168	1.49	3.76	0.0022	0.17	0.17	0.35	595.15	0.002	0.0051	3E-06	0.0002	0.0002	0.0005	0.0003	0.8043
4	2024	Apron (GA)	Clearing and Grubbing	Chain Saw	Other Construction Equipment1	Diesel	11	0.7	136.8	2.47	4.18	0.0022	0.24	0.23	0.84	593.76	0.0029	0.0049	2.5E-06	0.0003	0.0003	0.001	0.0004	1.6894
4	2024	Apron (GA)	Clearing and Grubbing	Chipper/Stump Grinder	Other Construction Equipment1	Diesel	100	0.43	136.8	0.55	1.35	0.0016	0.08	0.08	0.06	595.98	0.0036	0.0087	1.1E-05	0.0005	0.0005	0.0004	0.0004	3.8645
4	2024	Apron (GA)	Clearing and Grubbing	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	182.4	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0036	0.0128	0.0001	0.0008	0.0008	0.0009	0.0009	38.207
4	2024	Apron (GA)	Concrete Placement	Air Compressor	Other Construction Equipment1	Diesel	100	0.43	173.16	0.55	1.35	0.0016	0.08	0.08	0.06	595.98	0.0045	0.011	1.4E-05	0.0006	0.0006	0.0005	0.0004	4.8916
4	2024	Apron (GA)	Concrete Placement	Concrete Saws	Other Construction Equipment4	Diesel	40	0.59	173.16	0.31	2.56	0.0016	0.03	0.03	0.10	595.87	0.0014	0.0115	7.1E-06	0.0001	0.0001	0.0004	0.0004	2.6842
4	2024	Apron (GA)	Concrete Placement	Concrete Truck	Off-highway Trucks600	Diesel	600	0.59	721.5	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0144	0.0505	0.0004	0.0033	0.0032	0.0037	151.13
4	2024	Apron (GA)	Concrete Placement	Other General Equipment	Other Construction Equipment1	Diesel	175	0.43	346.32	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0066	0.0183	4.3E-05	0.0015	0.0014	0.0015	0.0015	15.417
4	2024	Apron (GA)	Concrete Placement	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	519.48	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0103	0.0364	0.00029	0.0024	0.0023	0.0027	108.81
4	2024	Apron (GA)	Concrete Placement	Rubber Tired Loader	Tractors/Loaders/Backhoes17	Diesel	175	0.59	173.16	1.25	2.41	0.0019	0.27	0.26	0.40	625.37	0.0246	0.0474	3.8E-05	0.0053	0.0051	0.008	0.0126	12.325
4	2024	Apron (GA)	Concrete Placement	Slip Form Paver	Pavers175	Diesel	175	0.59	173.16	0.18	0.46	0.0015	0.05	0.04	0.03	536.75	0.0035	0.009	2.9E-05	0.0009	0.0009	0.0005	0.0005	10.578
4	2024	Apron (GA)	Concrete Placement	Surfacing Equipment (Grooving)	Other Construction Equipment2	Diesel	25	0.59	173.16	1.49	3.76	0.0022	0.17	0.17	0.35	595.15	0.0042	0.0106	6.2E-06	0.0005	0.0005	0.001	0.0007	1.6756
4	2024	Apron (GA)	Drainage - 24 inch SICPP	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	75.2	0.12	0.35	0.0014	0.03	0.03	0.02	536.78	0.0011	0.003	1.2E-05	0.0003	0.0003	0.0002	0.0002	4.5942
4	2024	Apron (GA)	Drainage - 24 inch SICPP	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	75.2	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0015	0.0053	4.2E-05	0.0003	0.0003	0.0004	0.0004	15.752
4	2024	Apron (GA)	Drainage - 24 inch SICPP	Excavator	Excavators175	Diesel	175	0.59	75.2	0.08	0.27	0.0014	0.02	0.02	0.01	536.79	0.0007	0.0023	1.2E-05	0.0002	0.0002	0.0001	0.0001	4.5943
4	2024	Apron (GA)	Drainage - 24 inch SICPP	Loader	Tractors/Loaders/Backhoes17	Diesel	175	0.59	75.2	1.25	2.41	0.0019	0.27	0.26	0.40	625.37	0.0107	0.0206	1.7E-05	0.0023	0.0022	0.0035	0.0025	5.3525
4	2024	Apron (GA)	Drainage - 24 inch SICPP	Other General Equipment	Other Construction Equipment1	Diesel	175	0.43	75.2	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0014	0.004	9.3E-06	0.0003	0.0003	0.0003	0.0003	3.3477
4	2024	Apron (GA)	Drainage - 24 inch SICPP	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	75.2	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0015	0.0053	4.2E-05	0.0003	0.0003	0.0004	0.0004	15.752
4	2024	Apron (GA)	Drainage - 24 inch SICPP	Roller	Rollers100	Diesel	100	0.59	75.2	0.47	1.21	0.0016	0.07	0.07	0.04	596.05	0.0023	0.0059	8E-06	0.0004	0.0003	0.0002	0.0002	2.9152
4	2024	Apron (GA)	Drainage - 6 inch Perforated Underdrain	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	41.77778	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0008	0.0029	2.3E-05	0.0002	0.0002	0.0002	0.0002	8.7511
4	2024	Apron (GA)	Drainage - 6 inch Perforated Underdrain	Loader	Tractors/Loaders/Backhoes17	Diesel	175	0.59	41.77778	1.25	2.41	0.0019	0.27	0.26	0.40	625.37	0.0059	0.0114	9.2E-06	0.0013	0.0012	0.0019	0.0013	2.9736
4	2024	Apron (GA)	Drainage - 6 inch Perforated Underdrain	Other General Equipment	Other Construction Equipment1	Diesel	175	0.43	41.77778	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0008	0.0022	5.1E-06	0.0002	0.0002	0.0002	0.0002	1.8598
4	2024	Apron (GA)	Drainage - 6 inch Perforated Underdrain	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	41.77778	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0008	0.0029	2.3E-05	0.0002	0.0002	0.0002	0.0002	8.7511
4	2024	Apron (GA)	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes10	Diesel	100	0.21	41.77778	3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0.003	0.003	2.1E-06	0.0004	0.0004	0.0005	0.0005	0.6716
4	2024	Apron (GA)	Dust Control	Water Truck	Off-highway Trucks600	Diesel	600	0.59	1440	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0287	0.1009	0.0008	0.0066	0.0064	0.0074	0.0074	301.63
4	2024	Apron (GA)	Excavation (Borrow)	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	288.6	0.12	0.35	0.0014	0.03	0.03	0.02	536.78	0.004	0.0116	4.7E-05	0.001	0.001	0.0006	0.0006	17.631
4	2024	Apron (GA)	Excavation (Borrow)	Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	288.6	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0057	0.0202	0.00016	0.0013	0.0013	0.0015	0.0015	60.452
4	2024	Apron (GA)	Excavation (Borrow)	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	288.6	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0057	0.0202	0.00016	0.0013	0.0013	0.0015	0.0015	60.452
4	2024	Apron (GA)	Excavation (Borrow)	Roller	Rollers100	Diesel	100	0.59	133.2	0.47	1.21	0.0016	0.07	0.07	0.04	596.05	0.0041	0.0104	1.4E-05	0.0006	0.0006	0.0003	0.0003	5.1636
4	2024	Apron (GA)	Excavation (Cut to Fill)	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	216.45	0.12	0.35	0.0014	0.03	0.03	0.02	536.78	0.003	0.0087	3.6E-05	0.0008	0.0007	0.0005	0.0005	13.224
4	2024	Apron (GA)	Excavation (Cut to Fill)	Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	577.2	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0115	0.0404	0.00032	0.0026	0.0026	0.003	0.003	120.9
4	2024	Apron (GA)	Excavation (Cut to Fill)	Excavator	Excavators175	Diesel	175	0.59	173.16	0.08	0.27	0.0014	0.02	0.02	0.01	536.79	0.0016	0.0053	2.8E-05	0.0004	0.0004	0.0003	0.0003	10.579
4	2024	Apron (GA)	Excavation (Cut to Fill)	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	173.16	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0034	0.0121	9.6E-05	0.0008	0.0008	0.0009	0.0009	36.271
4	2024	Apron (GA)	Excavation (Cut to Fill)	Roller	Rollers100	Diesel	100	0.59	173.16	0.47	1.21	0.0016	0.07	0.07	0.04	596.05	0.0053	0.0136	1.8E-05	0.0008	0.0008	0.0004	0.0004	6.7126
4	2024	Apron (GA)	Excavation (Cut to Fill)	Scraper	Scrapers600	Diesel	600	0.59	216.45	0.20	0.55	0.0015	0.03	0.03	0.03	536.74	0.0171	0.0462	0.00013	0.0028	0.0027	0.0027	0.0027	45.334
4	2024	Apron (GA)	Excavation (Topsoil Stripping)	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	81.48706	0.12	0.35	0.0014	0.03	0.03	0.02	536.78	0.0011	0.0033	1.3E-05	0.0003	0.0003	0.0002	0.0002	4.9783
4	2024	Apron (GA)	Fencing	Concrete Truck	Off-highway Trucks600	Diesel	600	0.59	26	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0005	0.0018	1.4E-05	0.0001	0.0001	0.0001	0.0001	5.4461
4	2024	Apron (GA)	Fencing	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	104	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0021	0.0073	5.8E-05	0.0005	0.0005	0.0005	0.0005	21.785
4	2024	Apron (GA)	Fencing	Other General Equipment	Other Construction Equipment1	Diesel	175	0.43	104	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.002	0.0055	1.3E-05	0.0004	0.0004	0.0004	0.0004	4.6298
4	2024	Apron (GA)	Fencing	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	104	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0021	0.0073	5.8E-05	0.0005	0.0005	0.0005	0.0005	21.785
4	2024	Apron (GA)	Fencing	Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	104	5.44	5.26	0.0024	0.78	0.75	1.02	693.01	0.0098	0.0095	4.3E-06	0.0014	0.0014	0.0018	0.0012	1.2513
4	2024	Apron (GA)	Fencing	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes10	Diesel	100	0.21	104	3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0.0075	0.0074	5.2E-06	0.001	0.001	0.0013	0.0013	1.6718
4	2024	Apron (GA)	Grading	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	54.7785	0.12	0.35	0.0014	0.03	0.03	0.02	536.78	0.0008	0.0022	9E-06	0.0002	0.0002	0.0001	0.0001	3.3466
4	2024	Apron (GA)	Grading	Grader	Graders300	Diesel	300	0.59	54.7785	0.07	0.22	0.0014	0.02	0.02	0.02	536.78	0.0007	0.0024	1.5E-05	0.0002	0.0002	0.0002	0.0002	5.737
4	2024	Apron (GA)	Grading	Roller	Rollers100	Diesel	100	0.59	54.7785	0.47	1.21	0.0016	0.07	0.07	0.04	596.05	0.0017	0.0043	5.8E-06	0.0003	0.0002	0.0001	0.0001	2.1235
4	2024	Apron (GA)	Hydroseeding	Hydroseeder	Other Construction Equipment6	Diesel	600	0.59	49.35	0.78	1.95	0.0017	0.11	0.11	0.11	536.52	0.015	0.0375	3.2E-05	0.0022	0.0021	0.0021	0.0021	10.332
4	2024	Apron (GA)	Hydroseeding	Off-Road Truck	Off-highway Trucks600	Diesel	600	0.59	49.35	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.001	0.0035	2.7E-05	0.0002	0.0002	0.0003	0.0003	10.337
4	2024	Apron (GA)	Lighting	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	33.86667	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0007	0.0024	1.9E-05	0.0002	0.0002	0.0002	0.0002	7.0939
4	2024	Apron (GA)	Lighting	Loader	Tractors/Loaders/Backhoes17	Diesel	175	0.59	33.86667	1.25	2.41	0.0019	0.27	0.26	0.40	625.37	0.0048	0.0093	7.5E-06	0.001	0.001	0.0016	0.0016	2.4105
4	2024	Apron (GA)	Lighting	Other General Equipment	Other Construction Equipment1	Diesel	175	0.43	33.86667	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0006	0.0018	4.2E-06	0.0001	0.0001	0.0001	0.0001	1.5077
4	2024	Apron (GA)	Lighting	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	33.86667	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0007	0.0024	1.9E-05	0.0002	0.0002	0.0002	0.0002	7.0939
4	2024	Apron (GA)	Lighting	Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	33.86667	5.44	5.26	0.0024	0.78	0.75	1.02	693.01	0.0032	0.0031	1.4E-06	0.0005	0.0004	0.0006	0.0004	0.4075
4	2024	Apron (GA)	Lighting	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes10	Diesel	100	0.21	33.86667	3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0.0024	0.0024	1.7E-06	0.0003	0.0003	0.0004	0.0004	0.5444
4	2024	Apron (GA)	Markings	Flatbed Truck	Off-highway Trucks600	Diesel	600	0.59	1069.714	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0213	0.0749	0.00059	0.0049	0.0047	0.0055	0.0055	224.07
4	2024	Apron (GA)	Markings	Other General Equipment	Other Construction Equipment1	Diesel	175	0.43	1069.714	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0203	0.0564	0.00013	0.0046	0.0045	0.0045	0.0045	47.621
4	2024	Apron (GA)	Markings	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	1069.714	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0213	0.0749	0.00059	0.0049	0.0047	0.0055	0.0055	224.07
4	2024	Apron (GA)	Sealing/Fuel Resistant	Distributing Tanker	Off-highway Trucks600	Diesel	600	0.59	138.528	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0028	0.0097	7.7E-05	0.0006	0.0006	0.0007	0.0007	29.017
4	2024	Apron (GA)	Sealing/Fuel Resistant	Other General Equipment	Other Construction Equipment1	Diesel	175	0.43	138.528	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0026	0.0073	1.7E-05	0.0006	0.0006	0.0006	0.0006	6.1669
4	2024	Apron (GA)	Sealing/Fuel Resistant	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	138.528	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0028	0.0097	7.7E-05	0.0006	0.0006	0.0007	0.0007	29.017
4	2024	Apron (GA)	Soil Erosion/Sediment Control	Other General Equipment	Other Construction Equipment1	Diesel	175	0.43	45.6	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0009	0.0024	5.6E-06	0.0002	0.0002	0.0002	0.0002	2.03
4	2024	Apron (GA)	Soil Erosion/Sediment Control	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	91.2	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0018	0.0064	5.1E-05	0.0004	0.0004	0.0005	0.0005	19.103
4	2024	Apron (GA)	Soil Erosion/Sediment Control	Pumps	Other Construction Equipment1	Diesel	11	0.43	45.6	2.47	4.18	0.0022	0.24	0.23	0.84	593.76	0.0006	0.001	5.2E-07	6E-05	6E-05	0.0002	0.0002	0.1412
4	2024	Apron (GA)	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes10	Diesel	100	0.21	45.6	3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0.0033	0.0032	2.3E-06	0.0004	0.0004	0.0006	0.0006	0.733
4	2024	Apron (GA)	Subbase Placement	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	109.3642	0.12	0.35	0.0014	0.03	0.03	0.02	536.78	0.0015	0.0044	1.8E-05	0.0004	0.0004	0.0002	0.0002	6.6814
4	2024	Apron (GA)	Subbase Placement	Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	769.6	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0153	0.0539	0.00043	0.0035	0.0034	0.004	0.0041	161.21
4	2024	Apron (GA)	Subbase Placement	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	109.3642	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0022	0.0077	6.1E-05	0.0005	0.0005	0.0006	0.0006	22.908
4	2024	Apron (GA)	Subbase Placement	Roller	Rollers100	Diesel	100	0.59	106.56	0.47	1.21	0.0016	0.07	0.07	0.04	596.05	0.0032	0.0084	1.1E-05	0.0005	0.0005	0.0003	0.0003	4.1308
4	2024	Apron (GA)	Topsoil Placement	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	121.7307	0.12	0.35	0.0014	0.03	0.03	0.02	536.78	0.0017	0.0049	2E-05	0.0004	0.0004	0.0003	0.0003	7.4369
4	2024	Apron (GA)	Topsoil Placement	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	121.7307	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0024	0.0085	6.8E-05	0.0006	0.0005	0.0006	0.0006	25.499
4	2024	Apron (GA)	Topsoil Placement	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	121.7307	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0024	0.0085	6.8E-05	0.0006	0.0005	0.0006	0.0006	25.499
5	2024	Access Road	Asphalt Placement	Asphalt Paver	Pavers175	Diesel	175	0.59	17.45825	0.18	0.46	0.0015	0.05	0.04	0.03	536.75	0.0004	0.0009	2.9E-06	9E-05	9E-05	5E-05	5E-05	1.0665
5	2024	Access Road	Asphalt Placement	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	62.87721	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0013	0.0044	3.5E-05	0.0003	0.0003	0.0003	0.0003	13.171
5	2024	Access Road	Asphalt Placement	Other General Equipment	Other Construction Equipment1	Diesel	175	0.43	34.9165	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0007	0.0018	4.3E-06	0.0002	0.0001	0.0001	0.0001	1.5544
5	2024	Access Road	Asphalt Placement	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	17.45825	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0003	0.0012	9.7E-06	8E-05	8E-05	9E-05	9E-05	3.6569
5	2024	Access Road	Asphalt Placement	Roller	Rollers100	Diesel	100	0.59	17.45825	0.47	1.21	0.0016	0.07	0.07	0.04	596.05	0.0005	0.0014	1.9E-06	8E-05	8E-05	4E-05	0.0002	0.6768
5	2024	Access Road	Asphalt Placement	Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	17.45825	5.44	5.26	0.0024	0.78	0.75	1.02	693.01	0.0016	0.0016	7.2E-07	0.0002	0.0002	0.0003	0.0003	0.2101
5	2024	Access Road	Asphalt Placement	Surfacing Equipment (Grooving)	Other Construction Equipment2	Diesel	25	0.59	22.34656	1.49	3.76	0.0022	0.17	0.17	0.35	595.15	0.0005	0.0014	8E-07	6E-05	6E-05	0.0001	0.0001	0.2162
5	2024	Access Road	Clearing and Grubbing	Chain Saw	Other Construction Equipment1	Diesel	11	0.7	49.2	2.47	4.18	0.0022	0.24	0.23	0.84	593.76	0.001	0.0017	9.1E-07	0.0001	1E-04	0.0003	0.0003	0.248
5	2024	Access Road	Clearing and Grubbing	Chipper/Stump Grinder	Other Construction Equipment1	Diesel	100	0.43	49.2	0.55	1.35	0.0016	0.08	0.08	0.06	595.98	0.0013	0.0031	3.8E-06	0.0002	0.0002	0.0001	0.0001	1.3899
5	2024	Access Road	Clearing and Grubbing	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	65.6	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0013	0.0046	3.6E-05	0.0003	0.0003	0.0003	0.0003	13.741
5	2024	Access Road	Concrete Placement	Air Compressor	Other Construction Equipment1	Diesel	100	0.43	46.5552	0.55	1.35	0.0016	0.08	0.08	0.06	595.98	0.0012	0.003	3.6E-06	0.0002	0.0002	0.0001	0.0001	1.3151
5	2024	Access Road	Concrete Placement	Concrete Saws	Other Construction Equipment4	Diesel	40	0.59	46.5552	0.31	2.56	0.0016	0.03	0.03	0.10	595.87	0.0004	0.0031	1.9E-06	3E-05	3E-05	0.0001	0.0001	0.7217
5	2024	Access Road	Concrete Placement	Concrete Truck	Off-highway Trucks600	Diesel	600	0.59	193.98	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0039	0.0136	0.00011	0.0009	0.0009	0.001	0.0011	40.632
5	2024	Access Road	Concrete Placement	Other General Equipment	Other Construction Equipment1	Diesel	175	0.43	93.1104	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0018	0.0049	1.1E-05	0.0004	0.0004	0.0004	0.0004	4.1451
5	2024	Access Road	Concrete Placement	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	139.6656	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0028	0.0098	7.8E-05	0.0006	0.0006	0.0007	0.0007	29.255
5	2024	Access Road	Concrete Placement	Rubber Tired Loader	Tractors/Loaders/Backhoes17	Diesel	175	0.59	46.5552	1.25	2.41	0.0019	0.27	0.26	0.40	625.37	0.0066	0.0127	1E-05	0.0014	0.0014

5	2024	Access Road	Drainage - 24 inch SICPP	Roller	Rollers100	Diesel	100	0.59	161.376	0.47	1.21	0.0016	0.07	0.07	0.04	596.05	0.0049	0.0127	1.7E-05	0.0008	0.0007	0.0004	6.2558
5	2024	Access Road	Drainage - 6 inch Perforated Underdrai	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	89.65333	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0018	0.0063	5E-05	0.0004	0.0004	0.0005	18.779
5	2024	Access Road	Drainage - 6 inch Perforated Underdrai	Loader	Tractors/Loaders/Backhoes17	Diesel	175	0.59	89.65333	1.25	2.41	0.0019	0.27	0.26	0.40	625.37	0.0127	0.0245	2E-05	0.0027	0.0026	0.0041	6.3812
5	2024	Access Road	Drainage - 6 inch Perforated Underdrai	Other General Equipment	Other Construction Equipment1	Diesel	175	0.43	89.65333	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0017	0.0047	1.1E-05	0.0004	0.0004	0.0004	3.9912
5	2024	Access Road	Drainage - 6 inch Perforated Underdrai	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	89.65333	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0018	0.0063	5E-05	0.0004	0.0004	0.0005	18.779
5	2024	Access Road	Drainage - 6 inch Perforated Underdrai	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes10	Diesel	100	0.21	89.65333	3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0.0065	0.0064	4.5E-06	0.0009	0.0008	0.0011	1.4412
5	2024	Access Road	Dust Control	Water Truck	Off-highway Trucks600	Diesel	600	0.59	1440	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0287	0.1009	0.0008	0.0066	0.0064	0.0074	301.63
5	2024	Access Road	Excavation (Borrow)	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	77.592	0.12	0.35	0.0014	0.03	0.03	0.02	536.78	0.0011	0.0031	1.3E-05	0.0003	0.0003	0.0002	4.7403
5	2024	Access Road	Excavation (Borrow)	Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	77.592	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0015	0.0054	4.3E-05	0.0004	0.0003	0.0004	16.253
5	2024	Access Road	Excavation (Borrow)	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	77.592	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0015	0.0054	4.3E-05	0.0004	0.0003	0.0004	16.253
5	2024	Access Road	Excavation (Borrow)	Roller	Rollers100	Diesel	100	0.59	35.81169	0.47	1.21	0.0016	0.07	0.07	0.04	596.05	0.0011	0.0028	3.8E-06	0.0002	0.0002	8E-05	1.3883
5	2024	Access Road	Excavation (Cut to Fill)	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	58.194	0.12	0.35	0.0014	0.03	0.03	0.02	536.78	0.0008	0.0023	9.5E-06	0.0002	0.0002	0.0001	3.5553
5	2024	Access Road	Excavation (Cut to Fill)	Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	155.184	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0031	0.0109	8.6E-05	0.0007	0.0007	0.0008	32.506
5	2024	Access Road	Excavation (Cut to Fill)	Excavator	Excavators175	Diesel	175	0.59	46.5552	0.08	0.27	0.0014	0.02	0.02	0.01	536.79	0.0004	0.0014	7.6E-06	0.0001	0.0001	7E-05	2.8443
5	2024	Access Road	Excavation (Cut to Fill)	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	46.5552	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0009	0.0033	2.6E-05	0.0002	0.0002	0.0002	9.7518
5	2024	Access Road	Excavation (Cut to Fill)	Roller	Rollers100	Diesel	100	0.59	46.5552	0.47	1.21	0.0016	0.07	0.07	0.04	596.05	0.0014	0.0037	4.9E-06	0.0002	0.0002	0.0001	1.8047
5	2024	Access Road	Excavation (Cut to Fill)	Scraper	Scrapers600	Diesel	600	0.59	58.194	0.20	0.55	0.0015	0.03	0.03	0.03	536.74	0.0046	0.0124	3.4E-05	0.0007	0.0007	0.0007	12.188
5	2024	Access Road	Excavation (Topsoil Stripping)	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	21.90839	0.12	0.35	0.0014	0.03	0.03	0.02	536.78	0.0003	0.0009	3.6E-06	8E-05	8E-05	5E-05	1.3385
5	2024	Access Road	Fencing	Concrete Truck	Off-highway Trucks600	Diesel	600	0.59	55.92222	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0011	0.0039	3.1E-05	0.0003	0.0002	0.0003	11.714
5	2024	Access Road	Fencing	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	223.6889	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0045	0.0157	0.00012	0.001	0.001	0.0012	46.855
5	2024	Access Road	Fencing	Other General Equipment	Other Construction Equipment1	Diesel	175	0.43	223.6889	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0042	0.0118	2.8E-05	0.001	0.0009	0.0009	9.9581
5	2024	Access Road	Fencing	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	223.6889	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0045	0.0157	0.00012	0.001	0.001	0.0012	46.855
5	2024	Access Road	Fencing	Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	223.6889	5.44	5.26	0.0024	0.78	0.75	1.02	693.01	0.0211	0.0204	9.3E-06	0.003	0.0029	0.004	2.6913
5	2024	Access Road	Fencing	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes10	Diesel	100	0.21	223.6889	3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0.0161	0.0159	1.1E-05	0.0022	0.0021	0.0028	3.5959
5	2024	Access Road	Grading	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	19.5921	0.12	0.35	0.0014	0.03	0.03	0.02	536.78	0.0003	0.0008	3.2E-06	7E-05	7E-05	4E-05	1.1969
5	2024	Access Road	Grading	Grader	Graders300	Diesel	300	0.59	19.5921	0.07	0.22	0.0014	0.02	0.02	0.02	536.78	0.0003	0.0009	5.5E-06	6E-05	6E-05	6E-05	2.0519
5	2024	Access Road	Grading	Roller	Rollers100	Diesel	100	0.59	19.5921	0.47	1.21	0.0016	0.07	0.07	0.04	596.05	0.0006	0.0015	2.1E-06	9E-05	9E-05	5E-05	0.7595
5	2024	Access Road	Hydroseeding	Hydroseeder	Other Construction Equipment6	Diesel	600	0.59	17.6505	0.78	1.95	0.0017	0.11	0.11	0.11	536.52	0.0054	0.0134	1.1E-05	0.0008	0.0007	0.0007	3.6953
5	2024	Access Road	Hydroseeding	Off-Road Truck	Off-highway Trucks600	Diesel	600	0.59	17.6505	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0004	0.0012	9.8E-06	8E-05	8E-05	9E-05	3.6972
5	2024	Access Road	Markings	Flatbed Truck	Off-highway Trucks600	Diesel	600	0.59	287.6	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0057	0.0201	0.00016	0.0013	0.0013	0.0015	60.243
5	2024	Access Road	Markings	Other General Equipment	Other Construction Equipment1	Diesel	175	0.43	287.6	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0055	0.0152	3.5E-05	0.0012	0.0012	0.0012	12.803
5	2024	Access Road	Markings	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	287.6	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0057	0.0201	0.00016	0.0013	0.0013	0.0015	60.243
5	2024	Access Road	Sidewalks	Concrete Truck	Off-highway Trucks600	Diesel	600	0.59	402.64	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.008	0.0282	0.00022	0.0018	0.0018	0.0021	84.34
5	2024	Access Road	Sidewalks	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	402.64	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.008	0.0282	0.00022	0.0018	0.0018	0.0021	84.34
5	2024	Access Road	Sidewalks	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	402.64	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.008	0.0282	0.00022	0.0018	0.0018	0.0021	84.34
5	2024	Access Road	Sidewalks	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes10	Diesel	100	0.21	402.64	3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0.029	0.0286	2E-05	0.0039	0.0038	0.005	6.4726
5	2024	Access Road	Sidewalks	Vibratory Compactor	Plate Compactors6	Diesel	6	0.43	402.64	2.58	4.24	0.0022	0.26	0.25	0.83	587.98	0.003	0.0049	2.5E-06	0.0003	0.0003	0.001	0.6733
5	2024	Access Road	Soil Erosion/Sediment Control	Other General Equipment	Other Construction Equipment1	Diesel	175	0.43	16.4	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0003	0.0009	2E-06	7E-05	7E-05	7E-05	0.7301
5	2024	Access Road	Soil Erosion/Sediment Control	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	32.8	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0007	0.0023	1.8E-05	0.0001	0.0001	0.0002	6.8705
5	2024	Access Road	Soil Erosion/Sediment Control	Pumps	Other Construction Equipment1	Diesel	11	0.43	16.4	2.47	4.18	0.0022	0.24	0.23	0.84	593.76	0.0002	0.0004	1.9E-07	2E-05	2E-05	7E-05	0.0508
5	2024	Access Road	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes10	Diesel	100	0.21	16.4	3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0.0012	0.0012	8.2E-07	0.0002	0.0002	0.0002	0.2636
5	2024	Access Road	Street Lighting	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	134.1333	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0027	0.0094	7.5E-05	0.0006	0.0006	0.0007	28.096
5	2024	Access Road	Street Lighting	Loader	Tractors/Loaders/Backhoes17	Diesel	175	0.59	134.1333	1.25	2.41	0.0019	0.27	0.26	0.40	625.37	0.0191	0.0367	3E-05	0.0041	0.004	0.0062	9.5471
5	2024	Access Road	Street Lighting	Other General Equipment	Other Construction Equipment1	Diesel	175	0.43	134.1333	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0.0025	0.0071	1.7E-05	0.0006	0.0006	0.0006	5.9713
5	2024	Access Road	Street Lighting	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	134.1333	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0027	0.0094	7.5E-05	0.0006	0.0006	0.0007	28.096
5	2024	Access Road	Street Lighting	Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	134.1333	5.44	5.26	0.0024	0.78	0.75	1.02	693.01	0.0127	0.0122	5.6E-06	0.0018	0.0018	0.0024	1.6138
5	2024	Access Road	Street Lighting	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes10	Diesel	100	0.21	134.1333	3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0.0097	0.0095	6.7E-06	0.0013	0.0013	0.0017	2.1562
5	2024	Access Road	Subbase Placement	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	29.40337	0.12	0.35	0.0014	0.03	0.03	0.02	536.78	0.0004	0.0012	4.8E-06	0.0001	0.0001	6E-05	1.7963
5	2024	Access Road	Subbase Placement	Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	206.9111	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0041	0.0145	0.00012	0.0009	0.0009	0.0011	43.341
5	2024	Access Road	Subbase Placement	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	29.40337	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0006	0.0021	1.6E-05	0.0001	0.0001	0.0002	6.159
5	2024	Access Road	Subbase Placement	Roller	Rollers100	Diesel	100	0.59	28.64923	0.47	1.21	0.0016	0.07	0.07	0.04	596.05	0.0009	0.0022	3E-06	0.0001	0.0001	7E-05	1.1106
5	2024	Access Road	Topsoil Placement	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	43.53733	0.12	0.35	0.0014	0.03	0.03	0.02	536.78	0.0006	0.0018	7.1E-06	0.0002	0.0001	9E-05	2.6598
5	2024	Access Road	Topsoil Placement	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	43.53733	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0009	0.0031	2.4E-05	0.0002	0.0002	0.0002	9.1196
5	2024	Access Road	Topsoil Placement	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	43.53733	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0009	0.0031	2.4E-05	0.0002	0.0002	0.0002	9.1196
5	2024	Access Road	Tree Planting	Flatbed Truck	Off-highway Trucks600	Diesel	600	0.59	0	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0	0	0	0	0	0	0
5	2024	Access Road	Tree Planting	Other General Equipment	Other Construction Equipment1	Diesel	175	0.43	0	0.23	0.64	0.0015	0.05	0.05	0.05	536.68	0	0	0	0	0	0	0
5	2024	Access Road	Tree Planting	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	0	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0	0	0	0	0	0	0
5	2024	Access Road	Tree Planting	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes10	Diesel	100	0.21	0	3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0	0	0	0	0	0	0
6	2024	g Structure - 160000 sqft- G+	Asphalt Pavement-Ground Floor	Asphalt Paver	Pavers175	Diesel	175	0.59	80	0.18	0.46	0.0015	0.05	0.04	0.03	536.75	0.0016	0.0042	1.3E-05	0.0004	0.0004	0.0002	4.8872
6	2024	g Structure - 160000 sqft- G+	Asphalt Pavement-Ground Floor	ont Loader for Subgrade Materia	Tractors/Loaders/Backhoes10	Diesel	100	0.21	80	3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0.0058	0.0057	4E-06	0.0008	0.0008	0.001	1.286
6	2024	g Structure - 160000 sqft- G+	Asphalt Pavement-Ground Floor	Ten Wheelers- Material Delivery	Off-highway Trucks600	Diesel	600	0.59	80	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0016	0.0056	4.4E-05	0.0004	0.0004	0.0004	16.757
6	2024	g Structure - 160000 sqft- G+	Concrete Foundations	Backhoe	Tractors/Loaders/Backhoes10	Diesel	100	0.21	320	3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0.0231	0.0227	1.6E-05	0.0031	0.003	0.004	5.1441
6	2024	g Structure - 160000 sqft- G+	Concrete Foundations	Concrete Pump	Other Construction Equipment1	Diesel	11	0.43	240	2.47	4.18	0.0022	0.24	0.23	0.84	593.76	0.0031	0.0052	2.7E-06	0.0003	0.0003	0.001	0.743
6	2024	g Structure - 160000 sqft- G+	Concrete Foundations	Concrete Ready Mix Trucks	Off-highway Trucks600	Diesel	600	0.59	240	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0048	0.0168	0.00013	0.0011	0.0011	0.0012	50.272
6	2024	g Structure - 160000 sqft- G+	Concrete Foundations	Excavator	Excavators175	Diesel	175	0.59	160	0.08	0.27	0.0014	0.02	0.02	0.01	536.79	0.0015	0.0049	2.6E-05	0.0004	0.0004	0.0002	9.7752
6	2024	g Structure - 160000 sqft- G+	Concrete Foundations	Fork Truck	Other Construction Equipment1	Diesel	100	0.59	320	0.55	1.35	0.0016	0.08	0.08	0.06	595.98	0.0114	0.028	3.4E-05	0.0016	0.0016	0.0013	12.403
6	2024	g Structure - 160000 sqft- G+	Concrete Foundations	Front Loader	Tractors/Loaders/Backhoes10	Diesel	100	0.21	160	3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0.0115	0.0114	8E-06	0.0016	0.0015	0.002	2.572
6	2024	g Structure - 160000 sqft- G+	Concrete Foundations	Tool Truck	Off-highway Trucks600	Diesel	600	0.59	80	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0016	0.0056	4.4E-05	0.0004	0.0004	0.0004	16.757
6	2024	g Structure - 160000 sqft- G+	Concrete Foundations	Tractor Trailer- Material Delivery	Off-highway Trucks600	Diesel	600	0.59	160	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0032	0.0112	8.9E-05	0.0007	0.0007	0.0008	33.515
6	2024	g Structure - 160000 sqft- G+	Concrete Foundations	Tractor Trailer- Stone Delivery	Off-highway Trucks600	Diesel	600	0.59	160	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0032	0.0112	8.9E-05	0.0007	0.0007	0.0008	33.515
6	2024	g Structure - 160000 sqft- G+	Concrete Foundations	Trencher for U/G Piping	Other Construction Equipment1	Diesel	75	0.59	160	0.59	2.78	0.0016	0.07	0.07	0.10	595.86	0.0046	0.0217	1.3E-05	0.0005	0.0005	0.0008	4.6504
6	2024	g Structure - 160000 sqft- G+	Construction Mob & Layout	Survey Crew Trucks	Off-highway Trucks600	Diesel	600	0.59	10	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0002	0.0007	5.6E-06	5E-05	4E-05	5E-05	2.0947
6	2024	g Structure - 160000 sqft- G+	Construction Mob & Layout	Tractor Trailers Temp Fac.	Off-highway Trucks600	Diesel	600	0.59	4	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	8E-05	0.0003	2.2E-06	2E-05	2E-05	2E-05	0.8379
6	2024	g Structure - 160000 sqft- G+	Horizontal Deck Pours	40 Ton Rough Terrain Crane	Cranes300	Diesel	300	0.43	64	0.09	0.38	0.0014	0.02	0.02	0.03	530.96	0.0008	0.0034	1.3E-05	0.0002	0.0002	0.0003	4.8321
6	2024	g Structure - 160000 sqft- G+	Horizontal Deck Pours	Concrete Pump	Other Construction Equipment1	Diesel	11	0.43	90	2.47	4.18	0.0022	0.24	0.23	0.84	593.76	0.0012	0.002	1E-06	0.0001	0.0001	0.0004	0.2786
6	2024	g Structure - 160000 sqft- G+	Horizontal Deck Pours	Concrete Truck	Off-highway Trucks600	Diesel	600	0.59	60	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0012	0.0042	3.3E-05	0.0003	0.0003	0.0003	12.568
6	2024	g Structure - 160000 sqft- G+	Horizontal Deck Pours	Fork Truck	Other Construction Equipment1	Diesel	100	0.59	64	0.55	1.35	0.0016	0.08	0.08	0.06	595.98	0.0023	0.0056	6.9E-06	0.0003	0.0003	0.0003	2.4807
6	2024	g Structure - 160000 sqft- G+	Horizontal Deck Pours	Tool Truck	Off-highway Trucks600	Diesel	600	0.59	60	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0012	0.0042	3.3E-05	0.0003	0.0003	0.0003	12.568
6	2024	g Structure - 160000 sqft- G+	Horizontal Deck Pours	Tractor Trailer- Material Delivery	Off-highway Trucks600	Diesel	600	0.59	20	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0004	0.0014	1.1E-05	9E-05	9E-05	0.0001	4.1893
6	2024	g Structure - 160000 sqft- G+	Horizontal Deck Pours	Trowel Machines (2) machines	Other Construction Equipment6	Diesel	600	0.59	32	0.78	1.95	0.0017	0.11	0.11	0.11	536.52	0.0097	0.0243	2.1E-05	0.0014	0.0014	0.0013	6.6996
6	2024	g Structure - 160000 sqft- G+	Lights and Power	Forklift	Rough Terrain Forklifts100	Diesel	100	0.59	240	0.56	1.28	0.0016	0.08	0.08	0.05	596.01	0.0087	0.02	2.6E-05	0.0012	0.0012	0.0008	9.303
6	2024	g Structure - 160000 sqft- G+	Lights and Power	High Lift	Rough Terrain Forklifts100	Diesel	100	0.59	240	0.56	1.28	0.0016	0.08	0.08	0.05	596.01	0.0087	0.02	2.6E-05	0.0012	0.0012	0.0008	9.303
6	2024	g Structure - 160000 sqft- G+	Lights and Power	Tool Truck	Off-highway Trucks600	Diesel	600	0.59	240	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0048	0.0168	0.00013	0.0011	0.0011	0.0012	50.272
6	2024	g Structure - 160000 sqft- G+	Lights and Power	Trencher	Other Construction Equipment1	Diesel	75	0.59	240	0.59	2.78	0.0016	0.07	0.07	0.10	595.86	0.0069	0.0326	1.9E-05	0.0008	0.0008	0.0011	6.9756
6	2024	g Structure - 160000 sqft- G+	Parapet Wall Construction	40 Ton Rough Terrain Crane	Cranes300	Diesel	300	0.43	60	0.09	0.38	0.0014	0.02	0.02	0.03	530.96	0.0008	0.0032	1.2E-05	0.0002	0.0002	0.0003	4.5301
6	2024	g Structure - 160000 sqft- G+	Parapet Wall Construction	Fork Truck	Other Construction Equipment1	Diesel	100	0.59	120	0.55	1.35	0.0016	0.08	0.08	0.06	595.98	0.0043	0.0105	1.3E-05	0.0006	0.0006	0.0005	4.6512
6	2024	g Structure - 160000 sqft- G+	Parapet Wall Construction	Grout Mixer	Other Construction Equipment6	Diesel	600	0.59	120	0.78	1.95	0.0017	0.11	0.11	0.11	536.52	0.0366	0.0912	7.8E-05	0.0052	0.0051	0.005	25.123
6	2024	g Structure - 160000 sqft- G+	Parapet Wall Construction	Man Lift	Rough Terrain Forklifts75	Diesel	75	0.21	120	0.49	2.71	0.0016	0.05	0.05	0.08	595.90	0.001	0.0056	3.4E-06	0.0001	0.0001	0.0002	1.2415
6	2024	g Structure - 160000 sqft- G+	Parapet Wall Construction	Tool Truck	Off-highway Trucks600	Diesel	600	0.59	80	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0016	0.0056	4.4E-05	0.0004	0.0004	0.0004	16.757
6	2024	g Structure - 160000 sqft- G+	Parapet Wall Construction	Tractor Trailer- Material Delivery	Off-highway Trucks600	Diesel	600	0.59	120	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0024	0.0084	6.7E-05	0.0005	0.0005	0.0006	25.136
6	2024	g Structure - 160000 sqft- G+	Security & Safety Systems	High Lift	Rough Terrain Forklifts100	Diesel	100	0.59	160	0.56	1.28	0.0016	0.08	0.08	0.05	596.01	0.0058	0.0133	1.7E-05	0.0008	0.0008	0.0005	6.202
6	2024	g Structure - 160000 sqft- G+	Security & Safety Systems	Tool Truck	Off-highway Trucks600	Diesel	600	0.59	160	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0032	0.0112	8.9E-05	0.0007	0.0007	0.0008	33.515
6	2024	g Structure - 160000 sqft- G+	Site Prep/Landscaping	Front Loader	Tractors/Loaders/Backhoes10	Diesel	100	0.21	80	3.11	3.06	0.0022	0.42	0.41	0.54	694.44	0.0058	0.0057	4E-06	0.0008	0.0008	0.001	1.286
6	2024	g Structure - 160000 sqft- G+	Site Prep/Landscaping	Tractor Trailer- Topsoil & Seed	Off-highway Trucks600	Diesel	600	0.59	80	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0016	0.0056	4.4E-05	0.0004	0.0004	0.0004	16.757
6	2024	g Structure - 160000 sqft- G+	Site Prep/Landscaping	railer with Boom Hoist- Curbs De	Off-highway Trucks600	Diesel	600	0.59	80	0.05	0.18	0.0014	0.01	0.01	0.01	536.79	0.0016	0.0056	4.4E-05	0.0004	0.0004	0.0004	16.757
6	2024	g Structure - 160000 sqft- G+	Structural Steel Erection & Metal Deck	90 Ton Crane	Cranes300	Diesel	300	0.43	160	0.09	0.38	0.0014	0.02	0.02	0.03	530.96	0.0021	0.0085	3.3E-05	0.0005	0.0004	0.0007	12.08
6	2024	g Structure - 160000 sqft- G+	Structural Steel Erection & Metal Deck	Concrete Pump	Other Construction Equipment1	Diesel	11	0.43	40	2.47	4.18	0.0022	0

Scenario ID	Year	Project	Equipment	Equipment Category	On-road Activity	Fuel	Lookup	Roadway Type	Round Trip Distance (miles)	Distance for fugitive PM	Number of Vehicles	VMT	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O	CO (TPY)	Nox (TPY)	SO2 (TPY)	PM10 (TPY)	PM2.5 (TPY)	VOC (TPY)	CO2 (TPY)	CH4 (TPY)	N2O (TPY)
1	2024	Taxiways	Asphalt 18 Wheeler	Combination Short-haul Truck	Material Delivery	Diesel	dUrban Unrestricted AccessCombination Short-haul	Unrestricted	40	5	1	247	2.2466	4.2868	0.0056	0.0741	0.0682	0.1558	1673.66	0.0206	0.0028	0.0006	0.0012	1.5E-06	2E-05	2E-05	4.2E-05	0	5.6E-06	7.6E-07
1	2024	Taxiways	Cement Mixer	Single Unit Short-haul Truck	Material Delivery	Diesel	elUrban Unrestricted AccessSingle Unit Short-haul T	Unrestricted	40	5	3	3931	1.3025	2.0166	0.0035	0.0407	0.0374	0.1068	1035.62	0.0164	0.0033	0.0056	0.0087	1.5E-05	0.00018	0.0002	0.00046	4	7.1E-05	1.4E-05
1	2024	Taxiways	Dump Truck - Asphalt	Single Unit Short-haul Truck	Material Delivery	Diesel	elUrban Unrestricted AccessSingle Unit Short-haul T	Unrestricted	40	5	1	349	1.3025	2.0166	0.0035	0.0407	0.0374	0.1068	1035.62	0.0164	0.0033	0.0005	0.0008	1.3E-06	1.6E-05	1E-05	4.1E-05	0	6.3E-06	1.3E-06
1	2024	Taxiways	Dump Truck Subbase Material	Single Unit Short-haul Truck	Material Delivery	Diesel	elUrban Unrestricted AccessSingle Unit Short-haul T	Unrestricted	40	5	2	2097	1.3025	2.0166	0.0035	0.0407	0.0374	0.1068	1035.62	0.0164	0.0033	0.003	0.0047	8E-06	9.4E-05	9E-05	0.00025	2	3.8E-05	7.6E-06
1	2024	Taxiways	Passenger Car	Passenger Car	Employee Commute	Gasoline	GasolineUrban Unrestricted AccessPassenger Car	Unrestricted	30	--	65	42900	2.3591	0.0752	0.0021	0.0021	0.0018	0.061	311.932	0.0079	0.0019	0.1116	0.0036	9.8E-05	9.7E-05	9E-05	0.00288	15	0.00038	8.8E-05
2	2024	uilding - 100000 sqft- 10 stori	Cement Mixer	Single Unit Short-haul Truck	Material Delivery	Diesel	elUrban Unrestricted AccessSingle Unit Short-haul T	Unrestricted	40	5	2	23125	1.3025	2.0166	0.0035	0.0407	0.0374	0.1068	1035.62	0.0164	0.0033	0.0332	0.0514	8.8E-05	0.00104	0.001	0.00272	26	0.00042	8.4E-05
2	2024	uilding - 100000 sqft- 10 stori	Dump Truck Subbase Material	Single Unit Short-haul Truck	Material Delivery	Diesel	elUrban Unrestricted AccessSingle Unit Short-haul T	Unrestricted	40	5	1	12333	1.3025	2.0166	0.0035	0.0407	0.0374	0.1068	1035.62	0.0164	0.0033	0.0177	0.0274	4.7E-05	0.00055	0.0005	0.00145	14	0.00022	4.5E-05
2	2024	uilding - 100000 sqft- 10 stori	Passenger Car	Passenger Car	Employee Commute	Gasoline	GasolineUrban Unrestricted AccessPassenger Car	Unrestricted	30	--	334.4	2588256	2.3591	0.0752	0.0021	0.0021	0.0018	0.061	311.932	0.0079	0.0019	6.7308	0.2145	0.00591	0.00587	0.0052	0.17403	890	0.02264	0.00528
2	2024	uilding - 100000 sqft- 10 stori	Tractor Trailer	Combination Short-haul Truck	Material Delivery	Diesel	dUrban Unrestricted AccessCombination Short-haul	Unrestricted	40	5	1	2400	2.2466	4.2868	0.0056	0.0741	0.0682	0.1558	1673.66	0.0206	0.0028	0.0059	0.0113	1.5E-05	0.0002	0.0002	0.00041	4	5.4E-05	7.4E-06
3	2024	Parking Lot	Asphalt 18 Wheeler	Combination Short-haul Truck	Material Delivery	Diesel	dUrban Unrestricted AccessCombination Short-haul	Unrestricted	40	5	1	9605	2.2466	4.2868	0.0056	0.0741	0.0682	0.1558	1673.66	0.0206	0.0028	0.0238	0.0454	5.9E-05	0.00078	0.0007	0.00165	18	0.00022	3E-05
3	2024	Parking Lot	Cement Mixer	Single Unit Short-haul Truck	Material Delivery	Diesel	elUrban Unrestricted AccessSingle Unit Short-haul T	Unrestricted	40	5	15	153088	1.3025	2.0166	0.0035	0.0407	0.0374	0.1068	1035.62	0.0164	0.0033	0.2198	0.3403	0.00059	0.00686	0.0063	0.01803	175	0.00276	0.00055
3	2024	Parking Lot	Dump Truck - Asphalt	Single Unit Short-haul Truck	Material Delivery	Diesel	elUrban Unrestricted AccessSingle Unit Short-haul T	Unrestricted	40	5	2	13608	1.3025	2.0166	0.0035	0.0407	0.0374	0.1068	1035.62	0.0164	0.0033	0.0195	0.0303	5.2E-05	0.00061	0.0006	0.0016	16	0.00025	4.9E-05
3	2024	Parking Lot	Dump Truck Subbase Material	Single Unit Short-haul Truck	Material Delivery	Diesel	elUrban Unrestricted AccessSingle Unit Short-haul T	Unrestricted	40	5	8	81647	1.3025	2.0166	0.0035	0.0407	0.0374	0.1068	1035.62	0.0164	0.0033	0.1172	0.1815	0.00031	0.00366	0.0034	0.00961	93	0.00147	0.0003
3	2024	Parking Lot	Passenger Car	Passenger Car	Employee Commute	Gasoline	GasolineUrban Unrestricted AccessPassenger Car	Unrestricted	30	--	88	340560	2.3591	0.0752	0.0021	0.0021	0.0018	0.061	311.932	0.0079	0.0019	0.8856	0.0282	0.00078	0.00077	0.0007	0.0229	117	0.00298	0.00069
4	2024	Apron (GA)	Asphalt 18 Wheeler	Combination Short-haul Truck	Material Delivery	Diesel	dUrban Unrestricted AccessCombination Short-haul	Unrestricted	40	5	1	6791	2.2466	4.2868	0.0056	0.0741	0.0682	0.1558	1673.66	0.0206	0.0028	0.0168	0.0321	4.2E-05	0.00055	0.0005	0.00117	13	0.00015	2.1E-05
4	2024	Apron (GA)	Cement Mixer	Single Unit Short-haul Truck	Material Delivery	Diesel	elUrban Unrestricted AccessSingle Unit Short-haul T	Unrestricted	40	5	11	108225	1.3025	2.0166	0.0035	0.0407	0.0374	0.1068	1035.62	0.0164	0.0033	0.1554	0.2406	0.00041	0.00485	0.0045	0.01274	124	0.00195	0.00039
4	2024	Apron (GA)	Dump Truck - Asphalt	Single Unit Short-haul Truck	Material Delivery	Diesel	elUrban Unrestricted AccessSingle Unit Short-haul T	Unrestricted	40	5	1	9620	1.3025	2.0166	0.0035	0.0407	0.0374	0.1068	1035.62	0.0164	0.0033	0.0138	0.0214	3.7E-05	0.00043	0.0004	0.00113	11	0.00017	3.5E-05
4	2024	Apron (GA)	Dump Truck Subbase Material	Single Unit Short-haul Truck	Material Delivery	Diesel	elUrban Unrestricted AccessSingle Unit Short-haul T	Unrestricted	40	5	6	57720	1.3025	2.0166	0.0035	0.0407	0.0374	0.1068	1035.62	0.0164	0.0033	0.0829	0.1283	0.00022	0.00259	0.0024	0.0068	66	0.00104	0.00021
4	2024	Apron (GA)	Passenger Car	Passenger Car	Employee Commute	Gasoline	GasolineUrban Unrestricted AccessPassenger Car	Unrestricted	30	--	104.5	404415	2.3591	0.0752	0.0021	0.0021	0.0018	0.061	311.932	0.0079	0.0019	1.0517	0.0335	0.00092	0.00092	0.0008	0.02719	139	0.00354	0.00083
5	2024	Access Road	Asphalt 18 Wheeler	Combination Short-haul Truck	Material Delivery	Diesel	dUrban Unrestricted AccessCombination Short-haul	Unrestricted	40	5	1	1826	2.2466	4.2868	0.0056	0.0741	0.0682	0.1558	1673.66	0.0206	0.0028	0.0045	0.0086	1.1E-05	0.00015	0.0001	0.00031	3	4.1E-05	5.6E-06
5	2024	Access Road	Cement Mixer	Single Unit Short-haul Truck	Material Delivery	Diesel	elUrban Unrestricted AccessSingle Unit Short-haul T	Unrestricted	40	5	3	29097	1.3025	2.0166	0.0035	0.0407	0.0374	0.1068	1035.62	0.0164	0.0033	0.0418	0.0647	0.00011	0.0013	0.0012	0.00343	33	0.00052	0.00011
5	2024	Access Road	Dump Truck - Asphalt	Single Unit Short-haul Truck	Material Delivery	Diesel	elUrban Unrestricted AccessSingle Unit Short-haul T	Unrestricted	40	5	1	2586	1.3025	2.0166	0.0035	0.0407	0.0374	0.1068	1035.62	0.0164	0.0033	0.0037	0.0057	9.9E-06	0.00012	0.0001	0.0003	3	4.7E-05	9.4E-06
5	2024	Access Road	Dump Truck Subbase Material	Single Unit Short-haul Truck	Material Delivery	Diesel	elUrban Unrestricted AccessSingle Unit Short-haul T	Unrestricted	40	5	2	15518	1.3025	2.0166	0.0035	0.0407	0.0374	0.1068	1035.62	0.0164	0.0033	0.0223	0.0345	5.9E-05	0.0007	0.0006	0.00183	18	0.00028	5.6E-05
5	2024	Access Road	Passenger Car	Passenger Car	Employee Commute	Gasoline	GasolineUrban Unrestricted AccessPassenger Car	Unrestricted	30	--	86	332820	2.3591	0.0752	0.0021	0.0021	0.0018	0.061	311.932	0.0079	0.0019	0.8655	0.0276	0.00076	0.00076	0.0007	0.02238	114	0.00291	0.00068
6	2024	g Structure - 160000 sqft- G+	Cement Mixer	Single Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	Unrestricted	40	5	3	37000	1.3025	2.0166	0.0035	0.0407	0.0374	0.1068	1035.62	0.0164	0.0033	0.0531	0.0822	0.00014	0.00166	0.0015	0.00436	42	0.00067	0.00013
6	2024	g Structure - 160000 sqft- G+	Dump Truck Subbase Material	Single Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted Access	Unrestricted	40	5	2	19733	1.3025	2.0166	0.0035	0.0407	0.0374	0.1068	1035.62	0.0164	0.0033	0.0283	0.0439	7.5E-05	0.00088	0.0008	0.00232	23	0.00036	7.1E-05
6	2024	g Structure - 160000 sqft- G+	Passenger Car	Passenger Car	Employee Commute	Gasoline	Urban Unrestricted Access	Unrestricted	30	--	424.6	2458434	2.3591	0.0752	0.0021	0.0021	0.0018	0.061	311.932	0.0079	0.0019	6.3932	0.2037	0.00562	0.00558	0.0049	0.1653	845	0.02151	0.00502
6	2024	g Structure - 160000 sqft- G+	Tractor Trailer	Combination Short-haul Truck	Material Delivery	Diesel	dUrban Unrestricted AccessCombination Short-haul	Unrestricted	40	5	1	1600	2.2466	4.2868	0.0056	0.0741	0.0682	0.1558	1673.66	0.0206	0.0028	0.004	0.0076	9.9E-06	0.00013	0.0001	0.00027	3	3.6E-05	4.9E-06
																						16.912	**1.8836**	**0.01641**	**0.04137**	**0.0376**	**0.48562**	**2812**	**0.06474**	**0.01472**

Fugitive Sources

Units for Non-Greenhouse Gases Emission: Short Ton

Scenario ID	Year	Project	Fugitive Source Type	Number of Months	CO	NOx	SO2	PM10	VOC
1	2024	Taxiways	Asphalt Drying	1	0	0	0	0	0.05
1	2024	Taxiways	Asphalt Storage and Batching	1	0.04115	0.002568	0.0004725	0.002817	0.001274
1	2024	Taxiways	Material Movement (Paved Roads)	1	0	0	0	0.003574	0
1	2024	Taxiways	Material Movement (Unpaved Roads)	1	0	0	0	0.0114	0
1	2024	Taxiways	Soil Handling	1	0	0	0	0.004812	0
1	2024	Taxiways	Unstabilized Land and Wind Erosion	1	0	0	0	5.72E-10	0
2	2024	uilding - 100000 sqft- 10 stori	Concrete Mixing/Batching	12	0	0	0	0.08555	0
2	2024	uilding - 100000 sqft- 10 stori	Material Movement (Paved Roads)	12	0	0	0	0.01795	0
2	2024	uilding - 100000 sqft- 10 stori	Material Movement (Unpaved Roads)	12	0	0	0	0.05435	0
3	2024	Parking Lot	Asphalt Drying	6	0	0	0	0	0.1
3	2024	Parking Lot	Asphalt Storage and Batching	6	1.60175	0.1	0.0184	0.1097	0.0496
3	2024	Parking Lot	Concrete Mixing/Batching	6	0	0	0	0.5664	0
3	2024	Parking Lot	Material Movement (Paved Roads)	6	0	0	0	0.07785	0
3	2024	Parking Lot	Material Movement (Unpaved Roads)	6	0	0	0	0.26285	0
3	2024	Parking Lot	Soil Handling	6	0	0	0	0.18735	0
3	2024	Parking Lot	Unstabilized Land and Wind Erosion	6	0	0	0	1.34E-07	0
4	2024	Apron (GA)	Asphalt Drying	6	0	0	0	0	0.1
4	2024	Apron (GA)	Asphalt Storage and Batching	6	1.13235	0.0707	0.013	0.07755	0.03505
4	2024	Apron (GA)	Concrete Mixing/Batching	6	0	0	0	0.40045	0
4	2024	Apron (GA)	Material Movement (Paved Roads)	6	0	0	0	0.0569	0
4	2024	Apron (GA)	Material Movement (Unpaved Roads)	6	0	0	0	0.18685	0
4	2024	Apron (GA)	Soil Handling	6	0	0	0	0.13245	0
4	2024	Apron (GA)	Unstabilized Land and Wind Erosion	6	0	0	0	9.44E-08	0
5	2024	Access Road	Asphalt Drying	6	0	0	0	0	0.05
5	2024	Access Road	Asphalt Storage and Batching	6	0.30445	0.019	0.0034975	0.02085	0.00945
5	2024	Access Road	Concrete Mixing/Batching	6	0	0	0	0.10765	0
5	2024	Access Road	Material Movement (Paved Roads)	6	0	0	0	0.02095	0
5	2024	Access Road	Material Movement (Unpaved Roads)	6	0	0	0	0.07375	0
5	2024	Access Road	Soil Handling	6	0	0	0	0.0356	0
5	2024	Access Road	Unstabilized Land and Wind Erosion	6	0	0	0	2.54E-08	0
6	2024	g Structure - 160000 sqft- G+	Asphalt Drying	9	0	0	0	0	0.25
6	2024	g Structure - 160000 sqft- G+	Concrete Mixing/Batching	9	0	0	0	0.1369	0
6	2024	g Structure - 160000 sqft- G+	Material Movement (Paved Roads)	9	0	0	0	0.0224	0
6	2024	g Structure - 160000 sqft- G+	Material Movement (Unpaved Roads)	9	0	0	0	0.06745	0
			Total		**3.0797**	**0.192268**	**0.03537**	**2.724353**	**0.645374**

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2024 Totals

Year	Emission Source	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O	CO2e
2024	NonRoad	2.06	5.41	0.02	0.38	0.37	0.43	8440.42	--	--	
2024	OnRoad	16.91185263	1.883583952	0.016405323	0.041371897	0.037567	0.485615695	2812.425	0.064739	0.014716	
2024	Fugitive	3.0797	0.192268	0.03537	2.724352754	--	0.645374	--	--	--	
2024 TOTAL		22.05	7.48	0.074	3.15	0.41	1.561	10208	0.05873	0.01335	10214

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ASSUMPTIONS

Emission factors were developed from the following models:

On-Road Vehicles: MOVES3 (Version 3.0.2)

Non-Road Equipment: NONROADs MOVES 3.0.2

In addition to the overall project size dimensions (e.g., Length and width) provided by the user, an additional 10 ft length and 10 ft width is added to account for disturbance areas.

The number of employees is based on the higher of two methods: (1) number of equipment, and (2) multiply the project cost in million by 11.

The average employee travels 30 miles round-trip from home to construction site each day.

The average on-road material delivery round-trip distance per truck is 40 miles per day.

For calculating fugitive, re-entrained PM emissions from on-road and non-road material delivery and handling equipment, a nominal VMT of 5 miles is used for each vehicle per day.

In deriving emission factors from NONROAD, the horsepower for each equipment represents the most popular in each equipment category.

The total length of each modeled scenario is used to define the number of days associated with vehicle/equipment evaporative emissions.

The choice of location and season are assumed to adequately represent differences in fuel characteristics affecting emissions.

The default methods assume that all construction equipment use diesel as well as heavy-duty on-road vehicles, while passenger vehicles (including motorcycles) use gasoline.

Fugitive emissions are only modeled for:

- Asphalt drying
- Asphalt storage and batching
- Concrete mixing/batching
- Soil handling
- Unstabilized land and wind erosion
- Material movement (unpaved roads)
- Material movement (paved roads)

On-Road vehicle speeds are not explicitly modeled. The associated emission factors for each modeled vehicle from MOVES represent averages over the driving cycles, the roadway type, and daily temperature variations.

The default equipment hours-of-use data are developed based on the overall size of the project provided by the user and activity rates based on expert engineering judgment.

Under the Construction Activity Type list (Activity Tab), when a choice between asphalt and concrete materials occurs, asphalt is always selected as default. To choose concrete, de-select the aphalt item and select the corresponding concrete item.

Two trips per day were assumed for each on-road material handling trucks.

Only CO2, CH4, and N2O are used to represent greenhouse gas emissions. Other potential greenhouse gases including air conditioning refrigerants were not included.

The following equipment are always modeled using diesel emission factors since gasoline-based emission factors are not available:

- Asphalt Deliveries/Ten Wheelers
- Bulldozer
- Concrete Ready Mix Trucks
- Concrete Ready Trucks Mix for Cores
- Concrete Truck
- Crack Filler (Trailer Mounted)
- Delivery of Tanks (3)
- Distributing Tanker
- Dozer
- Dump Truck
- Dump Truck (12 cy)
- Excavator
- Excavator for U/G Services/Tanks
- Flat Bed or Dump Trucks
- Flatbed Truck
- Grader
- Grout Wheel Truck
- Hoist Equipment with 40 Ton Rig
- Hydralic Hammer
- Hydroseeder
- Line Painting Truck and Sprayer
- Material Deliveries
- Off-Road Truck
- Pickup Truck
- Scraper
- Seed Truck Spreader
- Small Dozer
- Survey Crew Trucks
- Ten Wheelers
- Ten Wheelers- Material Delivery
- Tool Truck
- Tractor Trailer- Equipment Delivery
- Tractor Trailer- Material Delivery
- Tractor Trailer- Steel Deliveries
- Tractor Trailer- Stone Delivery
- Tractor Trailer- Topsoil & Seed
- Tractor Trailer- Truck Delivery
- Tractor Trailer with Boom Hoist- Curbs Del & Place
- Tractor Trailer with Boom Hoist- Delivery
- Tractor Trailers- Rebar Deliveries
- Tractor Trailers Temp Fac.
- Truck for Topsoil & Seed Del&Spread
- Water Truck
- Excavator with Bucket
- Excavator with Hoe Ram

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Airport Construction Emissions Inventory Tool (ACEIT)
Version 1.0
Run Date & Time: 3/3/2022 8:55:41 AM

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STUDY

Study Name

HVN EA

Study Description

2025 Construction Schedule

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EMISSIONS INVENTORY - DETAILS:

Non-Road Sources
Units for Non-Greenhouse Gases Emission: Short Ton
Units for Greenhouse Gases (CO2, CH4, and N2O) Emission: Metric Ton

										MOVES3 Emission Factors (g-hp-hr)							NONROAD Emissions (TPY)						
										3	6	9	7	8	11	2							
Scenario ID	Year	Project	Construction Activity	Equipment	MovesLookup	Fuel	HP Average	Load Factor	Hours of Activity	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CO (tpy)	NOx (tpy)	SO2 (tpy)	PM10 (tpy)	PM2.5 (tpy)	VOC (tpy)	CO2 Exhaust (tpy)
1	2025	way Extens	Asphalt Placement	Asphalt Paver	Pavers175	Diesel	175	0.59	21.541	0.17745	0.4563	0.0015	0.0453	0.0439	0.02722	536.75	0.0004	0.0011	4E-06	0.00011	0.0001	7E-05	1.3159
1	2025	way Extens	Asphalt Placement	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	77.582	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0015	0.0054	4E-05	0.00035	0.0003	0.0004	16.251
1	2025	way Extens	Asphalt Placement	Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	43.082	0.2287	0.6355	0.0015	0.0518	0.0503	0.05074	536.68	0.0008	0.0023	5E-06	0.00019	0.0002	0.0002	1.9179
1	2025	way Extens	Asphalt Placement	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	21.541	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0004	0.0015	1E-05	9.8E-05	1E-04	0.0001	4.5121
1	2025	way Extens	Asphalt Placement	Roller	Rollers100	Diesel	100	0.59	21.541	0.46757	1.206	0.0016	0.0718	0.0697	0.03622	596.05	0.0007	0.0017	2E-06	0.0001	1E-04	5E-05	0.835
1	2025	way Extens	Asphalt Placement	Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	21.541	5.43542	5.2597	0.0024	0.7757	0.7524	1.0212	693.01	0.002	0.002	9E-07	0.00029	0.0003	0.0004	0.2592
1	2025	way Extens	Asphalt Placement	Surfacing Equipment (Grooving)	Other Construction Equipment25	Diesel	25	0.59	27.572	1.49427	3.7637	0.0022	0.1713	0.1662	0.35213	595.15	0.0007	0.0017	1E-06	7.7E-05	7E-05	0.0002	0.2668
1	2025	way Extens	Clearing and Grubbing	Chain Saw	Other Construction Equipment11	Diesel	11	0.7	45.6	2.47082	4.1835	0.0022	0.2405	0.2333	0.83753	593.76	0.001	0.0016	8E-07	9.3E-05	9E-05	0.0003	0.2298
1	2025	way Extens	Clearing and Grubbing	Chipper/Stump Grinder	Other Construction Equipment100	Diesel	100	0.43	45.6	0.54796	1.346	0.0016	0.0775	0.0752	0.06272	595.98	0.0012	0.0029	4E-06	0.00017	0.0002	0.0001	1.2882
1	2025	way Extens	Clearing and Grubbing	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	60.8	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0012	0.0043	3E-05	0.00028	0.0003	0.0003	12.736
1	2025	way Extens	Drainage - 24 inch SICPP	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	33.44	0.1232	0.3541	0.0014	0.0311	0.0302	0.01855	536.78	0.0005	0.0013	5E-06	0.00012	0.0001	7E-05	2.043
1	2025	way Extens	Drainage - 24 inch SICPP	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	33.44	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0007	0.0023	2E-05	0.00015	0.0001	0.0002	7.0046
1	2025	way Extens	Drainage - 24 inch SICPP	Excavator	Excavators175	Diesel	175	0.59	33.44	0.08353	0.2689	0.0014	0.0202	0.0196	0.01298	536.79	0.0003	0.001	5E-06	7.7E-05	7E-05	5E-05	2.043
1	2025	way Extens	Drainage - 24 inch SICPP	Loader	Tractors/Loaders/Backhoes175	Diesel	175	0.59	33.44	1.24837	2.4059	0.0019	0.2675	0.2594	0.40394	625.37	0.0048	0.0092	7E-06	0.00102	0.001	0.0015	2.3801
1	2025	way Extens	Drainage - 24 inch SICPP	Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	33.44	0.2287	0.6355	0.0015	0.0518	0.0503	0.05074	536.68	0.0006	0.0018	4E-06	0.00014	0.0001	0.0001	1.4887
1	2025	way Extens	Drainage - 24 inch SICPP	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	33.44	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0007	0.0023	2E-05	0.00015	0.0001	0.0002	7.0046
1	2025	way Extens	Drainage - 24 inch SICPP	Roller	Rollers100	Diesel	100	0.59	33.44	0.46757	1.206	0.0016	0.0718	0.0697	0.03622	596.05	0.001	0.0026	4E-06	0.00016	0.0002	8E-05	1.2963
1	2025	way Extens	Drainage - 6 inch Perforated Underdrain	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	18.578	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0004	0.0013	1E-05	8.5E-05	8E-05	1E-04	3.8914
1	2025	way Extens	Drainage - 6 inch Perforated Underdrain	Loader	Tractors/Loaders/Backhoes175	Diesel	175	0.59	18.578	1.24837	2.4059	0.0019	0.2675	0.2594	0.40394	625.37	0.0026	0.0051	4E-06	0.00057	0.0005	0.0009	1.3223
1	2025	way Extens	Drainage - 6 inch Perforated Underdrain	Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	18.578	0.2287	0.6355	0.0015	0.0518	0.0503	0.05074	536.68	0.0004	0.001	2E-06	8E-05	8E-05	8E-05	0.827
1	2025	way Extens	Drainage - 6 inch Perforated Underdrain	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	18.578	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0004	0.0013	1E-05	8.5E-05	8E-05	1E-04	3.8914
1	2025	way Extens	Drainage - 6 inch Perforated Underdrain	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes100	Diesel	100	0.21	18.578	3.11288	3.0648	0.0022	0.4203	0.4077	0.53654	694.44	0.0013	0.0013	9E-07	0.00018	0.0002	0.0002	0.2986
1	2025	way Extens	Dust Control	Water Truck	Off-highway Trucks600	Diesel	600	0.59	960	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0191	0.0673	0.0005	0.00439	0.0043	0.005	201.09
1	2025	way Extens	Excavation (Borrow)	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	95.737	0.1232	0.3541	0.0014	0.0311	0.0302	0.01855	536.78	0.0013	0.0039	2E-05	0.00034	0.0003	0.0002	5.8489
1	2025	way Extens	Excavation (Borrow)	Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	95.737	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0019	0.0067	5E-05	0.00044	0.0004	0.0005	20.054
1	2025	way Extens	Excavation (Borrow)	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	95.737	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0019	0.0067	5E-05	0.00044	0.0004	0.0005	20.054
1	2025	way Extens	Excavation (Borrow)	Roller	Rollers100	Diesel	100	0.59	44.186	0.46757	1.206	0.0016	0.0718	0.0697	0.03622	596.05	0.0013	0.0035	5E-06	0.00021	0.0002	0.0001	1.7129
1	2025	way Extens	Excavation (Cut to Fill)	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	71.803	0.1232	0.3541	0.0014	0.0311	0.0302	0.01855	536.78	0.001	0.0029	1E-05	0.00025	0.0002	0.0002	4.3867
1	2025	way Extens	Excavation (Cut to Fill)	Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	191.47	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0038	0.0134	0.0001	0.00088	0.0008	0.001	40.108
1	2025	way Extens	Excavation (Cut to Fill)	Excavator	Excavators175	Diesel	175	0.59	57.442	0.08353	0.2689	0.0014	0.0202	0.0196	0.01298	536.79	0.0005	0.0018	9E-06	0.00013	0.0001	8E-05	3.5094
1	2025	way Extens	Excavation (Cut to Fill)	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	57.442	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0011	0.004	3E-05	0.00026	0.0003	0.0003	12.032
1	2025	way Extens	Excavation (Cut to Fill)	Roller	Rollers100	Diesel	100	0.59	57.442	0.46757	1.206	0.0016	0.0718	0.0697	0.03622	596.05	0.0017	0.0045	6E-06	0.00027	0.0003	0.0001	2.2268
1	2025	way Extens	Excavation (Cut to Fill)	Scraper	Scrapers600	Diesel	600	0.59	71.803	0.20188	0.5474	0.0015	0.0326	0.0316	0.03245	536.74	0.0057	0.0153	4E-05	0.00091	0.0009	0.0009	15.039
1	2025	way Extens	Excavation (Topsoil Stripping)	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	27.032	0.1232	0.3541	0.0014	0.0311	0.0302	0.01855	536.78	0.0004	0.0011	4E-06	9.6E-05	9E-05	6E-05	1.6515
1	2025	way Extens	Fencing	Concrete Truck	Off-highway Trucks600	Diesel	600	0.59	11.5	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0002	0.0008	6E-06	5.3E-05	5E-05	6E-05	2.4089
1	2025	way Extens	Fencing	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	46	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0009	0.0032	3E-05	0.00021	0.0002	0.0002	9.6355
1	2025	way Extens	Fencing	Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	46	0.2287	0.6355	0.0015	0.0518	0.0503	0.05074	536.68	0.0009	0.0024	6E-06	0.0002	0.0002	0.0002	2.0478
1	2025	way Extens	Fencing	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	46	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0009	0.0032	3E-05	0.00021	0.0002	0.0002	9.6355
1	2025	way Extens	Fencing	Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	46	5.43542	5.2597	0.0024	0.7757	0.7524	1.0212	693.01	0.0043	0.0042	2E-06	0.00062	0.0006	0.0008	0.5535
1	2025	way Extens	Fencing	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes100	Diesel	100	0.21	46	3.11288	3.0648	0.0022	0.4203	0.4077	0.53654	694.44	0.0033	0.0033	2E-06	0.00045	0.0004	0.0006	0.7395
1	2025	way Extens	Grading	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	18.559	0.1232	0.3541	0.0014	0.0311	0.0302	0.01855	536.78	0.0003	0.0007	3E-06	6.6E-05	6E-05	4E-05	1.1338
1	2025	way Extens	Grading	Grader	Graders300	Diesel	300	0.59	18.559	0.06847	0.2231	0.0014	0.016	0.0155	0.01696	536.78	0.0002	0.0008	5E-06	5.8E-05	6E-05	6E-05	1.9437
1	2025	way Extens	Grading	Roller	Rollers100	Diesel	100	0.59	18.559	0.46757	1.206	0.0016	0.0718	0.0697	0.03622	596.05	0.0006	0.0015	2E-06	8.7E-05	8E-05	4E-05	0.7195
1	2025	way Extens	Hydroseeding	Hydroseeder	Other Construction Equipment600	Diesel	600	0.59	16.72	0.78079	1.9482	0.0017	0.1117	0.1084	0.10667	536.52	0.0051	0.0127	1E-05	0.00073	0.0007	0.0007	3.5005
1	2025	way Extens	Hydroseeding	Off-Road Truck	Off-highway Trucks600	Diesel	600	0.59	16.72	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0003	0.0012	9E-06	7.6E-05	7E-05	9E-05	3.5023
1	2025	way Extens	Lighting	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	15.8	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0003	0.0011	9E-06	7.2E-05	7E-05	8E-05	3.3096
1	2025	way Extens	Lighting	Loader	Tractors/Loaders/Backhoes175	Diesel	175	0.59	15.8	1.24837	2.4059	0.0019	0.2675	0.2594	0.40394	625.37	0.0022	0.0043	3E-06	0.00048	0.0005	0.0007	1.1246
1	2025	way Extens	Lighting	Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	15.8	0.2287	0.6355	0.0015	0.0518	0.0503	0.05074	536.68	0.0003	0.0008	2E-06	6.8E-05	7E-05	7E-05	0.7034
1	2025	way Extens	Lighting	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	15.8	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0003	0.0011	9E-06	7.2E-05	7E-05	8E-05	3.3096
1	2025	way Extens	Lighting	Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	15.8	5.43542	5.2597	0.0024	0.7757	0.7524	1.0212	693.01	0.0015	0.0014	7E-07	0.00021	0.0002	0.0003	0.1901
1	2025	way Extens	Lighting	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes100	Diesel	100	0.21	15.8	3.11288	3.0648	0.0022	0.4203	0.4077	0.53654	694.44	0.0011	0.0011	8E-07	0.00015	0.0001	0.0002	0.254
1	2025	way Extens	Markings	Flatbed Truck	Off-highway Trucks600	Diesel	600	0.59	354.86	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0071	0.0249	0.0002	0.00162	0.0016	0.0018	74.331
1	2025	way Extens	Markings	Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	354.86	0.2287	0.6355	0.0015	0.0518	0.0503	0.05074	536.68	0.0067	0.0187	4E-05	0.00153	0.0015	0.0015	15.797
1	2025	way Extens	Markings	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	354.86	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0071	0.0249	0.0002	0.00162	0.0016	0.0018	74.331
1	2025	way Extens	Soil Erosion/Control	Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	15.2	0.2287	0.6355	0.0015	0.0518	0.0503	0.05074	536.68	0.0003	0.0008	2E-06	6.5E-05	6E-05	6E-05	0.6767
1	2025	way Extens	Soil Erosion/Control	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	30.4	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0006	0.0021	2E-05	0.00014	0.0001	0.0002	6.3678
1	2025	way Extens	Soil Erosion/Control	Pumps	Other Construction Equipment11	Diesel	11	0.43	15.2	2.47082	4.1835	0.0022	0.2405	0.2333	0.83753	593.76	0.0002	0.0003	2E-07	1.9E-05	2E-05	7E-05	0.0471
1	2025	way Extens	Soil Erosion/Control	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes100	Diesel	100	0.21	15.2	3.11288	3.0648	0.0022	0.4203	0.4077	0.53654	694.44	0.0011	0.0011	8E-07	0.00015	0.0001	0.0002	0.2443
1	2025	way Extens	Subbase Placement	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	36.28	0.1232	0.3541	0.0014	0.0311	0.0302	0.01855	536.78	0.0005	0.0015	6E-06	0.00013	0.0001	8E-05	2.2164
1	2025	way Extens	Subbase Placement	Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	255.3	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0051	0.0179	0.0001	0.00117	0.0011	0.0013	53.477
1	2025	way Extens	Subbase Placement	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	36.28	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0007	0.0025	2E-05	0.00017	0.0002	0.0002	7.5994
1	2025	way Extens	Subbase Placement	Roller	Rollers100	Diesel	100	0.59	35.35	0.46757	1.206	0.0016	0.0718	0.0697	0.03622	596.05	0.0011	0.0028	4E-06	0.00017	0.0002	8E-05	1.3703
1	2025	way Extens	Topsoil Placement	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	41.243	0.1232	0.3541	0.0014	0.0311	0.0302	0.01855	536.78	0.0006	0.0017	7E-06	0.00015	0.0001	9E-05	2.5196
1	2025	way Extens	Topsoil Placement	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	41.243	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0008	0.0029	2E-05	0.00019	0.0002	0.0002	8.639
1	2025	way Extens	Topsoil Placement	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	41.243	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0008	0.0029	2E-05	0.00019	0.0002	0.0002	8.639
2	2025	bilitate Rur	Asphalt Placement	Asphalt Paver	Pavers175	Diesel	175	0.59	65.955	0.17745	0.4563	0.0015	0.0453	0.0439	0.02722	536.75	0.0013	0.0034	1E-05	0.00034	0.0003	0.0002	4.0292
2	2025	bilitate Rur	Asphalt Placement	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	237.54	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0047	0.0166	0.0001	0.00109	0.0011	0.0012	49.757
2	2025	bilitate Rur	Asphalt Placement	Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	131.91	0.2287	0.6355	0.0015	0.0518	0.0503	0.05074	536.68	0.0025	0.007	2E-05	0.00057	0.0006	0.0006	5.8723
2	2025	bilitate Rur	Asphalt Placement	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	65.955	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0013	0.0046	4E-05	0.0003	0.0003	0.0003	13.815
2	2025	bilitate Rur	Asphalt Placement	Roller	Rollers100	Diesel	100	0.59	65.955	0.46757	1.206	0.0016	0.0718	0.0697	0.03622	596.05	0.002	0.0052	7E-06	0.00031	0.0003	0.0002	2.5568
2	2025	bilitate Rur	Asphalt Placement	Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	65.955	5.43542	5.2597	0.0024	0.7757	0.7524	1.0212	693.01	0.0062	0.006	3E-06	0.00089	0.0009	0.0012	0.7935
2	2025	bilitate Rur	Asphalt Placement	Surfacing Equipment (Grooving)	Other Construction Equipment25	Diesel	25	0.59	84.422	1.49427	3.7637	0.0022	0.1713	0.1662	0.35213	595.15	0.0021	0.0052	3E-06	0.00024	0.0002	0.0005	0.8169
2	2025	bilitate Rur	Cold Milling	Cold Planer	Other Construction Equipment175	Diesel	175	0.59	105.53	0.2287	0.6355	0.0015	0.0518	0.0503	0.05074	536.68	0.0027	0.0076	2E-05	0.00062	0.0006	0.0006	6.4459
2	2025	bilitate Rur	Cold Milling	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	105.53	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0021	0.0074	6E-05	0.00048	0.0005	0.0005	22.105
2	2025	bilitate Rur	Cold Milling	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	105.53	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0021	0.0074	6E-05	0.00048	0.0005	0.0005	22.105
2	2025	bilitate Rur	Cold Milling	Sweepers	Off-highway Trucks175	Diesel	175	0.43	105.53	0.05594	0.1792	0.0014	0.0128	0.0125	0.00914	536.81	0.0005	0.0016	1E-05	0.00011	0.0001	8E-05	4.6989
2	2025	bilitate Rur	Cold Milling	Water Truck	Off-highway Trucks600	Diesel	600	0.59	105.53	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0021	0.0074	6E-05	0.00048	0.0005	0.0005	22.105

2	2025	bilitate Rur	Concrete Demolition	Concrete Saws	Other Construction Equipment40	Diesel	40	0.59	950.7	0.31263	2.559	0.0016	0.028	0.0271	0.09703	595.87	0.0077	0.0633	4E-05	0.00069	0.0007	0.0024	14.737
2	2025	bilitate Rur	Concrete Demolition	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	950.7	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0189	0.0666	0.0005	0.00435	0.0042	0.0049	199.14
2	2025	bilitate Rur	Concrete Demolition	Excavator	Excavators175	Diesel	175	0.59	950.7	0.08353	0.2689	0.0014	0.0202	0.0196	0.01298	536.79	0.009	0.0291	0.0002	0.00219	0.0021	0.0014	58.083
2	2025	bilitate Rur	Concrete Demolition	Hydralic Hammer	Other Construction Equipment175	Diesel	175	0.59	950.7	0.2287	0.6355	0.0015	0.0518	0.0503	0.05074	536.68	0.0247	0.0688	0.0002	0.00561	0.0054	0.0055	58.071
2	2025	bilitate Rur	Concrete Demolition	Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	950.7	0.2287	0.6355	0.0015	0.0518	0.0503	0.05074	536.68	0.018	0.0501	0.0001	0.00409	0.004	0.004	42.323
2	2025	bilitate Rur	Concrete Demolition	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	950.7	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0189	0.0666	0.0005	0.00435	0.0042	0.0049	199.14
2	2025	bilitate Rur	Concrete Placement	Air Compressor	Other Construction Equipment100	Diesel	100	0.43	175.88	0.54796	1.346	0.0016	0.0775	0.0752	0.06272	595.98	0.0046	0.0112	1E-05	0.00065	0.0006	0.0005	4.9684
2	2025	bilitate Rur	Concrete Placement	Concrete Saws	Other Construction Equipment40	Diesel	40	0.59	175.88	0.31263	2.559	0.0016	0.028	0.0271	0.09703	595.87	0.0014	0.0117	7E-06	0.00013	0.0001	0.0004	2.7264
2	2025	bilitate Rur	Concrete Placement	Concrete Truck	Off-highway Trucks600	Diesel	600	0.59	732.83	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0146	0.0513	0.0004	0.00335	0.0033	0.0038	153.5
2	2025	bilitate Rur	Concrete Placement	Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	351.76	0.2287	0.6355	0.0015	0.0518	0.0503	0.05074	536.68	0.0067	0.0185	4E-05	0.00151	0.0015	0.0015	15.659
2	2025	bilitate Rur	Concrete Placement	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	527.64	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0105	0.037	0.0003	0.00241	0.0023	0.0027	110.52
2	2025	bilitate Rur	Concrete Placement	Rubber Tired Loader	Tractors/Loaders/Backhoes175	Diesel	175	0.59	175.88	1.24837	2.4059	0.0019	0.2675	0.2594	0.40394	625.37	0.025	0.0482	4E-05	0.00535	0.0052	0.0081	12.518
2	2025	bilitate Rur	Concrete Placement	Slip Form Paver	Pavers175	Diesel	175	0.59	175.88	0.17745	0.4563	0.0015	0.0453	0.0439	0.02722	536.75	0.0036	0.0091	3E-05	0.00091	0.0009	0.0005	10.745
2	2025	bilitate Rur	Concrete Placement	Surfacing Equipment (Grooving)	Other Construction Equipment25	Diesel	25	0.59	175.88	1.49427	3.7637	0.0022	0.1713	0.1662	0.35213	595.15	0.0043	0.0108	6E-06	0.00049	0.0005	0.001	1.7019
2	2025	bilitate Rur	Dust Control	Water Truck	Off-highway Trucks600	Diesel	600	0.59	960	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0191	0.0673	0.0005	0.00439	0.0043	0.005	201.09
2	2025	bilitate Rur	Excavation (Cut to Fill) (Assume 20% reconstruction)	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	35.176	0.1232	0.3541	0.0014	0.0311	0.0302	0.01855	536.78	0.0005	0.0014	6E-06	0.00012	0.0001	7E-05	2.149
2	2025	bilitate Rur	Excavation (Cut to Fill) (Assume 20% reconstruction)	Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	117.25	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0023	0.0082	7E-05	0.00054	0.0005	0.0006	24.561
2	2025	bilitate Rur	Excavation (Cut to Fill) (Assume 20% reconstruction)	Excavator	Excavators175	Diesel	175	0.59	35.176	0.08353	0.2689	0.0014	0.0202	0.0196	0.01298	536.79	0.0003	0.0011	6E-06	8.1E-05	8E-05	5E-05	2.1491
2	2025	bilitate Rur	Excavation (Cut to Fill) (Assume 20% reconstruction)	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	35.176	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0007	0.0025	2E-05	0.00016	0.0002	0.0002	7.3682
2	2025	bilitate Rur	Excavation (Cut to Fill) (Assume 20% reconstruction)	Roller	Rollers100	Diesel	100	0.59	35.176	0.46757	1.206	0.0016	0.0718	0.0697	0.03622	596.05	0.0011	0.0028	4E-06	0.00016	0.0002	8E-05	1.3636
2	2025	bilitate Rur	Excavation (Topsoil Stripping)	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	16.553	0.1232	0.3541	0.0014	0.0311	0.0302	0.01855	536.78	0.0002	0.0007	3E-06	5.9E-05	6E-05	3E-05	1.0113
2	2025	bilitate Rur	Grading	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	11.292	0.1232	0.3541	0.0014	0.0311	0.0302	0.01855	536.78	0.0002	0.0005	2E-06	4E-05	4E-05	2E-05	0.6899
2	2025	bilitate Rur	Grading	Grader	Graders300	Diesel	300	0.59	11.292	0.06847	0.2231	0.0014	0.016	0.0155	0.01696	536.78	0.0002	0.0005	3E-06	3.5E-05	3E-05	4E-05	1.1826
2	2025	bilitate Rur	Grading	Roller	Rollers100	Diesel	100	0.59	11.292	0.46757	1.206	0.0016	0.0718	0.0697	0.03622	596.05	0.0003	0.0009	1E-06	5.3E-05	5E-05	3E-05	0.4377
2	2025	bilitate Rur	Hydroseeding	Hydroseeder	Other Construction Equipment600	Diesel	600	0.59	1.1292	0.78079	1.9482	0.0017	0.1117	0.1084	0.10667	536.52	0.0003	0.0009	7E-07	4.9E-05	5E-05	5E-05	0.2364
2	2025	bilitate Rur	Hydroseeding	Off-Road Truck	Off-highway Trucks600	Diesel	600	0.59	1.1292	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	2E-05	8E-05	6E-07	5.2E-06	5E-06	6E-06	0.2365
2	2025	bilitate Rur	Lighting	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	44.253	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0009	0.0031	2E-05	0.0002	0.0002	0.0002	9.2696
2	2025	bilitate Rur	Lighting	Loader	Tractors/Loaders/Backhoes175	Diesel	175	0.59	44.253	1.24837	2.4059	0.0019	0.2675	0.2594	0.40394	625.37	0.0063	0.0121	1E-05	0.00135	0.0013	0.002	3.1498
2	2025	bilitate Rur	Lighting	Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	44.253	0.2287	0.6355	0.0015	0.0518	0.0503	0.05074	536.68	0.0008	0.0023	5E-06	0.00019	0.0002	0.0002	1.9701
2	2025	bilitate Rur	Lighting	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	44.253	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0009	0.0031	2E-05	0.0002	0.0002	0.0002	9.2696
2	2025	bilitate Rur	Lighting	Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	44.253	5.43542	5.2597	0.0024	0.7757	0.7524	1.0212	693.01	0.0042	0.004	2E-06	0.0006	0.0006	0.0008	0.5324
2	2025	bilitate Rur	Lighting	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes100	Diesel	100	0.21	44.253	3.11288	3.0648	0.0022	0.4203	0.4077	0.53654	694.44	0.0032	0.0031	2E-06	0.00043	0.0004	0.0005	0.7114
2	2025	bilitate Rur	Markings	Flatbed Truck	Off-highway Trucks600	Diesel	600	0.59	1086.5	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0216	0.0761	0.0006	0.00497	0.0048	0.0056	227.59
2	2025	bilitate Rur	Markings	Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	1086.5	0.2287	0.6355	0.0015	0.0518	0.0503	0.05074	536.68	0.0206	0.0573	0.0001	0.00467	0.0045	0.0046	48.369
2	2025	bilitate Rur	Markings	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	1086.5	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0216	0.0761	0.0006	0.00497	0.0048	0.0056	227.59
2	2025	bilitate Rur	Sealing Random Cracks	Crack Cleaner	Other Construction Equipment40	Diesel	40	0.59	9.0543	0.31263	2.559	0.0016	0.028	0.0271	0.09703	595.87	7E-05	0.0006	4E-07	6.6E-06	6E-06	2E-05	0.1404
2	2025	bilitate Rur	Sealing Random Cracks	Crack Filler (Trailer Mounted)	Other Construction Equipment100	Diesel	100	0.43	9.0543	0.54796	1.346	0.0016	0.0775	0.0752	0.06272	595.98	0.0002	0.0006	7E-07	3.3E-05	3E-05	3E-05	0.2558
2	2025	bilitate Rur	Sealing Random Cracks	Flatbed Truck	Off-highway Trucks600	Diesel	600	0.59	9.0543	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0002	0.0006	5E-06	4.1E-05	4E-05	5E-05	1.8966
2	2025	bilitate Rur	Sealing Random Cracks	Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	9.0543	0.2287	0.6355	0.0015	0.0518	0.0503	0.05074	536.68	0.0002	0.0005	1E-06	3.9E-05	4E-05	4E-05	0.4031
2	2025	bilitate Rur	Sealing Random Cracks	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	9.0543	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0002	0.0006	5E-06	4.1E-05	4E-05	5E-05	1.8966
2	2025	bilitate Rur	Soil Erosion/Sediment Control	Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	9.2	0.2287	0.6355	0.0015	0.0518	0.0503	0.05074	536.68	0.0002	0.0005	1E-06	4E-05	4E-05	4E-05	0.4096
2	2025	bilitate Rur	Soil Erosion/Sediment Control	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	18.4	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0004	0.0013	1E-05	8.4E-05	8E-05	9E-05	3.8542
2	2025	bilitate Rur	Soil Erosion/Sediment Control	Pumps	Other Construction Equipment11	Diesel	11	0.43	9.2	2.47082	4.1835	0.0022	0.2405	0.2333	0.83753	593.76	0.0001	0.0002	1E-07	1.2E-05	1E-05	4E-05	0.0285
2	2025	bilitate Rur	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes100	Diesel	100	0.21	9.2	3.11288	3.0648	0.0022	0.4203	0.4077	0.53654	694.44	0.0007	0.0007	5E-07	9E-05	9E-05	0.0001	0.1479
2	2025	bilitate Rur	Subbase Placement	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	111.08	0.1232	0.3541	0.0014	0.0311	0.0302	0.01855	536.78	0.0016	0.0045	2E-05	0.00039	0.0004	0.0002	6.7863
2	2025	bilitate Rur	Subbase Placement	Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	781.69	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0156	0.0548	0.0004	0.00357	0.0035	0.004	163.74
2	2025	bilitate Rur	Subbase Placement	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	111.08	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0022	0.0078	6E-05	0.00051	0.0005	0.0006	23.268
2	2025	bilitate Rur	Subbase Placement	Roller	Rollers100	Diesel	100	0.59	108.23	0.46757	1.206	0.0016	0.0718	0.0697	0.03622	596.05	0.0033	0.0085	1E-05	0.00051	0.0005	0.0003	4.1957
2	2025	bilitate Rur	Topsoil Placement	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	25.093	0.1232	0.3541	0.0014	0.0311	0.0302	0.01855	536.78	0.0004	0.001	4E-06	8.9E-05	9E-05	5E-05	1.533
2	2025	bilitate Rur	Topsoil Placement	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	25.093	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0005	0.0018	1E-05	0.00011	0.0001	0.0001	5.2562
2	2025	bilitate Rur	Topsoil Placement	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	25.093	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0005	0.0018	1E-05	0.00011	0.0001	0.0001	5.2562
3	2025	way Safety	Clearing and Grubbing	Chain Saw	Other Construction Equipment11	Diesel	11	0.7	21.6	2.47082	4.1835	0.0022	0.2405	0.2333	0.83753	593.76	0.0005	0.0008	4E-07	4.4E-05	4E-05	0.0002	0.1089
3	2025	way Safety	Clearing and Grubbing	Chipper/Stump Grinder	Other Construction Equipment100	Diesel	100	0.43	21.6	0.54796	1.346	0.0016	0.0775	0.0752	0.06272	595.98	0.0006	0.0014	2E-06	7.9E-05	8E-05	6E-05	0.6102
3	2025	way Safety	Clearing and Grubbing	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	28.8	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0006	0.002	2E-05	0.00013	0.0001	0.0001	6.0326
3	2025	way Safety	Drainage - 24 inch SICPP	Excavator	Excavators175	Diesel	175	0.59	13.44	0.08353	0.2689	0.0014	0.0202	0.0196	0.01298	536.79	0.0001	0.0004	2E-06	3.1E-05	3E-05	2E-05	0.8211
3	2025	way Safety	Drainage	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	13.44	0.1232	0.3541	0.0014	0.0311	0.0302	0.01855	536.78	0.0002	0.0005	2E-06	4.8E-05	5E-05	3E-05	0.8211
3	2025	way Safety	Drainage	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	13.44	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0003	0.0009	7E-06	6.1E-05	6E-05	7E-05	2.8152
3	2025	way Safety	Drainage	Loader	Tractors/Loaders/Backhoes175	Diesel	175	0.59	13.44	1.24837	2.4059	0.0019	0.2675	0.2594	0.40394	625.37	0.0019	0.0037	3E-06	0.00041	0.0004	0.0006	0.9566
3	2025	way Safety	Drainage	Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	13.44	0.2287	0.6355	0.0015	0.0518	0.0503	0.05074	536.68	0.0003	0.0007	2E-06	5.8E-05	6E-05	6E-05	0.5983
3	2025	way Safety	Drainage	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	13.44	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0003	0.0009	7E-06	6.1E-05	6E-05	7E-05	2.8152
3	2025	way Safety	Drainage	Roller	Rollers100	Diesel	100	0.59	13.44	0.46757	1.206	0.0016	0.0718	0.0697	0.03622	596.05	0.0004	0.0011	1E-06	6.3E-05	6E-05	3E-05	0.521
3	2025	way Safety	Dust Control	Water Truck	Off-highway Trucks600	Diesel	600	0.59	960	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0191	0.0673	0.0005	0.00439	0.0043	0.005	201.09
3	2025	way Safety	Excavation (Borrow)	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	45.017	0.1232	0.3541	0.0014	0.0311	0.0302	0.01855	536.78	0.0006	0.0018	7E-06	0.00016	0.0002	1E-04	2.7503
3	2025	way Safety	Excavation (Borrow)	Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	45.017	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0009	0.0032	3E-05	0.00021	0.0002	0.0002	9.4296
3	2025	way Safety	Excavation (Borrow)	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	45.017	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0009	0.0032	3E-05	0.00021	0.0002	0.0002	9.4296
3	2025	way Safety	Excavation (Borrow)	Roller	Rollers100	Diesel	100	0.59	20.777	0.46757	1.206	0.0016	0.0718	0.0697	0.03622	596.05	0.0006	0.0016	2E-06	9.7E-05	9E-05	5E-05	0.8054
3	2025	way Safety	Excavation (Cut to Fill)	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	33.763	0.1232	0.3541	0.0014	0.0311	0.0302	0.01855	536.78	0.0005	0.0014	6E-06	0.00012	0.0001	7E-05	2.0627
3	2025	way Safety	Excavation (Cut to Fill)	Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	90.035	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0018	0.0063	5E-05	0.00041	0.0004	0.0005	18.859
3	2025	way Safety	Excavation (Cut to Fill)	Excavator	Excavators175	Diesel	175	0.59	27.01	0.08353	0.2689	0.0014	0.0202	0.0196	0.01298	536.79	0.0003	0.0008	4E-06	6.2E-05	6E-05	4E-05	1.6502
3	2025	way Safety	Excavation (Cut to Fill)	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	27.01	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0005	0.0019	2E-05	0.00012	0.0001	0.0001	5.6578
3	2025	way Safety	Excavation (Cut to Fill)	Roller	Rollers100	Diesel	100	0.59	27.01	0.46757	1.206	0.0016	0.0718	0.0697	0.03622	596.05	0.0008	0.0021	3E-06	0.00013	0.0001	6E-05	1.0471
3	2025	way Safety	Excavation (Cut to Fill)	Scraper	Scrapers600	Diesel	600	0.59	33.763	0.20188	0.5474	0.0015	0.0326	0.0316	0.03245	536.74	0.0027	0.0072	2E-05	0.00043	0.0004	0.0004	7.0715
3	2025	way Safety	Excavation (Topsoil Stripping)	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	12.711	0.1232	0.3541	0.0014	0.0311	0.0302	0.01855	536.78	0.0002	0.0005	2E-06	4.5E-05	4E-05	3E-05	0.7765
3	2025	way Safety	Fencing	Concrete Truck	Off-highway Trucks600	Diesel	600	0.59	2.2222	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	4E-05	0.0002	1E-06	1E-05	1E-05	1E-05	0.4655
3	2025	way Safety	Fencing	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	8.8889	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0002	0.0006	5E-06	4.1E-05	4E-05	5E-05	1.8619
3	2025	way Safety	Fencing	Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	8.8889	0.2287	0.6355	0.0015	0.0518	0.0503	0.05074	536.68	0.0002	0.0005	1E-06	3.8E-05	4E-05	4E-05	0.3957
3	2025	way Safety	Fencing	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	8.8889	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0002	0.0006	5E-06	4.1E-05	4E-05	5E-05	1.8619
3	2025	way Safety	Fencing	Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	8.8889	5.43542	5.2597	0.0024	0.7757	0.7524	1.0212	693.01	0.0008	0.0008	4E-07	0.00012	0.0001	0.0002	0.1069
3	2025	way Safety	Fencing	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes100	Diesel	100	0.21	8.8889	3.11288	3.0648	0.0022	0.4203	0.4077	0.53654	694.44	0.0006	0.0006	4E-07	8.6E-05	8E-05	0.0001	0.1429
3	2025	way Safety	Hydroseeding	Hydroseeder	Other Construction Equipment600	Diesel	600	0.59	7.875	0.78079	1.9482	0.0017	0.1117	0.1084	0.10667	536.52	0.0024	0.006	5E-06	0.00034	0.0003	0.0003	1.6487
3	2025	way Safety	Hydroseeding	Off-Road Truck	Off-highway Trucks600	Diesel	600	0.59	7.875	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0002	0.0006	4E-06	3.6E-05	3E-05	4E-05	1.6496
3	2025	way Safety	Soil Erosion/Sediment Control	Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	7.2	0.2287	0.6355	0.0015	0.0518	0.0503	0.05074	536.68	0.0001	0.0004	9E-07	3.1E-05	3E-05	3E-05	0.3205
3	2025	way Safety	Soil Erosion/Sediment Control	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	14.4	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0003	0.001	8E-06	6.6E-05	6E-05	7E-05	3.0163
3	2025	way Safety	Soil Erosion/Sediment Control	Pumps	Other Construction Equipment11	Diesel	11	0.43	7.2	2.47082	4.1835	0.0022	0.2405	0.2333	0.83753	593.76	9E-05	0.0002	8E-08	9E-06	9E-06	3E-05	0.0223
3	2025	way Safety	Soil Erosion/Sediment Control	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes100	Diesel	100	0.21	7.2	3.11288	3.0648	0.0022	0.4203	0.4077	0.53654	694.44	0.0005	0.0005	4E-07	7E-05	7E-05	9E-05	0.1157
3	2025	way Safety	Topsoil Placement	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	19.425	0.1232	0.3541	0.0014	0.0311	0.0302	0.01855	536.78	0.0003	0.0008	3E-06	6.9E-05	7E-05	4E-05	1.1868
3	2025	way Safety	Topsoil Placement	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	19.425	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0004	0.0014	1E-05	8.9E-05	9E-05	0.0001	4.069
3	2025	way Safety	Topsoil Placement	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	19.425	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0004	0.0014	1E-05	8.9E-05	9E-05	0.0001	4.069
4	2025	e - 160000	Asphalt Pavement-Ground Floor	Asphalt Paver	Pavers175	Diesel	175	0.59	80	0.17745	0.4563	0.0015	0.0453	0.0439	0.02722	536.75	0.0016	0.0042	1E-05	0.00041	0.0004	0.0002	4.8872
4	2025	e - 160000	Asphalt Pavement-Ground Floor	ront Loader for Subgrade Materia	Tractors/Loaders/Backhoes100	Diesel	100	0.21	80	3.11288	3.0648	0.0022	0.4203	0.4077	0.53654	694.44	0.0058	0.0057	4E-06	0.00078	0.0008	0.001	1.286
4	2025	e - 160000	Asphalt Pavement-Ground Floor	Ten Wheelers- Material Delivery	Off-highway Trucks600	Diesel	600	0.59	80	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0016	0.0056	4E-05	0.00037	0.0004	0.0004	16.757
4	2025	e - 160000	Concrete Foundations	Backhoe	Tractors/Loaders/Backhoes100	Diesel	100	0.21	320	3.11288	3.0648	0.0022	0.4203	0.4077	0.53654	694.44	0.0231	0.0227	2E-05	0.00311	0.003	0.004	5.1441
4	2025	e - 160000	Concrete Foundations	Concrete Pump	Other Construction Equipment11	Diesel	11	0.43	240	2.47082	4.1835	0.0022	0.2405	0.2333	0.83753	593.76	0.0031	0.0052	3E-06	0.0003	0.0003	0.001	0.743
4	2025	e - 160000	Concrete Foundations	Concrete Ready Mix Trucks	Off-highway Trucks600	Diesel	600	0.59	240	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0048	0.0168	0.0001	0.0011	0.0011	0.0012	50.272
4	2025	e - 160000	Concrete Foundations	Excavator	Excavators175	Diesel	175	0.59	160	0.08353	0.2689	0.0014	0.0202	0.0196	0.01298	536.79	0.0015	0.0049	3E-05	0.00037	0.0004	0.0002	9.7752
4	2025	e - 160000	Concrete Foundations	Fork Truck	Other Construction Equipment100	Diesel	100	0.59	320	0.54796	1.346	0.0016	0.0775	0.0752

4	2025	e - 160000	Horizontal Deck Pours	Fork Truck	Other Construction Equipment100	Diesel	100	0.59	64	0.54796	1.346	0.0016	0.0775	0.0752	0.06272	595.98	0.0023	0.0056	7E-06	0.00032	0.0003	0.0003	2.4807			
4	2025	e - 160000	Horizontal Deck Pours	Tool Truck	Off-highway Trucks600	Diesel	600	0.59	60	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0012	0.0042	3E-05	0.00027	0.0003	0.0003	12.568			
4	2025	e - 160000	Horizontal Deck Pours	Tractor Trailer- Material Delivery	Off-highway Trucks600	Diesel	600	0.59	20	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0004	0.0014	1E-05	9.1E-05	9E-05	0.0001	4.1893			
4	2025	e - 160000	Horizontal Deck Pours	Trowel Machines (2) machines	Other Construction Equipment600	Diesel	600	0.59	32	0.78079	1.9482	0.0017	0.1117	0.1084	0.10667	536.52	0.0097	0.0243	2E-05	0.0014	0.0014	0.0013	6.6996			
4	2025	e - 160000	Lights and Power	Forklift	Rough Terrain Forklifts100	Diesel	100	0.59	240	0.55554	1.281	0.0016	0.0793	0.0769	0.05203	596.01	0.0087	0.02	3E-05	0.00124	0.0012	0.0008	9.303			
4	2025	e - 160000	Lights and Power	High Lift	Rough Terrain Forklifts100	Diesel	100	0.59	240	0.55554	1.281	0.0016	0.0793	0.0769	0.05203	596.01	0.0087	0.02	3E-05	0.00124	0.0012	0.0008	9.303			
4	2025	e - 160000	Lights and Power	Tool Truck	Off-highway Trucks600	Diesel	600	0.59	240	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0048	0.0168	0.0001	0.0011	0.0011	0.0012	50.272			
4	2025	e - 160000	Lights and Power	Trencher	Other Construction Equipment75	Diesel	75	0.59	240	0.58574	2.7811	0.0016	0.0688	0.0667	0.09759	595.86	0.0069	0.0326	2E-05	0.00081	0.0008	0.0011	6.9756			
4	2025	e - 160000	Parapet Wall Construction	40 Ton Rough Terrain Crane	Cranes300	Diesel	300	0.43	60	0.09317	0.3757	0.0014	0.0202	0.0196	0.02969	530.96	0.0008	0.0032	1E-05	0.00017	0.0002	0.0003	4.5301			
4	2025	e - 160000	Parapet Wall Construction	Fork Truck	Other Construction Equipment100	Diesel	100	0.59	120	0.54796	1.346	0.0016	0.0775	0.0752	0.06272	595.98	0.0043	0.0105	1E-05	0.0006	0.0006	0.0005	4.6512			
4	2025	e - 160000	Parapet Wall Construction	Grout Mixer	Other Construction Equipment600	Diesel	600	0.59	120	0.78079	1.9482	0.0017	0.1117	0.1084	0.10667	536.52	0.0366	0.0912	8E-05	0.00523	0.0051	0.005	25.123			
4	2025	e - 160000	Parapet Wall Construction	Man Lift	Rough Terrain Forklifts75	Diesel	75	0.21	120	0.48777	2.7082	0.0016	0.0523	0.0507	0.08372	595.9	0.001	0.0056	3E-06	0.00011	0.0001	0.0002	1.2415			
4	2025	e - 160000	Parapet Wall Construction	Tool Truck	Off-highway Trucks600	Diesel	600	0.59	80	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0016	0.0056	4E-05	0.00037	0.0004	0.0004	16.757			
4	2025	e - 160000	Parapet Wall Construction	Tractor Trailer- Material Delivery	Off-highway Trucks600	Diesel	600	0.59	120	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0024	0.0084	7E-05	0.00055	0.0005	0.0006	25.136			
4	2025	e - 160000	Security & Safety Systems	High Lift	Rough Terrain Forklifts100	Diesel	100	0.59	160	0.55554	1.281	0.0016	0.0793	0.0769	0.05203	596.01	0.0058	0.0133	2E-05	0.00083	0.0008	0.0005	6.202			
4	2025	e - 160000	Security & Safety Systems	Tool Truck	Off-highway Trucks600	Diesel	600	0.59	160	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0032	0.0112	9E-05	0.00073	0.0007	0.0008	33.515			
4	2025	e - 160000	Site Prep/Landscaping	Front Loader	Tractors/Loaders/Backhoes100	Diesel	100	0.21	80	3.11288	3.0648	0.0022	0.4203	0.4077	0.53654	694.44	0.0058	0.0057	4E-06	0.00078	0.0008	0.001	1.286			
4	2025	e - 160000	Site Prep/Landscaping	Tractor Trailer- Topsoil & Seed	Off-highway Trucks600	Diesel	600	0.59	80	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0016	0.0056	4E-05	0.00037	0.0004	0.0004	16.757			
4	2025	e - 160000	Site Prep/Landscaping	Trailer with Boom Hoist- Curbs De	Off-highway Trucks600	Diesel	600	0.59	80	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0016	0.0056	4E-05	0.00037	0.0004	0.0004	16.757			
4	2025	e - 160000	Structural Steel Erection & Metal Deck	90 Ton Crane	Cranes300	Diesel	300	0.43	160	0.09317	0.3757	0.0014	0.0202	0.0196	0.02969	530.96	0.0021	0.0085	3E-05	0.00046	0.0004	0.0007	12.08			
4	2025	e - 160000	Structural Steel Erection & Metal Deck	Concrete Pump	Other Construction Equipment11	Diesel	11	0.43	40	2.47082	4.1835	0.0022	0.2405	0.2333	0.83753	593.76	0.0005	0.0009	5E-07	5E-05	5E-05	0.0002	0.1238			
4	2025	e - 160000	Structural Steel Erection & Metal Deck	Tractor Trailer- Steel Deliveries	Off-highway Trucks600	Diesel	600	0.59	80	0.05102	0.1795	0.0014	0.0117	0.0114	0.01321	536.79	0.0016	0.0056	4E-05	0.00037	0.0004	0.0004	16.757			
																	0.6806	**1.962**	**0.0094**	**0.13377**	**0.1298**	**0.1488**	**3524**			

On-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton

Units for Greenhouse Gases (CO2, CH4, and N2O) Emission: Metric Ton

												MOVES Emission Factor (g/mile)										MOVES Emissions (TPY)									
												7	10	13	11	12	14	5	8	9		7	10	13	11	12	14	5	8	9	
Scenario ID	Year	Project	Equipment	Equipment Category	On-road Activity	Fuel	Lookup	adway Typ	Distance for fug	per of Ve	VMT	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O	CO (TPY)	Nox (TPY)	SO2 (TPY)	PM10 (TPY)	PM2.5 (TPY)	VOC (TPY)	CO2 (TPY)	CH4 (TPY)	N2O (TPY)	
1	2025	way Extens	Asphalt 18 Wheeler	Combination Short-haul Truck	Material Delivery	Diesel	rban Unrestricted AccessCombination Short-ha	nrestricte	40	5	1	2253	2.2026	4.1177	0.00549	0.0662	0.0609	0.1448	1643.2	0.01968	0.0028	0.0055	0.0102	1E-05	0.0002	0.00015	0.00036	4.081	4.9E-05	7E-06	
1	2025	way Extens	Cement Mixer	Single Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted AccessSingle Unit Short-hau	nrestricte	40	5	6	35902	1.2693	1.913	0.00341	0.0339	0.0312	0.0931	1018.1	0.01568	0.0033	0.0502	0.0757	0.0001	0.0013	0.00123	0.00368	40.293	0.00062	0.0001	
1	2025	way Extens	Dump Truck - Asphalt	Single Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted AccessSingle Unit Short-hau	nrestricte	40	5	1	3191	1.2693	1.913	0.00341	0.0339	0.0312	0.0931	1018.1	0.01568	0.0033	0.0045	0.0067	1E-05	0.0001	0.00011	0.00033	3.5813	5.5E-05	1E-05	
1	2025	way Extens	Dump Truck Subbase Material	Single Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted AccessSingle Unit Short-hau	nrestricte	40	5	3	19148	1.2693	1.913	0.00341	0.0339	0.0312	0.0931	1018.1	0.01568	0.0033	0.0268	0.0404	7E-05	0.0007	0.00066	0.00196	21.49	0.00033	7E-05	
1	2025	way Extens	Passenger Car	Passenger Car	Employee Commute	Gasoline	asolineUrban Unrestricted AccessPassenger Ca	nrestricte	30	--	146.3	377454	2.2328	0.0635	0.00202	0.002	0.0017	0.0576	304.16	0.00737	0.0017	0.929	0.0264	0.0008	0.0008	0.00072	0.02397	126.55	0.00307	0.0007	
2	2025	bilitate Rur	Asphalt 18 Wheeler	Combination Short-haul Truck	Material Delivery	Diesel	rban Unrestricted AccessCombination Short-ha	nrestricte	40	5	2	6897	2.2026	4.1177	0.00549	0.0662	0.0609	0.1448	1643.2	0.01968	0.0028	0.0167	0.0313	4E-05	0.0005	0.00046	0.0011	12.493	0.00015	2E-05	
2	2025	bilitate Rur	Cement Mixer	Single Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted AccessSingle Unit Short-hau	nrestricte	40	5	16	109925	1.2693	1.913	0.00341	0.0339	0.0312	0.0931	1018.1	0.01568	0.0033	0.1538	0.2318	0.0004	0.0041	0.00378	0.01128	123.37	0.0019	0.0004	
2	2025	bilitate Rur	Dump Truck - Asphalt	Single Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted AccessSingle Unit Short-hau	nrestricte	40	5	2	9771	1.2693	1.913	0.00341	0.0339	0.0312	0.0931	1018.1	0.01568	0.0033	0.0137	0.0206	4E-05	0.0004	0.00034	0.001	10.966	0.00017	4E-05	
2	2025	bilitate Rur	Dump Truck Subbase Material	Single Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted AccessSingle Unit Short-hau	nrestricte	40	5	9	58627	1.2693	1.913	0.00341	0.0339	0.0312	0.0931	1018.1	0.01568	0.0033	0.082	0.1236	0.0002	0.0022	0.00202	0.00602	65.797	0.00101	0.0002	
2	2025	bilitate Rur	Passenger Car	Passenger Car	Employee Commute	Gasoline	asolineUrban Unrestricted AccessPassenger Ca	nrestricte	30	--	130.9	337722	2.2328	0.0635	0.00202	0.002	0.0017	0.0576	304.16	0.00737	0.0017	0.8312	0.0236	0.0008	0.0007	0.00064	0.02145	113.23	0.00274	0.0006	
3	2025	way Safety	Concrete Mixer for Fencing	Single Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted AccessSingle Unit Short-hau	nrestricte	40	5	59	400000	1.2693	1.913	0.00341	0.0339	0.0312	0.0931	1018.1	0.01568	0.0033	0.5597	0.8435	0.0015	0.0149	0.01375	0.04104	448.92	0.00692	0.0014	
3	2025	way Safety	Passenger Car	Passenger Car	Employee Commute	Gasoline	asolineUrban Unrestricted AccessPassenger Ca	nrestricte	30	--	82.5	212850	2.2328	0.0635	0.00202	0.002	0.0017	0.0576	304.16	0.00737	0.0017	0.5239	0.0149	0.0005	0.0005	0.00041	0.01352	71.365	0.00173	0.0004	
4	2025	e - 160000	Cement Mixer	Single Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted AccessSingle Unit Short-hau	nrestricte	40	5	5	37000	1.2693	1.913	0.00341	0.0339	0.0312	0.0931	1018.1	0.01568	0.0033	0.0518	0.078	0.0001	0.0014	0.00127	0.0038	41.525	0.00064	0.0001	
4	2025	e - 160000	Dump Truck Subbase Material	Single Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted AccessSingle Unit Short-hau	nrestricte	40	5	3	19733	1.2693	1.913	0.00341	0.0339	0.0312	0.0931	1018.1	0.01568	0.0033	0.0276	0.0416	7E-05	0.0007	0.00068	0.00202	22.146	0.00034	7E-05	
4	2025	e - 160000	Passenger Car	Passenger Car	Employee Commute	Gasoline	asolineUrban Unrestricted AccessPassenger Ca	nrestricte	30	--	235.4	762696	2.2328	0.0635	0.00202	0.002	0.0017	0.0576	304.16	0.00737	0.0017	1.8772	0.0534	0.0017	0.0016	0.00145	0.04843	255.72	0.0062	0.0015	
4	2025	e - 160000	Tractor Trailer	Combination Short-haul Truck	Material Delivery	Diesel	rban Unrestricted AccessCombination Short-ha	nrestricte	40	5	1	1600	2.2026	4.1177	0.00549	0.0662	0.0609	0.1448	1643.2	0.01968	0.0028	0.0039	0.0073	1E-05	0.0001	0.00011	0.00026	2.8982	3.5E-05	5E-06	
tional Fill	2025	Soil Borrow	Dump Truck - Asphalt	Single Unit Short-haul Truck	Material Delivery	Diesel	Urban Unrestricted AccessSingle Unit Short-hau	nrestricte	30			90000	1.2693	1.913	0.00341	0.0339	0.0312	0.0931	1018.1	0.01568	0.0033	0.1259	0.1898	0.0003	0.0034	0.00309	0.00923	101.01	0.00156	0.0003	
																						5.2834	**1.8189**	**0.0068**	**0.0337**	**0.03087**	**0.18945**	**1465.4**	**0.02751**	**0.0061**	

Fugitive Sources

Units for Non-Greenhouse Gases Emission: Short Ton

Scenario ID	Year	Project	Fugitive Source Type	Number of Months	CO	NOx	SO2	PM10	VOC
1	2025	way Extens	Asphalt Drying	4	0	0	0	0	0.05
1	2025	way Extens	Asphalt Storage and Batching	4	0.37565	0.02345	0.0043155	0.0257	0.0117
1	2025	way Extens	Material Movement (Paved Roads)	4	0	0	0	0.02195	0
1	2025	way Extens	Material Movement (Unpaved Roads)	4	0	0	0	0.0715	0
1	2025	way Extens	Soil Handling	4	0	0	0	0.04395	0
1	2025	way Extens	Unstabilized Land and Wind Erosion	4	0	0	0	2.09E-08	0
2	2025	bilitate Rur	Asphalt Drying	4	0	0	0	0	0.1
2	2025	bilitate Rur	Asphalt Storage and Batching	4	1.15015	0.0718	0.0132	0.07875	0.0356
2	2025	bilitate Rur	Concrete Mixing/Batching	4	0	0	0	0.4067	0
2	2025	bilitate Rur	Material Movement (Paved Roads)	4	0	0	0	0.0579	0
2	2025	bilitate Rur	Material Movement (Unpaved Roads)	4	0	0	0	0.18325	0
2	2025	bilitate Rur	Soil Handling	4	0	0	0	0.13455	0
2	2025	bilitate Rur	Unstabilized Land and Wind Erosion	4	0	0	0	6.40E-08	0
3	2025	way Safety	Material Movement (Paved Roads)	4	0	0	0	0	0
3	2025	way Safety	Material Movement (Unpaved Roads)	4	0	0	0	0.00234	0
3	2025	way Safety	Soil Handling	4	0	0	0	0.02065	0
3	2025	way Safety	Unstabilized Land and Wind Erosion	4	0	0	0	9.82E-09	0
4	2025	e - 160000	Asphalt Drying	5	0	0	0	0	0.25
4	2025	e - 160000	Concrete Mixing/Batching	5	0	0	0	0.1369	0
4	2025	e - 160000	Material Movement (Paved Roads)	5	0	0	0	0.02005	0
4	2025	e - 160000	Material Movement (Unpaved Roads)	5	0	0	0	0.06055	0
				Total	**1.5258**	**0.09525**	**0.0175155**	**1.26474**	**0.4473**

2025 Totals

Year	ission Sou	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O	CO2e
2025	NonRoad	0.68	1.96	0.01	0.13	0.13	0.15	3523.97	--	--	
2025	OnRoad	5.283408	1.818862188	0.006774113	0.033692159	0.030868	0.189450584	1465.44	0.0275	0.0061	
2025	Fugitive	1.5258	0.09525	0.0175155	1.264738595	0	0.44725	--	--	--	
2025	TOTAL	7.49	3.88	0.03	1.43	0.16	0.785	4526	0.025	0.00553	4528

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ASSUMPTIONS

Emission factors were developed from the following models:

On-Road Vehicles: MOVES3 (Version 3.0.2)

Non-Road Equipment: NONROAD MOVES3 Version 3.0.2

In addition to the overall project size dimensions (e.g., Length and width) provided by the user, an additional 10 ft length and 10 ft width is added to account for disturbance areas.

The number of employees is based on the higher of two methods: (1) number of equipment, and (2) multiply the project cost in million by 11.

The average employee travels 30 miles round-trip from home to construction site each day.

The average on-road material delivery round-trip distance per truck is 40 miles per day.

For calculating fugitive, re-entrained PM emissions from on-road and non-road material delivery and handling equipment, a nominal VMT of 5 miles is used for each vehicle per day.

In deriving emission factors from NONROAD, the horsepower for each equipment represents the most popular in each equipment category.

The total length of each modeled scenario is used to define the number of days associated with vehicle/equipment evaporative emissions.

The choice of location and season are assumed to adequately represent differences in fuel characteristics affecting emissions.

The default methods assume that all construction equipment use diesel as well as heavy-duty on-road vehicles, while passenger vehicles (including motorcycles) use gasoline.

Fugitive emissions are only modeled for:

- Asphalt drying
- Asphalt storage and batching
- Concrete mixing/batching
- Soil handling
- Unstabilized land and wind erosion
- Material movement (unpaved roads)
- Material movement (paved roads)

On-Road vehicle speeds are not explicitly modeled. The associated emission factors for each modeled vehicle from MOVES represent averages over the driving cycles, the roadway type, and daily temperature variations.

The default equipment hours-of-use data are developed based on the overall size of the project provided by the user and activity rates based on expert engineering judgment.

Under the Construction Activity Type list (Activity Tab), when a choice between asphalt and concrete materials occurs, asphalt is always selected as default. To choose concrete, de-select the aphalt item and select the corresponding concrete item.

Two trips per day were assumed for each on-road material handling trucks.

Only CO2, CH4, and N2O are used to represent greenhouse gas emissions. Other potential greenhouse gases including air conditioning refrigerants were not included.

The following equipment are always modeled using diesel emission factors since gasoline-based emission factors are not available:

- Asphalt Deliveries/Ten Wheelers
- Bulldozer
- Concrete Ready Mix Trucks
- Concrete Ready Trucks Mix for Cores
- Concrete Truck
- Crack Filler (Trailer Mounted)
- Delivery of Tanks (3)
- Distributing Tanker
- Dozer
- Dump Truck
- Dump Truck (12 cy)
- Excavator
- Excavator for U/G Services/Tanks
- Flat Bed or Dump Trucks
- Flatbed Truck
- Grader
- Grout Wheel Truck
- Hoist Equipment with 40 Ton Rig
- Hydralic Hammer
- Hydroseeder
- Line Painting Truck and Sprayer
- Material Deliveries
- Off-Road Truck
- Pickup Truck
- Scraper
- Seed Truck Spreader
- Small Dozer
- Survey Crew Trucks
- Ten Wheelers
- Ten Wheelers- Material Delivery
- Tool Truck
- Tractor Trailer- Equipment Delivery
- Tractor Trailer- Material Delivery
- Tractor Trailer- Steel Deliveries
- Tractor Trailer- Stone Delivery
- Tractor Trailer- Topsoil & Seed
- Tractor Trailer- Truck Delivery
- Tractor Trailer with Boom Hoist- Curbs Del & Place
- Tractor Trailer with Boom Hoist- Delivery
- Tractor Trailers- Rebar Deliveries
- Tractor Trailers Temp Fac.
- Truck for Topsoil & Seed Del&Spread
- Water Truck
- Excavator with Bucket
- Excavator with Hoe Ram

==========

HVN Ground Access Vehicles

		Alternative (Net Change)	
Segment	Distance	Daily 2029	VMT
Incoming	0.95322	400	381
Outgoing	0.95322	400	381
Idle	0	400	0

HVN Ground Access Vehicles

MOVES3 2029 Emission Factors								
CO	NOx	PM10	PM2.5	VOC	Sox	CH4	N2O	CO2
2.466	0.0145	0.0015	0.0013	0.019	0.0015	0.0078	0.00137	271
2.466	0.0145	0.0015	0.0013	0.019	0.0015	0.0078	0.00137	271
8.3	0.056	0.007	0.0067	0.229	0.01	0.026	0.0165	1538

HVN Ground Access Vehicles

MOVES3 2029 Emissions TPY								
CO	NOx	PM10	PM2.5	VOC	SO2	CH4	N2O	CO2
0.378033	0.002223	0.00023	0.000199	0.002913	0.00023	0.001196	0.00021	41.54376
0.378033	0.002223	0.00023	0.000199	0.002913	0.00023	0.001196	0.00021	41.54376
0.111235	0.00075	9.38E-05	8.98E-05	0.003069	0.000134	0.000348	0.000221	20.61193
Totals	**0.867**	**0.005**	**0.001**	**0.0005**	**0.009**	**0.001**	**0.002486**	**0.000582**	**94.07459**
					GWP		**0.069597**	**0.154139**	**94.07459**
									94.29833

Average Speeds assuming 30 mph

Idling assumings 5 minutes per hour per vehicle

ADT assumes a net change of 400 tpd, No Action at 8300 trips per day and Proposed Action 8700 trips per day per FHI Studios 6/22/2022 email.

HVN New Parking Area

Proposed Action									
Location	Levels	Total Parking Build	Total Per Level	Length	Width	Half In	Half Out	Total Distance (ft)	Total Distance (mile)
New Employee Parking (Net New)	1	3,075	3,075	6,620	100	3,360	3,360	6,720	1.27

HVN New Parking Area

MOVES3 2029 Emission Factors								
CO	NOx	PM10	PM2.5	VOC	Sox	CH4	N2O	CO2
3.520	0.039	0.002	0.002	0.038	0.003	0.011	0.001	401.700

HVN New Parking Area

MOVES3 2029 Emissions TPY								
CO	NOx	PM10	PM2.5	VOC	SO2	CH4	N2O	CO2
5.538685	**0.061209**	**0.003776**	**0.003147**	**0.060107**	**0.004091**	**0.017308**	**0.001731**	**632.071**
5.54	**0.061**	**0.004**	**0.003**	**0.060**	**0.004**	**0.016**	**0.002**	**573.83**
				GWP		**0.439976**	**0.416406**	**573.8256**
								574.682

Notes
1. Assumes the vehicles travel 15 mph and assumes vehicles enter halfway in and halfway out
2. Assumes parking area is filled every day for 365 days per year.
3. GHG emissions totals are Metric Tons
4. Assumes 3075 net new parking spaces.

HVN No Action Satellite New Parking Area LongWharf Drive

Proposed Action									
Location	Levels	Total Parking Build	Total Per Level	Length	Width	Half In	Half Out	Total Distance (ft)	Total Distance (mile)
Long Wharf Drive Parking (Proposed No Action)	1	500	500	475	475	475	475	950	0.18
	Daily Shuttle Trips					One Way Over	One Way Back	Total Distance (ft)	Total Distance (mile)
Shuttle Trips	240					15,840	15,840	31,680	6.00

HVN No Action Satellite New Parking Area LongWharf Drive

MOVES3 2029 Emission Factors								
CO	NOx	PM10	PM2.5	VOC	Sox	CH4	N2O	CO2
3.520	0.039	0.002	0.002	0.038	0.003	0.011	0.001	401.700
2.360	4.040	0.018	0.017	0.071	0.005	0.020	0.003	1525.000

HVN No Action Satellite New Parking Area LongWharf Drive

MOVES3 2029 Emissions TPY								
CO	NOx	PM10	PM2.5	VOC	SO2	CH4	N2O	CO2
0.127317	**0.001407**	**7.23E-05**	**8.68E-05**	**0.001382**	**9.4E-05**	**0.000398**	**3.98E-05**	**14.52931**
1.366	**2.338985**	**0.010421**	**0.009842**	**0.041106**	**0.002895**	**0.011579**	**0.001737**	**882.9089**
1.49	**2.340**	**0.010**	**0.010**	**0.042**	**0.003**	**0.011**	**0.002**	**814.74**
				GWP		**0.304453**	**0.427428**	**814.7393**
								815.4711

Notes
1. Assumes the vehicles travel 15 mph and assumes vehicles enter halfway in and halfway out
2. Assumes parking area is filled every day for 365 days per year.
3. GHG emissions totals are Metric Tons
4. Average transit bus speed of 30 mph was assumed

Delta	**4.05**	**-2.28**	**-0.01**	**-0.01**	**0.018**	**0.001**	**0.14**	**-0.01**	**-240.91**
									-240.789

APPENDIX F TRAFFIC STUDY

MEMORANDUM

To:	Jeff Wood, McFarland Johnson David Rosa, McFarland Johnson	Project:	Tweed / New Haven East Terminal
From:	Carla Tillery, FHI Studio Parker Sorenson, FHI Studio	Date:	May 25, 2022
Subject:	Tweed / New Haven East Terminal – Airport Operation Traffic Study Update		

FHI Studio has completed updated analyses, as part of the traffic evaluation for the Tweed / New Haven East Terminal Environmental Assessment (HVN EA). This memorandum provides a brief summary of the LOS analysis, approach volumes and intersection turning movement volumes for the No Action Condition and the Proposed Action Condition.

No Action Condition Analysis Summary

The No Action condition represents the future design year with normal traffic growth plus estimated trips generated by future operations of the airport. This scenario considers the existing west side terminal with increased flight operations. It also considers traffic analysis assumptions as approved by Avports, May 17, 2022.

Proposed Action Condition Analysis Summary

The Proposed Action condition represents the future design year with normal traffic growth plus estimated trips generated by future operations of the airport. It does not include any roadway improvements to address any operational issues. However, in coordination with McFarland Johnson (Jeff Wood), the LOS results at the intersection of Coe Avenue with Proto Drive reflect signalization.

Minor changes have been made to this analysis, so please consider the results presented in this memorandum for purposes of the air quality analysis.

Results

Table 1 provides the LOS results for the No Action (2029) and Proposed Action (2029). Table 2 provides the total intersection approach volumes (vehicles per hour) for the No Action and Proposed Action conditions. Table 3 provides the intersection turning movement count volumes for the No Action and Proposed Action conditions.

Table 1: No Action (2029) and Proposed Action (2029)
Level of Service Summary

			No Action (2029)		Proposed Action (2029)	
ID	**Intersection**	**Control Type**	**Morning Peak Hour**	**Midday Peak Hour**	**Morning Peak Hour**	**Midday Peak Hour**
1	High Street (Rte 100) & I-95 SB Off Ramp (Exit 52)	Signal	B	C	B	C
2	High Street (Rte 100) & I-95 NB On Ramp (Exit 52)	Signal	C	F	C	F
3	High Street (Rte 100) & Kimberly Avenue (Rte 735)	Signal	B	E	B	E
4	High Street (Rte 100) & Messina Drive	Signal	B	B	B	B
5	Main Street & Messina Drive	Signal	B	B	B	B
6	High Street (Rte 100) & Main Street (Rte 100)	Signal	C	C	C	C
7	Hemingway Avenue (Rte 142) & Saltonstall Parkway (Rte 1)	Signal	C	C	C	C*
8	Hemingway Avenue (Rte 142) & Main Street (Rte 100)	Signal	C	D*	D*	D*
9	Hemingway Avenue (Rte 142) & Dodge Avenue	Signal	B	B	B	B
10	Coe Avenue (Rte 337) & Proto Drive*	TWSC/Signal	C	C	B	B
11	Thompson Avenue & Dodge Avenue	AWSC	A	B	A	A

TWSC: Two-way Stop Controlled - LOS Reports average side street delay
AWSC: All-way Stop Controlled
*Intersections with critical movements at LOS E or LOS F.

Table 2: No Action (2029) and Proposed Action (2029) Approach Intersection Total Approach Volumes

			No Action (2029)		Proposed Action (2029)	
ID	**Intersection**	**Control Type**	**AM Peak Hour**	**Midday Peak Hour**	**AM Peak Hour**	**Midday Peak Hour**
1	High Street (Rte 100) & I-95 SB Off Ramp (Exit 52)	Signal	999	1,531	1,007	1,535
2	High Street (Rte 100) & I-95 NB On Ramp (Exit 52)	Signal	1,434	2,054	1,444	2,060
3	High Street (Rte 100) & Kimberly Avenue (Rte 735)	Signal	1,276	1,828	1,286	1,834
4	High Street (Rte 100) & Messina Drive	Signal	987	1,298	997	1,304
5	Main Street & Messina Drive	Signal	623	806	623	806
6	High Street (Rte 100) & Main Street (Rte 100)	Signal	1,037	1,387	1,047	1,393
7	Hemingway Avenue (Rte 142) & Saltonstall Parkway (Rte 1)	Signal	1,695	2,211	2,201	2,779
8	Hemingway Avenue (Rte 142) & Main Street (Rte 100)	Signal	1,617	2,054	2,257	2,773
9	Hemingway Avenue (Rte 142) & Dodge Avenue	Signal	1,263	1,696	1,923	2,435
10	Coe Avenue (Rte 337) & Proto Drive	TWSC	738	938	1,430	1,713
11	Thompson Avenue & Dodge Avenue	AWSC	494	684	358	523

TWSC: Two-way Stop Controlled

AWSC: All-way Stop Controlled

Table 3: No Action and Proposed Action Condition (2029)

Intersection Turning Movement Traffic Volumes

			No Action (2029)		Proposed Action (2029)	
ID	**Intersection**	**Movement**	**Morning Peak Hour**	**Midday Peak Hour**	**Morning Peak Hour**	**Midday Peak Hour**
1	**High Street (Rte 100) & I-95 NB Off Ramp**					
		WBL	271	351	279	355
		WBR	81	137	81	137
		NBT	249	464	249	464
		NBR	0	0	0	0
		SBL	0	0	0	0
		SBT	398	579	398	579
		SBR				
2	**High Street (Rte 100) & Laurel Street/I-95 NB On Ramp**					
		EBL	8	18	8	18
		EBT	57	62	57	62
		EBR	139	155	139	155
		NBL	107	178	107	178
		NBT	241	446	241	446
		NBR	213	265	215	267
		SBL	116	123	116	123
		SBT	516	739	524	743
		SBR	37	68	37	68
3	**High Street (Rte 100) & Kimberly Avenue**					
		EBL	146	327	146	327
		EBR	28	19	28	19
		NBL	32	26	32	26
		NBT	415	562	417	564
		SBT	434	598	442	602
		SBR	221	296	221	296
4	**High Street (Rte 100) & Messina Drive**					
		EBL	46	62	46	62
		EBT	23	26	23	26
		EBR	1	1	1	1
		WBL	5	8	5	8
		WBT	40	40	40	40
		WBR	169	198	169	198
		NBL	3	10	3	10
		NBT	232	328	234	330
		NBR	6	8	6	8
		SBL	81	90	81	90
		SBT	311	417	319	421
		SBR	70	110	70	110
5	**Kirkham Avenue/Messina Drive & Main Street**					
		EBL	60	78	60	78
		EBT	221	296	221	296
		EBR	6	10	6	10
		WBL	7	3	7	3
		WBT	185	231	185	231
		WBR	2	2	2	2
		NBL	9	5	9	5
		NBT	8	9	8	9
		NBR	12	12	12	12
		SBL	3	3	3	3
		SBT	8	7	8	7
		SBR	102	150	102	150
6	**Thompson Avenue/High Street (Rte 100) & Main Street/Main Street (Rte 100)**					
		EBL	4	12	4	12
		EBT	186	229	186	229
		EBR	46	70	46	70
		WBL	16	31	16	31
		WBT	148	192	148	192
		WBR	84	116	149	194
		NBL	43	40	43	40
		NBT	153	218	90	142
		NBR	40	53	40	53
		SBL	175	225	244	298
		SBT	139	197	78	128
		SBR	3	4	3	4

Table 3: No Action and Proposed Action Condition (2029)

Intersection Turning Movement Traffic Volumes

			No Action (2029)		Proposed Action (2029)	
ID	**Intersection**	**Movement**	**Morning Peak Hour**	**Midday Peak Hour**	**Morning Peak Hour**	**Midday Peak Hour**
7	**Hemingway Avenue (Rte 142)/Estelle Road & Saltonstall Parkway (Rte 1)**					
		EBL	22	26	22	26
		EBT	376	494	376	494
		EBR	286	417	545	689
		WBL	82	131	83	132
		WBT	384	565	384	565
		WBR	1	3	1	3
		NBL	450	456	695	750
		NBT	5	9	5	9
		NBR	77	92	78	93
		SBL	2	3	2	3
		SBT	2	9	2	9
		SBR	8	6	8	6
8	**Hemingway Avenue (Rte 142) & Main Street (Rte 100)**					
		EBL	46	64	46	64
		EBT	154	161	154	161
		EBR	201	282	270	355
		WBL	77	106	77	106
		WBT	86	121	86	121
		WBR	33	21	33	21
		NBL	117	168	182	246
		NBT	453	472	699	767
		NBR	79	102	79	102
		SBL	28	53	28	53
		SBT	298	454	558	727
		SBR	45	50	45	50
9	**Hemingway Avenue (Rte 142) & Dodge Avenue**					
		EBL	60	75	44	56
		EBR	80	137	90	147
		NBL	63	77	73	87
		NBT	567	653	894	1045
		SBT	443	671	788	1034
		SBR	50	83	34	66
10	**Hemingway Avenue (Rte 142) & Proto Drive**					
		EBL	39	60	376	462
		EBR	3	8	3	8
		NBL	1	5	1	5
		NBT	338	377	338	377
		SBT	311	457	311	457
		SBR	46	31	401	404
11	**Thompson Avenue & Dodge Avenue**					
		EBL	89	150	26	74
		EBT	84	116	78	107
		EBR	7	24	7	24
		WBL	4	17	4	17
		WBT	78	80	72	73
		WBR	26	17	26	17
		NBL	5	14	5	14
		NBT	39	36	39	36
		NBR	19	33	19	33
		SBL	20	48	20	48
		SBT	31	40	31	40
		SBR	92	109	31	40

APPENDIX G CAL3QHC OUTPUT

JOB: HVN EA 2024 Construction RUN: High Street Kimberly Ave Midday CO

DATE : 4/29/22
TIME : 8:27:34

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 5 (E) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
	*	X1	Y1	X2	Y2	*									
1. S Leg App - FreeFlow	*	8.0	0.0	-844.0	-853.0	*	1206.	225.	AG	329.	4.1	0.0	31.7		
2. S Leg App - Queue	*	-13.0	-21.0	-91.8	-99.9	*	112.	225.	AG	48.	100.0	0.0	12.0	0.46	5.7
3. S Leg Dep - FreeFlow	*	0.0	8.0	-853.0	-844.0	*	1206.	225.	AG	307.	4.1	0.0	31.7		
4. E Leg App - FreeFlow	*	8.0	0.0	853.0	-844.0	*	1194.	135.	AG	505.	4.1	0.0	31.7		
5. E Leg App - Queue	*	13.0	-4.0	134.1	-125.1	*	171.	135.	AG	48.	100.0	0.0	12.0	0.70	8.7
6. E Leg Dep - FreeFlow	*	-8.0	-8.0	840.0	-857.0	*	1200.	135.	AG	792.	4.1	0.0	43.7		
7. W Leg App - FreeFlow	*	-8.0	-8.0	-857.0	840.0	*	1200.	315.	AG	788.	4.1	0.0	43.7		
8. W Leg App - Queue	*	-17.0	0.0	-111.5	94.5	*	134.	315.	AG	96.	100.0	0.0	24.0	0.55	6.8
9. W Leg Dep - FreeFlow	*	0.0	8.0	-844.0	853.0	*	1194.	315.	AG	523.	4.1	0.0	31.7		

JOB: HVN EA 2024 Construction RUN: High Street Kimberly Ave Midday CO

DATE : 4/29/22
TIME : 8:27:34

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. S Leg App - Queue	120	62	2.0	329	1600	34.50	2	3
5. E Leg App - Queue	120	62	2.0	505	1600	34.50	2	3
8. W Leg App - Queue	120	62	2.0	788	1600	34.50	2	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	31.1	0.0	5.9
2. N Leg, E Side - 0 m	31.1	0.0	5.9
3. N Leg, W Side-Corner	0.0	31.1	5.9
4. S Leg, E Side-Corner	-8.5	-39.6	5.9
5. S Leg, E Side - 25 m	-59.4	-90.5	5.9
6. S Leg, E Side - 50 m	-117.4	-148.5	5.9
7. S Leg, E Side-Midblk	-425.7	-456.8	5.9
8. S Leg, W Side-Corner	-39.6	-8.5	5.9
9. S Leg, W Side - 25 m	-90.5	-59.4	5.9
10. S Leg, W Side - 50 m	-148.5	-117.4	5.9

```
     11. S Leg, W Side-Midblk *      -456.8     -425.7        5.9   *
     12. E Leg, N Side - 25 m *        82.0      -50.9        5.9   *
     13. E Leg, N Side - 50 m *       140.0     -108.9        5.9   *
     14. E Leg, N Side-Midblk *       448.3     -417.2        5.9   *
     15. W Leg, N Side - 25 m *       -50.9       82.0        5.9   *
     16. W Leg, N Side - 50 m *      -108.9      140.0        5.9   *
     17. W Leg, N Side-Midblk *      -417.2      448.3        5.9   *
     18. E Leg, S Side - 25 m *        42.4      -90.5        5.9   *
     19. E Leg, S Side - 50 m *       100.4     -148.5        5.9   *
     20. E Leg, S Side-Midblk *       408.7     -456.8        5.9   *
     21. W Leg, S Side - 25 m *       -90.5       42.4        5.9   *
     22. W Leg, S Side - 50 m *      -148.5      100.4        5.9   *
     23. W Leg, S Side-Midblk *      -456.8      408.7        5.9   *

PAGE  3
      JOB: HVN EA 2024 Construction                          RUN: High Street Kimberly Ave Midday CO

       MODEL RESULTS
       -------------

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE:  10.-360.

 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*       1       2       3       4       5       6       7       8       9      10      11      12      13
 14      15

------*-----------------------------------------------------------------------------------------------------------
-----------
  10.  *  0.0000  0.0000  0.0000  0.2000  0.5000  0.2000  0.1000  0.5000  0.2000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000
  20.  *  0.0000  0.0000  0.0000  0.1000  0.4000  0.4000  0.2000  0.5000  0.2000  0.1000  0.0000  0.0000  0.0000
0.0000  0.0000
  30.  *  0.0000  0.0000  0.0000  0.1000  0.2000  0.3000  0.2000  0.5000  0.2000  0.1000  0.0000  0.0000  0.0000
0.0000  0.0000
  40.  *  0.0000  0.0000  0.0000  0.2000  0.2000  0.2000  0.2000  0.4000  0.1000  0.1000  0.1000  0.0000  0.0000
0.0000  0.0000
  50.  *  0.0000  0.0000  0.0000  0.2000  0.0000  0.1000  0.1000  0.3000  0.2000  0.2000  0.2000  0.0000  0.0000
0.0000  0.0000
  60.  *  0.0000  0.0000  0.0000  0.3000  0.1000  0.0000  0.0000  0.3000  0.2000  0.3000  0.2000  0.0000  0.0000
0.0000  0.0000
  70.  *  0.0000  0.0000  0.0000  0.3000  0.1000  0.0000  0.0000  0.2000  0.2000  0.3000  0.2000  0.0000  0.0000
0.0000  0.0000
  80.  *  0.0000  0.0000  0.0000  0.3000  0.1000  0.0000  0.0000  0.2000  0.3000  0.2000  0.2000  0.0000  0.0000
0.0000  0.0000
  90.  *  0.0000  0.0000  0.0000  0.3000  0.1000  0.0000  0.0000  0.4000  0.4000  0.1000  0.1000  0.0000  0.0000
0.0000  0.0000
 100.  *  0.0000  0.0000  0.0000  0.3000  0.1000  0.0000  0.0000  0.4000  0.2000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000
 110.  *  0.0000  0.0000  0.0000  0.4000  0.1000  0.0000  0.0000  0.3000  0.2000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000
 120.  *  0.0000  0.0000  0.0000  0.4000  0.1000  0.0000  0.0000  0.5000  0.2000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000
 130.  *  0.3000  0.3000  0.3000  0.3000  0.1000  0.0000  0.0000  0.4000  0.2000  0.0000  0.0000  0.2000  0.2000
0.2000  0.3000
 140.  *  0.5000  0.5000  0.4000  0.1000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.0000  0.5000  0.3000
0.3000  0.4000
 150.  *  0.6000  0.6000  0.4000  0.1000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.0000  0.6000  0.4000
0.3000  0.5000
 160.  *  0.4000  0.4000  0.3000  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.0000  0.4000  0.2000
0.2000  0.4000
 170.  *  0.4000  0.4000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.0000  0.4000  0.2000
0.2000  0.4000
 180.  *  0.4000  0.4000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000  0.1000  0.1000  0.4000  0.2000
```

0.2000 0.5000
 190. * 0.3000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.3000 0.2000 0.2000 0.2000 0.3000 0.2000
0.2000 0.4000
 200. * 0.3000 0.3000 0.6000 0.0000 0.0000 0.0000 0.0000 0.3000 0.2000 0.2000 0.2000 0.3000 0.3000
0.2000 0.4000
 210. * 0.3000 0.3000 0.6000 0.0000 0.0000 0.0000 0.0000 0.3000 0.2000 0.2000 0.2000 0.3000 0.3000
0.2000 0.4000
 220. * 0.5000 0.5000 0.7000 0.1000 0.1000 0.1000 0.1000 0.2000 0.2000 0.2000 0.2000 0.3000 0.3000
0.2000 0.4000
 230. * 0.6000 0.6000 0.5000 0.3000 0.2000 0.2000 0.2000 0.1000 0.1000 0.1000 0.1000 0.3000 0.3000
0.2000 0.4000
 240. * 0.6000 0.6000 0.4000 0.4000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000
0.2000 0.4000
 250. * 0.6000 0.6000 0.4000 0.4000 0.3000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000
0.2000 0.4000
 260. * 0.4000 0.4000 0.4000 0.3000 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000
0.2000 0.4000
 270. * 0.2000 0.2000 0.5000 0.3000 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.5000 0.4000
0.2000 0.4000
 280. * 0.3000 0.3000 0.5000 0.2000 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.4000 0.4000
0.2000 0.4000
 290. * 0.4000 0.4000 0.5000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.5000 0.4000
0.2000 0.3000
 300. * 0.5000 0.5000 0.6000 0.1000 0.1000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.5000 0.6000
0.3000 0.4000
 310. * 0.4000 0.4000 0.5000 0.3000 0.1000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.5000 0.6000
0.3000 0.3000
 320. * 0.2000 0.2000 0.2000 0.6000 0.2000 0.0000 0.0000 0.5000 0.1000 0.0000 0.0000 0.4000 0.3000
0.2000 0.2000
 330. * 0.0000 0.0000 0.0000 0.7000 0.2000 0.0000 0.0000 0.6000 0.1000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 340. * 0.0000 0.0000 0.0000 0.6000 0.3000 0.0000 0.0000 0.7000 0.1000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 350. * 0.0000 0.0000 0.0000 0.6000 0.4000 0.1000 0.1000 0.6000 0.2000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 360. * 0.0000 0.0000 0.0000 0.4000 0.5000 0.1000 0.1000 0.5000 0.2000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000

------*---

 MAX   * 0.6000 0.6000 0.7000 0.7000 0.5000 0.4000 0.2000 0.7000 0.4000 0.3000 0.2000 0.6000 0.6000
0.3000 0.5000
 DEGR. *   150   150   220   330   10   20   20   340   90   60   50   150   300
140   150

       MODEL RESULTS

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE: 10.-360.

 WIND * CONCENTRATION
 ANGLE *   (PPM)
 (DEGR)*   16   17   18   19   20   21   22   23
 ------*---
  10. * 0.0000 0.0000 0.3000 0.3000 0.2000 0.5000 0.2000 0.2000
  20. * 0.0000 0.0000 0.3000 0.3000 0.2000 0.5000 0.2000 0.2000
  30. * 0.0000 0.0000 0.2000 0.3000 0.2000 0.5000 0.2000 0.2000
  40. * 0.0000 0.0000 0.2000 0.2000 0.1000 0.5000 0.2000 0.2000
  50. * 0.0000 0.0000 0.2000 0.2000 0.1000 0.5000 0.2000 0.2000
  60. * 0.0000 0.0000 0.3000 0.2000 0.2000 0.5000 0.2000 0.2000

70.	*	0.0000	0.0000	0.3000	0.2000	0.2000	0.5000	0.2000	0.2000
80.	*	0.0000	0.0000	0.3000	0.2000	0.2000	0.5000	0.2000	0.2000
90.	*	0.0000	0.0000	0.3000	0.2000	0.2000	0.5000	0.3000	0.2000
100.	*	0.0000	0.0000	0.3000	0.2000	0.2000	0.5000	0.4000	0.2000
110.	*	0.0000	0.0000	0.4000	0.3000	0.3000	0.4000	0.6000	0.3000
120.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.7000	0.5000	0.3000
130.	*	0.2000	0.2000	0.3000	0.3000	0.3000	0.5000	0.5000	0.3000
140.	*	0.5000	0.3000	0.1000	0.1000	0.1000	0.3000	0.3000	0.1000
150.	*	0.5000	0.4000	0.1000	0.1000	0.1000	0.0000	0.0000	0.1000
160.	*	0.5000	0.2000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
170.	*	0.4000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
180.	*	0.4000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190.	*	0.3000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
240.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
250.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
260.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
270.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
280.	*	0.2000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
290.	*	0.2000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
300.	*	0.4000	0.4000	0.1000	0.0000	0.1000	0.1000	0.1000	0.1000
310.	*	0.3000	0.3000	0.3000	0.3000	0.1000	0.1000	0.1000	0.1000
320.	*	0.2000	0.2000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
330.	*	0.0000	0.0000	0.4000	0.4000	0.3000	0.5000	0.3000	0.3000
340.	*	0.0000	0.0000	0.3000	0.4000	0.3000	0.5000	0.3000	0.3000
350.	*	0.0000	0.0000	0.2000	0.3000	0.2000	0.5000	0.2000	0.2000
360.	*	0.0000	0.0000	0.3000	0.3000	0.2000	0.5000	0.2000	0.2000
------	*	----------	----------	----------	----------	----------	----------	----------	----------
MAX	*	0.5000	0.4000	0.4000	0.4000	0.3000	0.7000	0.6000	0.3000
DEGR.	*	140	150	110	320	110	120	110	110

THE HIGHEST CONCENTRATION OF 0.7000 PPM OCCURRED AT RECEPTOR 21.

JOB: HVN EA 2024 Construction RUN: High Street Kimberly Ave Midday PM

DATE : 4/29/22
TIME : 8:29:43

The MODE flag has been set for calculating concentrations for POLLUTANT: PM2.5

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 5 (E) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 UG/M**3

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
	*	X1	Y1	X2	Y2	*									
1. S Leg App - FreeFlow	*	8.0	0.0	-844.0	-853.0	*	1206.	225.	AG	329.	0.0	0.0	31.7		
2. S Leg App - Queue	*	-13.0	-21.0	-91.8	-99.9	*	112.	225.	AG	0.	100.0	0.0	12.0	0.46	5.7
3. S Leg Dep - FreeFlow	*	0.0	8.0	-853.0	-844.0	*	1206.	225.	AG	307.	0.0	0.0	31.7		
4. E Leg App - FreeFlow	*	8.0	0.0	853.0	-844.0	*	1194.	135.	AG	505.	0.0	0.0	31.7		
5. E Leg App - Queue	*	13.0	-4.0	134.1	-125.1	*	171.	135.	AG	0.	100.0	0.0	12.0	0.70	8.7
6. E Leg Dep - FreeFlow	*	-8.0	-8.0	840.0	-857.0	*	1200.	135.	AG	792.	0.0	0.0	43.7		
7. W Leg App - FreeFlow	*	-8.0	-8.0	-857.0	840.0	*	1200.	315.	AG	728.	0.0	0.0	43.7		
8. W Leg App - Queue	*	-17.0	0.0	-104.3	87.3	*	123.	315.	AG	0.	100.0	0.0	24.0	0.51	6.3
9. W Leg Dep - FreeFlow	*	0.0	8.0	-844.0	853.0	*	1194.	315.	AG	523.	0.0	0.0	31.7		

2. S Leg App - Queue	*	120	62	2.0	329	1600	0.02	2	3
5. E Leg App - Queue	*	120	62	2.0	505	1600	0.02	2	3
8. W Leg App - Queue	*	120	62	2.0	728	1600	0.02	2	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	31.1	0.0	5.9	*
2. N Leg, E Side - 0 m	*	31.1	0.0	5.9	*
3. N Leg, W Side-Corner	*	0.0	31.1	5.9	*
4. S Leg, E Side-Corner	*	-8.5	-39.6	5.9	*
5. S Leg, E Side - 25 m	*	-59.4	-90.5	5.9	*
6. S Leg, E Side - 50 m	*	-117.4	-148.5	5.9	*
7. S Leg, E Side-Midblk	*	-425.7	-456.8	5.9	*
8. S Leg, W Side-Corner	*	-39.6	-8.5	5.9	*
9. S Leg, W Side - 25 m	*	-90.5	-59.4	5.9	*
10. S Leg, W Side - 50 m	*	-148.5	-117.4	5.9	*
11. S Leg, W Side-Midblk	*	-456.8	-425.7	5.9	*
12. E Leg, N Side - 25 m	*	82.0	-50.9	5.9	*
13. E Leg, N Side - 50 m	*	140.0	-108.9	5.9	*
14. E Leg, N Side-Midblk	*	448.3	-417.2	5.9	*
15. W Leg, N Side - 25 m	*	-50.9	82.0	5.9	*
16. W Leg, N Side - 50 m	*	-108.9	140.0	5.9	*

17. W Leg, N Side-Midblk *	-417.2	448.3	5.9	*
18. E Leg, S Side - 25 m *	42.4	-90.5	5.9	*
19. E Leg, S Side - 50 m *	100.4	-148.5	5.9	*
20. E Leg, S Side-Midblk *	408.7	-456.8	5.9	*
21. W Leg, S Side - 25 m *	-90.5	42.4	5.9	*
22. W Leg, S Side - 50 m *	-148.5	100.4	5.9	*
23. W Leg, S Side-Midblk *	-456.8	408.7	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (UG/M**3) * 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10. *	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.3000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20. *	0.0000	0.0000	0.0000	0.1000	0.2000	0.1000	0.0000	0.3000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30. *	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.3000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
40. *	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.3000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
50. *	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.3000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000
60. *	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.2000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
70. *	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
80. *	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
90. *	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
100. *	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
110. *	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
120. *	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
130. *	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.1000	0.1000	0.1000	0.0000
140. *	0.3000	0.3000	0.3000	0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.3000	0.2000	0.2000	0.1000
150. *	0.3000	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.3000	0.2000	0.2000	0.3000
160. *	0.3000	0.3000	0.2000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.3000	0.2000	0.2000	0.2000
170. *	0.3000	0.3000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.3000	0.2000	0.2000	0.4000
180. *	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.3000
190. *	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.3000
200. *	0.2000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.2000
210. *	0.1000	0.1000	0.2000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.1000	0.1000	0.1000		

0.0000 0.2000
 220. * 0.2000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000 0.1000 0.1000 0.2000 0.2000
0.1000 0.2000
 230. * 0.4000 0.4000 0.1000 0.2000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000
0.1000 0.2000
 240. * 0.2000 0.2000 0.2000 0.2000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000
0.0000 0.2000
 250. * 0.1000 0.1000 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000
0.1000 0.2000
 260. * 0.0000 0.0000 0.3000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000
0.1000 0.2000
 270. * 0.1000 0.1000 0.3000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000
0.1000 0.3000
 280. * 0.1000 0.1000 0.4000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000
0.2000 0.3000
 290. * 0.3000 0.3000 0.4000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.4000 0.3000
0.2000 0.2000
 300. * 0.3000 0.3000 0.3000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000
0.2000 0.2000
 310. * 0.3000 0.3000 0.3000 0.3000 0.1000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.3000 0.2000
0.2000 0.2000
 320. * 0.1000 0.1000 0.1000 0.4000 0.1000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000
0.1000 0.1000
 330. * 0.0000 0.0000 0.0000 0.4000 0.1000 0.0000 0.0000 0.3000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 340. * 0.0000 0.0000 0.0000 0.4000 0.1000 0.0000 0.0000 0.3000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 350. * 0.0000 0.0000 0.0000 0.1000 0.2000 0.0000 0.0000 0.3000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 360. * 0.0000 0.0000 0.0000 0.1000 0.2000 0.0000 0.0000 0.3000 0.1000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000

------*---

 MAX   * 0.4000 0.4000 0.4000 0.4000 0.2000 0.1000 0.1000 0.3000 0.1000 0.1000 0.1000 0.4000 0.3000
0.2000 0.4000
 DEGR. *   230   230   280   320   10   20   30   10   10   30   50   290   280
140   170

       MODEL RESULTS

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE: 10.-360.

 WIND * CONCENTRATION
 ANGLE *   (UG/M**3)
 (DEGR)*   16   17   18   19   20   21   22   23
 ------*---
  10. * 0.0000 0.0000 0.2000 0.2000 0.1000 0.3000 0.1000 0.1000
  20. * 0.0000 0.0000 0.2000 0.2000 0.1000 0.3000 0.1000 0.1000
  30. * 0.0000 0.0000 0.2000 0.2000 0.1000 0.3000 0.1000 0.1000
  40. * 0.0000 0.0000 0.2000 0.1000 0.1000 0.3000 0.1000 0.1000
  50. * 0.0000 0.0000 0.2000 0.1000 0.1000 0.3000 0.1000 0.1000
  60. * 0.0000 0.0000 0.2000 0.1000 0.1000 0.3000 0.1000 0.1000
  70. * 0.0000 0.0000 0.2000 0.1000 0.1000 0.3000 0.1000 0.1000
  80. * 0.0000 0.0000 0.2000 0.1000 0.1000 0.3000 0.1000 0.1000
  90. * 0.0000 0.0000 0.2000 0.1000 0.1000 0.3000 0.1000 0.1000
 100. * 0.0000 0.0000 0.2000 0.1000 0.1000 0.3000 0.2000 0.1000
 110. * 0.0000 0.0000 0.1000 0.1000 0.1000 0.3000 0.2000 0.1000
 120. * 0.0000 0.0000 0.1000 0.1000 0.1000 0.3000 0.3000 0.1000

130.	*	0.0000	0.1000	0.1000	0.1000	0.1000	0.3000	0.2000	0.1000
140.	*	0.2000	0.2000	0.1000	0.1000	0.1000	0.0000	0.1000	0.1000
150.	*	0.3000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
160.	*	0.3000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
170.	*	0.3000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
180.	*	0.3000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
240.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
250.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
260.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
270.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
280.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
290.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
300.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
310.	*	0.2000	0.2000	0.1000	0.0000	0.1000	0.1000	0.1000	0.1000
320.	*	0.1000	0.1000	0.3000	0.1000	0.1000	0.1000	0.1000	0.1000
330.	*	0.0000	0.0000	0.2000	0.1000	0.1000	0.2000	0.1000	0.1000
340.	*	0.0000	0.0000	0.1000	0.2000	0.1000	0.2000	0.1000	0.1000
350.	*	0.0000	0.0000	0.2000	0.2000	0.1000	0.3000	0.1000	0.1000
360.	*	0.0000	0.0000	0.2000	0.2000	0.1000	0.3000	0.1000	0.1000
------	*								
MAX	*	0.3000	0.2000	0.3000	0.2000	0.1000	0.3000	0.3000	0.1000
DEGR.	*	150	140	320	10	10	10	120	10

THE HIGHEST CONCENTRATION OF 0.4000 UG/M**3 OCCURRED AT RECEPTOR 15.

JOB: New Haven EA 2024 RUN: Hemingway and Main

DATE : 4/ 4/22
TIME : 14:23:39

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 5 (E) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
	*	X1	Y1	X2	Y2	*									
1. N Leg App - FreeFlow	*	-24.0	0.0	-24.0	1200.0	*	1200.	360.	AG	961.	4.1	0.0	67.7		
2. N Leg App - Queue	*	-24.0	24.0	-24.0	105.4	*	81.	360.	AG	191.	100.0	0.0	48.0	0.33	4.1
3. N Leg Dep - FreeFlow	*	18.0	0.0	18.0	1200.0	*	1200.	360.	AG	727.	4.1	0.0	55.7		
4. S Leg App - FreeFlow	*	18.0	0.0	18.0	-1200.0	*	1200.	180.	AG	518.	4.1	0.0	55.7		
5. S Leg App - Queue	*	18.0	-36.0	18.0	-94.3	*	58.	180.	AG	143.	100.0	0.0	36.0	0.24	3.0
6. S Leg Dep - FreeFlow	*	-24.0	0.0	-24.0	-1200.0	*	1200.	180.	AG	791.	4.1	0.0	67.7		
7. E Leg App - FreeFlow	*	0.0	12.0	1200.0	12.0	*	1200.	90.	AG	483.	5.2	0.0	43.7		
8. E Leg App - Queue	*	36.0	12.0	117.7	12.0	*	82.	90.	AG	96.	100.0	0.0	24.0	0.33	4.2
9. E Leg Dep - FreeFlow	*	0.0	-18.0	1200.0	-18.0	*	1200.	90.	AG	300.	4.1	0.0	55.7		
10. W Leg App - FreeFlow	*	0.0	-18.0	-1200.0	-18.0	*	1200.	270.	AG	235.	4.1	0.0	55.7		
11. W Leg App - Queue	*	-48.0	-18.0	-74.4	-18.0	*	26.	270.	AG	143.	100.0	0.0	36.0	0.11	1.3
12. W Leg Dep - FreeFlow	*	0.0	12.0	-1200.0	12.0	*	1200.	270.	AG	379.	5.2	0.0	43.7		

JOB: New Haven EA 2024 RUN: Hemingway and Main

DATE : 4/ 4/22
TIME : 14:23:39

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. N Leg App - Queue	*	120	62	2.0	961	1600	34.50	1	3
5. S Leg App - Queue	*	120	62	2.0	518	1600	34.50	1	3
8. E Leg App - Queue	*	120	62	2.0	483	1600	34.50	1	3
11. W Leg App - Queue	*	120	62	2.0	235	1600	34.50	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	46.0	34.0	5.9	*
2. N Leg, E Side - 25 m	*	46.0	106.0	5.9	*
3. N Leg, E Side - 50 m	*	46.0	188.0	5.9	*
4. N Leg, E Side-Midblk	*	46.0	624.0	5.9	*
5. N Leg, W Side-Corner	*	-58.0	34.0	5.9	*

6.	N Leg, W Side - 25 m	-58.0	106.0	5.9	*
7.	N Leg, W Side - 50 m	-58.0	188.0	5.9	*
8.	N Leg, W Side-Midblk	-58.0	624.0	5.9	*
9.	S Leg, E Side-Corner	46.0	-46.0	5.9	*
10.	S Leg, E Side - 25 m	46.0	-118.0	5.9	*
11.	S Leg, E Side - 50 m	46.0	-200.0	5.9	*
12.	S Leg, E Side-Midblk	46.0	-636.0	5.9	*
13.	S Leg, W Side-Corner	-58.0	-46.0	5.9	*
14.	S Leg, W Side - 25 m	-58.0	-118.0	5.9	*
15.	S Leg, W Side - 50 m	-58.0	-200.0	5.9	*
16.	S Leg, W Side-Midblk	-58.0	-636.0	5.9	*
17.	E Leg, N Side - 25 m	118.0	34.0	5.9	*
18.	E Leg, N Side - 50 m	200.0	34.0	5.9	*
19.	E Leg, N Side-Midblk	636.0	34.0	5.9	*
20.	W Leg, N Side - 25 m	-130.0	34.0	5.9	*
21.	W Leg, N Side - 50 m	-212.0	34.0	5.9	*
22.	W Leg, N Side-Midblk	-648.0	34.0	5.9	*
23.	E Leg, S Side - 25 m	118.0	-46.0	5.9	*
24.	E Leg, S Side - 50 m	200.0	-46.0	5.9	*
25.	E Leg, S Side-Midblk	636.0	-46.0	5.9	*
26.	W Leg, S Side - 25 m	-130.0	-46.0	5.9	*
27.	W Leg, S Side - 50 m	-212.0	-46.0	5.9	*
28.	W Leg, S Side-Midblk	-648.0	-46.0	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.1000	0.1000	0.1000	0.1000	0.6000	0.3000	0.3000	0.3000	0.4000	0.1000	0.1000	0.1000	1.0000	0.6000	0.4000
20.	*	0.0000	0.0000	0.0000	0.0000	0.7000	0.3000	0.3000	0.3000	0.3000	0.1000	0.0000	0.0000	0.8000	0.4000	0.3000
30.	*	0.0000	0.0000	0.0000	0.0000	0.8000	0.3000	0.3000	0.3000	0.3000	0.1000	0.0000	0.0000	0.6000	0.3000	0.2000
40.	*	0.0000	0.0000	0.0000	0.0000	0.8000	0.2000	0.2000	0.2000	0.3000	0.0000	0.0000	0.0000	0.5000	0.3000	0.2000
50.	*	0.0000	0.0000	0.0000	0.0000	0.8000	0.2000	0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.2000	0.4000	0.1000
60.	*	0.0000	0.0000	0.0000	0.0000	0.8000	0.2000	0.2000	0.2000	0.3000	0.0000	0.0000	0.0000	0.3000	0.3000	0.1000
70.	*	0.0000	0.0000	0.0000	0.0000	0.7000	0.3000	0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.3000	0.2000	0.1000
80.	*	0.1000	0.0000	0.0000	0.0000	0.8000	0.3000	0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.5000	0.2000	0.1000
90.	*	0.3000	0.0000	0.0000	0.0000	0.9000	0.5000	0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.5000	0.1000	0.1000
100.	*	0.4000	0.1000	0.0000	0.0000	0.8000	0.7000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000
110.	*	0.5000	0.1000	0.0000	0.0000	0.6000	0.7000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000
120.	*	0.4000	0.1000	0.0000	0.0000	0.3000	0.9000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000
130.	*	0.4000	0.0000	0.0000	0.0000	0.4000	0.9000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.2000		

0.1000 0.1000
 140. * 0.4000 0.1000 0.0000 0.0000 0.5000 0.7000 0.4000 0.2000 0.0000 0.0000 0.0000 0.0000 0.1000
0.1000 0.1000
 150. * 0.4000 0.1000 0.0000 0.0000 0.5000 0.8000 0.5000 0.3000 0.0000 0.0000 0.0000 0.0000 0.2000
0.2000 0.2000
 160. * 0.4000 0.1000 0.1000 0.0000 0.6000 0.9000 0.5000 0.3000 0.0000 0.0000 0.0000 0.0000 0.3000
0.3000 0.3000
 170. * 0.4000 0.1000 0.1000 0.1000 0.6000 0.6000 0.6000 0.3000 0.1000 0.1000 0.1000 0.0000 0.3000
0.3000 0.3000
 180. * 0.7000 0.5000 0.4000 0.2000 0.4000 0.4000 0.4000 0.2000 0.2000 0.2000 0.2000 0.1000 0.2000
0.2000 0.2000
 190. * 0.7000 0.4000 0.4000 0.3000 0.4000 0.1000 0.2000 0.1000 0.3000 0.2000 0.2000 0.2000 0.1000
0.1000 0.1000
 200. * 0.8000 0.3000 0.4000 0.3000 0.2000 0.0000 0.0000 0.0000 0.4000 0.2000 0.2000 0.2000 0.0000
0.0000 0.0000
 210. * 0.6000 0.4000 0.4000 0.2000 0.2000 0.0000 0.0000 0.0000 0.5000 0.2000 0.2000 0.2000 0.0000
0.0000 0.0000
 220. * 0.5000 0.4000 0.4000 0.2000 0.1000 0.0000 0.0000 0.0000 0.6000 0.2000 0.2000 0.2000 0.0000
0.0000 0.0000
 230. * 0.3000 0.5000 0.3000 0.2000 0.1000 0.0000 0.0000 0.0000 0.6000 0.2000 0.2000 0.2000 0.0000
0.0000 0.0000
 240. * 0.3000 0.6000 0.2000 0.2000 0.1000 0.0000 0.0000 0.0000 0.6000 0.2000 0.2000 0.2000 0.0000
0.0000 0.0000
 250. * 0.6000 0.5000 0.2000 0.2000 0.1000 0.0000 0.0000 0.0000 0.6000 0.2000 0.2000 0.2000 0.0000
0.0000 0.0000
 260. * 0.6000 0.5000 0.2000 0.2000 0.1000 0.0000 0.0000 0.0000 0.6000 0.2000 0.2000 0.2000 0.0000
0.0000 0.0000
 270. * 0.6000 0.4000 0.2000 0.2000 0.1000 0.0000 0.0000 0.0000 0.6000 0.2000 0.2000 0.2000 0.1000
0.0000 0.0000
 280. * 0.5000 0.3000 0.2000 0.2000 0.1000 0.0000 0.0000 0.0000 0.7000 0.2000 0.2000 0.2000 0.2000
0.0000 0.0000
 290. * 0.6000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.6000 0.3000 0.2000 0.2000 0.2000
0.0000 0.0000
 300. * 0.6000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.4000 0.3000 0.2000 0.2000 0.2000
0.0000 0.0000
 310. * 0.5000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.4000 0.5000 0.2000 0.2000 0.2000
0.0000 0.0000
 320. * 0.4000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.4000 0.6000 0.2000 0.2000 0.2000
0.0000 0.0000
 330. * 0.3000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.5000 0.6000 0.3000 0.2000 0.2000
0.0000 0.0000
 340. * 0.3000 0.3000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.4000 0.7000 0.5000 0.2000 0.3000
0.0000 0.0000
 350. * 0.3000 0.3000 0.3000 0.3000 0.1000 0.1000 0.1000 0.1000 0.5000 0.6000 0.5000 0.2000 0.6000
0.2000 0.0000
 360. * 0.3000 0.3000 0.3000 0.1000 0.3000 0.2000 0.2000 0.2000 0.4000 0.5000 0.4000 0.1000 0.8000
0.5000 0.3000

------*---

 MAX   * 0.8000 0.6000 0.4000 0.3000 0.9000 0.9000 0.6000 0.3000 0.7000 0.7000 0.5000 0.2000 1.0000
0.6000 0.4000
 DEGR. *   200   240   180   190   90   120   170   10   280   340   340   190   10
10   10

       MODEL RESULTS

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)												
	* 16	17	18	19	20	21	22	23	24	25	26	27	28
10.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000
20.	* 0.3000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.1000	0.1000	0.1000	0.2000	0.1000	0.0000
30.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.1000	0.1000	0.1000	0.2000	0.1000	0.0000
40.	* 0.1000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.1000	0.1000	0.1000	0.3000	0.1000	0.0000
50.	* 0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.1000	0.1000	0.1000	0.4000	0.1000	0.1000
60.	* 0.1000	0.0000	0.0000	0.0000	0.3000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.1000	0.1000
70.	* 0.1000	0.0000	0.0000	0.0000	0.4000	0.1000	0.0000	0.2000	0.2000	0.2000	0.2000	0.1000	0.2000
80.	* 0.1000	0.1000	0.1000	0.1000	0.4000	0.1000	0.1000	0.2000	0.2000	0.2000	0.4000	0.2000	0.2000
90.	* 0.1000	0.2000	0.2000	0.1000	0.6000	0.3000	0.1000	0.2000	0.1000	0.1000	0.4000	0.1000	0.0000
100.	* 0.1000	0.2000	0.2000	0.2000	0.4000	0.2000	0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000
110.	* 0.1000	0.2000	0.2000	0.1000	0.3000	0.2000	0.1000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000
120.	* 0.1000	0.1000	0.1000	0.1000	0.3000	0.1000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
130.	* 0.1000	0.1000	0.1000	0.1000	0.4000	0.1000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
140.	* 0.1000	0.1000	0.1000	0.1000	0.3000	0.1000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
150.	* 0.2000	0.1000	0.1000	0.1000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
160.	* 0.3000	0.1000	0.1000	0.1000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
170.	* 0.2000	0.2000	0.1000	0.1000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
180.	* 0.1000	0.2000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190.	* 0.1000	0.4000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	* 0.0000	0.5000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	* 0.0000	0.6000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	* 0.0000	0.6000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	* 0.0000	0.5000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
240.	* 0.0000	0.5000	0.2000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
250.	* 0.0000	0.4000	0.3000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
260.	* 0.0000	0.5000	0.2000	0.2000	0.1000	0.1000	0.1000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
270.	* 0.0000	0.5000	0.3000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000
280.	* 0.0000	0.3000	0.2000	0.1000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000	0.2000	0.2000	0.2000
290.	* 0.0000	0.4000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.4000	0.2000	0.2000	0.2000	0.2000
300.	* 0.0000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3000	0.4000	0.2000	0.1000	0.1000	0.1000
310.	* 0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.5000	0.3000	0.1000	0.1000	0.1000	0.1000
320.	* 0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.6000	0.1000	0.1000	0.0000	0.0000	0.0000
330.	* 0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.5000	0.2000	0.1000	0.0000	0.0000	0.0000
340.	* 0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.5000	0.2000	0.1000	0.0000	0.0000	0.0000
350.	* 0.1000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.4000	0.1000	0.1000	0.0000	0.0000	0.0000
360.	* 0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000
MAX DEGR.	* 0.3000 20	0.6000 210	0.3000 250	0.2000 100	0.6000 90	0.3000 90	0.1000 80	0.6000 320	0.4000 290	0.2000 60	0.4000 50	0.2000 80	0.2000 70

THE HIGHEST CONCENTRATION OF 1.0000 PPM OCCURRED AT RECEPTOR 13.

JOB: New Haven EA 2024 RUN: Hemingway and Main

DATE : 4/28/22
TIME : 16:11: 1

The MODE flag has been set for calculating concentrations for POLLUTANT: PM2.5

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 5 (E) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 UG/M**3

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
	*	X1	Y1	X2	Y2	*									
1. N Leg App - FreeFlow	*	-24.0	0.0	-24.0	1200.0	*	1200.	360.	AG	961.	0.0	0.0	67.7		
2. N Leg App - Queue	*	-24.0	24.0	-24.0	105.4	*	81.	360.	AG	0.	100.0	0.0	48.0	0.33	4.1
3. N Leg Dep - FreeFlow	*	18.0	0.0	18.0	1200.0	*	1200.	360.	AG	727.	0.0	0.0	55.7		
4. S Leg App - FreeFlow	*	18.0	0.0	18.0	-1200.0	*	1200.	180.	AG	518.	0.0	0.0	55.7		
5. S Leg App - Queue	*	18.0	-36.0	18.0	-94.3	*	58.	180.	AG	0.	100.0	0.0	36.0	0.24	3.0
6. S Leg Dep - FreeFlow	*	-24.0	0.0	-24.0	-1200.0	*	1200.	180.	AG	791.	0.0	0.0	67.7		
7. E Leg App - FreeFlow	*	0.0	12.0	1200.0	12.0	*	1200.	90.	AG	483.	0.0	0.0	43.7		
8. E Leg App - Queue	*	36.0	12.0	117.7	12.0	*	82.	90.	AG	0.	100.0	0.0	24.0	0.33	4.2
9. E Leg Dep - FreeFlow	*	0.0	-18.0	1200.0	-18.0	*	1200.	90.	AG	300.	0.0	0.0	55.7		
10. W Leg App - FreeFlow	*	0.0	-18.0	-1200.0	-18.0	*	1200.	270.	AG	235.	0.0	0.0	55.7		
11. W Leg App - Queue	*	-48.0	-18.0	-74.4	-18.0	*	26.	270.	AG	0.	100.0	0.0	36.0	0.11	1.3
12. W Leg Dep - FreeFlow	*	0.0	12.0	-1200.0	12.0	*	1200.	270.	AG	379.	0.0	0.0	43.7		

JOB: New Haven EA 2024 RUN: Hemingway and Main

DATE : 4/28/22
TIME : 16:11: 1

2. N Leg App - Queue	*	120	62	2.0	961	1600	0.02	1	3
5. S Leg App - Queue	*	120	62	2.0	518	1600	0.02	1	3
8. E Leg App - Queue	*	120	62	2.0	483	1600	0.02	1	3
11. W Leg App - Queue	*	120	62	2.0	235	1600	0.02	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	46.0	34.0	5.9	*
2. N Leg, E Side - 25 m	*	46.0	106.0	5.9	*
3. N Leg, E Side - 50 m	*	46.0	188.0	5.9	*
4. N Leg, E Side-Midblk	*	46.0	624.0	5.9	*
5. N Leg, W Side-Corner	*	-58.0	34.0	5.9	*
6. N Leg, W Side - 25 m	*	-58.0	106.0	5.9	*
7. N Leg, W Side - 50 m	*	-58.0	188.0	5.9	*
8. N Leg, W Side-Midblk	*	-58.0	624.0	5.9	*
9. S Leg, E Side-Corner	*	46.0	-46.0	5.9	*
10. S Leg, E Side - 25 m	*	46.0	-118.0	5.9	*
11. S Leg, E Side - 50 m	*	46.0	-200.0	5.9	*

12.	S Leg, E Side-Midblk *	46.0	-636.0	5.9	*
13.	S Leg, W Side-Corner *	-58.0	-46.0	5.9	*
14.	S Leg, W Side - 25 m *	-58.0	-118.0	5.9	*
15.	S Leg, W Side - 50 m *	-58.0	-200.0	5.9	*
16.	S Leg, W Side-Midblk *	-58.0	-636.0	5.9	*
17.	E Leg, N Side - 25 m *	118.0	34.0	5.9	*
18.	E Leg, N Side - 50 m *	200.0	34.0	5.9	*
19.	E Leg, N Side-Midblk *	636.0	34.0	5.9	*
20.	W Leg, N Side - 25 m *	-130.0	34.0	5.9	*
21.	W Leg, N Side - 50 m *	-212.0	34.0	5.9	*
22.	W Leg, N Side-Midblk *	-648.0	34.0	5.9	*
23.	E Leg, S Side - 25 m *	118.0	-46.0	5.9	*
24.	E Leg, S Side - 50 m *	200.0	-46.0	5.9	*
25.	E Leg, S Side-Midblk *	636.0	-46.0	5.9	*
26.	W Leg, S Side - 25 m *	-130.0	-46.0	5.9	*
27.	W Leg, S Side - 50 m *	-212.0	-46.0	5.9	*
28.	W Leg, S Side-Midblk *	-648.0	-46.0	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (UG/M**3) *	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.5000	0.3000	0.2000
20.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.4000	0.2000	0.2000
30.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.4000	0.1000	0.2000
40.	*	0.0000	0.0000	0.0000	0.0000	0.5000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000
50.	*	0.0000	0.0000	0.0000	0.0000	0.5000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000
60.	*	0.0000	0.0000	0.0000	0.0000	0.5000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000
70.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000
80.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000
90.	*	0.1000	0.0000	0.0000	0.0000	0.5000	0.3000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000
100.	*	0.2000	0.0000	0.0000	0.0000	0.4000	0.3000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000
110.	*	0.3000	0.0000	0.0000	0.0000	0.4000	0.4000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000
120.	*	0.3000	0.0000	0.0000	0.0000	0.2000	0.4000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000
130.	*	0.2000	0.0000	0.0000	0.0000	0.2000	0.6000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000
140.	*	0.2000	0.0000	0.0000	0.0000	0.1000	0.5000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
150.	*	0.2000	0.1000	0.0000	0.0000	0.2000	0.6000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
160.	*	0.2000	0.1000	0.0000	0.0000	0.2000	0.5000	0.3000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000		

```
0.1000  0.1000
 170.  *  0.2000  0.1000  0.0000  0.0000  0.2000  0.4000  0.3000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000
0.1000  0.1000
 180.  *  0.4000  0.1000  0.1000  0.1000  0.2000  0.2000  0.2000  0.1000  0.1000  0.1000  0.1000  0.1000  0.1000
0.1000  0.1000
 190.  *  0.5000  0.3000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.3000  0.2000  0.2000  0.1000  0.0000
0.0000  0.0000
 200.  *  0.3000  0.1000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.4000  0.2000  0.2000  0.2000  0.0000
0.0000  0.0000
 210.  *  0.2000  0.2000  0.3000  0.2000  0.0000  0.0000  0.0000  0.0000  0.4000  0.2000  0.2000  0.2000  0.0000
0.0000  0.0000
 220.  *  0.0000  0.2000  0.3000  0.2000  0.0000  0.0000  0.0000  0.0000  0.3000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000
 230.  *  0.0000  0.3000  0.3000  0.2000  0.0000  0.0000  0.0000  0.0000  0.3000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000
 240.  *  0.0000  0.3000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.3000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000
 250.  *  0.1000  0.2000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000  0.3000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000
 260.  *  0.2000  0.2000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000  0.3000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000
 270.  *  0.3000  0.2000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.3000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000
 280.  *  0.3000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.2000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000
 290.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000
 300.  *  0.4000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000
0.0000  0.0000
 310.  *  0.4000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.0000  0.1000
0.0000  0.0000
 320.  *  0.3000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.0000  0.1000
0.0000  0.0000
 330.  *  0.3000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000  0.1000  0.2000  0.2000
0.0000  0.0000
 340.  *  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.3000  0.4000  0.3000  0.2000  0.2000
0.0000  0.0000
 350.  *  0.2000  0.2000  0.2000  0.2000  0.1000  0.1000  0.1000  0.0000  0.3000  0.4000  0.4000  0.1000  0.2000
0.1000  0.0000
 360.  *  0.1000  0.1000  0.1000  0.1000  0.2000  0.1000  0.1000  0.1000  0.2000  0.2000  0.1000  0.1000  0.4000
0.3000  0.3000

------*-----------------------------------------------------------------------------------------------------------
-----------
 MAX   *  0.5000  0.3000  0.3000  0.2000  0.5000  0.6000  0.3000  0.1000  0.4000  0.4000  0.4000  0.2000  0.5000
0.3000  0.3000
 DEGR. *    190     190     210     190      40     130     160      10     200     340     350     200      10
10     360
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (UG/M**3) * 16	17	18	19	20	21	22	23	24	25	26	27	28
10.	* 0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20.	* 0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000

30.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
40.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
50.	*	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000
60.	*	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000
70.	*	0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000
80.	*	0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
90.	*	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
100.	*	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
110.	*	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
120.	*	0.1000	0.1000	0.1000	0.1000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
130.	*	0.1000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
140.	*	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
150.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
160.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
170.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
180.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190.	*	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	*	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	*	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	*	0.0000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	*	0.0000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
240.	*	0.0000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
250.	*	0.0000	0.3000	0.2000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
260.	*	0.0000	0.2000	0.2000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
270.	*	0.0000	0.2000	0.2000	0.1000	0.1000	0.1000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
280.	*	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
290.	*	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000
300.	*	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000
310.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
320.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
330.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
340.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
350.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
360.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	*	0.1000	0.3000	0.2000	0.1000	0.2000	0.1000	0.1000	0.2000	0.2000	0.0000	0.2000	0.1000	0.0000
DEGR.	*	10	220	250	90	70	70	100	300	290	10	60	50	10

THE HIGHEST CONCENTRATION OF 0.6000 UG/M**3 OCCURRED AT RECEPTOR 6.

JOB: New Haven EA 2024 Construction RUN: High Street Laurel St E

DATE : 4/ 4/22
TIME : 10:20:46

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 5 (E) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
	*	X1	Y1	X2	Y2	*									
1. N Leg App - FreeFlow	*	-18.0	0.0	-18.0	1200.0	*	1200.	360.	AG	792.	4.1	0.0	55.7		
2. N Leg App - Queue	*	-18.0	12.0	-18.0	101.5	*	90.	360.	AG	143.	100.0	0.0	36.0	0.37	4.5
3. N Leg Dep - FreeFlow	*	12.0	0.0	12.0	1200.0	*	1200.	360.	AG	441.	4.1	0.0	43.7		
4. S Leg App - FreeFlow	*	12.0	0.0	12.0	-1200.0	*	1200.	180.	AG	821.	4.1	0.0	43.7		
5. S Leg App - Queue	*	12.0	-12.0	12.0	-151.0	*	139.	180.	AG	96.	100.0	0.0	24.0	0.57	7.1
6. S Leg Dep - FreeFlow	*	-18.0	0.0	-18.0	-1200.0	*	1200.	180.	AG	788.	4.1	0.0	55.7		
7. E Leg App - FreeFlow	*	0.0	6.0	1200.0	6.0	*	1200.	90.	AG	224.	4.1	0.0	31.7		
8. E Leg App - Queue	*	24.0	6.0	99.9	6.0	*	76.	90.	AG	48.	100.0	0.0	12.0	0.31	3.9
9. E Leg Dep - FreeFlow	*	0.0	-6.0	1200.0	-6.0	*	1200.	90.	AG	375.	4.1	0.0	31.7		
10. W Leg App - FreeFlow	*	0.0	-6.0	-1200.0	-6.0	*	1200.	270.	AG	1.	4.1	0.0	31.7		
11. W Leg App - Queue	*	-36.0	-6.0	-36.3	-6.0	*	0.	270.	AG	48.	100.0	0.0	12.0	0.00	0.0
12. W Leg Dep - FreeFlow	*	0.0	6.0	-1200.0	6.0	*	1200.	270.	AG	1.	4.1	0.0	31.7		

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. N Leg App - Queue	120	62	2.0	792	1600	34.50	2	3
5. S Leg App - Queue	120	62	2.0	821	1600	34.50	2	3
8. E Leg App - Queue	120	62	2.0	224	1600	34.50	2	3
11. W Leg App - Queue	120	62	2.0	1	1600	34.50	2	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	34.0	22.0	5.9
2. N Leg, E Side - 25 m	34.0	94.0	5.9
3. N Leg, E Side - 50 m	34.0	176.0	5.9
4. N Leg, E Side-Midblk	34.0	612.0	5.9
5. N Leg, W Side-Corner	-46.0	22.0	5.9

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      6. N Leg, W Side - 25 m *       -46.0       94.0        5.9   *
      7. N Leg, W Side - 50 m *       -46.0      176.0        5.9   *
      8. N Leg, W Side-Midblk *       -46.0      612.0        5.9   *
      9. S Leg, E Side-Corner *        34.0      -22.0        5.9   *
     10. S Leg, E Side - 25 m *        34.0      -94.0        5.9   *
     11. S Leg, E Side - 50 m *        34.0     -176.0        5.9   *
     12. S Leg, E Side-Midblk *        34.0     -612.0        5.9   *
     13. S Leg, W Side-Corner *       -46.0      -22.0        5.9   *
     14. S Leg, W Side - 25 m *       -46.0      -94.0        5.9   *
     15. S Leg, W Side - 50 m *       -46.0     -176.0        5.9   *
     16. S Leg, W Side-Midblk *       -46.0     -612.0        5.9   *
     17. E Leg, N Side - 25 m *       106.0       22.0        5.9   *
     18. E Leg, N Side - 50 m *       188.0       22.0        5.9   *
     19. E Leg, N Side-Midblk *       624.0       22.0        5.9   *
     20. W Leg, N Side - 25 m *      -118.0       22.0        5.9   *
     21. W Leg, N Side - 50 m *      -200.0       22.0        5.9   *
     22. W Leg, N Side-Midblk *      -636.0       22.0        5.9   *
     23. E Leg, S Side - 25 m *       106.0      -22.0        5.9   *
     24. E Leg, S Side - 50 m *       188.0      -22.0        5.9   *
     25. E Leg, S Side-Midblk *       624.0      -22.0        5.9   *
     26. W Leg, S Side - 25 m *      -118.0      -22.0        5.9   *
     27. W Leg, S Side - 50 m *      -200.0      -22.0        5.9   *
     28. W Leg, S Side-Midblk *      -636.0      -22.0        5.9   *

PAGE  3
      JOB: New Haven EA 2024 Construction                    RUN: High Street Laurel St E

       MODEL RESULTS
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       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE:  10.-360.

 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*       1       2       3       4       5       6       7       8       9      10      11      12      13
 14      15

------*-------------------------------------------------------------------------------------------------------------
-----------
  10.  *  0.1000  0.1000  0.1000  0.1000  0.5000  0.3000  0.3000  0.2000  0.2000  0.0000  0.2000  0.1000  0.6000
0.5000  0.4000
  20.  *  0.0000  0.0000  0.0000  0.0000  0.7000  0.3000  0.3000  0.3000  0.2000  0.0000  0.0000  0.0000  0.6000
0.3000  0.5000
  30.  *  0.0000  0.0000  0.0000  0.0000  0.7000  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.5000
0.3000  0.4000
  40.  *  0.0000  0.0000  0.0000  0.0000  0.6000  0.1000  0.1000  0.1000  0.2000  0.0000  0.0000  0.0000  0.4000
0.3000  0.4000
  50.  *  0.0000  0.0000  0.0000  0.0000  0.6000  0.2000  0.1000  0.1000  0.2000  0.0000  0.0000  0.0000  0.3000
0.4000  0.4000
  60.  *  0.0000  0.0000  0.0000  0.0000  0.5000  0.2000  0.1000  0.1000  0.2000  0.0000  0.0000  0.0000  0.2000
0.4000  0.3000
  70.  *  0.0000  0.0000  0.0000  0.0000  0.5000  0.3000  0.1000  0.1000  0.2000  0.0000  0.0000  0.0000  0.2000
0.4000  0.3000
  80.  *  0.0000  0.0000  0.0000  0.0000  0.5000  0.4000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.5000
0.4000  0.2000
  90.  *  0.2000  0.0000  0.0000  0.0000  0.7000  0.4000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.4000
0.4000  0.2000
 100.  *  0.3000  0.0000  0.0000  0.0000  0.6000  0.5000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.4000
0.4000  0.2000
 110.  *  0.3000  0.0000  0.0000  0.0000  0.4000  0.5000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000
0.4000  0.2000
 120.  *  0.3000  0.0000  0.0000  0.0000  0.4000  0.5000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000
0.4000  0.2000
 130.  *  0.3000  0.0000  0.0000  0.0000  0.5000  0.6000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000
```

0.3000 0.2000
 140. * 0.1000 0.0000 0.0000 0.0000 0.5000 0.6000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.4000
0.3000 0.2000
 150. * 0.1000 0.0000 0.0000 0.0000 0.4000 0.8000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.4000
0.2000 0.2000
 160. * 0.1000 0.0000 0.0000 0.0000 0.3000 0.8000 0.5000 0.3000 0.0000 0.0000 0.0000 0.0000 0.4000
0.3000 0.3000
 170. * 0.3000 0.2000 0.0000 0.1000 0.4000 0.7000 0.6000 0.2000 0.2000 0.1000 0.1000 0.1000 0.3000
0.3000 0.3000
 180. * 0.6000 0.4000 0.4000 0.2000 0.3000 0.4000 0.4000 0.2000 0.5000 0.4000 0.3000 0.3000 0.3000
0.3000 0.3000
 190. * 0.7000 0.4000 0.5000 0.2000 0.1000 0.1000 0.2000 0.1000 0.6000 0.4000 0.3000 0.3000 0.1000
0.1000 0.1000
 200. * 0.7000 0.5000 0.4000 0.2000 0.0000 0.0000 0.0000 0.0000 0.7000 0.5000 0.3000 0.3000 0.0000
0.0000 0.0000
 210. * 0.5000 0.4000 0.4000 0.2000 0.0000 0.0000 0.0000 0.0000 0.7000 0.6000 0.3000 0.3000 0.0000
0.0000 0.0000
 220. * 0.4000 0.5000 0.3000 0.2000 0.0000 0.0000 0.0000 0.0000 0.6000 0.5000 0.2000 0.2000 0.0000
0.0000 0.0000
 230. * 0.3000 0.5000 0.3000 0.2000 0.0000 0.0000 0.0000 0.0000 0.5000 0.5000 0.2000 0.2000 0.0000
0.0000 0.0000
 240. * 0.1000 0.5000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.5000 0.5000 0.2000 0.2000 0.0000
0.0000 0.0000
 250. * 0.2000 0.5000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.5000 0.5000 0.2000 0.2000 0.0000
0.0000 0.0000
 260. * 0.4000 0.5000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.5000 0.5000 0.2000 0.2000 0.0000
0.0000 0.0000
 270. * 0.4000 0.4000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.5000 0.5000 0.2000 0.2000 0.0000
0.0000 0.0000
 280. * 0.5000 0.3000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.4000 0.5000 0.2000 0.2000 0.0000
0.0000 0.0000
 290. * 0.5000 0.3000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.4000 0.5000 0.2000 0.2000 0.0000
0.0000 0.0000
 300. * 0.5000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.5000 0.5000 0.2000 0.2000 0.0000
0.0000 0.0000
 310. * 0.5000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.6000 0.5000 0.3000 0.2000 0.0000
0.0000 0.0000
 320. * 0.5000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.6000 0.6000 0.4000 0.2000 0.0000
0.0000 0.0000
 330. * 0.4000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.7000 0.6000 0.6000 0.3000 0.0000
0.0000 0.0000
 340. * 0.3000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.5000 0.7000 0.7000 0.3000 0.0000
0.0000 0.0000
 350. * 0.2000 0.2000 0.2000 0.2000 0.1000 0.1000 0.1000 0.1000 0.5000 0.6000 0.7000 0.3000 0.2000
0.1000 0.1000
 360. * 0.2000 0.2000 0.2000 0.2000 0.3000 0.2000 0.2000 0.2000 0.4000 0.5000 0.5000 0.3000 0.4000
0.3000 0.3000

------*---

 MAX   * 0.7000 0.5000 0.5000 0.2000 0.7000 0.8000 0.6000 0.3000 0.7000 0.7000 0.7000 0.3000 0.6000
0.5000 0.5000
 DEGR. *   190   200   190   180   20   150   170   20   200   340   340   180   10
10   20

      JOB: New Haven EA 2024 Construction   RUN: High Street Laurel St E

       MODEL RESULTS

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)												
	* 16	17	18	19	20	21	22	23	24	25	26	27	28
10.	* 0.3000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000
20.	* 0.3000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000
30.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.0000	0.0000
40.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.0000	0.0000
50.	* 0.2000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.1000	0.1000	0.1000	0.3000	0.0000	0.0000
60.	* 0.2000	0.0000	0.0000	0.0000	0.3000	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.1000	0.0000
70.	* 0.2000	0.0000	0.0000	0.0000	0.3000	0.1000	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000
80.	* 0.2000	0.0000	0.0000	0.0000	0.3000	0.1000	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000
90.	* 0.2000	0.2000	0.2000	0.1000	0.1000	0.1000	0.0000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000
100.	* 0.2000	0.2000	0.2000	0.2000	0.1000	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.1000	0.0000
110.	* 0.2000	0.2000	0.2000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000
120.	* 0.2000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000
130.	* 0.2000	0.1000	0.1000	0.1000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000
140.	* 0.2000	0.0000	0.0000	0.0000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000
150.	* 0.2000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000
160.	* 0.3000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000
170.	* 0.3000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000
180.	* 0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190.	* 0.1000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	* 0.0000	0.3000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	* 0.0000	0.4000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	* 0.0000	0.4000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	* 0.0000	0.5000	0.2000	0.1000	0.0000	0.0000	0.0000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000
240.	* 0.0000	0.4000	0.2000	0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
250.	* 0.0000	0.3000	0.3000	0.2000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
260.	* 0.0000	0.2000	0.1000	0.2000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000
270.	* 0.0000	0.2000	0.1000	0.2000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000	0.0000	0.0000	0.0000
280.	* 0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000	0.0000	0.0000	0.0000
290.	* 0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.3000	0.2000	0.1000	0.0000	0.0000	0.0000
300.	* 0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.4000	0.2000	0.1000	0.0000	0.0000	0.0000
310.	* 0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.4000	0.1000	0.1000	0.0000	0.0000	0.0000
320.	* 0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.4000	0.1000	0.1000	0.0000	0.0000	0.0000
330.	* 0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.0000	0.0000	0.0000
340.	* 0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.0000	0.0000	0.0000
350.	* 0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000
360.	* 0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000
MAX	* 0.3000	0.5000	0.3000	0.2000	0.3000	0.1000	0.0000	0.4000	0.2000	0.1000	0.3000	0.1000	0.0000
DEGR.	* 10	230	250	100	60	70	10	300	270	10	50	60	10

THE HIGHEST CONCENTRATION OF 0.8000 PPM OCCURRED AT RECEPTOR 6.

JOB: New Haven EA 2024 Construction RUN: High Street Laurel St E PM

DATE : 4/29/22
TIME : 8: 4:46

The MODE flag has been set for calculating concentrations for POLLUTANT: PM2.5

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 5 (E) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 UG/M**3

LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	LENGTH (FT)	BRG TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. N Leg App - FreeFlow	-18.0	0.0	-18.0	1200.0	1200.	360. AG	792.	0.0	0.0	55.7		
2. N Leg App - Queue	-18.0	12.0	-18.0	101.5	90.	360. AG	0.	100.0	0.0	36.0	0.37	4.5
3. N Leg Dep - FreeFlow	12.0	0.0	12.0	1200.0	1200.	360. AG	441.	0.0	0.0	43.7		
4. S Leg App - FreeFlow	12.0	0.0	12.0	-1200.0	1200.	180. AG	821.	0.0	0.0	43.7		
5. S Leg App - Queue	12.0	-12.0	12.0	-151.0	139.	180. AG	0.	100.0	0.0	24.0	0.57	7.1
6. S Leg Dep - FreeFlow	-18.0	0.0	-18.0	-1200.0	1200.	180. AG	788.	0.0	0.0	55.7		
7. E Leg App - FreeFlow	0.0	6.0	1200.0	6.0	1200.	90. AG	224.	0.0	0.0	31.7		
8. E Leg App - Queue	24.0	6.0	99.9	6.0	76.	90. AG	0.	100.0	0.0	12.0	0.31	3.9
9. E Leg Dep - FreeFlow	0.0	-6.0	1200.0	-6.0	1200.	90. AG	375.	0.0	0.0	31.7		
10. W Leg App - FreeFlow	0.0	-6.0	-1200.0	-6.0	1200.	270. AG	1.	0.0	0.0	31.7		
11. W Leg App - Queue	-36.0	-6.0	-36.3	-6.0	0.	270. AG	0.	100.0	0.0	12.0	0.00	0.0
12. W Leg Dep - FreeFlow	0.0	6.0	-1200.0	6.0	1200.	270. AG	1.	0.0	0.0	31.7		

2. N Leg App - Queue	120	62	2.0	792	1600	0.02	2	3
5. S Leg App - Queue	120	62	2.0	821	1600	0.02	2	3
8. E Leg App - Queue	120	62	2.0	224	1600	0.02	2	3
11. W Leg App - Queue	120	62	2.0	1	1600	0.02	2	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	34.0	22.0	5.9
2. N Leg, E Side - 25 m	34.0	94.0	5.9
3. N Leg, E Side - 50 m	34.0	176.0	5.9
4. N Leg, E Side-Midblk	34.0	612.0	5.9
5. N Leg, W Side-Corner	-46.0	22.0	5.9
6. N Leg, W Side - 25 m	-46.0	94.0	5.9
7. N Leg, W Side - 50 m	-46.0	176.0	5.9
8. N Leg, W Side-Midblk	-46.0	612.0	5.9
9. S Leg, E Side-Corner	34.0	-22.0	5.9
10. S Leg, E Side - 25 m	34.0	-94.0	5.9
11. S Leg, E Side - 50 m	34.0	-176.0	5.9

12.	S Leg, E Side-Midblk *	34.0	-612.0	5.9	*
13.	S Leg, W Side-Corner *	-46.0	-22.0	5.9	*
14.	S Leg, W Side - 25 m *	-46.0	-94.0	5.9	*
15.	S Leg, W Side - 50 m *	-46.0	-176.0	5.9	*
16.	S Leg, W Side-Midblk *	-46.0	-612.0	5.9	*
17.	E Leg, N Side - 25 m *	106.0	22.0	5.9	*
18.	E Leg, N Side - 50 m *	188.0	22.0	5.9	*
19.	E Leg, N Side-Midblk *	624.0	22.0	5.9	*
20.	W Leg, N Side - 25 m *	-118.0	22.0	5.9	*
21.	W Leg, N Side - 50 m *	-200.0	22.0	5.9	*
22.	W Leg, N Side-Midblk *	-636.0	22.0	5.9	*
23.	E Leg, S Side - 25 m *	106.0	-22.0	5.9	*
24.	E Leg, S Side - 50 m *	188.0	-22.0	5.9	*
25.	E Leg, S Side-Midblk *	624.0	-22.0	5.9	*
26.	W Leg, S Side - 25 m *	-118.0	-22.0	5.9	*
27.	W Leg, S Side - 50 m *	-200.0	-22.0	5.9	*
28.	W Leg, S Side-Midblk *	-636.0	-22.0	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (UG/M**3) * 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.1000	0.3000	0.3000	0.2000
20.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.3000	0.2000	0.2000
30.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.3000	0.2000	0.2000
40.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.1000	0.2000	0.2000
50.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.1000	0.2000	0.2000
60.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.2000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000
70.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.2000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000
80.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.3000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000
90.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.3000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000
100.	* 0.1000	0.0000	0.0000	0.0000	0.3000	0.4000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000
110.	* 0.1000	0.0000	0.0000	0.0000	0.1000	0.4000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000
120.	* 0.1000	0.0000	0.0000	0.0000	0.2000	0.4000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000
130.	* 0.1000	0.0000	0.0000	0.0000	0.2000	0.4000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000
140.	* 0.1000	0.0000	0.0000	0.0000	0.1000	0.4000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000
150.	* 0.1000	0.0000	0.0000	0.0000	0.3000	0.5000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.3000	0.2000	0.2000
160.	* 0.1000	0.0000	0.0000	0.0000	0.3000	0.5000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.3000		

0.2000 0.2000
 170. * 0.1000 0.0000 0.0000 0.0000 0.2000 0.6000 0.3000 0.1000 0.1000 0.1000 0.1000 0.1000 0.2000
0.2000 0.2000
 180. * 0.3000 0.2000 0.0000 0.1000 0.1000 0.2000 0.2000 0.1000 0.2000 0.1000 0.1000 0.1000 0.1000
0.1000 0.1000
 190. * 0.5000 0.3000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.4000 0.3000 0.2000 0.2000 0.0000
0.0000 0.0000
 200. * 0.5000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.4000 0.3000 0.2000 0.2000 0.0000
0.0000 0.0000
 210. * 0.4000 0.1000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.5000 0.4000 0.2000 0.2000 0.0000
0.0000 0.0000
 220. * 0.1000 0.2000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.4000 0.4000 0.2000 0.2000 0.0000
0.0000 0.0000
 230. * 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.1000 0.1000 0.0000
0.0000 0.0000
 240. * 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.1000 0.1000 0.0000
0.0000 0.0000
 250. * 0.1000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.1000 0.1000 0.0000
0.0000 0.0000
 260. * 0.1000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.1000 0.1000 0.0000
0.0000 0.0000
 270. * 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.1000 0.1000 0.0000
0.0000 0.0000
 280. * 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.1000 0.1000 0.0000
0.0000 0.0000
 290. * 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.3000 0.1000 0.1000 0.0000
0.0000 0.0000
 300. * 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.1000 0.1000 0.0000
0.0000 0.0000
 310. * 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.1000 0.3000 0.2000 0.1000 0.0000
0.0000 0.0000
 320. * 0.3000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.2000 0.3000 0.3000 0.2000 0.0000
0.0000 0.0000
 330. * 0.2000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.3000 0.4000 0.4000 0.2000 0.0000
0.0000 0.0000
 340. * 0.3000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.2000 0.4000 0.3000 0.2000 0.0000
0.0000 0.0000
 350. * 0.2000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.3000 0.4000 0.4000 0.2000 0.0000
0.0000 0.0000
 360. * 0.1000 0.1000 0.1000 0.1000 0.2000 0.1000 0.1000 0.1000 0.2000 0.2000 0.2000 0.1000 0.2000
0.2000 0.2000

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 MAX   * 0.5000 0.3000 0.2000 0.2000 0.4000 0.6000 0.3000 0.1000 0.5000 0.4000 0.4000 0.2000 0.3000
0.3000 0.2000
 DEGR. *   190   190   190   190   20   170   170   10   210   210   330   190   10
10   10

       MODEL RESULTS

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE: 10.-360.

 WIND * CONCENTRATION
 ANGLE *   (UG/M**3)
 (DEGR)*   16   17   18   19   20   21   22   23   24   25   26   27   28
 ------*---
  10. * 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
  20. * 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000

30.	*	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
40.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
50.	*	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
60.	*	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000
70.	*	0.1000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000
80.	*	0.1000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000
90.	*	0.1000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000
100.	*	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
110.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
120.	*	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
130.	*	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
140.	*	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
150.	*	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
160.	*	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
170.	*	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
180.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	*	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	*	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	*	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
240.	*	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
250.	*	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
260.	*	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
270.	*	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.1000	0.0000	0.0000	0.0000
280.	*	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000
290.	*	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000	0.0000	0.0000	0.0000
300.	*	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
310.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
320.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
330.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
340.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
350.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
360.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	*	0.2000	0.2000	0.1000	0.0000	0.1000	0.1000	0.0000	0.2000	0.2000	0.1000	0.1000	0.1000	0.0000
DEGR.	*	10	210	240	10	50	70	10	290	290	70	40	60	10

THE HIGHEST CONCENTRATION OF 0.6000 UG/M**3 OCCURRED AT RECEPTOR 6.

JOB: HVN EA 2029 Construction Build RUN: High Street Kimberly Ave Midday CO

DATE : 6/ 1/22
TIME : 14:13:52

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 5 (E) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
	*	X1	Y1	X2	Y2	*									
1. S Leg App - FreeFlow	*	8.0	0.0	-844.0	-853.0	*	1206.	225.	AG	346.	2.5	0.0	31.7		
2. S Leg App - Queue	*	-13.0	-21.0	-95.9	-104.0	*	117.	225.	AG	29.	100.0	0.0	12.0	0.48	6.0
3. S Leg Dep - FreeFlow	*	0.0	8.0	-853.0	-844.0	*	1206.	225.	AG	796.	2.5	0.0	31.7		
4. E Leg App - FreeFlow	*	8.0	0.0	853.0	-844.0	*	1194.	135.	AG	935.	2.5	0.0	31.7		
5. E Leg App - Queue	*	13.0	-4.0	1818.5	-1809.5	*	2553.	135.	AG	29.	100.0	0.0	12.0	1.30	129.7
6. E Leg Dep - FreeFlow	*	-8.0	-8.0	840.0	-857.0	*	1200.	135.	AG	625.	2.5	0.0	43.7		
7. W Leg App - FreeFlow	*	-8.0	-8.0	-857.0	840.0	*	1200.	315.	AG	901.	2.5	0.0	43.7		
8. W Leg App - Queue	*	-17.0	0.0	-124.9	107.9	*	153.	315.	AG	58.	100.0	0.0	24.0	0.62	7.8
9. W Leg Dep - FreeFlow	*	0.0	8.0	-844.0	853.0	*	1194.	315.	AG	475.	2.5	0.0	31.7		

JOB: HVN EA 2029 Construction Build RUN: High Street Kimberly Ave Midday CO

DATE : 6/ 1/22
TIME : 14:13:52

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. S Leg App - Queue	120	62	2.0	346	1600	20.80	2	3
5. E Leg App - Queue	120	62	2.0	935	1600	20.80	2	3
8. W Leg App - Queue	120	62	2.0	901	1600	20.80	2	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	31.1	0.0	5.9
2. N Leg, E Side - 0 m	31.1	0.0	5.9
3. N Leg, W Side-Corner	0.0	31.1	5.9
4. S Leg, E Side-Corner	-8.5	-39.6	5.9
5. S Leg, E Side - 25 m	-59.4	-90.5	5.9
6. S Leg, E Side - 50 m	-117.4	-148.5	5.9
7. S Leg, E Side-Midblk	-425.7	-456.8	5.9
8. S Leg, W Side-Corner	-39.6	-8.5	5.9
9. S Leg, W Side - 25 m	-90.5	-59.4	5.9
10. S Leg, W Side - 50 m	-148.5	-117.4	5.9

11.	S Leg, W Side-Midblk *	-456.8	-425.7	5.9	*
12.	E Leg, N Side - 25 m *	82.0	-50.9	5.9	*
13.	E Leg, N Side - 50 m *	140.0	-108.9	5.9	*
14.	E Leg, N Side-Midblk *	448.3	-417.2	5.9	*
15.	W Leg, N Side - 25 m *	-50.9	82.0	5.9	*
16.	W Leg, N Side - 50 m *	-108.9	140.0	5.9	*
17.	W Leg, N Side-Midblk *	-417.2	448.3	5.9	*
18.	E Leg, S Side - 25 m *	42.4	-90.5	5.9	*
19.	E Leg, S Side - 50 m *	100.4	-148.5	5.9	*
20.	E Leg, S Side-Midblk *	408.7	-456.8	5.9	*
21.	W Leg, S Side - 25 m *	-90.5	42.4	5.9	*
22.	W Leg, S Side - 50 m *	-148.5	100.4	5.9	*
23.	W Leg, S Side-Midblk *	-456.8	408.7	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) *	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.3000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.3000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30.	*	0.0000	0.0000	0.0000	0.0000	0.2000	0.3000	0.2000	0.3000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
40.	*	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.3000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
50.	*	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
60.	*	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.3000	0.1000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
70.	*	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.3000	0.2000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
80.	*	0.0000	0.0000	0.0000	0.3000	0.0000	0.0000	0.0000	0.3000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
90.	*	0.0000	0.0000	0.0000	0.3000	0.0000	0.0000	0.0000	0.1000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
100.	*	0.0000	0.0000	0.0000	0.3000	0.0000	0.0000	0.0000	0.3000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
110.	*	0.0000	0.0000	0.0000	0.3000	0.0000	0.0000	0.0000	0.4000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
120.	*	0.0000	0.0000	0.0000	0.3000	0.0000	0.0000	0.0000	0.4000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
130.	*	0.2000	0.2000	0.2000	0.3000	0.0000	0.0000	0.0000	0.4000	0.2000	0.1000	0.1000	0.2000	0.2000	0.2000	0.2000
140.	*	0.5000	0.5000	0.3000	0.1000	0.0000	0.0000	0.0000	0.3000	0.2000	0.1000	0.1000	0.5000	0.5000	0.5000	0.3000
150.	*	0.5000	0.5000	0.3000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000	0.1000	0.4000	0.4000	0.4000	0.4000
160.	*	0.3000	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000	0.1000	0.3000	0.3000	0.3000	0.3000
170.	*	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000	0.1000	0.3000	0.3000	0.3000	0.3000
180.	*	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.1000	0.3000	0.3000		

0.3000 0.3000
 190. * 0.2000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.2000 0.1000 0.1000 0.1000 0.2000 0.2000
0.2000 0.2000
 200. * 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.2000 0.1000 0.1000 0.1000 0.2000 0.2000
0.2000 0.2000
 210. * 0.2000 0.2000 0.4000 0.0000 0.0000 0.0000 0.0000 0.2000 0.1000 0.1000 0.1000 0.2000 0.2000
0.2000 0.2000
 220. * 0.3000 0.3000 0.3000 0.1000 0.1000 0.1000 0.0000 0.2000 0.2000 0.2000 0.1000 0.2000 0.2000
0.2000 0.2000
 230. * 0.5000 0.5000 0.3000 0.3000 0.2000 0.2000 0.2000 0.1000 0.1000 0.1000 0.1000 0.2000 0.2000
0.2000 0.2000
 240. * 0.5000 0.5000 0.2000 0.3000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000
0.2000 0.2000
 250. * 0.3000 0.3000 0.2000 0.2000 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000
0.2000 0.2000
 260. * 0.2000 0.2000 0.2000 0.2000 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000
0.2000 0.2000
 270. * 0.3000 0.3000 0.3000 0.2000 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000
0.3000 0.2000
 280. * 0.2000 0.2000 0.4000 0.2000 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000
0.3000 0.3000
 290. * 0.3000 0.3000 0.4000 0.2000 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000
0.3000 0.3000
 300. * 0.3000 0.3000 0.3000 0.2000 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.4000 0.3000
0.4000 0.2000
 310. * 0.3000 0.3000 0.3000 0.4000 0.2000 0.1000 0.1000 0.2000 0.0000 0.0000 0.0000 0.4000 0.4000
0.4000 0.2000
 320. * 0.1000 0.1000 0.2000 0.5000 0.2000 0.1000 0.1000 0.3000 0.0000 0.0000 0.0000 0.1000 0.1000
0.2000 0.2000
 330. * 0.0000 0.0000 0.0000 0.5000 0.3000 0.1000 0.1000 0.3000 0.1000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 340. * 0.0000 0.0000 0.0000 0.5000 0.2000 0.1000 0.1000 0.3000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 350. * 0.0000 0.0000 0.0000 0.3000 0.3000 0.1000 0.1000 0.3000 0.1000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 360. * 0.0000 0.0000 0.0000 0.2000 0.3000 0.1000 0.1000 0.3000 0.1000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000

------*---

 MAX   * 0.5000 0.5000 0.4000 0.5000 0.3000 0.3000 0.2000 0.4000 0.2000 0.2000 0.1000 0.5000 0.5000
0.5000 0.4000
 DEGR. *   140   140   210   320   10   30   30   110   40   60   40   140   140
140   150

       MODEL RESULTS

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE: 10.-360.

 WIND * CONCENTRATION
 ANGLE *   (PPM)
 (DEGR)*   16   17   18   19   20   21   22   23
 ------*---
  10. * 0.0000 0.0000 0.3000 0.3000 0.3000 0.3000 0.1000 0.1000
  20. * 0.0000 0.0000 0.2000 0.2000 0.2000 0.3000 0.1000 0.1000
  30. * 0.0000 0.0000 0.1000 0.1000 0.1000 0.3000 0.1000 0.1000
  40. * 0.0000 0.0000 0.2000 0.2000 0.2000 0.3000 0.1000 0.1000
  50. * 0.0000 0.0000 0.2000 0.2000 0.2000 0.3000 0.1000 0.1000
  60. * 0.0000 0.0000 0.1000 0.1000 0.1000 0.3000 0.1000 0.1000

70.	*	0.0000	0.0000	0.2000	0.2000	0.2000	0.3000	0.2000	0.1000
80.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.2000	0.1000
90.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000	0.1000
100.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000	0.1000
110.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000	0.1000
120.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.5000	0.3000	0.1000
130.	*	0.1000	0.1000	0.3000	0.3000	0.3000	0.5000	0.5000	0.1000
140.	*	0.4000	0.2000	0.1000	0.1000	0.1000	0.0000	0.2000	0.1000
150.	*	0.3000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
160.	*	0.4000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
170.	*	0.4000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
180.	*	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190.	*	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	*	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	*	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
240.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
250.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
260.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
270.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
280.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
290.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
300.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
310.	*	0.2000	0.2000	0.2000	0.0000	0.1000	0.1000	0.1000	0.1000
320.	*	0.2000	0.1000	0.2000	0.3000	0.3000	0.3000	0.2000	0.1000
330.	*	0.0000	0.0000	0.3000	0.2000	0.3000	0.2000	0.1000	0.1000
340.	*	0.0000	0.0000	0.1000	0.3000	0.3000	0.3000	0.1000	0.1000
350.	*	0.0000	0.0000	0.2000	0.3000	0.3000	0.3000	0.1000	0.1000
360.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.1000	0.1000
------	*								
MAX	*	0.4000	0.2000	0.3000	0.3000	0.3000	0.5000	0.5000	0.1000
DEGR.	*	140	140	10	10	10	120	130	10

THE HIGHEST CONCENTRATION OF 0.5000 PPM OCCURRED AT RECEPTOR 21.

JOB: HVN EA 2029 Construction Build RUN: High Street Kimberly Ave Midday PM

DATE : 6/ 1/22
TIME : 15: 1:17

The MODE flag has been set for calculating concentrations for POLLUTANT: PM2.5

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 5 (E) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 UG/M**3

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
	*	X1	Y1	X2	Y2	*									
1. S Leg App - FreeFlow	*	8.0	0.0	-844.0	-853.0	*	1206.	225.	AG	346.	0.0	0.0	31.7		
2. S Leg App - Queue	*	-13.0	-21.0	-95.9	-104.0	*	117.	225.	AG	0.	100.0	0.0	12.0	0.48	6.0
3. S Leg Dep - FreeFlow	*	0.0	8.0	-853.0	-844.0	*	1206.	225.	AG	796.	0.0	0.0	31.7		
4. E Leg App - FreeFlow	*	8.0	0.0	853.0	-844.0	*	1194.	135.	AG	935.	0.0	0.0	31.7		
5. E Leg App - Queue	*	13.0	-4.0	1818.5	-1809.5	*	2553.	135.	AG	0.	100.0	0.0	12.0	1.30	129.7
6. E Leg Dep - FreeFlow	*	-8.0	-8.0	840.0	-857.0	*	1200.	135.	AG	625.	0.0	0.0	43.7		
7. W Leg App - FreeFlow	*	-8.0	-8.0	-857.0	840.0	*	1200.	315.	AG	901.	0.0	0.0	43.7		
8. W Leg App - Queue	*	-17.0	0.0	-124.9	107.9	*	153.	315.	AG	0.	100.0	0.0	24.0	0.62	7.8
9. W Leg Dep - FreeFlow	*	0.0	8.0	-844.0	853.0	*	1194.	315.	AG	475.	0.0	0.0	31.7		

2. S Leg App - Queue	*	120	62	2.0	346	1600	0.02	2	3
5. E Leg App - Queue	*	120	62	2.0	935	1600	0.02	2	3
8. W Leg App - Queue	*	120	62	2.0	901	1600	0.02	2	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	31.1	0.0	5.9	*
2. N Leg, E Side - 0 m	*	31.1	0.0	5.9	*
3. N Leg, W Side-Corner	*	0.0	31.1	5.9	*
4. S Leg, E Side-Corner	*	-8.5	-39.6	5.9	*
5. S Leg, E Side - 25 m	*	-59.4	-90.5	5.9	*
6. S Leg, E Side - 50 m	*	-117.4	-148.5	5.9	*
7. S Leg, E Side-Midblk	*	-425.7	-456.8	5.9	*
8. S Leg, W Side-Corner	*	-39.6	-8.5	5.9	*
9. S Leg, W Side - 25 m	*	-90.5	-59.4	5.9	*
10. S Leg, W Side - 50 m	*	-148.5	-117.4	5.9	*
11. S Leg, W Side-Midblk	*	-456.8	-425.7	5.9	*
12. E Leg, N Side - 25 m	*	82.0	-50.9	5.9	*
13. E Leg, N Side - 50 m	*	140.0	-108.9	5.9	*
14. E Leg, N Side-Midblk	*	448.3	-417.2	5.9	*
15. W Leg, N Side - 25 m	*	-50.9	82.0	5.9	*
16. W Leg, N Side - 50 m	*	-108.9	140.0	5.9	*

17.	W Leg, N Side-Midblk *	-417.2	448.3	5.9	*
18.	E Leg, S Side - 25 m *	42.4	-90.5	5.9	*
19.	E Leg, S Side - 50 m *	100.4	-148.5	5.9	*
20.	E Leg, S Side-Midblk *	408.7	-456.8	5.9	*
21.	W Leg, S Side - 25 m *	-90.5	42.4	5.9	*
22.	W Leg, S Side - 50 m *	-148.5	100.4	5.9	*
23.	W Leg, S Side-Midblk *	-456.8	408.7	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (UG/M**3) * 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.1000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
40.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.2000	0.1000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000
50.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
60.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
70.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
80.	* 0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.1000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
90.	* 0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
100.	* 0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
110.	* 0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
120.	* 0.0000	0.0000	0.0000	0.3000	0.0000	0.0000	0.0000	0.3000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
130.	* 0.2000	0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.3000	0.1000	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000
140.	* 0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000
150.	* 0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000
160.	* 0.2000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000
170.	* 0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000
180.	* 0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000
190.	* 0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000	0.1000
200.	* 0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
210.	* 0.1000	0.1000	0.3000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000		

0.1000 0.1000
 220. * 0.1000 0.1000 0.2000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000
0.1000 0.1000
 230. * 0.3000 0.3000 0.2000 0.2000 0.1000 0.1000 0.0000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000
0.1000 0.1000
 240. * 0.3000 0.3000 0.1000 0.2000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000
0.1000 0.1000
 250. * 0.1000 0.1000 0.1000 0.2000 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000
0.1000 0.1000
 260. * 0.0000 0.0000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000
0.2000 0.1000
 270. * 0.1000 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000
0.2000 0.1000
 280. * 0.1000 0.1000 0.3000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000
0.2000 0.2000
 290. * 0.2000 0.2000 0.3000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000
0.2000 0.2000
 300. * 0.2000 0.2000 0.3000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.2000
0.2000 0.2000
 310. * 0.2000 0.2000 0.3000 0.3000 0.1000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.3000 0.2000
0.2000 0.2000
 320. * 0.0000 0.0000 0.0000 0.3000 0.1000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000
0.2000 0.0000
 330. * 0.0000 0.0000 0.0000 0.4000 0.1000 0.0000 0.0000 0.3000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 340. * 0.0000 0.0000 0.0000 0.2000 0.1000 0.0000 0.0000 0.3000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 350. * 0.0000 0.0000 0.0000 0.1000 0.2000 0.0000 0.0000 0.3000 0.1000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 360. * 0.0000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000 0.3000 0.1000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000

------*---

 MAX   * 0.3000 0.3000 0.3000 0.4000 0.2000 0.1000 0.1000 0.3000 0.2000 0.2000 0.1000 0.3000 0.2000
0.2000 0.2000
 DEGR. *   230   230   210   330   10   30   20   120   70   60   40   300   130
130   140

       MODEL RESULTS

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE: 10.-360.

 WIND * CONCENTRATION
 ANGLE *   (UG/M**3)
 (DEGR)*   16   17   18   19   20   21   22   23
 ------*---
  10. * 0.0000 0.0000 0.0000 0.1000 0.1000 0.2000 0.0000 0.0000
  20. * 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000
  30. * 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000
  40. * 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000
  50. * 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000
  60. * 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000
  70. * 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.1000 0.0000
  80. * 0.0000 0.0000 0.1000 0.1000 0.1000 0.2000 0.1000 0.0000
  90. * 0.0000 0.0000 0.1000 0.1000 0.1000 0.3000 0.2000 0.1000
 100. * 0.0000 0.0000 0.1000 0.1000 0.1000 0.3000 0.3000 0.1000
 110. * 0.0000 0.0000 0.1000 0.1000 0.1000 0.3000 0.3000 0.1000
 120. * 0.0000 0.0000 0.3000 0.3000 0.3000 0.3000 0.3000 0.1000

130.	*	0.1000	0.0000	0.2000	0.2000	0.2000	0.2000	0.4000	0.1000
140.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000
150.	*	0.1000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
160.	*	0.3000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
170.	*	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
180.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
240.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
250.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
260.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
270.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
280.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
290.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
300.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
310.	*	0.2000	0.2000	0.1000	0.0000	0.0000	0.1000	0.1000	0.1000
320.	*	0.0000	0.0000	0.2000	0.0000	0.2000	0.2000	0.1000	0.1000
330.	*	0.0000	0.0000	0.1000	0.0000	0.3000	0.2000	0.1000	0.1000
340.	*	0.0000	0.0000	0.0000	0.1000	0.1000	0.3000	0.1000	0.1000
350.	*	0.0000	0.0000	0.0000	0.1000	0.1000	0.3000	0.1000	0.1000
360.	*	0.0000	0.0000	0.1000	0.1000	0.1000	0.3000	0.1000	0.1000
MAX	*	0.3000	0.2000	0.3000	0.3000	0.3000	0.3000	0.4000	0.1000
DEGR.	*	160	140	120	120	120	90	130	90

THE HIGHEST CONCENTRATION OF 0.4000 UG/M**3 OCCURRED AT RECEPTOR 22.

JOB: HVN EA 2029 Construction No Build RUN: High Street Kimberly Ave Midday PM

DATE : 5/26/22
TIME : 13:27:14

The MODE flag has been set for calculating concentrations for POLLUTANT: PM2.5

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 5 (E) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 UG/M**3

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
	*	X1	Y1	X2	Y2	*									
1. S Leg App - FreeFlow	*	8.0	0.0	-844.0	-853.0	*	1206.	225.	AG	346.	0.0	0.0	31.7		
2. S Leg App - Queue	*	-13.0	-21.0	-95.9	-104.0	*	117.	225.	AG	0.	100.0	0.0	12.0	0.48	6.0
3. S Leg Dep - FreeFlow	*	0.0	8.0	-853.0	-844.0	*	1206.	225.	AG	796.	0.0	0.0	31.7		
4. E Leg App - FreeFlow	*	8.0	0.0	853.0	-844.0	*	1194.	135.	AG	930.	0.0	0.0	31.7		
5. E Leg App - Queue	*	13.0	-4.0	1782.1	-1773.1	*	2502.	135.	AG	0.	100.0	0.0	12.0	1.29	127.1
6. E Leg Dep - FreeFlow	*	-8.0	-8.0	840.0	-857.0	*	1200.	135.	AG	617.	0.0	0.0	43.7		
7. W Leg App - FreeFlow	*	-8.0	-8.0	-857.0	840.0	*	1200.	315.	AG	889.	0.0	0.0	43.7		
8. W Leg App - Queue	*	-17.0	0.0	-123.4	106.4	*	151.	315.	AG	0.	100.0	0.0	24.0	0.62	7.6
9. W Leg Dep - FreeFlow	*	0.0	8.0	-844.0	853.0	*	1194.	315.	AG	464.	0.0	0.0	31.7		

2. S Leg App - Queue	120	62	2.0	346	1600	0.02	2	3
5. E Leg App - Queue	120	62	2.0	930	1600	0.02	2	3
8. W Leg App - Queue	120	62	2.0	889	1600	0.02	2	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	31.1	0.0	5.9
2. N Leg, E Side - 0 m	31.1	0.0	5.9
3. N Leg, W Side-Corner	0.0	31.1	5.9
4. S Leg, E Side-Corner	-8.5	-39.6	5.9
5. S Leg, E Side - 25 m	-59.4	-90.5	5.9
6. S Leg, E Side - 50 m	-117.4	-148.5	5.9
7. S Leg, E Side-Midblk	-425.7	-456.8	5.9
8. S Leg, W Side-Corner	-39.6	-8.5	5.9
9. S Leg, W Side - 25 m	-90.5	-59.4	5.9
10. S Leg, W Side - 50 m	-148.5	-117.4	5.9
11. S Leg, W Side-Midblk	-456.8	-425.7	5.9
12. E Leg, N Side - 25 m	82.0	-50.9	5.9
13. E Leg, N Side - 50 m	140.0	-108.9	5.9
14. E Leg, N Side-Midblk	448.3	-417.2	5.9
15. W Leg, N Side - 25 m	-50.9	82.0	5.9
16. W Leg, N Side - 50 m	-108.9	140.0	5.9

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     17. W Leg, N Side-Midblk *      -417.2      448.3        5.9   *
     18. E Leg, S Side - 25 m *        42.4      -90.5        5.9   *
     19. E Leg, S Side - 50 m *       100.4     -148.5        5.9   *
     20. E Leg, S Side-Midblk *       408.7     -456.8        5.9   *
     21. W Leg, S Side - 25 m *       -90.5       42.4        5.9   *
     22. W Leg, S Side - 50 m *      -148.5      100.4        5.9   *
     23. W Leg, S Side-Midblk *      -456.8      408.7        5.9   *
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (UG/M**3) * 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.1000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
40.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.2000	0.1000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000
50.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
60.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
70.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
80.	* 0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.1000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
90.	* 0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
100.	* 0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
110.	* 0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
120.	* 0.0000	0.0000	0.0000	0.3000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
130.	* 0.2000	0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.3000	0.1000	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000
140.	* 0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000
150.	* 0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000
160.	* 0.2000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000
170.	* 0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000
180.	* 0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000
190.	* 0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000	0.1000
200.	* 0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
210.	* 0.1000	0.1000	0.3000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000		

0.1000 0.1000
 220. * 0.1000 0.1000 0.2000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000
0.1000 0.1000
 230. * 0.3000 0.3000 0.2000 0.2000 0.1000 0.1000 0.0000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000
0.1000 0.1000
 240. * 0.3000 0.3000 0.1000 0.2000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000
0.1000 0.1000
 250. * 0.1000 0.1000 0.1000 0.2000 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000
0.1000 0.1000
 260. * 0.0000 0.0000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000
0.2000 0.1000
 270. * 0.1000 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000
0.2000 0.1000
 280. * 0.1000 0.1000 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000
0.2000 0.1000
 290. * 0.2000 0.2000 0.3000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000
0.2000 0.2000
 300. * 0.2000 0.2000 0.3000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.2000
0.2000 0.2000
 310. * 0.2000 0.2000 0.3000 0.3000 0.1000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.3000 0.2000
0.2000 0.2000
 320. * 0.0000 0.0000 0.0000 0.3000 0.1000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000
0.2000 0.0000
 330. * 0.0000 0.0000 0.0000 0.4000 0.1000 0.0000 0.0000 0.3000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 340. * 0.0000 0.0000 0.0000 0.2000 0.1000 0.0000 0.0000 0.3000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 350. * 0.0000 0.0000 0.0000 0.1000 0.2000 0.0000 0.0000 0.3000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 360. * 0.0000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000 0.3000 0.1000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000

------*---

 MAX   * 0.3000 0.3000 0.3000 0.4000 0.2000 0.1000 0.1000 0.3000 0.2000 0.2000 0.1000 0.3000 0.2000
0.2000 0.2000
 DEGR. *   230   230   210   330   10   30   20   130   70   60   40   300   130
130   290

       MODEL RESULTS

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE: 10.-360.

 WIND * CONCENTRATION
 ANGLE *   (UG/M**3)
 (DEGR)*   16   17   18   19   20   21   22   23
 ------*---
  10. * 0.0000 0.0000 0.0000 0.1000 0.1000 0.2000 0.0000 0.0000
  20. * 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000
  30. * 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000
  40. * 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000
  50. * 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000
  60. * 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000
  70. * 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.1000 0.0000
  80. * 0.0000 0.0000 0.1000 0.1000 0.1000 0.2000 0.1000 0.0000
  90. * 0.0000 0.0000 0.1000 0.1000 0.1000 0.3000 0.2000 0.1000
 100. * 0.0000 0.0000 0.1000 0.1000 0.1000 0.3000 0.3000 0.1000
 110. * 0.0000 0.0000 0.1000 0.1000 0.1000 0.3000 0.3000 0.1000
 120. * 0.0000 0.0000 0.3000 0.3000 0.3000 0.3000 0.3000 0.1000

130.	*	0.1000	0.0000	0.2000	0.2000	0.2000	0.2000	0.3000	0.1000
140.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000
150.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
160.	*	0.3000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
170.	*	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
180.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
240.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
250.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
260.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
270.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
280.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
290.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
300.	*	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
310.	*	0.2000	0.2000	0.1000	0.0000	0.0000	0.1000	0.1000	0.1000
320.	*	0.0000	0.0000	0.2000	0.0000	0.2000	0.2000	0.1000	0.1000
330.	*	0.0000	0.0000	0.1000	0.0000	0.3000	0.2000	0.1000	0.1000
340.	*	0.0000	0.0000	0.0000	0.1000	0.1000	0.3000	0.1000	0.1000
350.	*	0.0000	0.0000	0.0000	0.1000	0.1000	0.3000	0.1000	0.1000
360.	*	0.0000	0.0000	0.1000	0.1000	0.1000	0.3000	0.1000	0.1000
MAX	*	0.3000	0.2000	0.3000	0.3000	0.3000	0.3000	0.3000	0.1000
DEGR.	*	160	140	120	120	120	90	100	90

THE HIGHEST CONCENTRATION OF 0.4000 UG/M**3 OCCURRED AT RECEPTOR 4.

JOB: HVN EA 2029 Construction No Build RUN: High Street Kimberly Ave Midday CO

DATE : 5/26/22
TIME : 10:19: 2

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 5 (E) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
	*	X1	Y1	X2	Y2	*									
1. S Leg App - FreeFlow	*	8.0	0.0	-844.0	-853.0	*	1206.	225.	AG	346.	2.5	0.0	31.7		
2. S Leg App - Queue	*	-13.0	-21.0	-95.9	-104.0	*	117.	225.	AG	29.	100.0	0.0	12.0	0.48	6.0
3. S Leg Dep - FreeFlow	*	0.0	8.0	-853.0	-844.0	*	1206.	225.	AG	796.	2.5	0.0	31.7		
4. E Leg App - FreeFlow	*	8.0	0.0	853.0	-844.0	*	1194.	135.	AG	930.	2.5	0.0	31.7		
5. E Leg App - Queue	*	13.0	-4.0	1782.1	-1773.1	*	2502.	135.	AG	29.	100.0	0.0	12.0	1.29	127.1
6. E Leg Dep - FreeFlow	*	-8.0	-8.0	840.0	-857.0	*	1200.	135.	AG	617.	2.5	0.0	43.7		
7. W Leg App - FreeFlow	*	-8.0	-8.0	-857.0	840.0	*	1200.	315.	AG	889.	2.5	0.0	43.7		
8. W Leg App - Queue	*	-17.0	0.0	-123.4	106.4	*	151.	315.	AG	58.	100.0	0.0	24.0	0.62	7.6
9. W Leg Dep - FreeFlow	*	0.0	8.0	-844.0	853.0	*	1194.	315.	AG	464.	2.5	0.0	31.7		

JOB: HVN EA 2029 Construction No Build RUN: High Street Kimberly Ave Midday CO

DATE : 5/26/22
TIME : 10:19: 2

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. S Leg App - Queue	120	62	2.0	346	1600	20.80	2	3
5. E Leg App - Queue	120	62	2.0	930	1600	20.80	2	3
8. W Leg App - Queue	120	62	2.0	889	1600	20.80	2	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	31.1	0.0	5.9
2. N Leg, E Side - 0 m	31.1	0.0	5.9
3. N Leg, W Side-Corner	0.0	31.1	5.9
4. S Leg, E Side-Corner	-8.5	-39.6	5.9
5. S Leg, E Side - 25 m	-59.4	-90.5	5.9
6. S Leg, E Side - 50 m	-117.4	-148.5	5.9
7. S Leg, E Side-Midblk	-425.7	-456.8	5.9
8. S Leg, W Side-Corner	-39.6	-8.5	5.9
9. S Leg, W Side - 25 m	-90.5	-59.4	5.9
10. S Leg, W Side - 50 m	-148.5	-117.4	5.9

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     11. S Leg, W Side-Midblk *      -456.8     -425.7        5.9   *
     12. E Leg, N Side - 25 m *        82.0      -50.9        5.9   *
     13. E Leg, N Side - 50 m *       140.0     -108.9        5.9   *
     14. E Leg, N Side-Midblk *       448.3     -417.2        5.9   *
     15. W Leg, N Side - 25 m *       -50.9       82.0        5.9   *
     16. W Leg, N Side - 50 m *      -108.9      140.0        5.9   *
     17. W Leg, N Side-Midblk *      -417.2      448.3        5.9   *
     18. E Leg, S Side - 25 m *        42.4      -90.5        5.9   *
     19. E Leg, S Side - 50 m *       100.4     -148.5        5.9   *
     20. E Leg, S Side-Midblk *       408.7     -456.8        5.9   *
     21. W Leg, S Side - 25 m *       -90.5       42.4        5.9   *
     22. W Leg, S Side - 50 m *      -148.5      100.4        5.9   *
     23. W Leg, S Side-Midblk *      -456.8      408.7        5.9   *

PAGE  3
      JOB: HVN EA 2029 Construction No Build                  RUN: High Street Kimberly Ave Midday CO

       MODEL RESULTS
       -------------

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE:  10.-360.

 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*       1       2       3       4       5       6       7       8       9      10      11      12      13
 14      15

------*-------------------------------------------------------------------------------------------------------------
-----------
  10.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.1000  0.1000  0.3000  0.1000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000
  20.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.1000  0.1000  0.3000  0.1000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000
  30.  *  0.0000  0.0000  0.0000  0.0000  0.2000  0.3000  0.2000  0.3000  0.1000  0.1000  0.0000  0.0000  0.0000
0.0000  0.0000
  40.  *  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.2000  0.3000  0.2000  0.1000  0.1000  0.0000  0.0000
0.0000  0.0000
  50.  *  0.0000  0.0000  0.0000  0.2000  0.0000  0.0000  0.0000  0.3000  0.1000  0.1000  0.1000  0.0000  0.0000
0.0000  0.0000
  60.  *  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000  0.3000  0.1000  0.2000  0.1000  0.0000  0.0000
0.0000  0.0000
  70.  *  0.0000  0.0000  0.0000  0.2000  0.0000  0.0000  0.0000  0.3000  0.2000  0.2000  0.1000  0.0000  0.0000
0.0000  0.0000
  80.  *  0.0000  0.0000  0.0000  0.3000  0.0000  0.0000  0.0000  0.3000  0.2000  0.1000  0.1000  0.0000  0.0000
0.0000  0.0000
  90.  *  0.0000  0.0000  0.0000  0.3000  0.0000  0.0000  0.0000  0.1000  0.2000  0.1000  0.1000  0.0000  0.0000
0.0000  0.0000
 100.  *  0.0000  0.0000  0.0000  0.3000  0.0000  0.0000  0.0000  0.3000  0.2000  0.1000  0.1000  0.0000  0.0000
0.0000  0.0000
 110.  *  0.0000  0.0000  0.0000  0.3000  0.0000  0.0000  0.0000  0.4000  0.2000  0.1000  0.1000  0.0000  0.0000
0.0000  0.0000
 120.  *  0.0000  0.0000  0.0000  0.3000  0.0000  0.0000  0.0000  0.4000  0.2000  0.1000  0.1000  0.0000  0.0000
0.0000  0.0000
 130.  *  0.2000  0.2000  0.2000  0.3000  0.0000  0.0000  0.0000  0.4000  0.2000  0.1000  0.1000  0.2000  0.2000
0.2000  0.2000
 140.  *  0.5000  0.5000  0.3000  0.1000  0.0000  0.0000  0.0000  0.3000  0.2000  0.1000  0.1000  0.5000  0.5000
0.5000  0.3000
 150.  *  0.5000  0.5000  0.3000  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000  0.1000  0.1000  0.4000  0.4000
0.4000  0.4000
 160.  *  0.3000  0.3000  0.3000  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000  0.1000  0.1000  0.3000  0.3000
0.3000  0.3000
 170.  *  0.3000  0.3000  0.0000  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000  0.1000  0.1000  0.3000  0.3000
0.3000  0.3000
 180.  *  0.3000  0.3000  0.0000  0.0000  0.0000  0.0000  0.0000  0.2000  0.1000  0.1000  0.1000  0.3000  0.3000
```

0.3000 0.3000
 190. * 0.2000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.2000 0.1000 0.1000 0.1000 0.2000 0.2000
0.2000 0.2000
 200. * 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.2000 0.1000 0.1000 0.1000 0.2000 0.2000
0.2000 0.2000
 210. * 0.2000 0.2000 0.4000 0.0000 0.0000 0.0000 0.0000 0.2000 0.1000 0.1000 0.1000 0.2000 0.2000
0.2000 0.2000
 220. * 0.3000 0.3000 0.3000 0.1000 0.1000 0.1000 0.0000 0.2000 0.2000 0.2000 0.1000 0.2000 0.2000
0.2000 0.2000
 230. * 0.5000 0.5000 0.3000 0.3000 0.2000 0.2000 0.2000 0.1000 0.1000 0.1000 0.1000 0.2000 0.2000
0.2000 0.2000
 240. * 0.5000 0.5000 0.2000 0.3000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000
0.2000 0.2000
 250. * 0.3000 0.3000 0.2000 0.2000 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000
0.2000 0.2000
 260. * 0.2000 0.2000 0.2000 0.2000 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000
0.2000 0.2000
 270. * 0.2000 0.2000 0.3000 0.2000 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.2000 0.3000
0.3000 0.2000
 280. * 0.2000 0.2000 0.4000 0.2000 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000
0.3000 0.3000
 290. * 0.3000 0.3000 0.4000 0.2000 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000
0.3000 0.3000
 300. * 0.3000 0.3000 0.3000 0.2000 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.4000 0.3000
0.4000 0.2000
 310. * 0.3000 0.3000 0.3000 0.4000 0.2000 0.1000 0.1000 0.2000 0.0000 0.0000 0.0000 0.4000 0.3000
0.4000 0.2000
 320. * 0.1000 0.1000 0.2000 0.5000 0.2000 0.1000 0.1000 0.3000 0.0000 0.0000 0.0000 0.1000 0.1000
0.2000 0.2000
 330. * 0.0000 0.0000 0.0000 0.5000 0.3000 0.1000 0.1000 0.3000 0.1000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 340. * 0.0000 0.0000 0.0000 0.5000 0.2000 0.1000 0.1000 0.3000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 350. * 0.0000 0.0000 0.0000 0.3000 0.3000 0.1000 0.1000 0.3000 0.1000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 360. * 0.0000 0.0000 0.0000 0.2000 0.3000 0.1000 0.1000 0.3000 0.1000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000

------*---

 MAX   * 0.5000 0.5000 0.4000 0.5000 0.3000 0.3000 0.2000 0.4000 0.2000 0.2000 0.1000 0.5000 0.5000
0.5000 0.4000
 DEGR. *   140   140   210   320   10   30   30   110   40   60   40   140   140
140   150

       MODEL RESULTS

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE: 10.-360.

 WIND * CONCENTRATION
 ANGLE *   (PPM)
 (DEGR)*   16   17   18   19   20   21   22   23
 ------*---
  10. * 0.0000 0.0000 0.3000 0.3000 0.3000 0.3000 0.1000 0.1000
  20. * 0.0000 0.0000 0.2000 0.2000 0.2000 0.3000 0.1000 0.1000
  30. * 0.0000 0.0000 0.1000 0.1000 0.1000 0.3000 0.1000 0.1000
  40. * 0.0000 0.0000 0.1000 0.1000 0.1000 0.3000 0.1000 0.1000
  50. * 0.0000 0.0000 0.1000 0.1000 0.2000 0.3000 0.1000 0.1000
  60. * 0.0000 0.0000 0.1000 0.1000 0.1000 0.3000 0.1000 0.1000

70.	*	0.0000	0.0000	0.2000	0.2000	0.2000	0.3000	0.2000	0.1000
80.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.2000	0.1000
90.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.2000	0.1000
100.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000	0.1000
110.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000	0.1000
120.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.5000	0.3000	0.1000
130.	*	0.1000	0.1000	0.3000	0.3000	0.3000	0.5000	0.5000	0.1000
140.	*	0.4000	0.2000	0.1000	0.1000	0.1000	0.0000	0.2000	0.1000
150.	*	0.3000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
160.	*	0.4000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
170.	*	0.4000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
180.	*	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190.	*	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	*	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	*	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
240.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
250.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
260.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
270.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
280.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
290.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
300.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
310.	*	0.2000	0.2000	0.2000	0.0000	0.1000	0.1000	0.1000	0.1000
320.	*	0.2000	0.1000	0.2000	0.3000	0.3000	0.3000	0.2000	0.1000
330.	*	0.0000	0.0000	0.3000	0.2000	0.3000	0.2000	0.1000	0.1000
340.	*	0.0000	0.0000	0.1000	0.3000	0.3000	0.3000	0.1000	0.1000
350.	*	0.0000	0.0000	0.2000	0.3000	0.3000	0.3000	0.1000	0.1000
360.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.1000	0.1000
------	*								
MAX	*	0.4000	0.2000	0.3000	0.3000	0.3000	0.5000	0.5000	0.1000
DEGR.	*	140	140	10	10	10	120	130	10

THE HIGHEST CONCENTRATION OF 0.5000 PPM OCCURRED AT RECEPTOR 21.

JOB: New Haven EA 2029 Build RUN: Hemingway and Main

DATE : 6/ 1/22
TIME : 14:25: 7

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 5 (E) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
	*	X1	Y1	X2	Y2	*									
1. N Leg App - FreeFlow	*	-24.0	0.0	-24.0	1200.0	*	1200.	360.	AG	1115.	2.2	0.0	67.7		
2. N Leg App - Queue	*	-24.0	24.0	-24.0	118.2	*	94.	360.	AG	115.	100.0	0.0	48.0	0.39	4.8
3. N Leg Dep - FreeFlow	*	18.0	0.0	18.0	1200.0	*	1200.	360.	AG	852.	2.2	0.0	55.7		
4. S Leg App - FreeFlow	*	18.0	0.0	18.0	-1200.0	*	1200.	180.	AG	830.	2.2	0.0	55.7		
5. S Leg App - Queue	*	18.0	-36.0	18.0	-129.6	*	94.	180.	AG	86.	100.0	0.0	36.0	0.38	4.8
6. S Leg Dep - FreeFlow	*	-24.0	0.0	-24.0	-1200.0	*	1200.	180.	AG	1188.	2.2	0.0	67.7		
7. E Leg App - FreeFlow	*	0.0	12.0	1200.0	12.0	*	1200.	90.	AG	580.	2.6	0.0	43.7		
8. E Leg App - Queue	*	36.0	12.0	134.3	12.0	*	98.	90.	AG	58.	100.0	0.0	24.0	0.40	5.0
9. E Leg Dep - FreeFlow	*	0.0	-18.0	1200.0	-18.0	*	1200.	90.	AG	316.	2.5	0.0	55.7		
10. W Leg App - FreeFlow	*	0.0	-18.0	-1200.0	-18.0	*	1200.	270.	AG	388.	2.5	0.0	55.7		
11. W Leg App - Queue	*	-48.0	-18.0	-91.7	-18.0	*	44.	270.	AG	86.	100.0	0.0	36.0	0.18	2.2
12. W Leg Dep - FreeFlow	*	0.0	12.0	-1200.0	12.0	*	1200.	270.	AG	503.	2.6	0.0	43.7		

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. N Leg App - Queue	*	120	62	2.0	1115	1600	20.80	1	3
5. S Leg App - Queue	*	120	62	2.0	830	1600	20.80	1	3
8. E Leg App - Queue	*	120	62	2.0	580	1600	20.80	1	3
11. W Leg App - Queue	*	120	62	2.0	388	1600	20.80	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	46.0	34.0	5.9	*
2. N Leg, E Side - 25 m	*	46.0	106.0	5.9	*
3. N Leg, E Side - 50 m	*	46.0	188.0	5.9	*
4. N Leg, E Side-Midblk	*	46.0	624.0	5.9	*
5. N Leg, W Side-Corner	*	-58.0	34.0	5.9	*

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      6. N Leg, W Side - 25 m *       -58.0      106.0        5.9   *
      7. N Leg, W Side - 50 m *       -58.0      188.0        5.9   *
      8. N Leg, W Side-Midblk *       -58.0      624.0        5.9   *
      9. S Leg, E Side-Corner *        46.0      -46.0        5.9   *
     10. S Leg, E Side - 25 m *        46.0     -118.0        5.9   *
     11. S Leg, E Side - 50 m *        46.0     -200.0        5.9   *
     12. S Leg, E Side-Midblk *        46.0     -636.0        5.9   *
     13. S Leg, W Side-Corner *       -58.0      -46.0        5.9   *
     14. S Leg, W Side - 25 m *       -58.0     -118.0        5.9   *
     15. S Leg, W Side - 50 m *       -58.0     -200.0        5.9   *
     16. S Leg, W Side-Midblk *       -58.0     -636.0        5.9   *
     17. E Leg, N Side - 25 m *       118.0       34.0        5.9   *
     18. E Leg, N Side - 50 m *       200.0       34.0        5.9   *
     19. E Leg, N Side-Midblk *       636.0       34.0        5.9   *
     20. W Leg, N Side - 25 m *      -130.0       34.0        5.9   *
     21. W Leg, N Side - 50 m *      -212.0       34.0        5.9   *
     22. W Leg, N Side-Midblk *      -648.0       34.0        5.9   *
     23. E Leg, S Side - 25 m *       118.0      -46.0        5.9   *
     24. E Leg, S Side - 50 m *       200.0      -46.0        5.9   *
     25. E Leg, S Side-Midblk *       636.0      -46.0        5.9   *
     26. W Leg, S Side - 25 m *      -130.0      -46.0        5.9   *
     27. W Leg, S Side - 50 m *      -212.0      -46.0        5.9   *
     28. W Leg, S Side-Midblk *      -648.0      -46.0        5.9   *

PAGE  3
      JOB: New Haven EA 2029 Build                              RUN: Hemingway and Main

       MODEL RESULTS
       -------------

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE:  10.-360.

 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*       1       2       3       4       5       6       7       8       9      10      11      12      13
 14      15

------*-------------------------------------------------------------------------------------------------------------
-----------
  10.  *  0.1000  0.1000  0.0000  0.0000  0.5000  0.3000  0.3000  0.1000  0.1000  0.1000  0.0000  0.0000  0.6000
0.4000  0.3000
  20.  *  0.0000  0.0000  0.0000  0.0000  0.5000  0.2000  0.2000  0.1000  0.1000  0.1000  0.0000  0.0000  0.5000
0.2000  0.2000
  30.  *  0.0000  0.0000  0.0000  0.0000  0.5000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.4000
0.1000  0.2000
  40.  *  0.0000  0.0000  0.0000  0.0000  0.5000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.3000
0.2000  0.2000
  50.  *  0.0000  0.0000  0.0000  0.0000  0.5000  0.2000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.1000
0.2000  0.2000
  60.  *  0.0000  0.0000  0.0000  0.0000  0.4000  0.2000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.2000
0.2000  0.1000
  70.  *  0.0000  0.0000  0.0000  0.0000  0.4000  0.3000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000
0.2000  0.1000
  80.  *  0.0000  0.0000  0.0000  0.0000  0.4000  0.3000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.2000
0.2000  0.1000
  90.  *  0.2000  0.0000  0.0000  0.0000  0.6000  0.4000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000
0.2000  0.1000
 100.  *  0.2000  0.0000  0.0000  0.0000  0.5000  0.4000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000
0.2000  0.1000
 110.  *  0.3000  0.0000  0.0000  0.0000  0.3000  0.4000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000
0.1000  0.1000
 120.  *  0.3000  0.0000  0.0000  0.0000  0.2000  0.5000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000
0.1000  0.1000
 130.  *  0.3000  0.0000  0.0000  0.0000  0.3000  0.5000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000
```

0.1000 0.1000
 140. * 0.3000 0.1000 0.0000 0.0000 0.2000 0.5000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.2000
0.1000 0.1000
 150. * 0.3000 0.1000 0.0000 0.0000 0.2000 0.5000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.1000
0.1000 0.1000
 160. * 0.2000 0.1000 0.0000 0.0000 0.4000 0.6000 0.3000 0.1000 0.0000 0.0000 0.0000 0.0000 0.2000
0.2000 0.2000
 170. * 0.2000 0.1000 0.0000 0.0000 0.3000 0.5000 0.4000 0.1000 0.0000 0.0000 0.0000 0.0000 0.3000
0.3000 0.2000
 180. * 0.6000 0.4000 0.1000 0.1000 0.2000 0.4000 0.3000 0.1000 0.2000 0.1000 0.1000 0.1000 0.1000
0.1000 0.1000
 190. * 0.4000 0.4000 0.3000 0.2000 0.3000 0.1000 0.0000 0.1000 0.4000 0.2000 0.2000 0.2000 0.1000
0.1000 0.1000
 200. * 0.4000 0.3000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.4000 0.2000 0.2000 0.2000 0.0000
0.0000 0.0000
 210. * 0.3000 0.2000 0.4000 0.2000 0.1000 0.0000 0.0000 0.0000 0.5000 0.2000 0.2000 0.2000 0.0000
0.0000 0.0000
 220. * 0.2000 0.2000 0.3000 0.2000 0.1000 0.0000 0.0000 0.0000 0.5000 0.2000 0.2000 0.2000 0.0000
0.0000 0.0000
 230. * 0.1000 0.4000 0.3000 0.2000 0.1000 0.0000 0.0000 0.0000 0.5000 0.3000 0.2000 0.2000 0.0000
0.0000 0.0000
 240. * 0.2000 0.4000 0.2000 0.2000 0.1000 0.0000 0.0000 0.0000 0.5000 0.3000 0.2000 0.2000 0.0000
0.0000 0.0000
 250. * 0.2000 0.4000 0.2000 0.2000 0.1000 0.0000 0.0000 0.0000 0.4000 0.3000 0.2000 0.2000 0.0000
0.0000 0.0000
 260. * 0.3000 0.4000 0.2000 0.2000 0.1000 0.0000 0.0000 0.0000 0.4000 0.4000 0.2000 0.2000 0.0000
0.0000 0.0000
 270. * 0.5000 0.4000 0.2000 0.2000 0.1000 0.0000 0.0000 0.0000 0.4000 0.4000 0.2000 0.2000 0.1000
0.0000 0.0000
 280. * 0.4000 0.3000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.5000 0.4000 0.2000 0.2000 0.1000
0.0000 0.0000
 290. * 0.4000 0.3000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.3000 0.4000 0.2000 0.2000 0.2000
0.0000 0.0000
 300. * 0.4000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.2000 0.5000 0.2000 0.2000 0.1000
0.0000 0.0000
 310. * 0.4000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.3000 0.5000 0.2000 0.2000 0.2000
0.0000 0.0000
 320. * 0.3000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.2000 0.5000 0.2000 0.2000 0.2000
0.0000 0.0000
 330. * 0.3000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.3000 0.5000 0.3000 0.2000 0.2000
0.0000 0.0000
 340. * 0.2000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.3000 0.5000 0.3000 0.2000 0.2000
0.1000 0.0000
 350. * 0.2000 0.2000 0.2000 0.2000 0.1000 0.1000 0.1000 0.1000 0.4000 0.6000 0.4000 0.2000 0.2000
0.1000 0.0000
 360. * 0.1000 0.1000 0.1000 0.1000 0.2000 0.1000 0.1000 0.1000 0.2000 0.2000 0.2000 0.1000 0.4000
0.4000 0.3000

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 MAX   * 0.6000 0.4000 0.4000 0.2000 0.6000 0.6000 0.4000 0.1000 0.5000 0.6000 0.4000 0.2000 0.6000
0.4000 0.3000
 DEGR. *   180   180   210   190   90   160   170   10   210   350   350   190   10
10   10

      JOB: New Haven EA 2029 Build   RUN: Hemingway and Main

       MODEL RESULTS

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)												
	* 16	17	18	19	20	21	22	23	24	25	26	27	28
10.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.1000	0.0000	0.0000	0.1000	0.0000	0.0000
20.	* 0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
30.	* 0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000
40.	* 0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000
50.	* 0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000
60.	* 0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000
70.	* 0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
80.	* 0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.1000	0.1000	0.0000	0.1000	0.1000	0.1000
90.	* 0.1000	0.1000	0.1000	0.1000	0.1000	0.2000	0.1000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000
100.	* 0.1000	0.1000	0.1000	0.1000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000
110.	* 0.1000	0.1000	0.1000	0.1000	0.2000	0.2000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
120.	* 0.1000	0.1000	0.1000	0.1000	0.3000	0.1000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
130.	* 0.1000	0.2000	0.1000	0.1000	0.3000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
140.	* 0.1000	0.2000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
150.	* 0.1000	0.2000	0.1000	0.1000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
160.	* 0.1000	0.1000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
170.	* 0.1000	0.2000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
180.	* 0.1000	0.3000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190.	* 0.1000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	* 0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	* 0.0000	0.4000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	* 0.0000	0.4000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	* 0.0000	0.4000	0.2000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
240.	* 0.0000	0.3000	0.2000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
250.	* 0.0000	0.3000	0.2000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
260.	* 0.0000	0.2000	0.2000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
270.	* 0.0000	0.2000	0.3000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.1000	0.1000	0.0000
280.	* 0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
290.	* 0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.1000	0.1000	0.1000
300.	* 0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.2000	0.0000	0.0000	0.0000	0.0000
310.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
320.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
330.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
340.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
350.	* 0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
360.	* 0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	* 0.2000	0.4000	0.3000	0.1000	0.3000	0.2000	0.1000	0.2000	0.2000	0.0000	0.2000	0.1000	0.1000
DEGR.	* 10	210	270	90	120	90	90	310	290	10	30	50	70

THE HIGHEST CONCENTRATION OF 0.6000 PPM OCCURRED AT RECEPTOR 13.

JOB: New Haven EA 2029 Build RUN: Hemingway and Main PM

DATE : 6/ 1/22
TIME : 15: 3:51

The MODE flag has been set for calculating concentrations for POLLUTANT: PM2.5

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 5 (E) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 UG/M**3

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
	*	X1	Y1	X2	Y2	*									
1. N Leg App - FreeFlow	*	-24.0	0.0	-24.0	1200.0	*	1200.	360.	AG	1115.	0.0	0.0	67.7		
2. N Leg App - Queue	*	-24.0	24.0	-24.0	118.2	*	94.	360.	AG	0.	100.0	0.0	48.0	0.39	4.8
3. N Leg Dep - FreeFlow	*	18.0	0.0	18.0	1200.0	*	1200.	360.	AG	852.	0.0	0.0	55.7		
4. S Leg App - FreeFlow	*	18.0	0.0	18.0	-1200.0	*	1200.	180.	AG	830.	0.0	0.0	55.7		
5. S Leg App - Queue	*	18.0	-36.0	18.0	-129.6	*	94.	180.	AG	0.	100.0	0.0	36.0	0.38	4.8
6. S Leg Dep - FreeFlow	*	-24.0	0.0	-24.0	-1200.0	*	1200.	180.	AG	1188.	0.0	0.0	67.7		
7. E Leg App - FreeFlow	*	0.0	12.0	1200.0	12.0	*	1200.	90.	AG	580.	0.0	0.0	43.7		
8. E Leg App - Queue	*	36.0	12.0	134.3	12.0	*	98.	90.	AG	0.	100.0	0.0	24.0	0.40	5.0
9. E Leg Dep - FreeFlow	*	0.0	-18.0	1200.0	-18.0	*	1200.	90.	AG	316.	0.0	0.0	55.7		
10. W Leg App - FreeFlow	*	0.0	-18.0	-1200.0	-18.0	*	1200.	270.	AG	388.	0.0	0.0	55.7		
11. W Leg App - Queue	*	-48.0	-18.0	-91.7	-18.0	*	44.	270.	AG	0.	100.0	0.0	36.0	0.18	2.2
12. W Leg Dep - FreeFlow	*	0.0	12.0	-1200.0	12.0	*	1200.	270.	AG	503.	0.0	0.0	43.7		

2. N Leg App - Queue	*	120	62	2.0	1115	1600	0.02	1	3
5. S Leg App - Queue	*	120	62	2.0	830	1600	0.02	1	3
8. E Leg App - Queue	*	120	62	2.0	580	1600	0.02	1	3
11. W Leg App - Queue	*	120	62	2.0	388	1600	0.02	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	46.0	34.0	5.9	*
2. N Leg, E Side - 25 m	*	46.0	106.0	5.9	*
3. N Leg, E Side - 50 m	*	46.0	188.0	5.9	*
4. N Leg, E Side-Midblk	*	46.0	624.0	5.9	*
5. N Leg, W Side-Corner	*	-58.0	34.0	5.9	*
6. N Leg, W Side - 25 m	*	-58.0	106.0	5.9	*
7. N Leg, W Side - 50 m	*	-58.0	188.0	5.9	*
8. N Leg, W Side-Midblk	*	-58.0	624.0	5.9	*
9. S Leg, E Side-Corner	*	46.0	-46.0	5.9	*
10. S Leg, E Side - 25 m	*	46.0	-118.0	5.9	*
11. S Leg, E Side - 50 m	*	46.0	-200.0	5.9	*

12.	S Leg, E Side-Midblk *	46.0	-636.0	5.9	*
13.	S Leg, W Side-Corner *	-58.0	-46.0	5.9	*
14.	S Leg, W Side - 25 m *	-58.0	-118.0	5.9	*
15.	S Leg, W Side - 50 m *	-58.0	-200.0	5.9	*
16.	S Leg, W Side-Midblk *	-58.0	-636.0	5.9	*
17.	E Leg, N Side - 25 m *	118.0	34.0	5.9	*
18.	E Leg, N Side - 50 m *	200.0	34.0	5.9	*
19.	E Leg, N Side-Midblk *	636.0	34.0	5.9	*
20.	W Leg, N Side - 25 m *	-130.0	34.0	5.9	*
21.	W Leg, N Side - 50 m *	-212.0	34.0	5.9	*
22.	W Leg, N Side-Midblk *	-648.0	34.0	5.9	*
23.	E Leg, S Side - 25 m *	118.0	-46.0	5.9	*
24.	E Leg, S Side - 50 m *	200.0	-46.0	5.9	*
25.	E Leg, S Side-Midblk *	636.0	-46.0	5.9	*
26.	W Leg, S Side - 25 m *	-130.0	-46.0	5.9	*
27.	W Leg, S Side - 50 m *	-212.0	-46.0	5.9	*
28.	W Leg, S Side-Midblk *	-648.0	-46.0	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (UG/M**3) *	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.5000	0.3000	0.2000
20.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.4000	0.2000	0.2000
30.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.2000
40.	*	0.0000	0.0000	0.0000	0.0000	0.5000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.1000	0.2000	0.2000
50.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.2000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000
60.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.1000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000
70.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000
80.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000
90.	*	0.2000	0.0000	0.0000	0.0000	0.5000	0.4000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000
100.	*	0.2000	0.0000	0.0000	0.0000	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000
110.	*	0.3000	0.0000	0.0000	0.0000	0.2000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
120.	*	0.2000	0.0000	0.0000	0.0000	0.1000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000
130.	*	0.2000	0.0000	0.0000	0.0000	0.2000	0.4000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000
140.	*	0.2000	0.0000	0.0000	0.0000	0.1000	0.4000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000
150.	*	0.2000	0.1000	0.0000	0.0000	0.1000	0.5000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
160.	*	0.2000	0.1000	0.0000	0.0000	0.2000	0.5000	0.3000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000		

```
0.1000  0.1000
 170.  *  0.2000  0.1000  0.0000  0.0000  0.2000  0.3000  0.3000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000
0.1000  0.1000
 180.  *  0.3000  0.1000  0.0000  0.1000  0.2000  0.3000  0.1000  0.1000  0.2000  0.1000  0.1000  0.1000  0.1000
0.1000  0.1000
 190.  *  0.4000  0.2000  0.2000  0.1000  0.2000  0.1000  0.0000  0.0000  0.3000  0.2000  0.2000  0.1000  0.0000
0.0000  0.0000
 200.  *  0.3000  0.1000  0.2000  0.1000  0.1000  0.0000  0.0000  0.0000  0.4000  0.2000  0.2000  0.2000  0.0000
0.0000  0.0000
 210.  *  0.2000  0.2000  0.3000  0.1000  0.1000  0.0000  0.0000  0.0000  0.4000  0.1000  0.1000  0.1000  0.0000
0.0000  0.0000
 220.  *  0.0000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.3000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000
 230.  *  0.0000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.1000  0.0000  0.0000  0.0000
0.0000  0.0000
 240.  *  0.1000  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.0000  0.0000
0.0000  0.0000
 250.  *  0.1000  0.2000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.0000  0.0000
0.0000  0.0000
 260.  *  0.1000  0.2000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.0000  0.0000
0.0000  0.0000
 270.  *  0.2000  0.2000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.0000  0.0000
0.0000  0.0000
 280.  *  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.2000  0.0000  0.0000  0.0000
0.0000  0.0000
 290.  *  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.0000  0.1000
0.0000  0.0000
 300.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000  0.2000  0.0000  0.0000  0.1000
0.0000  0.0000
 310.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000  0.3000  0.0000  0.0000  0.2000
0.0000  0.0000
 320.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000  0.3000  0.0000  0.0000  0.2000
0.0000  0.0000
 330.  *  0.2000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000  0.5000  0.2000  0.1000  0.2000
0.0000  0.0000
 340.  *  0.2000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000  0.4000  0.3000  0.2000  0.2000
0.1000  0.0000
 350.  *  0.2000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.3000  0.2000  0.3000  0.1000  0.2000
0.1000  0.0000
 360.  *  0.1000  0.1000  0.1000  0.1000  0.2000  0.1000  0.1000  0.1000  0.2000  0.1000  0.1000  0.1000  0.4000
0.3000  0.2000

------*-----------------------------------------------------------------------------------------------------------
-----------
 MAX   *  0.4000  0.2000  0.3000  0.1000  0.5000  0.5000  0.3000  0.1000  0.4000  0.5000  0.3000  0.2000  0.5000
0.3000  0.2000
 DEGR. *    190     190     210     180      40     150     160      10     200     330     340     200      10
10      10
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
WIND  * CONCENTRATION
ANGLE *   (UG/M**3)
(DEGR)*      16      17      18      19      20      21      22      23      24      25      26      27      28
------*-----------------------------------------------------------------------------------------------------------
 10.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000
 20.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
```

30.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
40.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000
50.	*	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000
60.	*	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000
70.	*	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000
80.	*	0.1000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000
90.	*	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
100.	*	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
110.	*	0.0000	0.1000	0.1000	0.1000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
120.	*	0.1000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
130.	*	0.1000	0.1000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
140.	*	0.1000	0.1000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
150.	*	0.1000	0.1000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
160.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
170.	*	0.1000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
180.	*	0.1000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190.	*	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	*	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	*	0.0000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	*	0.0000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	*	0.0000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
240.	*	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
250.	*	0.0000	0.2000	0.2000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
260.	*	0.0000	0.1000	0.2000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
270.	*	0.0000	0.2000	0.2000	0.1000	0.1000	0.1000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
280.	*	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
290.	*	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000
300.	*	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.2000	0.0000	0.0000	0.0000	0.0000
310.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
320.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
330.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
340.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
350.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
360.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	*	0.1000	0.3000	0.2000	0.1000	0.2000	0.1000	0.1000	0.2000	0.2000	0.0000	0.2000	0.1000	0.0000
DEGR.	*	10	210	250	90	70	70	100	310	290	10	40	50	10

THE HIGHEST CONCENTRATION OF 0.5000 UG/M**3 OCCURRED AT RECEPTOR 13.

JOB: New Haven EA 2024 RUN: Hemingway and Main No Build PM

DATE : 5/26/22
TIME : 13:25: 1

The MODE flag has been set for calculating concentrations for POLLUTANT: PM2.5

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 5 (E) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 UG/M**3

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT) X1	Y1	X2	Y2	*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. N Leg App - FreeFlow	*	-24.0	0.0	-24.0	1200.0	*	1200.	360.	AG	742.	0.0	0.0	67.7		
2. N Leg App - Queue	*	-24.0	24.0	-24.0	86.7	*	63.	360.	AG	0.	100.0	0.0	48.0	0.26	3.2
3. N Leg Dep - FreeFlow	*	18.0	0.0	18.0	1200.0	*	1200.	360.	AG	557.	0.0	0.0	55.7		
4. S Leg App - FreeFlow	*	18.0	0.0	18.0	-1200.0	*	1200.	180.	AG	557.	0.0	0.0	55.7		
5. S Leg App - Queue	*	18.0	-36.0	18.0	-98.7	*	63.	180.	AG	0.	100.0	0.0	36.0	0.26	3.2
6. S Leg Dep - FreeFlow	*	-24.0	0.0	-24.0	-1200.0	*	1200.	180.	AG	842.	0.0	0.0	67.7		
7. E Leg App - FreeFlow	*	0.0	12.0	1200.0	12.0	*	1200.	90.	AG	507.	0.0	0.0	43.7		
8. E Leg App - Queue	*	36.0	12.0	121.8	12.0	*	86.	90.	AG	0.	100.0	0.0	24.0	0.35	4.4
9. E Leg Dep - FreeFlow	*	0.0	-18.0	1200.0	-18.0	*	1200.	90.	AG	316.	0.0	0.0	55.7		
10. W Leg App - FreeFlow	*	0.0	-18.0	-1200.0	-18.0	*	1200.	270.	AG	248.	0.0	0.0	55.7		
11. W Leg App - Queue	*	-48.0	-18.0	-75.8	-18.0	*	28.	270.	AG	0.	100.0	0.0	36.0	0.11	1.4
12. W Leg Dep - FreeFlow	*	0.0	12.0	-1200.0	12.0	*	1200.	270.	AG	503.	0.0	0.0	43.7		

JOB: New Haven EA 2024 RUN: Hemingway and Main No Build PM

DATE : 5/26/22
TIME : 13:25: 1

2. N Leg App - Queue	*	120	62	2.0	742	1600	0.02	1	3
5. S Leg App - Queue	*	120	62	2.0	557	1600	0.02	1	3
8. E Leg App - Queue	*	120	62	2.0	507	1600	0.02	1	3
11. W Leg App - Queue	*	120	62	2.0	248	1600	0.02	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	46.0	34.0	5.9	*
2. N Leg, E Side - 25 m	*	46.0	106.0	5.9	*
3. N Leg, E Side - 50 m	*	46.0	188.0	5.9	*
4. N Leg, E Side-Midblk	*	46.0	624.0	5.9	*
5. N Leg, W Side-Corner	*	-58.0	34.0	5.9	*
6. N Leg, W Side - 25 m	*	-58.0	106.0	5.9	*
7. N Leg, W Side - 50 m	*	-58.0	188.0	5.9	*
8. N Leg, W Side-Midblk	*	-58.0	624.0	5.9	*
9. S Leg, E Side-Corner	*	46.0	-46.0	5.9	*
10. S Leg, E Side - 25 m	*	46.0	-118.0	5.9	*
11. S Leg, E Side - 50 m	*	46.0	-200.0	5.9	*

12.	S Leg, E Side-Midblk *	46.0	-636.0	5.9	*
13.	S Leg, W Side-Corner *	-58.0	-46.0	5.9	*
14.	S Leg, W Side - 25 m *	-58.0	-118.0	5.9	*
15.	S Leg, W Side - 50 m *	-58.0	-200.0	5.9	*
16.	S Leg, W Side-Midblk *	-58.0	-636.0	5.9	*
17.	E Leg, N Side - 25 m *	118.0	34.0	5.9	*
18.	E Leg, N Side - 50 m *	200.0	34.0	5.9	*
19.	E Leg, N Side-Midblk *	636.0	34.0	5.9	*
20.	W Leg, N Side - 25 m *	-130.0	34.0	5.9	*
21.	W Leg, N Side - 50 m *	-212.0	34.0	5.9	*
22.	W Leg, N Side-Midblk *	-648.0	34.0	5.9	*
23.	E Leg, S Side - 25 m *	118.0	-46.0	5.9	*
24.	E Leg, S Side - 50 m *	200.0	-46.0	5.9	*
25.	E Leg, S Side-Midblk *	636.0	-46.0	5.9	*
26.	W Leg, S Side - 25 m *	-130.0	-46.0	5.9	*
27.	W Leg, S Side - 50 m *	-212.0	-46.0	5.9	*
28.	W Leg, S Side-Midblk *	-648.0	-46.0	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (UG/M**3) * 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.4000	0.1000	0.1000
20.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.2000
30.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.2000	0.0000	0.2000
40.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000
50.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000
60.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000
70.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000
80.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000
90.	* 0.1000	0.0000	0.0000	0.0000	0.4000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
100.	* 0.2000	0.0000	0.0000	0.0000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
110.	* 0.3000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
120.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
130.	* 0.2000	0.0000	0.0000	0.0000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
140.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
150.	* 0.2000	0.1000	0.0000	0.0000	0.1000	0.3000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
160.	* 0.2000	0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000		

0.1000 0.1000
 170. * 0.2000 0.1000 0.0000 0.0000 0.2000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.1000
0.1000 0.1000
 180. * 0.2000 0.0000 0.0000 0.0000 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.1000
0.1000 0.1000
 190. * 0.2000 0.1000 0.0000 0.1000 0.1000 0.0000 0.0000 0.0000 0.2000 0.1000 0.1000 0.1000 0.0000
0.0000 0.0000
 200. * 0.2000 0.0000 0.1000 0.0000 0.1000 0.0000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 210. * 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 220. * 0.0000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 230. * 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 240. * 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 250. * 0.0000 0.1000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 260. * 0.1000 0.1000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 270. * 0.2000 0.0000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 280. * 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 290. * 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000 0.0000 0.0000 0.0000
0.0000 0.0000
 300. * 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000 0.0000 0.0000 0.0000
0.0000 0.0000
 310. * 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.1000 0.2000 0.0000 0.0000 0.1000
0.0000 0.0000
 320. * 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.1000 0.2000 0.0000 0.0000 0.1000
0.0000 0.0000
 330. * 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.1000 0.3000 0.0000 0.0000 0.1000
0.0000 0.0000
 340. * 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.1000 0.3000 0.1000 0.0000 0.2000
0.0000 0.0000
 350. * 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000 0.1000 0.2000
0.0000 0.0000
 360. * 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000 0.1000 0.0000 0.1000 0.1000 0.1000 0.0000 0.3000
0.2000 0.0000

------*---

 MAX   * 0.3000 0.2000 0.1000 0.1000 0.4000 0.3000 0.1000 0.1000 0.3000 0.3000 0.1000 0.1000 0.4000
0.2000 0.2000
 DEGR. *   110   230   200   190   90   140   10   10   230   330   190   190   10
360   20

       MODEL RESULTS

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE: 10.-360.

 WIND * CONCENTRATION
 ANGLE *   (UG/M**3)
 (DEGR)*   16   17   18   19   20   21   22   23   24   25   26   27   28
 ------*---
  10. * 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
  20. * 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000

30.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
40.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
50.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
60.	*	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000
70.	*	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
80.	*	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
90.	*	0.0000	0.1000	0.1000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
100.	*	0.0000	0.1000	0.1000	0.1000	0.1000	0.0000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
110.	*	0.0000	0.1000	0.1000	0.1000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
120.	*	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
130.	*	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
140.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
150.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
160.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
170.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
180.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190.	*	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	*	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	*	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	*	0.0000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	*	0.0000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
240.	*	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
250.	*	0.0000	0.2000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
260.	*	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
270.	*	0.0000	0.2000	0.1000	0.0000	0.1000	0.1000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
280.	*	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
290.	*	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000
300.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
310.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
320.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
330.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
340.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
350.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
360.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	*	0.1000	0.3000	0.1000	0.1000	0.1000	0.1000	0.1000	0.2000	0.1000	0.0000	0.2000	0.1000	0.0000
DEGR.	*	10	220	90	100	60	80	100	310	290	10	60	60	10

THE HIGHEST CONCENTRATION OF 0.4000 UG/M**3 OCCURRED AT RECEPTOR 13.

JOB: New Haven EA 2024 RUN: Hemingway and Main

DATE : 5/26/22
TIME : 10:10: 8

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 5 (E) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
	*	X1	Y1	X2	Y2	*									
1. N Leg App - FreeFlow	*	-24.0	0.0	-24.0	1200.0	*	1200.	360.	AG	742.	2.2	0.0	67.7		
2. N Leg App - Queue	*	-24.0	24.0	-24.0	86.7	*	63.	360.	AG	115.	100.0	0.0	48.0	0.26	3.2
3. N Leg Dep - FreeFlow	*	18.0	0.0	18.0	1200.0	*	1200.	360.	AG	557.	2.2	0.0	55.7		
4. S Leg App - FreeFlow	*	18.0	0.0	18.0	-1200.0	*	1200.	180.	AG	557.	2.2	0.0	55.7		
5. S Leg App - Queue	*	18.0	-36.0	18.0	-98.7	*	63.	180.	AG	86.	100.0	0.0	36.0	0.26	3.2
6. S Leg Dep - FreeFlow	*	-24.0	0.0	-24.0	-1200.0	*	1200.	180.	AG	842.	2.2	0.0	67.7		
7. E Leg App - FreeFlow	*	0.0	12.0	1200.0	12.0	*	1200.	90.	AG	507.	2.6	0.0	43.7		
8. E Leg App - Queue	*	36.0	12.0	121.8	12.0	*	86.	90.	AG	58.	100.0	0.0	24.0	0.35	4.4
9. E Leg Dep - FreeFlow	*	0.0	-18.0	1200.0	-18.0	*	1200.	90.	AG	316.	2.5	0.0	55.7		
10. W Leg App - FreeFlow	*	0.0	-18.0	-1200.0	-18.0	*	1200.	270.	AG	248.	2.5	0.0	55.7		
11. W Leg App - Queue	*	-48.0	-18.0	-75.8	-18.0	*	28.	270.	AG	86.	100.0	0.0	36.0	0.11	1.4
12. W Leg Dep - FreeFlow	*	0.0	12.0	-1200.0	12.0	*	1200.	270.	AG	503.	2.6	0.0	43.7		

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. N Leg App - Queue	*	120	62	2.0	742	1600	20.80	1	3
5. S Leg App - Queue	*	120	62	2.0	557	1600	20.80	1	3
8. E Leg App - Queue	*	120	62	2.0	507	1600	20.80	1	3
11. W Leg App - Queue	*	120	62	2.0	248	1600	20.80	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	46.0	34.0	5.9	*
2. N Leg, E Side - 25 m	*	46.0	106.0	5.9	*
3. N Leg, E Side - 50 m	*	46.0	188.0	5.9	*
4. N Leg, E Side-Midblk	*	46.0	624.0	5.9	*
5. N Leg, W Side-Corner	*	-58.0	34.0	5.9	*

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      6. N Leg, W Side - 25 m *       -58.0      106.0        5.9   *
      7. N Leg, W Side - 50 m *       -58.0      188.0        5.9   *
      8. N Leg, W Side-Midblk *       -58.0      624.0        5.9   *
      9. S Leg, E Side-Corner *        46.0      -46.0        5.9   *
     10. S Leg, E Side - 25 m *        46.0     -118.0        5.9   *
     11. S Leg, E Side - 50 m *        46.0     -200.0        5.9   *
     12. S Leg, E Side-Midblk *        46.0     -636.0        5.9   *
     13. S Leg, W Side-Corner *       -58.0      -46.0        5.9   *
     14. S Leg, W Side - 25 m *       -58.0     -118.0        5.9   *
     15. S Leg, W Side - 50 m *       -58.0     -200.0        5.9   *
     16. S Leg, W Side-Midblk *       -58.0     -636.0        5.9   *
     17. E Leg, N Side - 25 m *       118.0       34.0        5.9   *
     18. E Leg, N Side - 50 m *       200.0       34.0        5.9   *
     19. E Leg, N Side-Midblk *       636.0       34.0        5.9   *
     20. W Leg, N Side - 25 m *      -130.0       34.0        5.9   *
     21. W Leg, N Side - 50 m *      -212.0       34.0        5.9   *
     22. W Leg, N Side-Midblk *      -648.0       34.0        5.9   *
     23. E Leg, S Side - 25 m *       118.0      -46.0        5.9   *
     24. E Leg, S Side - 50 m *       200.0      -46.0        5.9   *
     25. E Leg, S Side-Midblk *       636.0      -46.0        5.9   *
     26. W Leg, S Side - 25 m *      -130.0      -46.0        5.9   *
     27. W Leg, S Side - 50 m *      -212.0      -46.0        5.9   *
     28. W Leg, S Side-Midblk *      -648.0      -46.0        5.9   *

PAGE  3
      JOB: New Haven EA 2024                                  RUN: Hemingway and Main

       MODEL RESULTS
       -------------

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE:  10.-360.

 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*       1       2       3       4       5       6       7       8       9      10      11      12      13
 14      15

------*-----------------------------------------------------------------------------------------------------------
-----------
  10.  *  0.0000  0.0000  0.0000  0.0000  0.2000  0.1000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.4000
0.3000  0.1000
  20.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.1000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.4000
0.2000  0.2000
  30.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.2000
0.1000  0.2000
  40.  *  0.0000  0.0000  0.0000  0.0000  0.4000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.1000
0.2000  0.2000
  50.  *  0.0000  0.0000  0.0000  0.0000  0.4000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000
0.2000  0.1000
  60.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.2000
0.2000  0.1000
  70.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.2000
0.2000  0.1000
  80.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000  0.2000
0.2000  0.1000
  90.  *  0.1000  0.0000  0.0000  0.0000  0.6000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000
0.1000  0.1000
 100.  *  0.2000  0.0000  0.0000  0.0000  0.4000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.2000
0.1000  0.1000
 110.  *  0.3000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.2000
0.1000  0.1000
 120.  *  0.3000  0.0000  0.0000  0.0000  0.1000  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.2000
0.1000  0.1000
 130.  *  0.3000  0.0000  0.0000  0.0000  0.2000  0.3000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000
```

0.1000 0.1000
 140. * 0.2000 0.0000 0.0000 0.0000 0.1000 0.4000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.1000
0.1000 0.1000
 150. * 0.2000 0.1000 0.0000 0.0000 0.2000 0.4000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.1000
0.1000 0.1000
 160. * 0.2000 0.1000 0.0000 0.0000 0.2000 0.4000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.1000
0.1000 0.1000
 170. * 0.2000 0.1000 0.0000 0.0000 0.2000 0.3000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.1000
0.1000 0.1000
 180. * 0.4000 0.1000 0.0000 0.1000 0.2000 0.2000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000
0.1000 0.1000
 190. * 0.4000 0.2000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.3000 0.2000 0.2000 0.1000 0.0000
0.0000 0.0000
 200. * 0.3000 0.0000 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.4000 0.2000 0.2000 0.2000 0.0000
0.0000 0.0000
 210. * 0.2000 0.1000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.4000 0.2000 0.2000 0.2000 0.0000
0.0000 0.0000
 220. * 0.0000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 230. * 0.0000 0.2000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.3000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 240. * 0.0000 0.2000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.3000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 250. * 0.0000 0.1000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 260. * 0.2000 0.1000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 270. * 0.3000 0.0000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 280. * 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000
 290. * 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000 0.0000 0.0000 0.0000
0.0000 0.0000
 300. * 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000 0.0000 0.0000 0.0000
0.0000 0.0000
 310. * 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000 0.0000 0.0000 0.1000
0.0000 0.0000
 320. * 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.1000 0.2000 0.0000 0.0000 0.1000
0.0000 0.0000
 330. * 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.1000 0.4000 0.1000 0.2000 0.2000
0.0000 0.0000
 340. * 0.2000 0.2000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.2000 0.4000 0.2000 0.2000 0.2000
0.0000 0.0000
 350. * 0.2000 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.3000 0.1000 0.2000 0.1000 0.2000
0.0000 0.0000
 360. * 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.2000 0.1000 0.1000 0.1000 0.4000
0.3000 0.1000

------*---

 MAX   * 0.4000 0.2000 0.2000 0.1000 0.6000 0.4000 0.2000 0.1000 0.4000 0.4000 0.2000 0.2000 0.4000
0.3000 0.2000
 DEGR. *   180   190   200   180   90   140   150   10   200   330   190   200   10
10   20

       MODEL RESULTS

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)												
	* 16	17	18	19	20	21	22	23	24	25	26	27	28
10.	* 0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20.	* 0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30.	* 0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
40.	* 0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
50.	* 0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
60.	* 0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000
70.	* 0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000
80.	* 0.1000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.1000	0.1000	0.0000	0.1000	0.0000	0.0000
90.	* 0.1000	0.1000	0.1000	0.1000	0.1000	0.2000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
100.	* 0.1000	0.1000	0.1000	0.1000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
110.	* 0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
120.	* 0.1000	0.1000	0.1000	0.1000	0.3000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
130.	* 0.1000	0.1000	0.1000	0.1000	0.3000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
140.	* 0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
150.	* 0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
160.	* 0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
170.	* 0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
180.	* 0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190.	* 0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	* 0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	* 0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	* 0.0000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	* 0.0000	0.4000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
240.	* 0.0000	0.3000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
250.	* 0.0000	0.3000	0.2000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
260.	* 0.0000	0.2000	0.2000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
270.	* 0.0000	0.2000	0.3000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
280.	* 0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
290.	* 0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000
300.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
310.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
320.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
330.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
340.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
350.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
360.	* 0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	* 0.1000	0.4000	0.3000	0.1000	0.3000	0.2000	0.1000	0.2000	0.1000	0.0000	0.2000	0.1000	0.0000
DEGR.	* 10	230	270	90	120	90	90	310	80	10	60	60	10

THE HIGHEST CONCENTRATION OF 0.6000 PPM OCCURRED AT RECEPTOR 5.

JOB: New Haven EA 2029 Construction RUN: High Street Laurel St E Build

DATE : 6/ 1/22
TIME : 14:30:20

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 5 (E) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
	*	X1	Y1	X2	Y2	*									
1. N Leg App - FreeFlow	*	-18.0	0.0	-18.0	1200.0	*	1200.	360.	AG	891.	2.5	0.0	55.7		
2. N Leg App - Queue	*	-18.0	12.0	-18.0	112.7	*	101.	360.	AG	86.	100.0	0.0	36.0	0.41	5.1
3. N Leg Dep - FreeFlow	*	12.0	0.0	12.0	1200.0	*	1200.	360.	AG	464.	2.5	0.0	43.7		
4. S Leg App - FreeFlow	*	12.0	0.0	12.0	-1200.0	*	1200.	180.	AG	1398.	2.5	0.0	43.7		
5. S Leg App - Queue	*	12.0	-12.0	12.0	-310.4	*	298.	180.	AG	58.	100.0	0.0	24.0	0.97	15.2
6. S Leg Dep - FreeFlow	*	-18.0	0.0	-18.0	-1200.0	*	1200.	180.	AG	898.	2.5	0.0	55.7		
7. E Leg App - FreeFlow	*	0.0	6.0	1200.0	6.0	*	1200.	90.	AG	235.	2.5	0.0	31.7		
8. E Leg App - Queue	*	24.0	6.0	103.7	6.0	*	80.	90.	AG	29.	100.0	0.0	12.0	0.33	4.0
9. E Leg Dep - FreeFlow	*	0.0	-6.0	1200.0	-6.0	*	1200.	90.	AG	450.	2.5	0.0	31.7		
10. W Leg App - FreeFlow	*	0.0	-6.0	-1200.0	-6.0	*	1200.	270.	AG	1.	2.5	0.0	31.7		
11. W Leg App - Queue	*	-36.0	-6.0	-36.3	-6.0	*	0.	270.	AG	29.	100.0	0.0	12.0	0.00	0.0
12. W Leg Dep - FreeFlow	*	0.0	6.0	-1200.0	6.0	*	1200.	270.	AG	1.	2.5	0.0	31.7		

JOB: New Haven EA 2029 Construction RUN: High Street Laurel St E Build

DATE : 6/ 1/22
TIME : 14:30:20

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. N Leg App - Queue	120	62	2.0	891	1600	20.80	2	3
5. S Leg App - Queue	120	62	2.0	1398	1600	20.80	2	3
8. E Leg App - Queue	120	62	2.0	235	1600	20.80	2	3
11. W Leg App - Queue	120	62	2.0	1	1600	20.80	2	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	34.0	22.0	5.9
2. N Leg, E Side - 25 m	34.0	94.0	5.9
3. N Leg, E Side - 50 m	34.0	176.0	5.9
4. N Leg, E Side-Midblk	34.0	612.0	5.9
5. N Leg, W Side-Corner	-46.0	22.0	5.9

6. N Leg, W Side - 25 m *	-46.0	94.0	5.9	*
7. N Leg, W Side - 50 m *	-46.0	176.0	5.9	*
8. N Leg, W Side-Midblk *	-46.0	612.0	5.9	*
9. S Leg, E Side-Corner *	34.0	-22.0	5.9	*
10. S Leg, E Side - 25 m *	34.0	-94.0	5.9	*
11. S Leg, E Side - 50 m *	34.0	-176.0	5.9	*
12. S Leg, E Side-Midblk *	34.0	-612.0	5.9	*
13. S Leg, W Side-Corner *	-46.0	-22.0	5.9	*
14. S Leg, W Side - 25 m *	-46.0	-94.0	5.9	*
15. S Leg, W Side - 50 m *	-46.0	-176.0	5.9	*
16. S Leg, W Side-Midblk *	-46.0	-612.0	5.9	*
17. E Leg, N Side - 25 m *	106.0	22.0	5.9	*
18. E Leg, N Side - 50 m *	188.0	22.0	5.9	*
19. E Leg, N Side-Midblk *	624.0	22.0	5.9	*
20. W Leg, N Side - 25 m *	-118.0	22.0	5.9	*
21. W Leg, N Side - 50 m *	-200.0	22.0	5.9	*
22. W Leg, N Side-Midblk *	-636.0	22.0	5.9	*
23. E Leg, S Side - 25 m *	106.0	-22.0	5.9	*
24. E Leg, S Side - 50 m *	188.0	-22.0	5.9	*
25. E Leg, S Side-Midblk *	624.0	-22.0	5.9	*
26. W Leg, S Side - 25 m *	-118.0	-22.0	5.9	*
27. W Leg, S Side - 50 m *	-200.0	-22.0	5.9	*
28. W Leg, S Side-Midblk *	-636.0	-22.0	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) *	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.1000	0.1000	0.0000	0.1000	0.1000	0.3000	0.3000	0.3000
20.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.3000	0.2000	0.3000
30.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.3000	0.1000	0.3000
40.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.2000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.2000	0.3000	0.3000
50.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.2000	0.1000	0.1000	0.2000	0.0000	0.0000	0.0000	0.1000	0.3000	0.3000
60.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.3000	0.1000	0.1000	0.2000	0.0000	0.0000	0.0000	0.1000	0.3000	0.3000
70.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.1000	0.3000	0.3000
80.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.4000	0.3000	0.3000
90.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.4000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.4000	0.3000	0.3000
100.	*	0.2000	0.0000	0.0000	0.0000	0.4000	0.3000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000
110.	*	0.2000	0.0000	0.0000	0.0000	0.2000	0.3000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000
120.	*	0.1000	0.0000	0.0000	0.0000	0.3000	0.4000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000
130.	*	0.1000	0.0000	0.0000	0.0000	0.3000	0.4000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.3000		

```
0.3000  0.3000
 140.  *  0.1000  0.0000  0.0000  0.0000  0.3000  0.4000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.3000
0.3000  0.3000
 150.  *  0.1000  0.0000  0.0000  0.0000  0.3000  0.6000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.3000
0.3000  0.3000
 160.  *  0.1000  0.0000  0.0000  0.0000  0.3000  0.5000  0.4000  0.1000  0.0000  0.0000  0.0000  0.0000  0.3000
0.3000  0.3000
 170.  *  0.3000  0.1000  0.0000  0.0000  0.3000  0.6000  0.6000  0.1000  0.2000  0.2000  0.1000  0.1000  0.3000
0.3000  0.2000
 180.  *  0.6000  0.3000  0.2000  0.1000  0.2000  0.3000  0.4000  0.1000  0.5000  0.4000  0.4000  0.2000  0.2000
0.2000  0.2000
 190.  *  0.6000  0.3000  0.5000  0.2000  0.1000  0.0000  0.0000  0.1000  0.5000  0.5000  0.5000  0.3000  0.1000
0.1000  0.1000
 200.  *  0.6000  0.4000  0.3000  0.2000  0.0000  0.0000  0.0000  0.0000  0.6000  0.6000  0.5000  0.3000  0.0000
0.0000  0.0000
 210.  *  0.3000  0.1000  0.3000  0.2000  0.0000  0.0000  0.0000  0.0000  0.5000  0.5000  0.5000  0.3000  0.0000
0.0000  0.0000
 220.  *  0.3000  0.3000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000
 230.  *  0.1000  0.3000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000
 240.  *  0.0000  0.3000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000
 250.  *  0.0000  0.3000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000
 260.  *  0.1000  0.3000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000
 270.  *  0.2000  0.3000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000
 280.  *  0.3000  0.2000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000
 290.  *  0.3000  0.2000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000
 300.  *  0.3000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.3000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000
 310.  *  0.3000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000
 320.  *  0.3000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000
 330.  *  0.3000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.4000  0.5000  0.5000  0.3000  0.0000
0.0000  0.0000
 340.  *  0.3000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.4000  0.5000  0.5000  0.3000  0.0000
0.0000  0.0000
 350.  *  0.2000  0.2000  0.2000  0.2000  0.1000  0.1000  0.1000  0.1000  0.3000  0.4000  0.6000  0.3000  0.1000
0.0000  0.0000
 360.  *  0.2000  0.2000  0.2000  0.1000  0.2000  0.1000  0.1000  0.1000  0.3000  0.3000  0.2000  0.2000  0.2000
0.3000  0.3000

------*-----------------------------------------------------------------------------------------------------------
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 MAX   *  0.6000  0.4000  0.5000  0.2000  0.4000  0.6000  0.6000  0.1000  0.6000  0.6000  0.6000  0.3000  0.4000
0.3000  0.3000
 DEGR. *    180     200     190     190      20     150     170      10     200     200     350     190      80
10      10


PAGE  4
      JOB: New Haven EA 2029 Construction                       RUN: High Street Laurel St E Build

       MODEL RESULTS
       -------------

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE:  10.-360.
```

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)												
	* 16	17	18	19	20	21	22	23	24	25	26	27	28
10.	* 0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
30.	* 0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
40.	* 0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
50.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000
60.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000
70.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000
80.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000
90.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000
100.	* 0.2000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
110.	* 0.2000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
120.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000
130.	* 0.2000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000
140.	* 0.2000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000
150.	* 0.2000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000
160.	* 0.2000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000
170.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
180.	* 0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190.	* 0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	* 0.0000	0.3000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
210.	* 0.0000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	* 0.0000	0.3000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
230.	* 0.0000	0.3000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
240.	* 0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
250.	* 0.0000	0.1000	0.0000	0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
260.	* 0.0000	0.1000	0.0000	0.1000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
270.	* 0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000
280.	* 0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000
290.	* 0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000	0.0000	0.0000	0.0000
300.	* 0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3000	0.2000	0.1000	0.0000	0.0000	0.0000
310.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000
320.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
330.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
340.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
350.	* 0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
360.	* 0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	* 0.2000	0.3000	0.1000	0.1000	0.2000	0.1000	0.0000	0.3000	0.2000	0.1000	0.2000	0.1000	0.0000
DEGR.	* 10	200	100	100	130	70	10	300	290	50	130	60	10

THE HIGHEST CONCENTRATION OF 0.6000 PPM OCCURRED AT RECEPTOR 6.

JOB: New Haven EA 2029 Construction RUN: High Street Laurel St E No Build

DATE : 5/26/22
TIME : 10: 2:39

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 5 (E) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
	*	X1	Y1	X2	Y2	*									
1. N Leg App - FreeFlow	*	-18.0	0.0	-18.0	1200.0	*	1200.	360.	AG	889.	2.5	0.0	55.7		
2. N Leg App - Queue	*	-18.0	12.0	-18.0	112.3	*	100.	360.	AG	86.	100.0	0.0	36.0	0.41	5.1
3. N Leg Dep - FreeFlow	*	12.0	0.0	12.0	1200.0	*	1200.	360.	AG	464.	2.5	0.0	43.7		
4. S Leg App - FreeFlow	*	12.0	0.0	12.0	-1200.0	*	1200.	180.	AG	1394.	2.5	0.0	43.7		
5. S Leg App - Queue	*	12.0	-12.0	12.0	-307.2	*	295.	180.	AG	58.	100.0	0.0	24.0	0.97	15.0
6. S Leg Dep - FreeFlow	*	-18.0	0.0	-18.0	-1200.0	*	1200.	180.	AG	894.	2.5	0.0	55.7		
7. E Leg App - FreeFlow	*	0.0	6.0	1200.0	6.0	*	1200.	90.	AG	235.	2.5	0.0	31.7		
8. E Leg App - Queue	*	24.0	6.0	103.7	6.0	*	80.	90.	AG	29.	100.0	0.0	12.0	0.33	4.0
9. E Leg Dep - FreeFlow	*	0.0	-6.0	1200.0	-6.0	*	1200.	90.	AG	450.	2.5	0.0	31.7		
10. W Leg App - FreeFlow	*	0.0	-6.0	-1200.0	-6.0	*	1200.	270.	AG	1.	2.5	0.0	31.7		
11. W Leg App - Queue	*	-36.0	-6.0	-36.3	-6.0	*	0.	270.	AG	29.	100.0	0.0	12.0	0.00	0.0
12. W Leg Dep - FreeFlow	*	0.0	6.0	-1200.0	6.0	*	1200.	270.	AG	1.	2.5	0.0	31.7		

JOB: New Haven EA 2029 Construction RUN: High Street Laurel St E No Build

DATE : 5/26/22
TIME : 10: 2:39

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. N Leg App - Queue	120	62	2.0	889	1600	20.80	2	3
5. S Leg App - Queue	120	62	2.0	1394	1600	20.80	2	3
8. E Leg App - Queue	120	62	2.0	235	1600	20.80	2	3
11. W Leg App - Queue	120	62	2.0	1	1600	20.80	2	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	34.0	22.0	5.9
2. N Leg, E Side - 25 m	34.0	94.0	5.9
3. N Leg, E Side - 50 m	34.0	176.0	5.9
4. N Leg, E Side-Midblk	34.0	612.0	5.9
5. N Leg, W Side-Corner	-46.0	22.0	5.9

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      6. N Leg, W Side - 25 m *       -46.0       94.0        5.9   *
      7. N Leg, W Side - 50 m *       -46.0      176.0        5.9   *
      8. N Leg, W Side-Midblk *       -46.0      612.0        5.9   *
      9. S Leg, E Side-Corner *        34.0      -22.0        5.9   *
     10. S Leg, E Side - 25 m *        34.0      -94.0        5.9   *
     11. S Leg, E Side - 50 m *        34.0     -176.0        5.9   *
     12. S Leg, E Side-Midblk *        34.0     -612.0        5.9   *
     13. S Leg, W Side-Corner *       -46.0      -22.0        5.9   *
     14. S Leg, W Side - 25 m *       -46.0      -94.0        5.9   *
     15. S Leg, W Side - 50 m *       -46.0     -176.0        5.9   *
     16. S Leg, W Side-Midblk *       -46.0     -612.0        5.9   *
     17. E Leg, N Side - 25 m *       106.0       22.0        5.9   *
     18. E Leg, N Side - 50 m *       188.0       22.0        5.9   *
     19. E Leg, N Side-Midblk *       624.0       22.0        5.9   *
     20. W Leg, N Side - 25 m *      -118.0       22.0        5.9   *
     21. W Leg, N Side - 50 m *      -200.0       22.0        5.9   *
     22. W Leg, N Side-Midblk *      -636.0       22.0        5.9   *
     23. E Leg, S Side - 25 m *       106.0      -22.0        5.9   *
     24. E Leg, S Side - 50 m *       188.0      -22.0        5.9   *
     25. E Leg, S Side-Midblk *       624.0      -22.0        5.9   *
     26. W Leg, S Side - 25 m *      -118.0      -22.0        5.9   *
     27. W Leg, S Side - 50 m *      -200.0      -22.0        5.9   *
     28. W Leg, S Side-Midblk *      -636.0      -22.0        5.9   *

PAGE  3
      JOB: New Haven EA 2029 Construction                    RUN: High Street Laurel St E No Build

       MODEL RESULTS
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       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE:  10.-360.

 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*       1       2       3       4       5       6       7       8       9      10      11      12      13
 14      15

------*-------------------------------------------------------------------------------------------------------------
-----------
  10.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.1000  0.1000  0.1000  0.1000  0.0000  0.1000  0.1000  0.3000
0.3000  0.3000
  20.  *  0.0000  0.0000  0.0000  0.0000  0.4000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.3000
0.2000  0.3000
  30.  *  0.0000  0.0000  0.0000  0.0000  0.4000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.3000
0.1000  0.3000
  40.  *  0.0000  0.0000  0.0000  0.0000  0.4000  0.2000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.2000
0.3000  0.3000
  50.  *  0.0000  0.0000  0.0000  0.0000  0.4000  0.2000  0.1000  0.1000  0.2000  0.0000  0.0000  0.0000  0.1000
0.3000  0.3000
  60.  *  0.0000  0.0000  0.0000  0.0000  0.4000  0.3000  0.1000  0.1000  0.2000  0.0000  0.0000  0.0000  0.1000
0.3000  0.3000
  70.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.1000
0.3000  0.3000
  80.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.4000
0.3000  0.3000
  90.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.4000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.4000
0.3000  0.3000
 100.  *  0.2000  0.0000  0.0000  0.0000  0.4000  0.3000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.3000
0.3000  0.3000
 110.  *  0.2000  0.0000  0.0000  0.0000  0.2000  0.3000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.3000
0.3000  0.3000
 120.  *  0.1000  0.0000  0.0000  0.0000  0.3000  0.4000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.3000
0.3000  0.3000
 130.  *  0.1000  0.0000  0.0000  0.0000  0.3000  0.4000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.3000
```

```
0.3000  0.3000
 140.  *  0.1000  0.0000  0.0000  0.0000  0.3000  0.4000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.3000
0.3000  0.3000
 150.  *  0.1000  0.0000  0.0000  0.0000  0.3000  0.6000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.3000
0.3000  0.3000
 160.  *  0.1000  0.0000  0.0000  0.0000  0.3000  0.5000  0.4000  0.1000  0.0000  0.0000  0.0000  0.0000  0.3000
0.3000  0.3000
 170.  *  0.3000  0.1000  0.0000  0.0000  0.3000  0.6000  0.6000  0.1000  0.2000  0.2000  0.1000  0.1000  0.3000
0.3000  0.2000
 180.  *  0.6000  0.3000  0.2000  0.1000  0.2000  0.3000  0.4000  0.1000  0.5000  0.4000  0.4000  0.2000  0.2000
0.2000  0.2000
 190.  *  0.6000  0.3000  0.5000  0.2000  0.1000  0.0000  0.0000  0.1000  0.5000  0.5000  0.5000  0.3000  0.1000
0.1000  0.1000
 200.  *  0.6000  0.4000  0.3000  0.2000  0.0000  0.0000  0.0000  0.0000  0.6000  0.6000  0.5000  0.3000  0.0000
0.0000  0.0000
 210.  *  0.3000  0.1000  0.3000  0.2000  0.0000  0.0000  0.0000  0.0000  0.5000  0.5000  0.5000  0.3000  0.0000
0.0000  0.0000
 220.  *  0.3000  0.3000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000
 230.  *  0.1000  0.3000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000
 240.  *  0.0000  0.3000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000
 250.  *  0.0000  0.3000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000
 260.  *  0.1000  0.3000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000
 270.  *  0.1000  0.3000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000
 280.  *  0.3000  0.2000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000
 290.  *  0.3000  0.2000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000
 300.  *  0.3000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.3000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000
 310.  *  0.3000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000
 320.  *  0.3000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000
 330.  *  0.3000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.4000  0.5000  0.5000  0.3000  0.0000
0.0000  0.0000
 340.  *  0.3000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.4000  0.5000  0.5000  0.3000  0.0000
0.0000  0.0000
 350.  *  0.2000  0.2000  0.2000  0.2000  0.1000  0.1000  0.1000  0.1000  0.3000  0.4000  0.6000  0.3000  0.1000
0.0000  0.0000
 360.  *  0.2000  0.2000  0.2000  0.1000  0.2000  0.1000  0.1000  0.1000  0.3000  0.3000  0.2000  0.2000  0.2000
0.3000  0.3000

------*-----------------------------------------------------------------------------------------------------------
-----------
 MAX   *  0.6000  0.4000  0.5000  0.2000  0.4000  0.6000  0.6000  0.1000  0.6000  0.6000  0.6000  0.3000  0.4000
0.3000  0.3000
 DEGR. *    180     200     190     190      20     150     170      10     200     200     350     190      80
10      10


PAGE  4
      JOB: New Haven EA 2029 Construction                       RUN: High Street Laurel St E No Build

       MODEL RESULTS
       -------------

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE:  10.-360.
```

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)												
	* 16	17	18	19	20	21	22	23	24	25	26	27	28
10.	* 0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
30.	* 0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
40.	* 0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
50.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000
60.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000
70.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000
80.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000
90.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000
100.	* 0.2000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
110.	* 0.2000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
120.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000
130.	* 0.2000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000
140.	* 0.2000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000
150.	* 0.2000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000
160.	* 0.2000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000
170.	* 0.2000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
180.	* 0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190.	* 0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	* 0.0000	0.3000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
210.	* 0.0000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	* 0.0000	0.3000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
230.	* 0.0000	0.3000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
240.	* 0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
250.	* 0.0000	0.1000	0.0000	0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
260.	* 0.0000	0.1000	0.0000	0.1000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
270.	* 0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000
280.	* 0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000
290.	* 0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000	0.0000	0.0000	0.0000
300.	* 0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3000	0.2000	0.1000	0.0000	0.0000	0.0000
310.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000
320.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
330.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
340.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
350.	* 0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
360.	* 0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	* 0.2000	0.3000	0.1000	0.1000	0.2000	0.1000	0.0000	0.3000	0.2000	0.1000	0.2000	0.1000	0.0000
DEGR.	* 10	200	100	100	130	70	10	300	290	50	130	60	10

THE HIGHEST CONCENTRATION OF 0.6000 PPM OCCURRED AT RECEPTOR 6.

JOB: New Haven EA 2029 Construction RUN: High Street Laurel St E Build PM

DATE : 6/ 1/22
TIME : 15: 5:40

The MODE flag has been set for calculating concentrations for POLLUTANT: PM2.5

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 5 (E) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 UG/M**3

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
	*	X1	Y1	X2	Y2	*									
1. N Leg App - FreeFlow	*	-18.0	0.0	-18.0	1200.0	*	1200.	360.	AG	891.	0.0	0.0	55.7		
2. N Leg App - Queue	*	-18.0	12.0	-18.0	112.7	*	101.	360.	AG	0.	100.0	0.0	36.0	0.41	5.1
3. N Leg Dep - FreeFlow	*	12.0	0.0	12.0	1200.0	*	1200.	360.	AG	464.	0.0	0.0	43.7		
4. S Leg App - FreeFlow	*	12.0	0.0	12.0	-1200.0	*	1200.	180.	AG	1398.	0.0	0.0	43.7		
5. S Leg App - Queue	*	12.0	-12.0	12.0	-310.4	*	298.	180.	AG	0.	100.0	0.0	24.0	0.97	15.2
6. S Leg Dep - FreeFlow	*	-18.0	0.0	-18.0	-1200.0	*	1200.	180.	AG	898.	0.0	0.0	55.7		
7. E Leg App - FreeFlow	*	0.0	6.0	1200.0	6.0	*	1200.	90.	AG	235.	0.0	0.0	31.7		
8. E Leg App - Queue	*	24.0	6.0	103.7	6.0	*	80.	90.	AG	0.	100.0	0.0	12.0	0.33	4.0
9. E Leg Dep - FreeFlow	*	0.0	-6.0	1200.0	-6.0	*	1200.	90.	AG	450.	0.0	0.0	31.7		
10. W Leg App - FreeFlow	*	0.0	-6.0	-1200.0	-6.0	*	1200.	270.	AG	1.	0.0	0.0	31.7		
11. W Leg App - Queue	*	-36.0	-6.0	-36.3	-6.0	*	0.	270.	AG	0.	100.0	0.0	12.0	0.00	0.0
12. W Leg Dep - FreeFlow	*	0.0	6.0	-1200.0	6.0	*	1200.	270.	AG	1.	0.0	0.0	31.7		

JOB: New Haven EA 2029 Construction RUN: High Street Laurel St E Build PM

DATE : 6/ 1/22
TIME : 15: 5:40

2. N Leg App - Queue	*	120	62	2.0	891	1600	0.02	2	3
5. S Leg App - Queue	*	120	62	2.0	1398	1600	0.02	2	3
8. E Leg App - Queue	*	120	62	2.0	235	1600	0.02	2	3
11. W Leg App - Queue	*	120	62	2.0	1	1600	0.02	2	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	34.0	22.0	5.9	*
2. N Leg, E Side - 25 m	*	34.0	94.0	5.9	*
3. N Leg, E Side - 50 m	*	34.0	176.0	5.9	*
4. N Leg, E Side-Midblk	*	34.0	612.0	5.9	*
5. N Leg, W Side-Corner	*	-46.0	22.0	5.9	*
6. N Leg, W Side - 25 m	*	-46.0	94.0	5.9	*
7. N Leg, W Side - 50 m	*	-46.0	176.0	5.9	*
8. N Leg, W Side-Midblk	*	-46.0	612.0	5.9	*
9. S Leg, E Side-Corner	*	34.0	-22.0	5.9	*
10. S Leg, E Side - 25 m	*	34.0	-94.0	5.9	*
11. S Leg, E Side - 50 m	*	34.0	-176.0	5.9	*

12.	S Leg, E Side-Midblk *	34.0	-612.0	5.9	*
13.	S Leg, W Side-Corner *	-46.0	-22.0	5.9	*
14.	S Leg, W Side - 25 m *	-46.0	-94.0	5.9	*
15.	S Leg, W Side - 50 m *	-46.0	-176.0	5.9	*
16.	S Leg, W Side-Midblk *	-46.0	-612.0	5.9	*
17.	E Leg, N Side - 25 m *	106.0	22.0	5.9	*
18.	E Leg, N Side - 50 m *	188.0	22.0	5.9	*
19.	E Leg, N Side-Midblk *	624.0	22.0	5.9	*
20.	W Leg, N Side - 25 m *	-118.0	22.0	5.9	*
21.	W Leg, N Side - 50 m *	-200.0	22.0	5.9	*
22.	W Leg, N Side-Midblk *	-636.0	22.0	5.9	*
23.	E Leg, S Side - 25 m *	106.0	-22.0	5.9	*
24.	E Leg, S Side - 50 m *	188.0	-22.0	5.9	*
25.	E Leg, S Side-Midblk *	624.0	-22.0	5.9	*
26.	W Leg, S Side - 25 m *	-118.0	-22.0	5.9	*
27.	W Leg, S Side - 50 m *	-200.0	-22.0	5.9	*
28.	W Leg, S Side-Midblk *	-636.0	-22.0	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (UG/M**3) *	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.1000	0.3000	0.1000	0.2000
20.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.3000	0.1000	0.2000
30.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.2000
40.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.2000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.1000	0.2000	0.3000
50.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.1000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
60.	*	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000
70.	*	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000
80.	*	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000
90.	*	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
100.	*	0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
110.	*	0.1000	0.0000	0.0000	0.0000	0.1000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
120.	*	0.1000	0.0000	0.0000	0.0000	0.2000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
130.	*	0.1000	0.0000	0.0000	0.0000	0.1000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
140.	*	0.1000	0.0000	0.0000	0.0000	0.1000	0.4000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000
150.	*	0.1000	0.0000	0.0000	0.0000	0.2000	0.5000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000
160.	*	0.1000	0.0000	0.0000	0.0000	0.3000	0.4000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.3000		

0.3000 0.3000
 170. * 0.3000 0.0000 0.0000 0.0000 0.3000 0.3000 0.5000 0.1000 0.2000 0.1000 0.1000 0.1000 0.3000
0.3000 0.2000
 180. * 0.4000 0.2000 0.2000 0.0000 0.1000 0.1000 0.1000 0.1000 0.2000 0.2000 0.2000 0.1000 0.1000
0.1000 0.1000
 190. * 0.5000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.5000 0.4000 0.3000 0.1000 0.0000
0.0000 0.0000
 200. * 0.4000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 210. * 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 220. * 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 230. * 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 240. * 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 250. * 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 260. * 0.1000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 270. * 0.1000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 280. * 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 290. * 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 300. * 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 310. * 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 320. * 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 330. * 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.4000 0.3000 0.1000 0.0000
0.0000 0.0000
 340. * 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.1000 0.4000 0.3000 0.1000 0.0000
0.0000 0.0000
 350. * 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.3000 0.4000 0.1000 0.0000
0.0000 0.0000
 360. * 0.0000 0.0000 0.0000 0.0000 0.2000 0.1000 0.1000 0.1000 0.1000 0.2000 0.2000 0.1000 0.2000
0.1000 0.1000

------*---

 MAX   * 0.5000 0.2000 0.2000 0.0000 0.4000 0.5000 0.5000 0.1000 0.5000 0.4000 0.4000 0.1000 0.3000
0.3000 0.3000
 DEGR. *   190   180   180   10   30   150   170   10   190   190   350   10   10
140   40

      JOB: New Haven EA 2029 Construction   RUN: High Street Laurel St E Build PM

       MODEL RESULTS

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE: 10.-360.

 WIND * CONCENTRATION
 ANGLE *   (UG/M**3)
 (DEGR)*   16   17   18   19   20   21   22   23   24   25   26   27   28
 ------*---
  10. * 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
  20. * 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000

30.	*	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
40.	*	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
50.	*	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
60.	*	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000
70.	*	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000
80.	*	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
90.	*	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
100.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
110.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
120.	*	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
130.	*	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
140.	*	0.2000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
150.	*	0.2000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
160.	*	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
170.	*	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
180.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	*	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	*	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	*	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	*	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
240.	*	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
250.	*	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
260.	*	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
270.	*	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
280.	*	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000
290.	*	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
300.	*	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
310.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
320.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
330.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
340.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
350.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
360.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	*	0.2000	0.2000	0.1000	0.0000	0.1000	0.1000	0.0000	0.2000	0.1000	0.1000	0.1000	0.1000	0.0000
DEGR.	*	10	200	220	10	50	70	10	300	80	280	40	60	10

THE HIGHEST CONCENTRATION OF 0.5000 UG/M**3 OCCURRED AT RECEPTOR 6.

JOB: New Haven EA 2029 Construction RUN: High Street Laurel St E No Build PM

DATE : 5/26/22
TIME : 13:21: 6

The MODE flag has been set for calculating concentrations for POLLUTANT: PM2.5

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 321. CM
U = 1.0 M/S CLAS = 5 (E) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 UG/M**3

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
	*	X1	Y1	X2	Y2	*									
1. N Leg App - FreeFlow	*	-18.0	0.0	-18.0	1200.0	*	1200.	360.	AG	889.	0.0	0.0	55.7		
2. N Leg App - Queue	*	-18.0	12.0	-18.0	112.3	*	100.	360.	AG	0.	100.0	0.0	36.0	0.41	5.1
3. N Leg Dep - FreeFlow	*	12.0	0.0	12.0	1200.0	*	1200.	360.	AG	464.	0.0	0.0	43.7		
4. S Leg App - FreeFlow	*	12.0	0.0	12.0	-1200.0	*	1200.	180.	AG	1394.	0.0	0.0	43.7		
5. S Leg App - Queue	*	12.0	-12.0	12.0	-307.2	*	295.	180.	AG	0.	100.0	0.0	24.0	0.97	15.0
6. S Leg Dep - FreeFlow	*	-18.0	0.0	-18.0	-1200.0	*	1200.	180.	AG	894.	0.0	0.0	55.7		
7. E Leg App - FreeFlow	*	0.0	6.0	1200.0	6.0	*	1200.	90.	AG	235.	0.0	0.0	31.7		
8. E Leg App - Queue	*	24.0	6.0	103.7	6.0	*	80.	90.	AG	0.	100.0	0.0	12.0	0.33	4.0
9. E Leg Dep - FreeFlow	*	0.0	-6.0	1200.0	-6.0	*	1200.	90.	AG	450.	0.0	0.0	31.7		
10. W Leg App - FreeFlow	*	0.0	-6.0	-1200.0	-6.0	*	1200.	270.	AG	1.	0.0	0.0	31.7		
11. W Leg App - Queue	*	-36.0	-6.0	-36.3	-6.0	*	0.	270.	AG	0.	100.0	0.0	12.0	0.00	0.0
12. W Leg Dep - FreeFlow	*	0.0	6.0	-1200.0	6.0	*	1200.	270.	AG	1.	0.0	0.0	31.7		

2. N Leg App - Queue	120	62	2.0	889	1600	0.02	2	3
5. S Leg App - Queue	120	62	2.0	1394	1600	0.02	2	3
8. E Leg App - Queue	120	62	2.0	235	1600	0.02	2	3
11. W Leg App - Queue	120	62	2.0	1	1600	0.02	2	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	34.0	22.0	5.9
2. N Leg, E Side - 25 m	34.0	94.0	5.9
3. N Leg, E Side - 50 m	34.0	176.0	5.9
4. N Leg, E Side-Midblk	34.0	612.0	5.9
5. N Leg, W Side-Corner	-46.0	22.0	5.9
6. N Leg, W Side - 25 m	-46.0	94.0	5.9
7. N Leg, W Side - 50 m	-46.0	176.0	5.9
8. N Leg, W Side-Midblk	-46.0	612.0	5.9
9. S Leg, E Side-Corner	34.0	-22.0	5.9
10. S Leg, E Side - 25 m	34.0	-94.0	5.9
11. S Leg, E Side - 50 m	34.0	-176.0	5.9

12.	S Leg, E Side-Midblk *	34.0	-612.0	5.9	*
13.	S Leg, W Side-Corner *	-46.0	-22.0	5.9	*
14.	S Leg, W Side - 25 m *	-46.0	-94.0	5.9	*
15.	S Leg, W Side - 50 m *	-46.0	-176.0	5.9	*
16.	S Leg, W Side-Midblk *	-46.0	-612.0	5.9	*
17.	E Leg, N Side - 25 m *	106.0	22.0	5.9	*
18.	E Leg, N Side - 50 m *	188.0	22.0	5.9	*
19.	E Leg, N Side-Midblk *	624.0	22.0	5.9	*
20.	W Leg, N Side - 25 m *	-118.0	22.0	5.9	*
21.	W Leg, N Side - 50 m *	-200.0	22.0	5.9	*
22.	W Leg, N Side-Midblk *	-636.0	22.0	5.9	*
23.	E Leg, S Side - 25 m *	106.0	-22.0	5.9	*
24.	E Leg, S Side - 50 m *	188.0	-22.0	5.9	*
25.	E Leg, S Side-Midblk *	624.0	-22.0	5.9	*
26.	W Leg, S Side - 25 m *	-118.0	-22.0	5.9	*
27.	W Leg, S Side - 50 m *	-200.0	-22.0	5.9	*
28.	W Leg, S Side-Midblk *	-636.0	-22.0	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (UG/M**3) *	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.1000	0.3000	0.1000	0.2000
20.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.3000	0.1000	0.2000
30.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.2000
40.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.2000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.1000	0.2000	0.3000
50.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.1000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
60.	*	0.0000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000
70.	*	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000
80.	*	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000
90.	*	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
100.	*	0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
110.	*	0.1000	0.0000	0.0000	0.0000	0.1000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
120.	*	0.1000	0.0000	0.0000	0.0000	0.2000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
130.	*	0.1000	0.0000	0.0000	0.0000	0.1000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
140.	*	0.1000	0.0000	0.0000	0.0000	0.1000	0.4000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000
150.	*	0.1000	0.0000	0.0000	0.0000	0.2000	0.5000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000
160.	*	0.1000	0.0000	0.0000	0.0000	0.3000	0.4000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.3000		

0.3000 0.3000
 170. * 0.3000 0.0000 0.0000 0.0000 0.3000 0.3000 0.5000 0.1000 0.2000 0.1000 0.1000 0.1000 0.3000
0.3000 0.2000
 180. * 0.4000 0.2000 0.2000 0.0000 0.1000 0.1000 0.1000 0.1000 0.2000 0.2000 0.2000 0.1000 0.1000
0.1000 0.1000
 190. * 0.5000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.4000 0.4000 0.3000 0.1000 0.0000
0.0000 0.0000
 200. * 0.4000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 210. * 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 220. * 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 230. * 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 240. * 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 250. * 0.0000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 260. * 0.1000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 270. * 0.1000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 280. * 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 290. * 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 300. * 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 310. * 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.1000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 320. * 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000
 330. * 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.4000 0.3000 0.1000 0.0000
0.0000 0.0000
 340. * 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.1000 0.4000 0.3000 0.1000 0.0000
0.0000 0.0000
 350. * 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.3000 0.4000 0.1000 0.0000
0.0000 0.0000
 360. * 0.0000 0.0000 0.0000 0.0000 0.2000 0.1000 0.1000 0.1000 0.1000 0.2000 0.2000 0.1000 0.2000
0.1000 0.1000

------*---

 MAX   * 0.5000 0.2000 0.2000 0.0000 0.4000 0.5000 0.5000 0.1000 0.4000 0.4000 0.4000 0.1000 0.3000
0.3000 0.3000
 DEGR. *   190   180   180   10   30   150   170   10   190   190   350   10   10
140   40

       MODEL RESULTS

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE: 10.-360.

 WIND * CONCENTRATION
 ANGLE *   (UG/M**3)
 (DEGR)*   16   17   18   19   20   21   22   23   24   25   26   27   28
 ------*---
  10. * 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
  20. * 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000

30.	*	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
40.	*	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
50.	*	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
60.	*	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000
70.	*	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000
80.	*	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
90.	*	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
100.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
110.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
120.	*	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
130.	*	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
140.	*	0.2000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
150.	*	0.2000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000
160.	*	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
170.	*	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
180.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	*	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	*	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	*	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	*	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
240.	*	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
250.	*	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
260.	*	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
270.	*	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
280.	*	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000
290.	*	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
300.	*	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
310.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
320.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
330.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
340.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
350.	*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
360.	*	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	*	0.2000	0.2000	0.1000	0.0000	0.1000	0.1000	0.0000	0.2000	0.1000	0.1000	0.1000	0.1000	0.0000
DEGR.	*	10	200	220	10	50	70	10	300	80	280	40	60	10

THE HIGHEST CONCENTRATION OF 0.5000 UG/M**3 OCCURRED AT RECEPTOR 6.