APPENDIX J

Noise and Noise-Compatible Land Use

Noise Technical Report

Noise Modeling Protocol

Construction Noise Technical Report

APPENDIX J

Noise and Noise-Compatible Land Use

Noise Technical Report

Sustainable Airport Master Plan – Near-Term Projects

Noise Technical Report

March 2024

PREPARED FOR
Port of Seattle

PREPARED BY
Landrum & Brown, Incorporated

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1. Introduction

Landrum & Brown prepared this Noise Technical Report to document the potential operational noise impacts resulting from the Sustainable Airport Master Plan (SAMP) Near-Term Projects (NTPs) at the Seattle-Tacoma International Airport (SEA or Airport). This report also provides information related to noise-compatible land use.

1.1 Description of the Proposed Action

The Port of Seattle (Port) identified a set of NTPs to address the near-term activity levels projected to occur at the Airport. The NTPs include 30 projects that would improve efficiency, safety, access to the Airport, and support facilities for airlines and the Airport. The NTPs (as a whole) are the Proposed Action and are shown on **Exhibit 1-1.**

In addition to the Proposed Action, the Environmental Assessment (EA) also evaluated a Hybrid Terminal Option. For the purposes of modeling aircraft noise, the Hybrid Terminal Option resulted in no differences from the Proposed Action. Therefore, the methodology, input data, and results presented in this technical report for the Proposed Action are also representative of the Hybrid Terminal Option.

1.2 Regulatory Setting

The Federal Aviation Administration (FAA) has laws and regulations that provide a basis for local development of airport plans, analysis of potential impacts from airport development, and compatibility policies. The *Airport and Airway Improvement Act of 1982* authorized funding for noise mitigation and noise compatibility planning and projects, and established certain requirements related to noise-compatible land uses for federally funded airport development projects. The 1979 *Aviation Safety and Noise Abatement Act* directs the FAA to establish, by regulation, a single system for measuring noise and determining the exposure of people to noise and to identify land uses normally compatible with various noise exposures.

This noise analysis was conducted in accordance with FAA Order 1050.1F and its associated desk reference, which specifies a number of requirements for the noise analyses. These include:

- Acceptable noise models to be used and the circumstances under which their use is required;
- The metrics to be used for characterizing the noise environment and quantifying impacts;
- Thresholds of significance for determining whether the effects of an action would constitute a significant impact under National Environmental Policy Act.
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EXHIBIT 1:1: PROPOSED ACTION

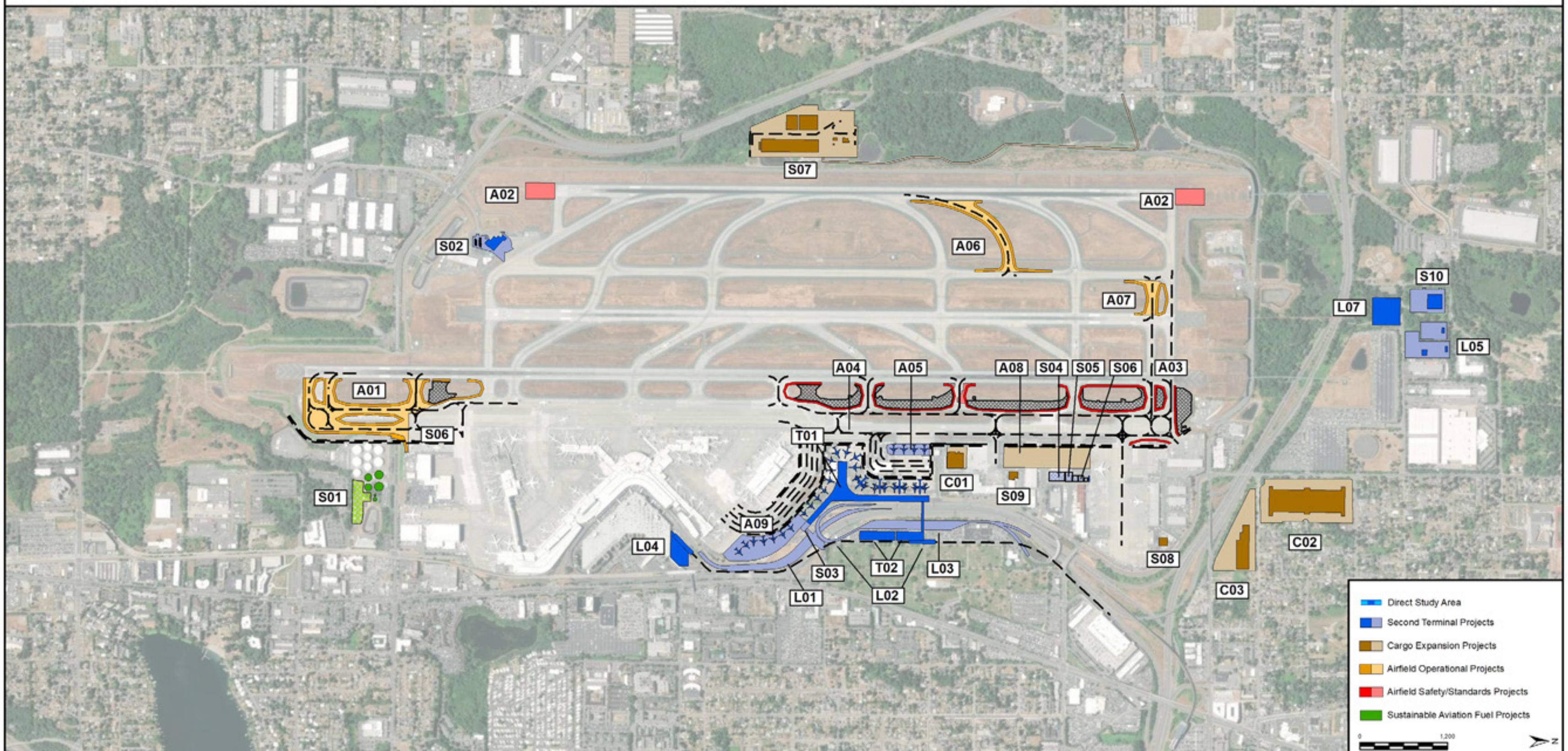
AIRSIDE
- A01 - Taxiway A/B Extension
- A02 - Runway 16R/34L Blast Pads
- A03 - Taxiway C/D Reconfiguration & RIM
- A04 - Taxiway B 500' Separation
- A05 - North Hold Pad
- A06 - Runway 34L High-Speed Exit
- A07 - Taxiway D Extension
- A08 - North Cargo Hardstand
- A09 - Central Hardstand
- A10 - Taxiway Fillets (not shown)

CARGO
- C01 - Cargo 4 South Redevelopment
- C02 - Offsite Cargo Phase 1
- C03 - Offsite Cargo Phase 2

LANDSIDE
- L01 - NAE Relocation (southbound lanes)
- L02 - Elevated Busway & Stations
- L03 - Second Terminal Roads & Curbside
- L04 - Northeast Ground Transportation Center
- L05 - North Ground Transportation Holding Lot
- L07 - Employee Parking Structure

TERMINAL
- T01 - North Gates
- T02 - Second Terminal & Parking

AIRPORT/AIRLINE SUPPORT
- S01 - Fuel Farm Expansion
- S02 - Primary ARFF Facility
- S03 - Secondary ARFF Facility
- S04 - Fuel Rack Relocation
- S05 - Triculator
- S06 - De-icing Tanks
- S07 - Westside Maintenance Campus
- S08 - North Airline Support
- S09 - West Airline Support
- S10 - Centralized Rec. & Dist. Center



Proposed Action

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2. Background on Characteristics of Noise

Sound is created by a vibrating source that induces vibrations in the air. The vibration produces alternating bands of relatively dense and sparse particles of air, spreading outward from the source like ripples on a pond. Sound waves dissipate with increasing distance from the source. Sound waves can also be reflected, diffracted, refracted, or scattered. When the source stops vibrating, the sound waves disappear almost instantly and the sound ceases.

Sound conveys information to listeners. It can be instructional, alarming, pleasant and relaxing, or annoying. Identical sounds can be characterized by different people or even by the same person at different times, as desirable or unwanted. Unwanted sound is commonly referred to as “noise.”

Sound can be defined in terms of three components:

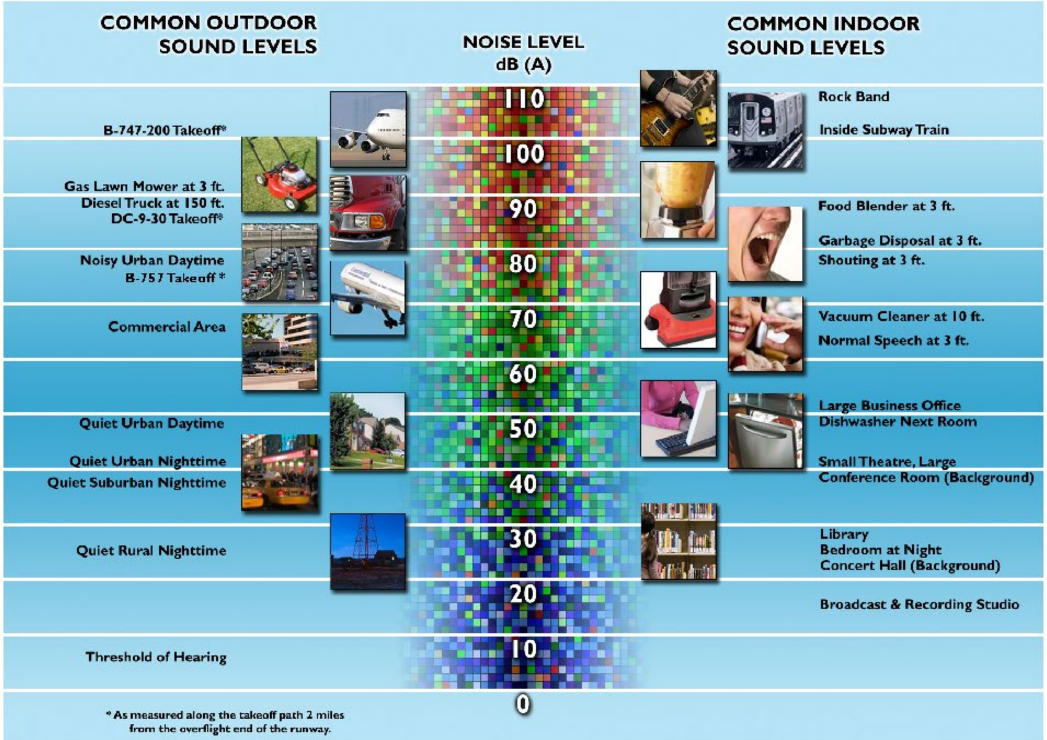
- Level (amplitude)
- Pitch (frequency)
- Duration (time pattern)

2.1 Sound Level

The level of sound is measured by the difference between atmospheric pressure (without the sound) and the total pressure (with the sound). Amplitude of sound is like the relative height of the ripples caused by the stone thrown into the water. Although physicists typically measure pressure using the linear Pascal scale, sound is measured using the logarithmic decibel (dB) scale. This is because the range of sound pressures detectable by the human ear can vary from 1 to 100 trillion units. A logarithmic scale allows us to discuss and analyze noise using numbers that are more manageable. The range of audible sound ranges from approximately 1 to 140 dB, although everyday sounds rarely rise above about 120 dB. The human ear is extremely sensitive to sound pressure fluctuations. A sound of 140 dB, which is sharply painful to humans, contains 100 trillion (10^{14}) times more sound pressure than the least audible sound. **Exhibit 2-1** shows a comparison of common sources of indoor and outdoor sounds measured on the dB scale.

By definition, a 10 dB increase in sound is equal to a tenfold (10^{1}) increase in the mean square sound pressure of the reference sound. A 20 dB increase is a 100-fold (10^{2}) increase in the mean square sound pressure of the reference sound. A 30 dB increase is a 1,000-fold (10^{3}) increase in mean square sound pressure.

EXHIBIT 2-1: COMPARISON OF SOUND



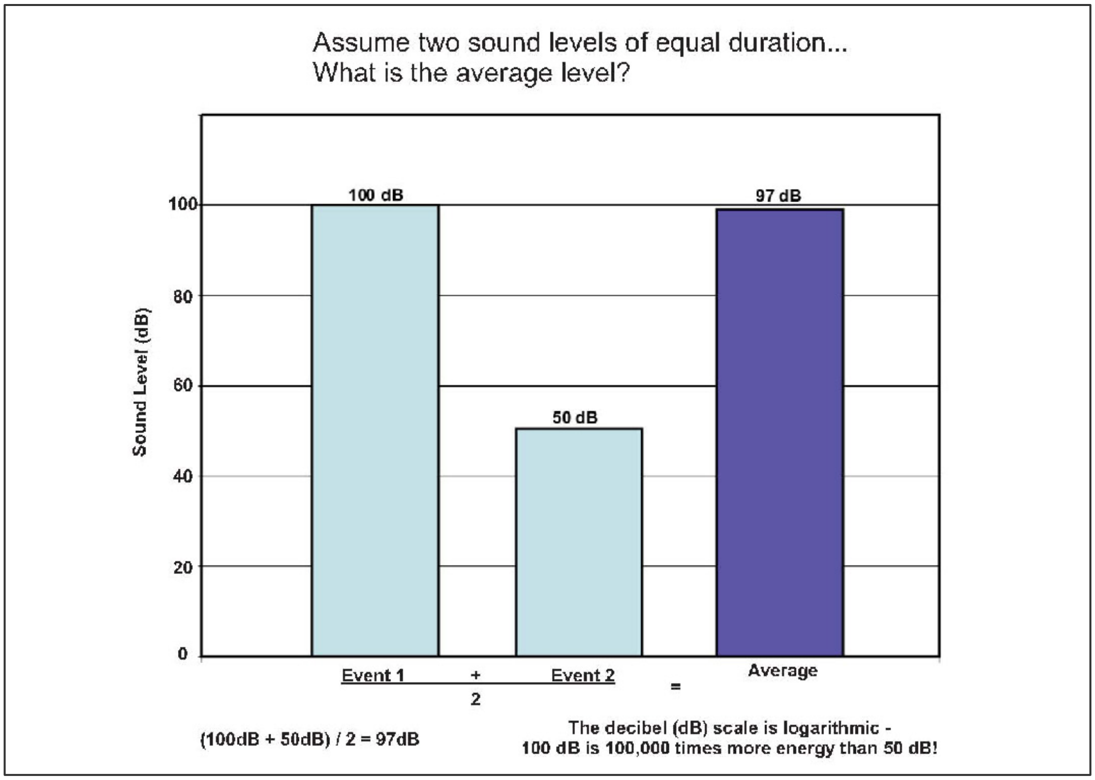
Source: Landrum & Brown

A logarithmic scale requires different mathematics than used with linear scales. The sound pressures of two separate sounds, expressed in dB, are not arithmetically additive. For example, if a sound of 80 dB is added to another sound of 74 dB, the total is a 1 dB increase in the louder sound (81 dB), not the arithmetic sum of 154 dB. If two equally loud noise events occur simultaneously, the sound pressure level from the combined events is 3 dB higher than the level produced by either event alone.

Logarithmic averaging also yields results that are quite different from simple arithmetic averaging. The example shown in **Exhibit 2-2** averages two sound levels of equal duration. One has a maximum sound level (Lmax) of 100 dB, the other 50 dB. Using conventional arithmetic, the average would be 75 dB. Using logarithmic math, the average is 97 dB. This is because 100 dB has far more energy than 50 dB (100,000 times as much) and is overwhelmingly dominant in computing the average of the two sounds.

Human perceptions of changes in sound pressure are less sensitive than a sound level meter. People typically perceive a tenfold increase in sound pressure, a 10 dB increase, as a doubling of loudness. Conversely, a 10 dB decrease in sound pressure is normally perceived as half as loud. In community settings, most people perceive a 3 dB increase in sound pressure (a doubling of the sound pressure or energy) as just noticeable. (In laboratory settings, people with good hearing are able to detect changes in sounds of as little as 1 dB.)

EXHIBIT 2-2: EXAMPLE OF SOUND LEVEL AVERAGING



Source: Landrum & Brown, 2019.

2.2 Sound Frequency

The pitch (or frequency) of sound can vary greatly from a low-pitched rumble to a shrill whistle. If we consider the analogy of ripples in a pond, high frequency sounds are vibrations with tightly spaced ripples, while low rumbles are vibrations with widely spaced ripples. The rate at which a source vibrates determines the frequency. The rate of vibration is measured in units called "Hertz" -- the number of cycles, or waves, per second. One's ability to hear a sound depends greatly on the frequency composition. Humans hear sounds best at frequencies between 1,000 and 6,000 Hertz. Sound at frequencies above 10,000 Hertz (high-pitched hissing) and below 100 Hertz (low rumble) are much more difficult to hear.

When attempting to measure sound in a way that approximates what our ears hear, we must give more weight to sounds at the frequencies we hear well and less weight to sounds at frequencies we do not hear well. Acousticians have developed several weighting scales for measuring sound. The A-weighted scale correlates with the judgments people make about the loudness of sounds. The A-weighted decibel scale (dBA) is used in studies where audible sound is the focus of inquiry. **Exhibit 2-3** shows the A, B, and C sound weighting scale. The U.S. Environmental Protection Agency (USEPA) has recommended the use of the A-weighted decibel scale in studies of environmental noise.[1] Its use is

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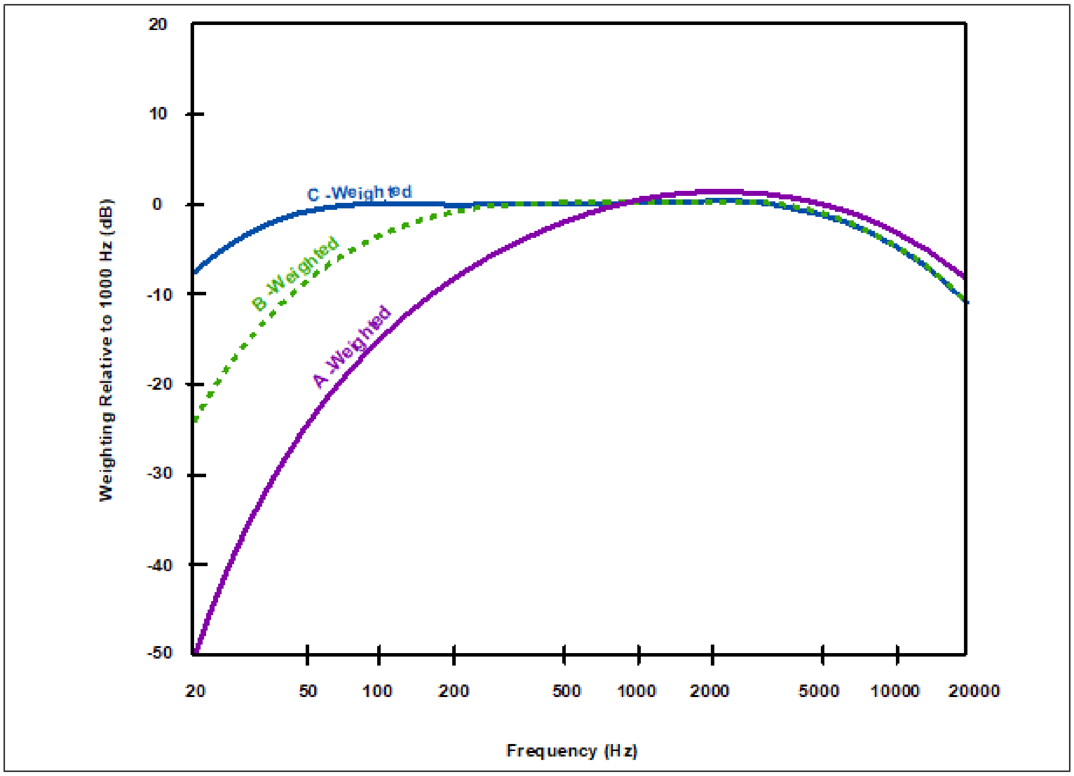
[1] Information on Levels of Environmental Noise Requisite to Protect Health and Welfare with an Adequate Margin of Safety. U.S. Environmental Protection Agency, Office of Noise Abatement and Control. 1974, P. A-10.

required by the FAA in airport noise studies.[2] For the purposes of this analysis, dBA was used as the noise metric and dB and dBA are used interchangeably.

EXHIBIT 2-3: SOUND FREQUENCY WEIGHTING CURVES



Source: Landrum & Brown, 2019.

2.3 Duration of Sounds

The duration of sounds – their patterns of loudness and pitch over time – can vary greatly. Sounds can be continuous like a waterfall, impulsive like a firecracker, or intermittent like aircraft overflights. Intermittent sounds are produced for relatively short periods, with the instantaneous sound level during the event roughly appearing as a bell-shaped curve. An aircraft event is characterized by the period during which it rises above the background sound level, reaches its peak, and then recedes below the background level.

2 “Airport Noise Compatibility Planning.” 14 CFR Part 150, Sec. A150.3, September 24, 2004.

2.4 Perceived Noise Level

Perceived noisiness is another method of rating sound developed for the assessment of aircraft noise. Perceived noisiness is the subjective measure of the degree to which noise is unwanted or causes annoyance to an individual. To determine perceived noise level, individuals are asked to judge in a laboratory setting when two sounds are equally noisy or disturbing if heard regularly in their own environment. These surveys are inherently subjective and thus subject to greater variability. For example, two separate events of equal noise energy may be perceived differently if one sound is more annoying to the listener than the other.

2.5 Propagation of Noise

Outdoor sound levels decrease as a function of distance from the source, and as a result of wave divergence, atmospheric absorption, and ground attenuation. Sound radiated from a source in a homogeneous and undisturbed manner travels as spherical waves. As the sound wave travels away from the source, the sound energy is distributed over a greater area, dispersing the sound energy of the wave. Spherical spreading of the sound wave reduces the noise level at a rate of 6 dB per doubling of the distance.

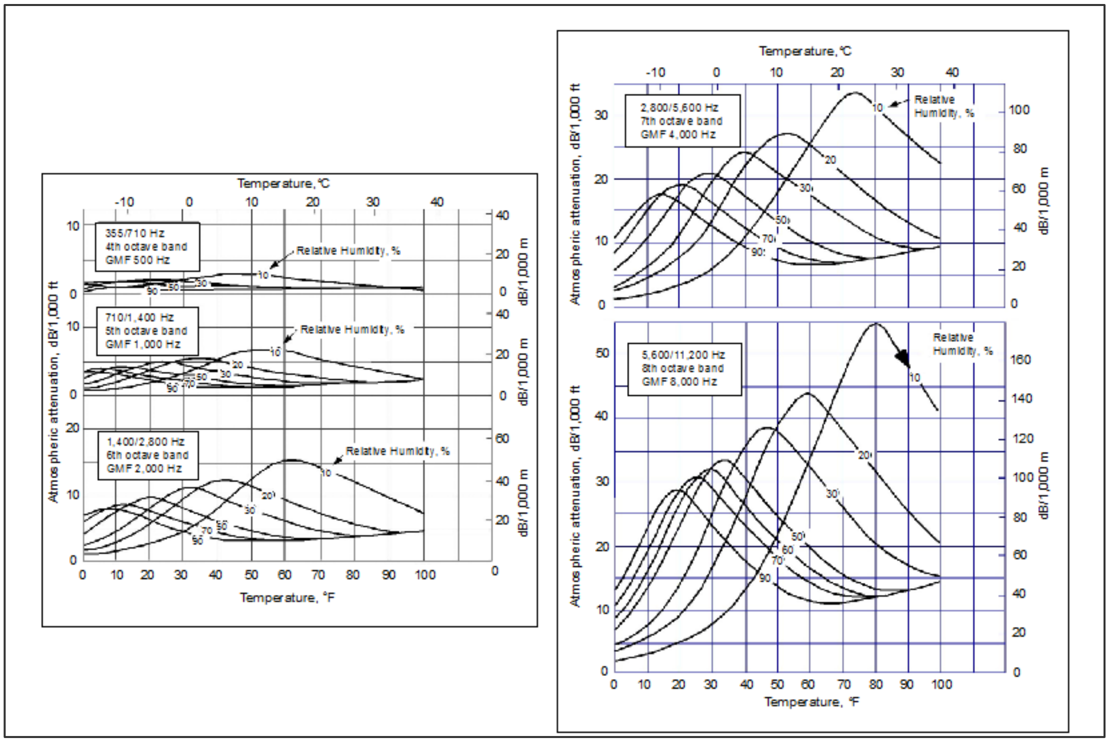
Atmospheric absorption also influences sound levels received by an observer. The greater the distance traveled, the greater the influence of the atmosphere and the resultant fluctuations. Atmospheric absorption becomes important at distances of greater than 1,000 feet. The degree of absorption is a function of the frequency of the sound as well as the humidity and temperature of the air. For example, atmospheric absorption is lowest at high humidity and higher temperatures. **Exhibit 2-4** provides sample atmospheric attenuation graphs. The graphs show noise absorption rates based on temperature, relative humidity, and distance at five different frequency ranges. For example, sounds at a frequency of 2,000 Hz, with a relative humidity of 10 percent and a temperature of 90° Fahrenheit (32° Celsius), will dissipate by 10 dB per for every 1,000 feet (305 meters) from the source.

The rate of atmospheric absorption also varies with sound frequency, and turbulence and gradients of wind. The higher frequencies are more readily absorbed than the lower frequencies. Over large distances, the lower frequencies become the dominant sound as the higher frequencies are attenuated. Certain conditions, such as inversions, can result in higher noise levels than would result from spherical spreading as a result of channeling or focusing the sound waves.

The effect of ground attenuation on noise propagation is a function of the height of the source and/or receiver and the characteristics of the terrain. The closer the source of noise is to the ground, the greater the ground absorption. Terrain consisting of soft surfaces such as vegetation provide for more ground absorption than hard surfaces. Ground attenuation is important for the study of noise from airfield operations (such as thrust reversals) and in the design of noise berms or engine run-up facilities.

These factors are an important consideration for assessing in-flight and ground noise in the Puget Sound area. Atmospheric conditions will play a significant role in affecting the sound levels on a daily basis and how these sounds are perceived by the population.

EXHIBIT 2-4: SOUND ATTENUATION GRAPHS



Source: Beranek, 1981

3. Health Effects of Noise

A considerable amount of research has been conducted over the last 30 years to identify, measure, and quantify the potential effects of aviation noise on health. The various methods by which noise can be measured (e.g., single dose, long-term average, number of events above a certain level, etc.), and difficulties in separating other lifestyle factors from the analysis, increase the complexity of determining the health effects of noise, and have caused considerable variability in the results of past studies. The health effects of noise are often divided into the following topics: hearing loss, sleep disturbance, and speech/communication interference.

3.1 Hearing Loss

The potential for noise-induced hearing loss is commonly associated with occupational noise exposure from working in a noisy work environment or recreational noise such as listening to loud music. Recent studies have concluded that "because environmental noise does not approximate occupational noise levels or recreational noise exposures…it does not have an effect on hearing threshold levels." Furthermore, "aviation noise does not pose a risk factor for child or adolescent hearing loss, but perhaps other noise sources (personal music devices, concerts, motorcycles, or night clubs) are a main risk factor."[3] Because aviation noise levels near airports do not approach levels of occupational or

[3] Airport Cooperative Research Program, Transportation Research Board, Effects of Aircraft Noise: Research Update on Selected Topics, 2008.

recreational noise exposures associated with hearing loss, hearing impairment is likely not caused by aircraft noise for populations living near an airport.

3.2 Sleep Disturbance

Sleep disturbance is a common complaint from people who live in the vicinity of an airport. A large amount of research has been published on the topic of sleep disturbance caused by environmental noise. This research has produced variable results due to differing definitions of sleep disturbance, different ways for measuring sleep disturbance (behavioral awakenings or sleep interruption), and different settings in which to measure it (laboratory setting or field setting).

In 1992, the Federal Interagency Committee on Noise (FICON) recommended an interim dose-response curve to predict the percent of the exposed population expected to be awakened percent awakening) as a function of the exposure to single event noise levels expressed in terms of the Sound Exposure Level (SEL). This interim curve was based on statistical adjustment of previous analysis and included data from both laboratory and field studies. In 1997, the Federal Interagency Committee on Aviation Noise (FICAN) recommended a revised sleep disturbance relationship based on data and analysis from three field studies.

Exhibit 3-1 shows the results of the 1992 and 1997 analyses. The top graph shows a comparison of the 1992 FICON and 1997 FICAN curves. The 1997 FICAN curve represents the upper limit of the observed field data and should be interpreted as predicting the "maximum percent of the exposed population expected to be behaviorally awakened" or the "maximum percent awakened" for a given residential population.

In 2008, FICAN recommended the use of a revised method to predict sleep disturbance in terms of percent awakenings based on data published by the American National Standards Institute (ANSI).[4] In contrast to the earlier FICAN recommendation, the 2008 ANSI standard indicates that the probability of awakening is lower for a single noise event in cases where the population is exposed to the given noise source for a long period of time (more than one year) compared to the probability of awakening for sound that is new to an area. In Exhibit 3-1, the lower graph shows these two relationships, with Equation 1 (blue dotted line) representing percent awakenings from long-term noise and Equation B1 (pink dashed line) representing percent awakenings from a new noise source based on the 1997 FICAN results. As shown in this exhibit, at an indoor SEL of 100 dB, the probability of awakenings would be expected to exceed 15 percent for a new noise source; yet for long-term noise sources, the probability of awakening is expected to be less than 10 percent.

The numerous studies and reports that have been developed on the subject of sleep disturbance related to environmental noise over the past several decades have produced varied results. A review of past studies conducted by the Airport Cooperative Research Program suggests that in-home sleep disturbance studies clearly demonstrate that it requires more noise to cause awakenings than was previously theorized based on laboratory sleep disturbance studies.[5]

Due to the variability of study methodologies, particularly studies outside of a laboratory, and other influencing factors, it is difficult to determine the noise level at which a high percentage of the

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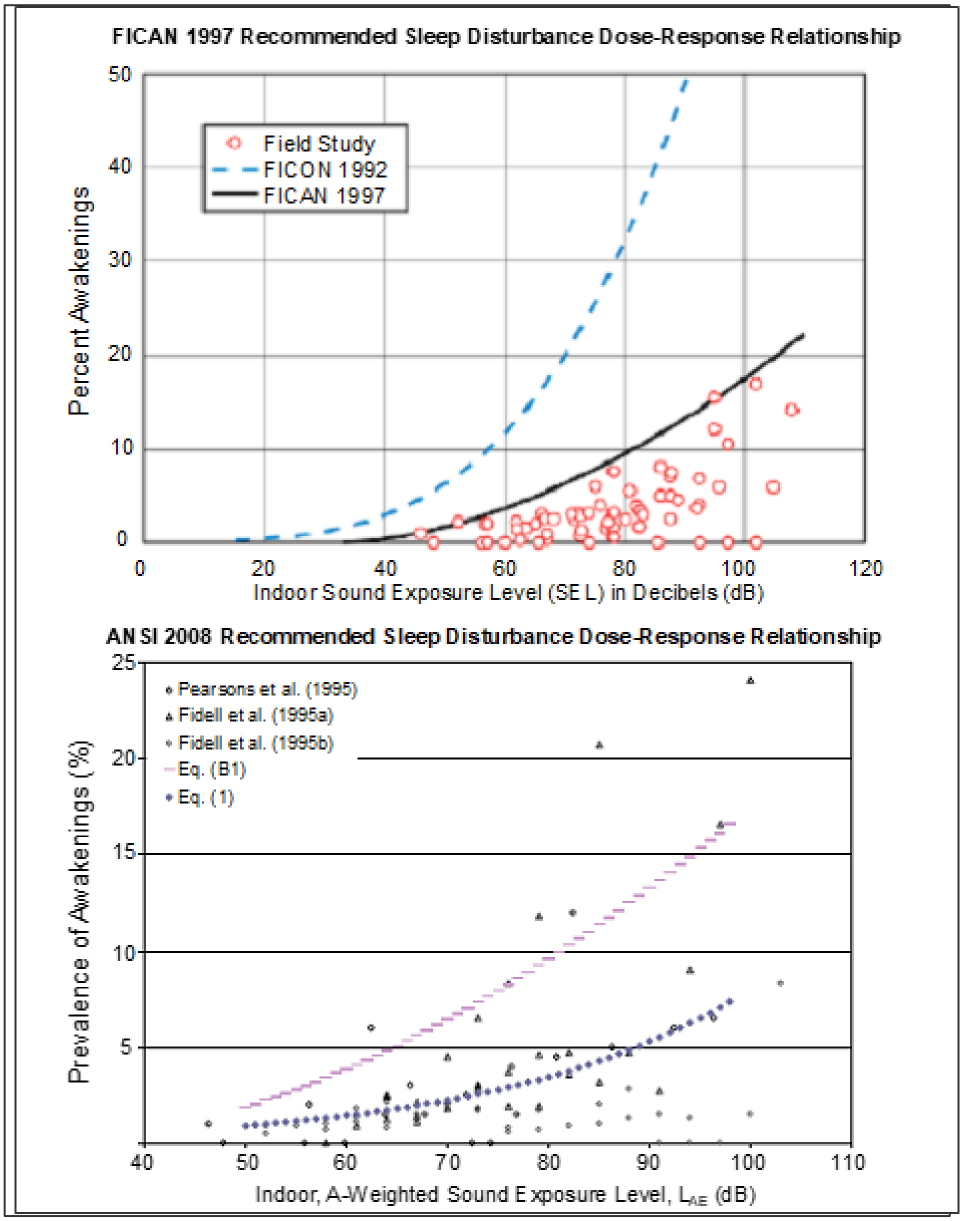
4 ANSI S12.9-2008, Quantities and Procedures for Description and Measurement of Environmental Sound — Part 6: Methods for Estimation of Awakenings Associated with Outdoor Noise Events Heard in Homes, 2008

5 Airport Cooperative Research Program, Transportation Research Board, Effects of Aircraft Noise: Research Update on Selected Topics, 2008.

population would be expected to be awakened by aircraft noise. No definitive conclusions have been drawn on the percent of a population that is estimated to be awakened by a certain level of aircraft noise and recent studies have cautioned about the over-interpretation of the data.[6]

EXHIBIT 3-1: SLEEP DISTURBANCE DOSE-RESPONSE CURVES



Source: Federal Interagency Committee on Aviation (FICAN), 1997. ANSI, 2008.

3.3 Communication Interference

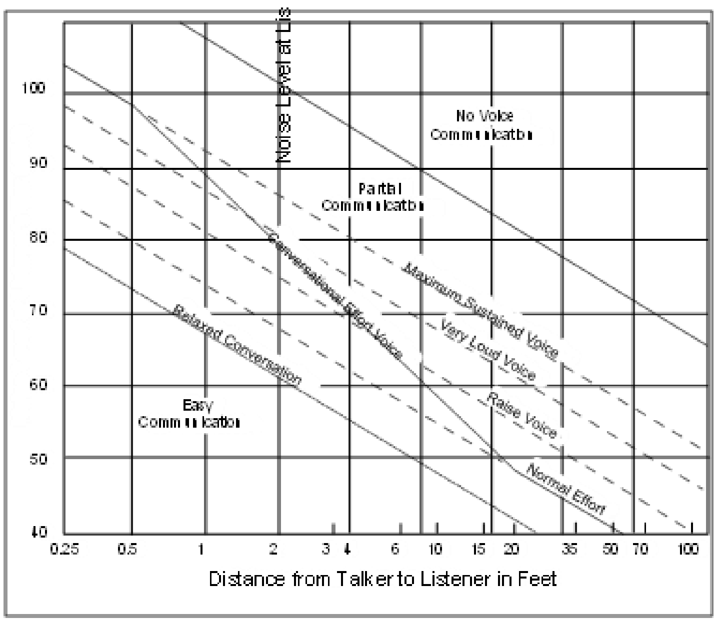
Communication interference can impact activities such as personal conversations, classroom learning, and listening to radio and television. Most studies have focused on communication interference due to

6 Airport Cooperative Research Program, Transportation Research Board, Effects of Aircraft Noise: Research Update on Selected Topics, 2008.

continual noise sources. In 1974, the USEPA published Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, which is one of the few studies to focus on intermittent noise. The study concluded that for voice communication, an indoor Leq of 45 dB allows normal conversation at distances up to 2 meters with 95 percent sentence intelligibility. **Exhibit 3-2** shows the required distance between talker and listener based on the type of speech communication (normal voice, loud voice, etc.) and the environmental noise level from the 1974 USEPA report.

Noise can also impact communication between student and teacher necessary for learning in a classroom setting. It is usually accepted that noise levels above a certain Leq may affect a child's learning experiences. Research has shown a "decline in reading when outdoor noise levels equal or exceed Leq of 65 dBA."[7] Furthermore, a study conducted by FICAN in 2007 found: "(1) a substantial association between noise reduction and decreased failure (worst-score) rates for high-school students, and (2) significant association between noise reduction and increased average test scores for student/test subgroups. In general, the study found little dependence upon student group and upon test type."[8] A study of noise exposure and the effects on school test scores between 2000/01 and 2008/09 found "…statistically significant associations between airport noise and student mathematics and reading test scores, after taking demographic and school factors into account."[9] This study also found that schools that had been provided sound insulation had better test scores than schools that were not sound insulated. This Study made no recommendation regarding the noise level at which impacts upon learning may occur.

EXHIBIT 3-2: NOISE EFFECTS ON DISTANCE NECESSARY FOR SPEECH COMMUNICATION



Source: FICON, 1992; from USEPA, 1974.

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7 Airport Cooperative Research Program, Transportation Research Board, Effects of Aircraft Noise: Research Update on Selected Topics, 2008.

8 Federal Interagency Committee on Aviation Noise (FICAN), Findings of the FICAN Pilot Study on the Relationship between Aircraft Noise Reduction and Changes in Standardized Test Scores, July 2007.

9 National Academies of Sciences, Engineering, and Medicine; Assessing Aircraft Noise Conditions Affecting Student Learning, Volume 1: Final Report; 2014.

4. Standard Noise Descriptors

Given the multiple dimensions of sound, a variety of descriptors, or metrics, have been developed for describing sound and noise. The Day-Night Average Sound Level (DNL) is widely accepted as the best available metric to describe aircraft noise exposure and is the noise descriptor required by the FAA for use in aircraft noise analyses and noise compatibility planning. Because the DNL metric correlates well with the degree of community annoyance from aircraft noise, DNL has been formally adopted by most federal agencies dealing with noise exposure. In addition to the FAA, these agencies include the Environmental Protection Agency (EPA), Department of Defense, Department of Housing and Urban Development (HUD) and the Veterans Administration. Also, federal interagency committees, such as the Federal Interagency Committee on Urban Noise and the FICON, have not identified new cumulative sound descriptors or metrics of sufficient scientific standing to substitute for DNL. Other cumulative metrics can be used to supplement, but not replace, DNL. FAA Orders 1050.1F and 5050.4B require that environmental studies use the DNL metric to describe cumulative noise exposure and identify aircraft noise/land use compatibility issues.

DNL is a cumulative sound level that provides a measure of the total sound energy during a specified time-period and is typically expressed as an annual average. DNL does not represent the sound level heard at any particular time, but rather represents the total sound exposure. DNL logarithmically averages the sound levels at a location over a 24-hour period, with a 10-decibel (dB) weighted penalty added to all noise events occurring during nighttime hours between 10:00 p.m. and 6:59 a.m. The 10 dB penalty represents the added intrusiveness of noise that occurs during sleeping hours, when ambient sound levels are typically lower than during daytime hours. This weighted penalty treats one nighttime noise event as equivalent to 10 daytime events of the same magnitude.

It is important to note that due to the logarithmic nature of noise, the *loudest* noise levels control the 24-hour average. For example, 30 seconds of sound of 100 dB, followed by 23 hours, 59 minutes, and 30 seconds of silence, would compute to a DNL value of 65 dB. If the 30 seconds of sound occurred at night, it would yield a DNL of 75 dB.

5. Noise Compatibility

5.1 FAA 14 CFR Part 150

The FAA uses the 14 C.F.R. Part 150, Airport Noise Compatibility Planning, land use compatibility guidelines to determine compatibility with most land uses. The FAA has created guidelines regarding the compatibility of land uses with various aircraft noise levels measured using the DNL metric. These guidelines are defined in Appendix A to 14 C.F.R. Part 150. These guidelines are consistent with land use compatibility guidelines developed by other federal agencies such as EPA and HUD.

Based on FAA guidelines, DNL 65 dB is the noise level where noise sensitive land uses (residences, churches, schools, libraries, and nursing homes) are not compatible with aircraft noise. Below 65 DNL, all land uses are determined to be compatible with airport noise. The land use compatibility table found in 14 C.F.R. Part 150 is presented in **Table 5-1.**

TABLE 5-1: YEARLY DAY-NIGHT AVERAGE SOUND LEVEL (DNL) IN DECIBELS (DB) BY LAND USE FROM THE LAND USE COMPATIBILITY GUIDELINES – 14 C.F.R. PART 150

LAND USE	BELOW DNL 65 dB	DNL 65-70 dB	DNL 70-75 dB	DNL 75-80 dB	DNL 80-85 dB	OVER DNL 85 dB
Residential						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail—building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade—general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB 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 25 dB 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 dB 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 35 dB 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 level is low.
(5) Land use compatible provided special sound reinforcement systems are installed.

(6) Residential buildings require an NLR of 25.
(7) Residential buildings require an NLR of 30.
(8) Residential buildings not permitted.

Notes:

1. The designations contained in this table do not constitute a federal determination that any use of land covered by the program is acceptable 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 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.
2. SLUCM=Standard Land Use Coding Manual.
3. Y (Yes)=Land Use and related structures compatible without restrictions.
4. N (No)=Land Use and related structures are not compatible and should be prohibited.
5. NLR=Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
6. 25, 30, or 35=Land use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated into design and construction of structure.

Source: 14 C.F.R. § 150 Airport Noise Compatibility Planning, Appendix A, Table 1.

5.2 Thresholds of Significance

FAA Order 1050.1F identifies the threshold of "significant impact" based on the yearly DNL and an incorporation of compatible land use standards found at 14 CFR Part 150, Airport Noise Compatibility Planning, specifically in Appendix A of that regulation. Implementation of a proposed action would have a significant impact with respect to aircraft noise if it would cause an increase in noise of 1.5 dB or more to a noise sensitive land use at the 65 DNL or greater contour.

FAA Order 1050.1F also provides direction for disclosing changes in aircraft noise exposure that while not meeting the threshold of significance, are nonetheless of interest to stakeholders. These are referred to as "reportable" changes. This implements a 1992 FICON recommendation that in addition to significant impacts, less-than-significant noise level changes be identified for noise sensitive locations exposed to Project-related increases. FICON recommended reporting any increases in DNL of 3 dB or more between 60 and 65 dB DNL, and increases of DNL 5 dB or more between 45 and 60 dB DNL. These recommendations ordinarily only apply to cases where the significance threshold (increase of 1.5 dB or more within the 65 dB DNL contour) is met or exceeded.

6. Noise Model

For this noise analysis, noise contours were developed using the FAA's Aviation Environmental Design Tool (AEDT). AEDT is the FAA-approved, industry-accepted tool for determining the total effect of aircraft noise exposure near an airport. AEDT has been the FAA's required model for estimating aircraft noise exposure near airports for NEPA studies since May of 2015 when it replaced the Integrated Noise Model.

AEDT uses runway and flight track information, aircraft operation levels distributed by time of day, aircraft fleet mix, and aircraft performance characteristics as inputs. The program includes a built-in Geographic Information System (GIS) platform, tools for comparing contours, and utilities that facilitate easy export to other GIS software suites. AEDT can also calculate predicted noise at specific sites such as hospitals, schools, or other noise sensitive locations. This analysis was prepared using AEDT Version 3f, which was the latest version of the model when modeling began.

Detailed inputs to AEDT fall into two general categories:

- Physical Characteristics – airfield layout, flight track geometry, terrain, climatological data, and aircraft noise and performance data.
- Operational Characteristics – aircraft operations, runway use, and flight track use.

6.1 Aircraft Activity Levels and Fleet Mix

In order to calculate DNL noise exposure levels for SEA, the average number of operations, types of aircraft, and the time of day at which the aircraft operate by specific AEDT airframe model and engine code were prepared for input into AEDT. AEDT airframe models are based on the manufactured aircraft types included in the fleet mix while the engine code refers to the version of engines that is associated with the defined airframe model.

6.2 Airfield Layout

The airfield layout is a physical description of the airfield configuration, including location, length and orientation of all runways and taxiways, and airport elevation. SEA's airfield system consists of three Runways (16L/34R, 16C/34C, 16R/34L), oriented in a north-south direction. **Table 6-1** provides the length and width of the runways at SEA.

TABLE 6-1: SEA RUNWAYS

Runway	Length (feet)	Width (feet)
16R/34L	8,500	150
16C/34C	9,425	150
16L/34R	11,899	150

Source: AEDT Version 3f

Table 6-2 provides the coordinates, elevation, crossing height and glide slope of the current runway ends at SEA used in AEDT:

TABLE 6-2: RUNWAY DEFINITION

Runway	Latitude	Longitude	Elevation (feet)	Crossing Height[1] (feet)	Glide Slope[2] (degrees)
16L	47.4637952222	-122.307750222	432.3	76	3
34R	47.4311722778	-122.30803825	346.7	81	2.75[3]
16C	47.4638098611	-122.31098375	429.4	71	3
34C	47.4379712778	-122.311209833	362.9	73	3
16R	47.4638363611	-122.317856833	414.8	69	3
34L	47.4405338056	-122.318058056	356.2	75	3

1 Crossing height is the height above the runway threshold at which the aircraft would be if maintaining the proper glide slope.
2 Glide slope represents the proper path (or angle) of descent for arriving aircraft.
3 AEDT utilizes a standard 3.0-degree glide on arrival profiles. Runway 34R glide slope of 2.75 is modeled as a 3.0-degree glide slope until threshold crossing.
Source: Port of Seattle, SEA Airport Layout Plan; AEDT Version 3f

6.3 Runway End Utilization

Runway end utilization refers to the frequency with which aircraft utilize each runway during the course of a year, as dictated or permitted by wind, weather, aircraft weight, air traffic control conditions, and noise considerations. Aircraft generally take-off and land facing into the wind, making it the primary factor in selecting a runway for take-off or landing. The efficient and safe use of the runways, taxiways, and airspace generally encourages the use of a single direction of "flow." "Head-to-head" operations, where aircraft depart in one direction and arrive in the opposite direction on the same runway are generally only possible when aircraft operations are well separated in both time and space.

6.4 Engine Run-Ups

Engine run-ups are routine engine maintenance or diagnostic tests where the engine is run at various settings to test performance. Depending on the frequency, engine run-ups may influence the size and location of noise contours.

6.5 Flight Tracks

A flight track is the path over the ground as aircraft fly to or from an airport. In order to model the arrival and departure flight corridors for SEA, consolidated flight tracks were developed from 2022 radar data and given a track ID. The radar data provide the location, density, and width of existing flight corridors. The AEDT models aircraft flight corridors with a system of primary flight tracks (or "backbone" tracks) and additional "dispersed" tracks. The backbone track lies at the center of the corridor, flanked by one or more dispersed tracks on each side. The AEDT distributes the operations assigned to a track among the backbone and dispersed tracks using a normal distribution or a user-defined distribution based on the observed flight track density. This dispersion more accurately models each flight corridor by accounting for variability attributed to weather, aircraft type, traffic, pilot technique and other factors.

Departure corridors are defined by a series of individual flight tracks located across the width of the corridor. Generally, aircraft on approach to a runway end are located within a smaller corridor due to the use of navigational instruments.

6.6 Aircraft Trip Length and Operational Profiles

Aircraft weight during departure is a factor in the dispersion of noise because it impacts the rate at which an aircraft is able to climb. Generally, the heavier an aircraft is, the slower the rate of climb and the wider the dispersion of noise along its route of flight. Where specific aircraft weights are unknown, AEDT uses the distance flown to the first stop as a surrogate for the weight, by assuming that the weight has a direct relationship with the fuel load necessary to reach the first destination. AEDT groups trip lengths into nine categories as shown in **Table 6-3.**

TABLE 6-3: AEDT STAGE LENGTH CATEGORIES

Stage Length	Distance
1	0-500 nautical miles
2	500-1000 nautical miles
3	1000-1500 nautical miles
4	1500-2500 nautical miles
5	2500-3500 nautical miles
6	3500-4500 nautical miles
7	4500-5500 nautical miles
8	5500-6500 nautical miles
9	6500-11000 nautical miles
M	Maximum range at maximum take-off weight

Source: Landrum & Brown analysis, 2024

AEDT includes standard flight procedure data for each aircraft that represents each phase of flight to or from an airport. Information related to aircraft speed, altitude, thrust settings, flap settings, and distance is available and used by AEDT to calculate noise levels on the ground. Additionally, terrain data was used to account for ground elevation variations under the flight paths.

6.7 Atmospheric Conditions

Weather is an important factor in the performance of aircraft and the amount of noise generated on landing and take-off. AEDT default weather parameters are based on Integrated Surface Data[10] average weather data (2012 -2021) from the National Oceanic and Atmospheric Administration. **Table 6-4** shows the default AEDT atmospheric settings for SEA.

TABLE 6-4: ATMOSPHERIC ELEMENTS

Atmospheric Element	Default AEDT Value
Temperature	52.67° Fahrenheit
Sea Level Pressure	1,018.13 millibars
Static Pressure	1,001.43 millibars
Dew Point	43.82° Fahrenheit
Relative Humidity	71.79%
Wind Speed	6.74 knots

Source: AEDT Version 3f, Landrum & Brown analysis, 2024.

7. Aircraft Noise

The following sections present the methodology and modeling input assumptions for the Existing (2022) condition, Future (2032) condition, and Future (2037) condition.

7.1 Existing Conditions

The following describes the input data and methodologies used in preparing the Existing (2022) Condition noise contour.

Aircraft Activity Levels and Fleet Mix

Information on aircraft operations was collected from FAA Air Traffic Activity System (ATADS) and the Port's EnvironmentalVue Flight Track Monitoring System. During the baseline condition year (2022), 401,351 total annual operations occurred at SEA. Additionally, specific AEDT airframe and engine combinations were developed from the EnvironmentalVue Flight Track Monitoring System data and a widely used airline fleet database.[11] **Table 7-1** presents the average daily operations by AEDT airframe and AEDT engine code that were used to calculate the Existing (2022) Contour.

The average daily number of aircraft arrivals and departures for the Existing (2022) Condition was calculated by determining the total annual operations and dividing by 365 (days in a year). The baseline conditions annual average day included 1,100 total operations, 15.9 percent of which occurred during the nighttime hours of 10:00 p.m. to 6:59 a.m.

10 https://www.ncdc.noaa.gov/isd, provided in AEDT Version 3f.
11 Diio Mi: Market Intelligence for the Aviation Industry, Accessed on February 3, 2022, https://mi.diio.net.

TABLE 7-1: AVERAGE DAILY OPERATIONS BY AEDT AIRFRAME AND ENGINE CODE – EXISTING (2022) CONDITION (CONTINUED)

Airframe	Engine Code	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
Commercial Jets						
Airbus A319-100 Series	01P10IA020	0.01	0.00	0.01	0.00	0.03
Airbus A319-100 Series	3CM028	0.10	0.02	0.10	0.02	0.24
Airbus A319-100 Series	3IA006	2.26	0.45	2.36	0.35	5.42
Airbus A319-100 Series	3IA007	1.21	0.24	1.26	0.19	2.90
Airbus A319-100 Series	4CM035	0.09	0.02	0.09	0.01	0.22
Airbus A319-100 Series	8IA09	0.04	0.01	0.04	0.01	0.10
Airbus A320-200 Series	01P08CM105	16.35	2.34	15.89	2.79	37.36
Airbus A320-200 Series	01P10IA021	1.47	0.21	1.43	0.25	3.35
Airbus A320-200 Series	01P10IA022	0.32	0.05	0.31	0.05	0.72
Airbus A320-200 Series	1CM008	0.40	0.06	0.39	0.07	0.91
Airbus A320-200 Series	1CM009	1.62	0.23	1.57	0.28	3.70
Airbus A320-200 Series	1IA003	3.09	0.44	3.00	0.53	7.06
Airbus A320-200 Series	3CM026	1.76	0.25	1.71	0.30	4.02
Airbus A320-200 Series	8IA010	0.00	0.00	0.00	0.00	0.01
Airbus A320-NEO	01P20CM128	0.87	0.06	0.72	0.22	1.86
Airbus A320-NEO	01P22PW163	1.39	0.09	1.13	0.34	2.95
Airbus A321-200 Series	01P08CM104	1.11	0.25	0.75	0.61	2.72
Airbus A321-200 Series	01P10IA025	6.73	1.54	4.54	3.72	16.52
Airbus A321-200 Series	3CM025	1.14	0.26	0.77	0.63	2.81
Airbus A321-NEO	01P18PW157	1.71	0.50	1.51	0.69	4.42
Airbus A321-NEO	01P20CM132	5.06	1.50	4.49	2.06	13.11
Airbus A330-200 Series	2RR023	1.15	1.37	2.49	0.02	5.03
Airbus A330-200 Series	9PW094	0.02	0.02	0.04	0.00	0.07
Airbus A330-300 Series	2RR023	0.64	0.02	0.64	0.02	1.33
Airbus A330-300 Series	4GE080	0.65	0.02	0.65	0.02	1.35
Airbus A330-300 Series	7PW082	0.09	0.00	0.09	0.00	0.18
Airbus A330-300 Series	9PW094	1.84	0.07	1.84	0.07	3.82
Airbus A330-300 Series	9PW095	0.43	0.02	0.43	0.02	0.90
Airbus A330-900N Series (Neo)	02P23RR141	3.13	0.51	3.35	0.29	7.29
Airbus A340-300 Series	2CM015	0.07	--	0.07	--	0.15
Airbus A350-1000 Series	18RR080	0.00	0.00	0.01		0.01
Airbus A350-900 series	01P18RR124	1.02	0.02	1.04	0.01	2.09
Boeing 717-200 Series	4BR002	0.00	--	0.00	--	0.00
Boeing 737-300 Series	1CM004	0.01	--	0.01	--	0.02
Boeing 737-300 Series	1CM005	0.01	--	0.01	--	0.02
Boeing 737-700 Series	3CM030	0.43	0.15	0.44	0.14	1.16
Boeing 737-700 Series	3CM031	14.65	5.01	15.01	4.65	39.32
Boeing 737-700 Series	3CM032	2.67	0.91	2.73	0.85	7.16
Boeing 737-700 Series	8CM051	0.01	0.00	0.01	0.00	0.03
Boeing 737-700 Series	8CM062	0.11	0.04	0.11	0.03	0.28
Boeing 737-700 Series	8CM063	2.48	0.85	2.55	0.79	6.67
Boeing 737-8	01P20CM135	0.04	0.02	0.04	0.02	0.11

TABLE 7-1: AVERAGE DAILY OPERATIONS BY AEDT AIRFRAME AND ENGINE CODE – EXISTING (2022) CONDITION (CONTINUED)

Airframe	Engine Code	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
Boeing 737-8	01P20CM136	1.17	0.67	1.17	0.67	3.67
Boeing 737-8	01P20CM140	1.08	0.62	1.08	0.62	3.39
Boeing 737-800 Series	01P11CM114	0.48	0.07	0.47	0.07	1.09
Boeing 737-800 Series	01P11CM116	6.51	0.94	6.45	1.00	14.90
Boeing 737-800 Series	01P11CM122	3.55	0.51	3.52	0.55	8.13
Boeing 737-800 Series	01P11CM125	0.79	0.11	0.78	0.12	1.81
Boeing 737-800 Series	01P11CM126	0.07	0.01	0.07	0.01	0.17
Boeing 737-800 Series	3CM032	19.93	2.88	19.74	3.08	45.62
Boeing 737-800 Series	3CM034	1.92	0.28	1.91	0.30	4.40
Boeing 737-800 Series	8CM051	27.28	3.95	27.02	4.21	62.45
Boeing 737-800 Series	8CM064	0.20	0.03	0.20	0.03	0.45
Boeing 737-800 Series	8CM065	2.55	0.37	2.52	0.39	5.83
Boeing 737-800 Series	8CM066	11.96	1.73	11.85	1.85	27.39
Boeing 737-800BCF	3CM034	0.18	0.01	0.15	0.03	0.38
Boeing 737-9	01P20CM136	0.60	0.11	0.58	0.13	1.42
Boeing 737-9	01P20CM140	23.54	4.42	22.93	5.03	55.92
Boeing 737-900 Series	01P11CM114	0.98	0.13	0.98	0.13	2.21
Boeing 737-900 Series	8CM051	11.05	1.43	11.07	1.41	24.97
Boeing 737-900-ER	01P11CM116	22.62	3.69	20.95	5.35	52.62
Boeing 737-900-ER	01P11CM121	64.23	10.46	59.49	15.20	149.39
Boeing 737-900-ER	01P11CM125	0.20	0.03	0.18	0.05	0.46
Boeing 737-900-ER	3CM034	0.91	0.15	0.84	0.22	2.12
Boeing 737-900-ER	8CM065	1.02	0.17	0.94	0.24	2.36
Boeing 737-900-ER_MA*	01P11CM121_MA	2.74	0.09	1.37	0.05	4.26
Boeing 757-200 Series	4PW072	6.00	1.84	6.21	1.63	15.68
Boeing 757-200 Series	4PW073	0.21	0.06	0.21	0.06	0.54
Boeing 757-200 Series	5RR038	0.59	0.18	0.62	0.16	1.55
Boeing 757-200 Series	5RR039	0.04	0.01	0.04	0.01	0.10
Boeing 757-300 Series	3RR028	0.00	0.00	0.00	0.00	0.01
Boeing 757-300 Series	5RR039	0.01	0.00	0.01	0.00	0.03
Boeing 757-300 Series	XPW204	1.58	0.81	1.99	0.39	4.77
Boeing 767-300 ER	12PW102	0.01	0.00	0.01	0.00	0.03
Boeing 767-300 ER	1GE029	0.08	0.03	0.09	0.02	0.21
Boeing 767-300 ER	1GE030	0.78	0.26	0.86	0.17	2.06
Boeing 767-300 ER	1PW043	0.56	0.18	0.62	0.12	1.49
Boeing 767-300 ER	1RR011	0.00	0.00	0.00	0.00	0.00
Boeing 767-300 ER	2GE055	0.31	0.10	0.35	0.07	0.83
Boeing 767-400 ER	8GE101	0.33	0.03	0.35	0.01	0.72
Boeing 777-200-ER	10PW099	0.11	0.00	0.11	0.00	0.22
Boeing 777-200-ER	2RR027	0.39	0.01	0.39	0.01	0.79
Boeing 777-200-ER	3GE060	0.17	0.00	0.17	0.00	0.35
Boeing 777-200-ER	3GE064	0.00	0.00	0.00	0.00	0.01
Boeing 777-200-ER	8GE100	0.18	0.00	0.18	0.00	0.36

TABLE 7-1: AVERAGE DAILY OPERATIONS BY AEDT AIRFRAME AND ENGINE CODE – EXISTING (2022) CONDITION (CONTINUED)

Airframe	Engine Code	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
Boeing 777-200-LR	01P21GE216	0.07	0.00	0.07	0.00	0.14
Boeing 777-200-LR	01P21GE217	0.26	0.00	0.25	0.00	0.52
Boeing 777-300 ER	01P21GE217	1.89	0.01	1.82	0.08	3.81
Boeing 787-10 Dreamliner	01P17GE211	0.18	0.00	0.04	0.14	0.36
Boeing 787-10 Dreamliner	02P23RR134	0.20	0.00	0.04	0.15	0.40
Boeing 787-10 Dreamliner	01P17GE213	0.39	0.00	0.09	0.31	0.78
Boeing 787-8 Dreamliner	01P17GE206	0.16	0.00	0.16	0.00	0.33
Boeing 787-8 Dreamliner	01P17GE210	0.01	0.00	0.01	0.00	0.01
Boeing 787-8 Dreamliner	11GE137	0.26	0.00	0.26	0.00	0.52
Boeing 787-8 Dreamliner	11GE138	0.64	0.00	0.64	0.00	1.28
Boeing 787-9 Dreamliner	01P17GE211	1.22	--	1.06	0.16	2.44
Boeing 787-9 Dreamliner	01P17GE214	0.01	--	0.01	0.00	0.02
Boeing 787-9 Dreamliner	02P23RR131	0.28	--	0.24	0.04	0.55
Boeing 787-9 Dreamliner	12RR067	1.26	--	1.09	0.17	2.52
Boeing 787-9 Dreamliner	12RR068	0.53	--	0.46	0.07	1.06
Bombardier CRJ-900-ER	01P08GE190	0.03	--	0.03	--	0.06
Bombardier CS100	04P20PW196	11.85	1.53	12.06	1.33	26.77
Bombardier CS300	04P20PW196	0.09	0.04	0.12	0.01	0.27
Bombardier CS300	04P20PW197	2.11	0.88	2.66	0.33	5.97
Bombardier Global Express	01P04BR013	0.01	--	0.01	--	0.01
Embraer ERJ175-LR	01P08GE197	81.63	11.10	80.82	11.91	185.46
Embraer ERJ175-LR_MA*	01P08GE197_MA	1.36	0.17	0.68	0.09	2.30
Subtotal		*397.49*	*67.69*	*384.75*	*78.24*	*928.17*
Cargo Jets						
Airbus A300F4-600 Series	1GE020	0.00	0.00	0.00	0.00	0.01
Airbus A300F4-600 Series	1PW048	0.12	0.00	0.01	0.11	0.24
Airbus A300F4-600 Series	3GE056	0.21	0.00	0.01	0.20	0.43
Boeing 747-400 ERF	12PW102	0.07	0.06	0.08	0.04	0.24
Boeing 747-400 Series	1GE024	0.67	0.41	0.63	0.45	2.17
Boeing 747-400 Series Freighter	01P03GE187	0.08	0.03	0.04	0.07	0.21
Boeing 747-400 Series Freighter	1GE024	0.01	0.00	0.00	0.01	0.02
Boeing 747-400 Series Freighter	1PW041	0.01	0.00	0.00	0.01	0.02
Boeing 747-400 Series Freighter	4RR037	0.08	0.03	0.04	0.06	0.20
Boeing 747-400BCF	1GE024	0.27	0.07	0.25	0.09	0.68
Boeing 747-400BCF	1PW041	0.01	0.00	0.01	0.00	0.03
Boeing 747-8F	01P17GE215	0.19	0.19	0.18	0.20	0.77
Boeing 747-8F	13GE156	0.05	0.05	0.05	0.05	0.20

TABLE 7-1: AVERAGE DAILY OPERATIONS BY AEDT AIRFRAME AND ENGINE CODE – EXISTING (2022) CONDITION (CONTINUED)

Airframe	Engine Code	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
Boeing 747-8F	8GENX1	0.16	0.17	0.16	0.17	0.66
Boeing 757-200 Series Freighter	3RR028	0.13	0.01	0.02	0.12	0.28
Boeing 757-200 Series Freighter	4PW072	0.06	0.00	0.01	0.06	0.13
Boeing 757-200 Series Freighter	4PW073	0.07	0.00	0.01	0.06	0.14
Boeing 757-200 Series Freighter	5RR039	0.00	0.00	0.00	0.00	0.01
Boeing 767-200 Series Freighter	1GE010	0.30	0.05	0.27	0.08	0.71
Boeing 767-200 Series Freighter	1GE012	0.15	0.03	0.14	0.04	0.35
Boeing 767-200 Series Freighter	1PW026	0.03	0.00	0.02	0.01	0.06
Boeing 767-300 ER Freighter	1GE030	4.35	3.43	4.75	3.03	15.56
Boeing 767-300 ER Freighter	2GE055	0.43	0.34	0.47	0.30	1.53
Boeing 767-300BCF	2GE055	0.03	0.05	0.07	0.01	0.16
Boeing 777 Freighter	01P21GE216	0.94	0.46	0.97	0.42	2.78
Boeing 777 Freighter	01P21GE217	0.02	0.01	0.02	0.01	0.07
Boeing 777-200-LR_C	01P21GE216_C	0.05	0.00	0.03	0.02	0.11
Boeing MD-10-30	3GE074	0.06	0.03	0.06	0.03	0.18
Boeing MD-11 Freighter	12PW102	0.22	0.19	0.29	0.12	0.81
Boeing MD-11 Freighter	1GE031	1.10	0.94	1.46	0.58	4.08
Boeing MD-11 Freighter	1PW052	0.36	0.30	0.47	0.19	1.33
Subtotal		*10.22*	*6.86*	*10.53*	*6.56*	*34.17*
Regional Jets						
Bombardier CRJ-200-LR	01P05GE189	0.01	0.00	0.01	--	0.02
Bombardier CRJ-700	01P08GE192	0.01	--	0.01	0.00	0.02
Bombardier CRJ-700-ER	01P08GE190	0.02	0.00	0.01	0.01	0.03
Bombardier CRJ-700-ER	01P08GE192	0.12	0.01	0.09	0.04	0.26
Bombardier CRJ-700-ER	5GE083	0.06	0.00	0.04	0.02	0.13
Subtotal		*0.22*	*0.01*	*0.16*	*0.07*	*0.46*
Turboprops						
Bombardier de Havilland Dash 8 Q400	PW150A	54.40	6.68	53.40	7.68	122.16
Raytheon Beech 99	PT6A27	0.01	--	0.01	0.00	0.03
Raytheon Beech 99	PT6A36	0.82	--	0.81	0.00	1.63
Raytheon C-12 Huron	PT660A	0.03	--	0.03	--	0.05
Raytheon Super King Air 200	PT6A42	0.00	--	0.00	--	0.01
Subtotal		*55.26*	*6.68*	*54.25*	*7.69*	*123.88*
Cargo Props						
Cessna 208 Caravan	P6114A	1.59	--	1.55	0.04	3.18
Cessna 208 Caravan	PT6A14	1.57	--	1.53	0.04	3.14

TABLE 7-1: AVERAGE DAILY OPERATIONS BY AEDT AIRFRAME AND ENGINE CODE – EXISTING (2022) CONDITION (CONTINUED)

Airframe	Engine Code	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
Raytheon Super King Air 300	PT660A	0.10	--	0.10	--	0.20
Subtotal		*3.26*	*0.00*	*3.18*	*0.08*	*6.52*
General Aviation Jets						
Bombardier Challenger 300	01P14HN011	0.05	0.00	0.05	--	0.10
Bombardier Challenger 300	11HN003	0.05	0.00	0.05	--	0.10
Bombardier Challenger 350	01P14HN011	0.18	0.01	0.19	0.00	0.39
Bombardier Challenger 600	01P05GE189	0.05	0.01	0.05	0.00	0.10
Bombardier Challenger 600	1GE034	0.03	0.00	0.03	0.00	0.07
Bombardier Global 5000	01P04BR013	0.04	--	0.04	0.00	0.08
Bombardier Global 5500	01P20BR015	0.00	--	0.00	--	0.01
Bombardier Learjet 35A/36A (C-21A)	1AS001	--	0.00	0.00	--	0.01
Bombardier Learjet 40	TFE731	0.01	--	0.01	--	0.01
Bombardier Learjet 45	1AS001	0.02	0.00	0.02	0.00	0.04
Bombardier Learjet 45	TFE731	0.04	0.01	0.04	0.01	0.10
Bombardier Learjet 60	7PW077	0.03		0.03	--	0.06
Bombardier Learjet 70	1AS002	0.00		0.00	--	0.01
Cessna 560 Citation Encore	PW530	0.01		0.01	--	0.03
Cessna 560 Citation Excel	PW530	0.05		0.05	--	0.10
Cessna 560 Citation Ultra	1PW038	0.01	0.00	0.01	0.00	0.02
Cessna 560 Citation XLS	PW530	0.08	--	0.08	0.00	0.16
Cessna 680 Citation Sovereign	03P14PW194	0.02	--	0.02	--	0.04
Cessna 680 Citation Sovereign	7PW078	0.04	--	0.04	--	0.09
Cessna 680-A Citation Latitude	7PW078	0.11	--	0.11	--	0.23
Cessna 700 Citation Longitude	01P18HN013	0.02	--	0.02	--	0.04
Cessna 750 Citation X	6AL024	0.11	0.00	0.11	0.00	0.23
Cessna CitationJet CJ2 (Cessna 525A)	1PW036	0.04	--	0.03	0.01	0.09
Cessna CitationJet CJ3 (Cessna 525B)	1PW038	0.09	0.00	0.09	0.00	0.18
Dassault Falcon 2000	CF700D	0.08	0.00	0.08	--	0.16
Dassault Falcon 50	1AS002	0.26	0.01	0.24	0.03	0.54
Embraer Legacy 450 (EMB-545)	01P14HN014	0.07		0.06	0.00	0.14
Embraer Phenom 300 (EMB-505)	PW530	0.11	0.01	0.11	0.00	0.22
Gulfstream G200	7PW077	0.03	--	0.03	0.00	0.07
Gulfstream G450	11RR048	0.04	0.00	0.03	0.01	0.08

TABLE 7-1: AVERAGE DAILY OPERATIONS BY AEDT AIRFRAME AND ENGINE CODE – EXISTING (2022) CONDITION (CONTINUED)

Airframe	Engine Code	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
Gulfstream G650	01P11BR016	0.03	0.00	0.03	0.00	0.06
Gulfstream G650ER	01P11BR016	0.01	0.01	0.02	--	0.04
Gulfstream IV-SP	11RR048	0.01	--	0.01	--	0.02
Gulfstream V-SP	01P06BR014	0.03	0.01	0.03	0.01	0.08
Honda HA-420 Hondajet	PW610F	0.02	0.00	0.03	--	0.05
Raytheon Beechjet 400	1PW037	0.03	0.00	0.03	--	0.06
Raytheon Hawker 800	1AS002	0.05	0.00	0.05	0.00	0.10
Subtotal		*1.87*	*0.09*	*1.86*	*0.09*	*3.92*
General Aviation Props						
Beechcraft Bonanza 35 (FAS)	TIO540	0.03	--	0.03	--	0.06
Cessna 150 Series	O200	0.02	--	0.02	0.00	0.05
Cessna 152 (FAS)	O200	0.10	--	0.09	0.01	0.19
Cessna 172 Skyhawk	IO320	0.47	0.16	0.59	0.04	1.27
Cessna 182	IO360	0.13	--	0.13	0.00	0.27
Cessna 206	TIO540	0.02	--	0.02	--	0.04
Cirrus SR22 Turbo (FAS)	TIO540	0.09	0.01	0.09	0.00	0.19
Mooney M20-K	TSIO36	0.02	--	0.02	--	0.05
Pilatus PC-12	PT6A67	0.07	0.01	0.07	0.01	0.15
Piper PA-28 Cherokee Series	IO320	0.08	--	0.08	0.00	0.16
Raytheon Beech Bonanza 36	TIO540	0.02	0.00	0.03	--	0.05
Subtotal		*1.06*	*0.18*	*1.18*	*0.06*	*2.48*
Grand Total:		**469.38**	**81.51**	**455.91**	**92.79**	**1099.59**

Notes: Day = 7:00 a.m. to 9:59 p.m., Night = 10:00 p.m. to 6:59 a.m.
Sources: SEA EnvironmentalVue Monitoring System data, January 2022-December 2022; Landrum & Brown analysis, 2024.

Runway End Utilization

Average annual day runway end utilization was derived from EnvironmentalVue Monitoring System data from January 2022 through December 2022. **Table 7-2** summarizes the percentage of use by each aircraft category on each of the runways at the Airport during the daytime (7:00 a.m.–9:59 p.m.) and nighttime (10:00 p.m.–6:59 a.m.) periods for the Existing (2022) Condition.

SEA primarily operates in a south flow configuration due to the prevailing winds. When SEA operates in this configuration, aircraft arrive from the north, landing on Runways 16R, 16L, and 16C; and depart to the south, taking off from Runways 16C, 16L, and to a lesser extent Runway 16R. A review of EnvironmentalVue Monitoring System data from January 2022 through December 2022 shows that SEA operated in the south flow configuration 70.6 percent of the time.

When in a north flow configuration, aircraft arrive from the south, landing on Runways 34L, 34R, and 34C, and depart to the north, taking off on Runways 34R, 34C, and, to a lesser extent, 34L. A review of EnvironmentalVue Monitoring System data from January 2022 through December 2022, shows that SEA operated in north flow configuration approximately 29.4 percent of the time. Runway use percentages modeled for the Existing (2022) Condition noise contour reflect this average annual runway use pattern.

TABLE 7-2: RUNWAY END UTILIZATION SUMMARY – EXISTING (2022) CONDITION

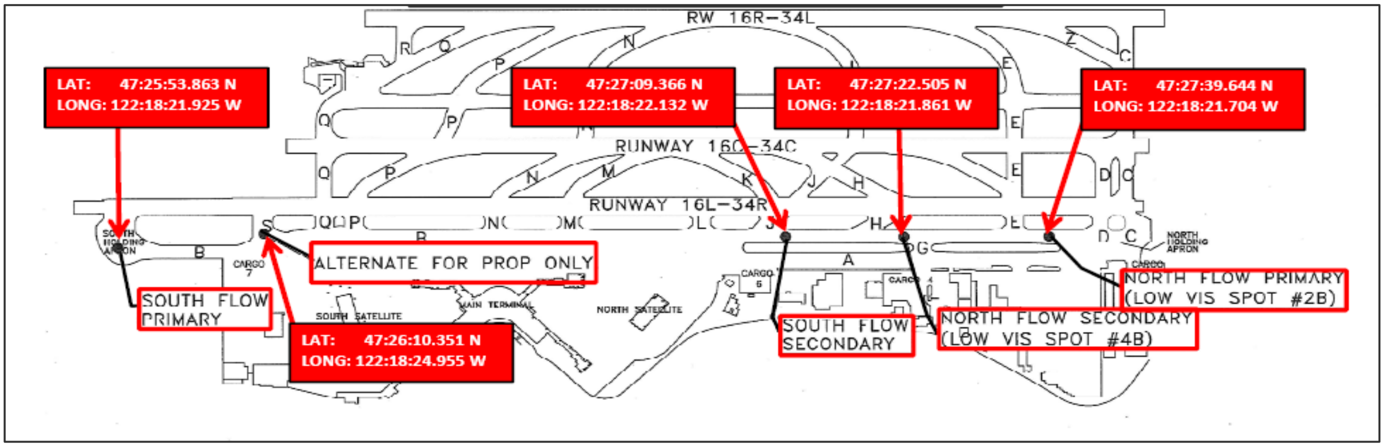
Aircraft Category	Runway End 16L	Runway End 16C	Runway End 16R	Runway End 34L	Runway End 34C	Runway End 34R
Daytime Arrivals						
Commercial Jets	4.57%	0.20%	65.32%	27.59%	0.14%	2.17%
Cargo Jets	45.97%	0.19%	25.35%	10.82%	0.03%	17.65%
Regional Jets	3.84%	0.00%	67.84%	28.32%	0.00%	0.00%
Turboprops	1.89%	0.19%	69.79%	27.30%	0.09%	0.74%
Cargo Props	9.40%	0.46%	59.75%	29.58%	0.46%	0.36%
GA Jets	1.45%	0.16%	64.70%	32.89%	0.00%	0.80%
GA Props	5.11%	4.04%	50.31%	20.28%	4.04%	16.21%
Missed Approaches*	--	--	77.33%	22.67%	--	--
Daytime Departures						
Commercial Jets	66.36%	4.43%	0.00%	0.00%	0.49%	28.71%
Cargo Jets	71.31%	0.73%	0.00%	0.00%	0.24%	27.72%
Regional Jets	63.05%	3.49%	0.00%	0.00%	0.00%	33.45%
Turboprops	62.53%	9.39%	0.00%	0.00%	1.95%	26.13%
Cargo Props	47.46%	31.06%	0.09%	0.00%	2.80%	18.59%
GA Jets	4.83%	64.47%	0.00%	0.11%	30.02%	0.58%
GA Props	9.06%	43.77%	8.48%	4.21%	34.48%	0.00%
Missed Approaches*	--	--	77.33%	22.67%	--	--
Nighttime Arrivals						
Commercial Jets	8.78%	5.55%	54.87%	24.67%	3.13%	2.99%
Cargo Jets	47.00%	9.06%	15.40%	5.28%	6.16%	17.10%
Regional Jet	26.10%	0.00%	73.90%	0.00%	0.00%	0.00%
Turboprops	1.78%	1.91%	71.24%	21.96%	2.20%	0.91%
Cargo Props	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
GA Jets	7.01%	10.09%	40.64%	31.94%	6.97%	3.34%
GA Props	17.97%	17.97%	46.08%	17.97%	0.00%	0.00%
Missed Approaches*	--	--	80.98%	19.02%	--	--
Nighttime Departures						
Commercial Jets	67.10%	3.09%	0.00%	0.00%	2.18%	27.62%
Cargo Jets	68.73%	5.32%	0.00%	0.00%	3.62%	22.32%
Regional Jets	88.46%	0.00%	0.00%	0.00%	0.00%	11.54%
Turboprops	66.21%	5.97%	0.00%	0.00%	0.79%	27.03%
Cargo Props	57.69%	3.85%	0.00%	0.00%	0.00%	38.46%
GA Jets	13.38%	56.77%	0.00%	0.00%	26.87%	2.98%
GA Props	56.56%	22.81%	0.84%	12.64%	7.16%	0.00%
Missed Approaches*	--	--	80.98%	19.02%	--	--

Notes: Day = 7:00 a.m. to 9:59 p.m., Night = 10:00 p.m. to 6:59 a.m.
* Missed approaches count as two arrivals and one departure for modeling purposes.
Sources: SEA EnvironmentalVue Monitoring System, January 2022-December 2022; Landrum & Brown analysis, 2024.

Engine Run-Ups

Exhibit 7-1: *Existing Aircraft Run-up Locations*, shows the north flow and south flow primary and secondary aircraft run-up locations at SEA. Aircraft utilizing the north flow primary and secondary locations are oriented at 340 degrees (i.e., nose pointing toward the north-northwest), while aircraft utilizing the south flow primary location are oriented at 160 degrees (i.e., nose pointing toward the south-southeast). Aircraft may use the secondary run-up location only when the primary run-up location is being utilized or is unavailable due to construction or weather. Airport staff log run-up activity that occurs at SEA. These run-up activity logs were utilized to determine the number of run-up operations, location of the run-up, average duration, thrust settings (high power, medium power) and the associated airframe and engine. During 2022 run-ups were only conducted at the North Primary, South Primary and Tango X locations. A total of 477 run-up operations were reported in the run-up activity logs for SEA in 2022. Table 7-3 presents the number of run-up operations, average duration and thrust settings per airframe and engine type that occurred at each run-up location in 2022. The AEDT aircraft are representative of all run-up operations occurring at SEA. The annual run-up totals for the 23 aircraft types, were proportionately distributed across each aircraft.

EXHIBIT 7-1: EXISTING AIRCRAFT RUN-UP LOCATIONS



Source: Port of Seattle

TABLE 7-3: ANNUAL AIRCRAFT RUN-UP ACTIVITY – EXISTING (2022) CONDITION

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
North Flow Primary Location						
Airbus A319-100 Series	3IA006	1.0	3.0	--	--	22000
Airbus A320-200 Series	01P08CM105	17.0	15.8	1.0	2.0	25000
Airbus A320-200 Series	1CM009	2.0	69.5	--	--	25000
Airbus A320-200 Series	3CM026	2.0	15.5	--	--	25000
Airbus A321-200 Series	3CM025	3.0	36.7	--	--	30000
Airbus A321-NEO	01P20CM132	--	--	1.0	2.0	30000
Airbus A330-200 Series	9PW094	6.0	27.7	--	--	71100
Airbus A330-300 Series	4GE080	1.0	37.0	--	--	67500
Airbus A330-900N Series (Neo)	02P23RR141	1.0	26.0	--	--	71100
Boeing 737-700 Freighter	3CM031	5.0	16.8	--	--	24000
Boeing 737-700 Series	3CM031	4.0	26.8	--	--	24000
Boeing 737-700 Series	3CM032	5.0	56.4	--	--	24000
Boeing 737-800 Series	01P11CM122	1.0	10.0	--	--	26300
Boeing 737-800 Series	3CM032	14.0	27.6	--	--	26300
Boeing 737-800 Series	3CM034	1.0	9.0	--	--	26300
Boeing 737-800 Series	8CM051	2.0	40.5	--	--	26300

TABLE 7-3: ANNUAL AIRCRAFT RUN-UP ACTIVITY – EXISTING (2022) CONDITION (CONTINUED)

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
Boeing 737-800 Series	8CM066	3	33.0	--	--	26300
Boeing 737-9	01P20CM140	9.0	14.6	--	--	26400
Boeing 737-900 Series	8CM051	10.0	8.0	--	--	26300
Boeing 737-900-ER	01P11CM116	10.0	20.2	--	--	26300
Boeing 737-900-ER	01P11CM121	16.0	25.1	--	--	26300
Boeing 737-900-ER	01P11CM121	1.0	4.0	--	--	13150
Boeing MD-11 Freighter	1GE031	--	--	1.0	2.0	61500
Bombardier de Havilland Dash 8 Q400	PW150A	7.0	15.9	--	--	4918
Cessna 560 Citation Encore	PW530	1.0	15.0	--	--	3313
Embraer ERJ175-LR	01P08GE197	4.0	28.0	--	--	13800
Embraer ERJ175-LR	01P08GE197	1.0	6.0	--	--	6900
South Flow Primary Location						
Airbus A319-100 Series	3IA006	1.0	15.0	--	--	22000
Airbus A319-100 Series	3IA007	1.0	26.0	1.0	11.0	22000
Airbus A320-200 Series	01P08CM105	28.0	12.9	--	--	25000
Airbus A320-200 Series	01P08CM105	2.0	6.0	--	--	12500
Airbus A320-200 Series	1CM009	5.0	31.6	--	--	25000
Airbus A321-NEO	01P20CM132	2.0	12.5	--	--	30000
Airbus A330-200 Series	2RR023	1.0	6.0	--	--	71100
Airbus A330-200 Series	9PW094	8.0	14.9	--	--	71100
Airbus A330-200 Series	9PW094	1.0	26.0	--	--	35550
Airbus A330-300 Series	4GE080	3.0	10.7	--	--	67500
Airbus A330-900N Series (Neo)	02P23RR141	3.0	26.7	--	--	71100
Boeing 737-700 Freighter	3CM031	11.0	27.8	--	--	24000
Boeing 737-700 Freighter	3CM031	1.0	5.0	--	--	12000
Boeing 737-700 Series	3CM031	16.0	17.6	--	--	24000
Boeing 737-700 Series	3CM031	1.0	20.0	1.0	2.0	12000
Boeing 737-700 Series	3CM032	4.0	31.5	--	--	24000
Boeing 737-800 Series	3CM032	42.0	18.3	--	--	26300
Boeing 737-800 Series	3CM032	3.0	18.3	--	--	13150
Boeing 737-800 Series	8CM051	11.0	21.0	--	--	26300
Boeing 737-800 Series	8CM065	1.0	6.0	--	--	26300
Boeing 737-800 Series	8CM066	24.0	10.7	--	--	26300
Boeing 737-800 Series	8CM066	1.0	3.0	1.0	2.0	13150
Boeing 737-800BCF	3CM034	1.0	11.0	--	--	26300
Boeing 737-9	01P20CM140	21.0	10.4	--	--	26400
Boeing 737-9	01P20CM140	1.0	9.0	--	--	13200
Boeing 737-900 Series	01P11CM114	1.0	4.0	--	--	26300
Boeing 737-900 Series	8CM051	22.0	8.7	--	--	26300
Boeing 737-900 Series	8CM051	1.0	26.0	2.0	2.0	13150

TABLE 7-3: ANNUAL AIRCRAFT RUN-UP ACTIVITY – EXISTING (2022) CONDITION (CONTINUED)

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
Boeing 737-900-ER	01P11CM116	21.0	15.7	2.0	2.0	26300
Boeing 737-900-ER	01P11CM116	1.0	3.0	--	--	13150
Boeing 737-900-ER	01P11CM121	54.0	25.5	--	--	26300
Boeing 737-900-ER	01P11CM121	1.0	8.0	--	--	13150
Boeing 757-200 Series	4PW072	2.0	36.5	--	--	38300
Boeing 757-300 Series	XPW204	4.0	27.0	--	--	43100
Boeing 767-200 Series Freighter	1GE012	1.0	6.0	--	--	48000
Boeing 767-300 ER Freighter	1GE030	3.0	21.0	--	--	60000
Boeing MD-11 Freighter	1GE031	2.0	44.5	--	--	61500
Bombardier de Havilland Dash 8 Q400	PW150A	23.0	15.2	--	--	4918
Bombardier de Havilland Dash 8 Q400	PW150A	1.0	10.0	--	--	2459
Bombardier Learjet 60	7PW077	1.0	9.0	--	--	3500
Cessna 560 Citation Encore	PW530	1.0	4.0	--	--	3313
Embraer ERJ175-LR	01P08GE197	7.0	11.1	--	--	13800
Tango X Location						
Airbus A330-200 Series	9PW094	1.0	38.0	--	--	71100
Total		467.0		10.0		

Notes: Totals may not sum due to rounding.
Daytime = 7:00am – 9:59pm, Nighttime = 10:00pm – 6:59am.
Source: SEA Engine Run-up Log, 2022; Landrum & Brown analysis, 2024.

Flight Tracks

Arrival and departure flight tracks modeled for the Existing (2022) Condition are depicted on **Exhibit 7-2** through **Exhibit 7-7**. The first two exhibits show jet aircraft flight tracks and the last two show propeller aircraft flight tracks. These flight tracks are separated because the flight patterns of jet aircraft versus propeller aircraft can be notably different.

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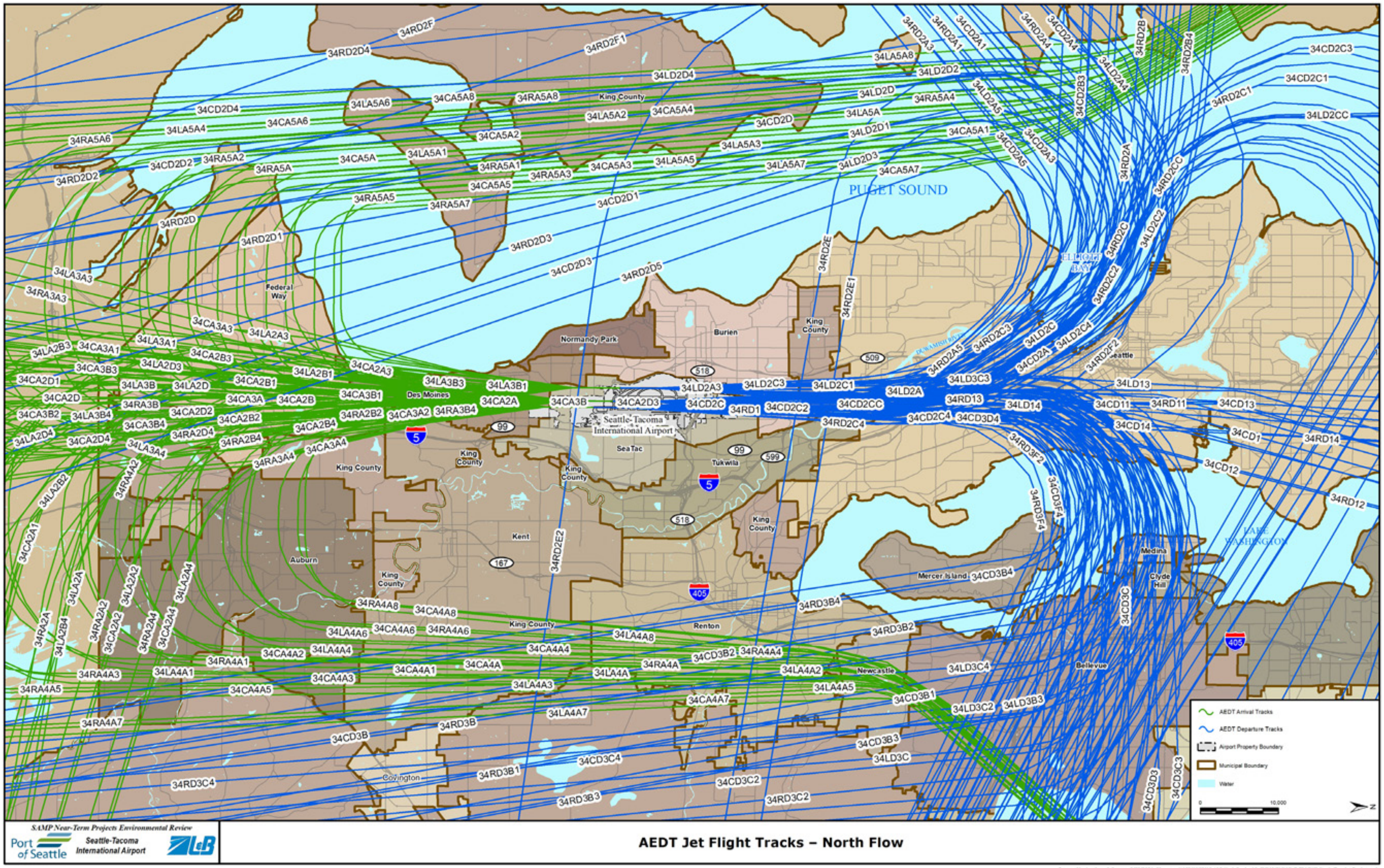
EXHIBIT 7-2: AEDT JET FLIGHT TRACKS – NORTH FLOW



Sources: SEA EnvironmentalVue Monitoring System data, January 2022-December 2022; Landrum & Brown analysis, 2024.

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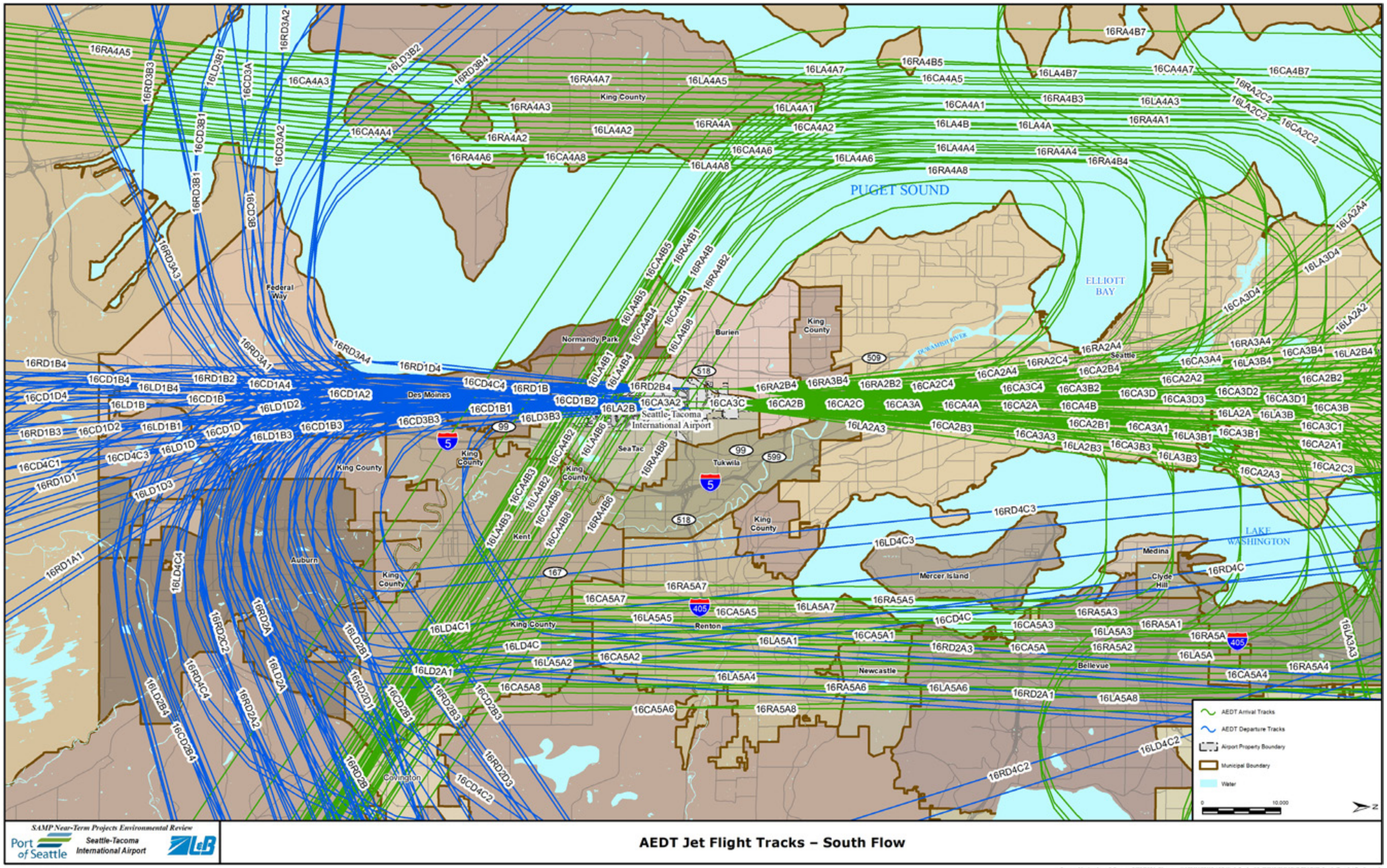
EXHIBIT 7-3: AEDT JET FLIGHT TRACKS – SOUTH FLOW



Sources: SEA EnvironmentalVue Monitoring System data, January 2022-December 2022; Landrum & Brown analysis, 2024.

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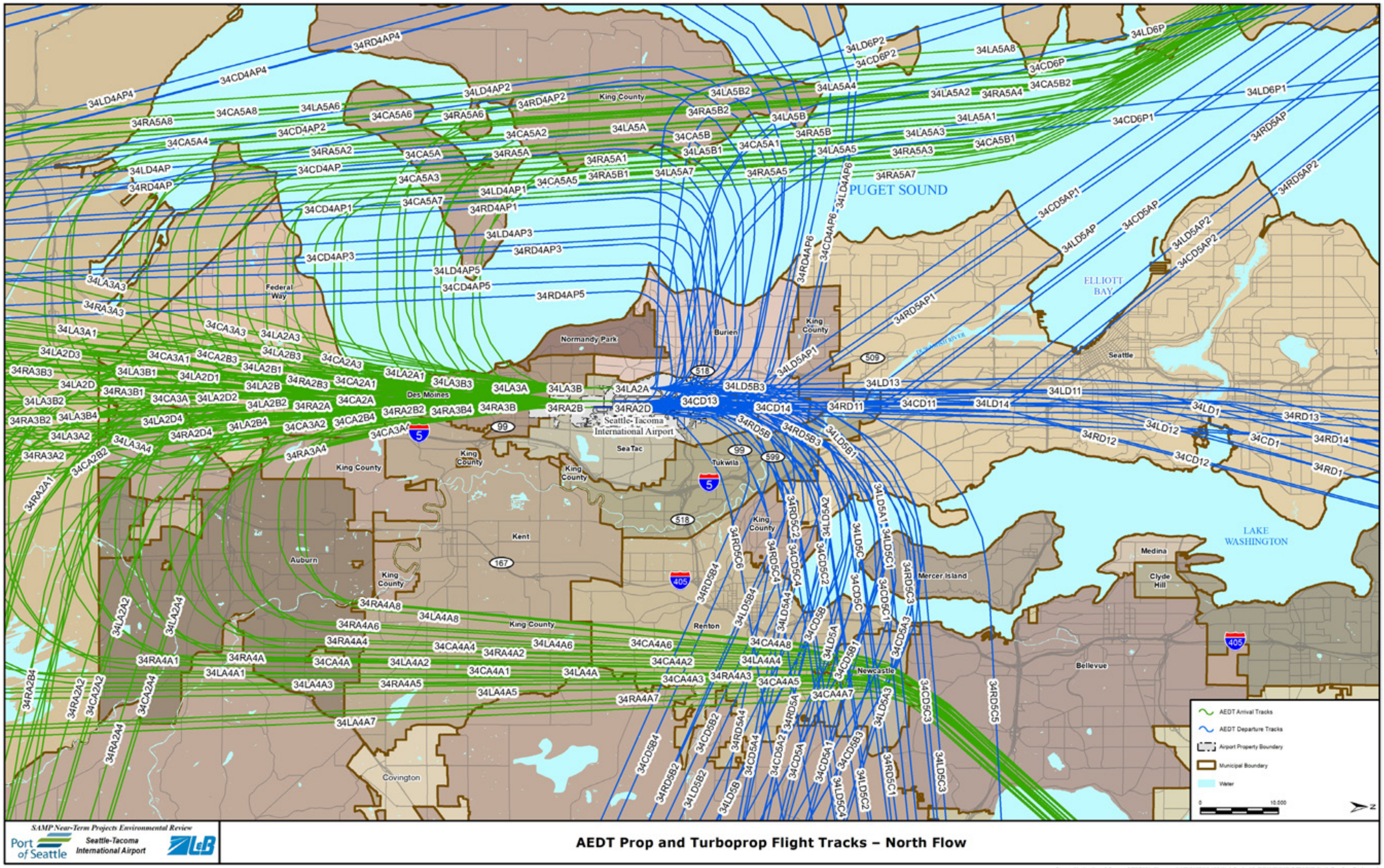
EXHIBIT 7-4: AEDT TURBOPROP AND PROP FLIGHT TRACKS – NORTH FLOW



Sources: SEA EnvironmentalVue Monitoring System data, January 2022-December 2022; Landrum & Brown analysis, 2024.

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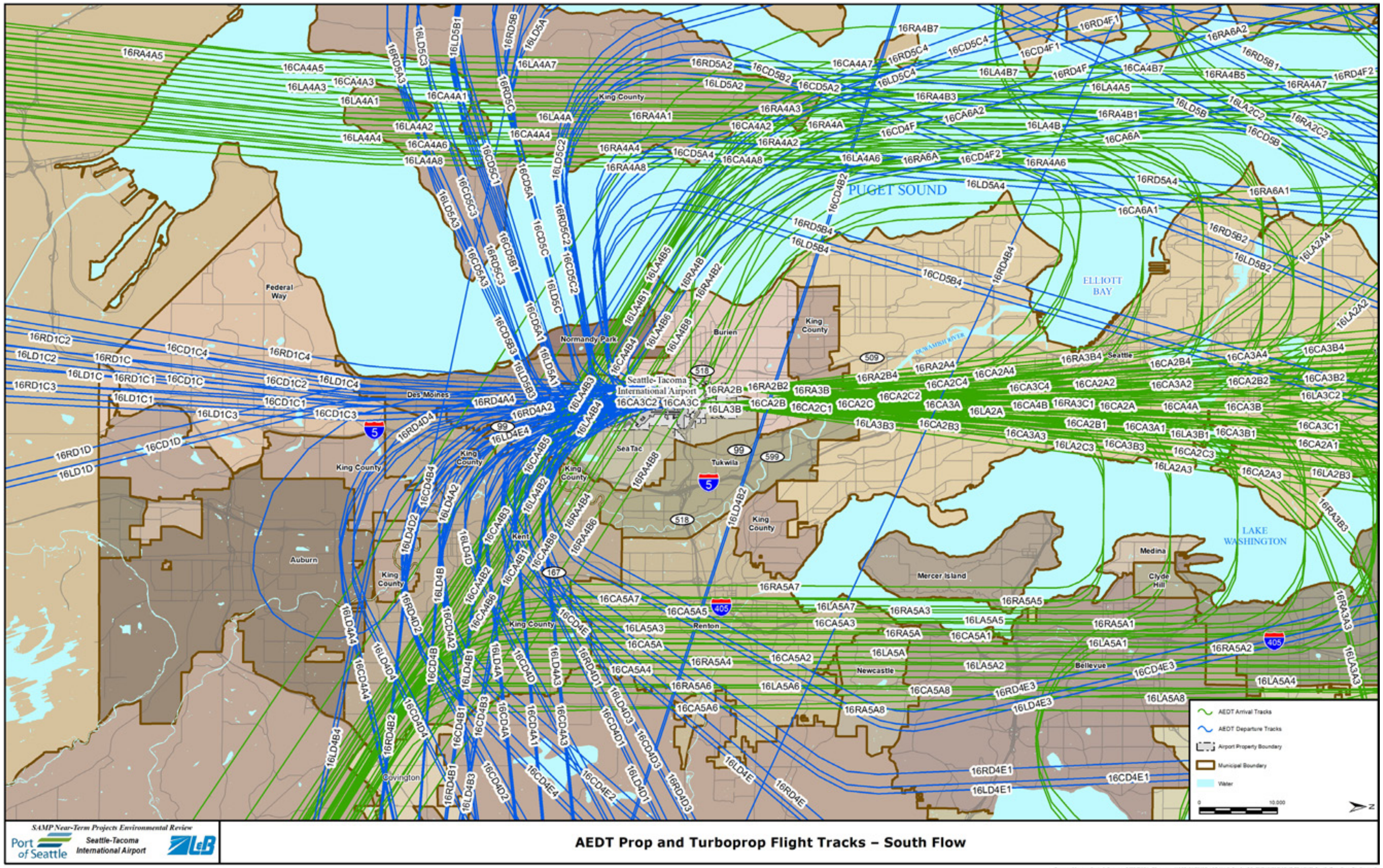
EXHIBIT 7-5: AEDT TURBOPROP AND PROP FLIGHT TRACKS – SOUTH FLOW



Sources: SEA EnvironmentalVue Monitoring System data, January 2022-December 2022; Landrum & Brown analysis, 2024

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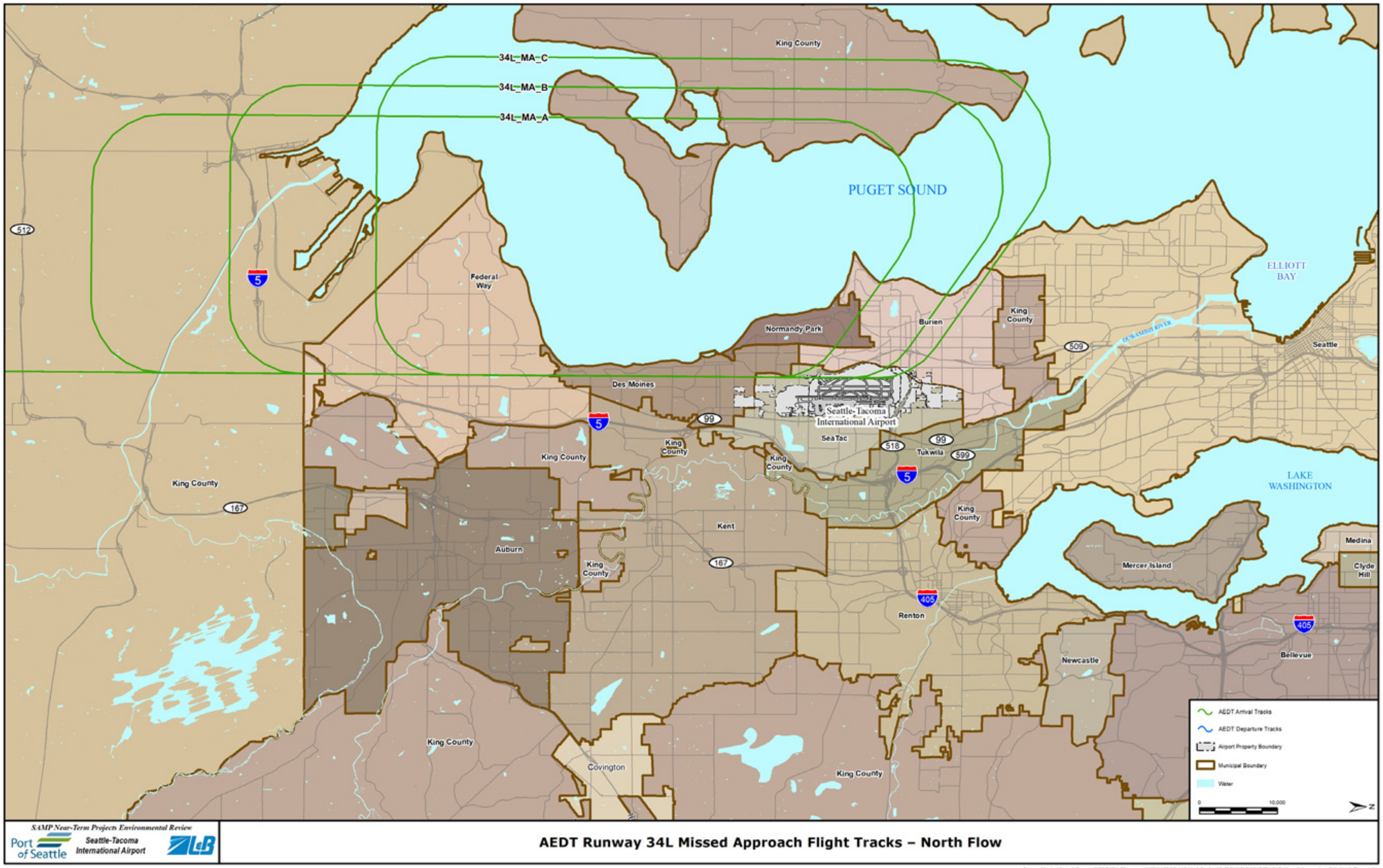
EXHIBIT 7-6: AEDT RUNWAY 34L MISSED APPROACH FLIGHT TRACKS – NORTH FLOW



Sources: SEA EnvironmentalVue Monitoring System data, January 2022-December 2022; Landrum & Brown analysis, 2024.

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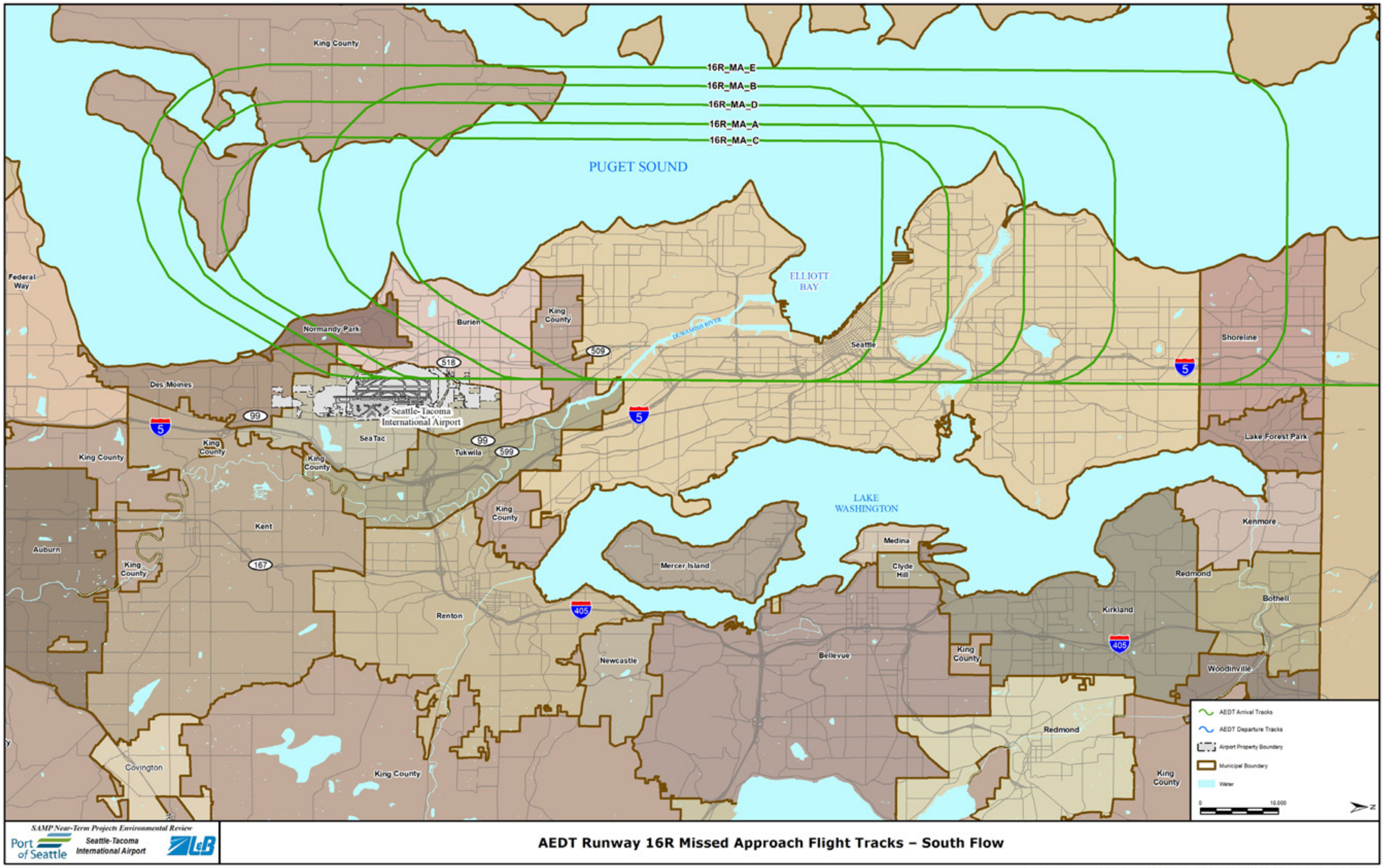
EXHIBIT 7-7: AEDT RUNWAY 16R MISSED APPROACH FLIGHT TRACKS – SORTH FLOW



Sources: SEA EnvironmentalVue Monitoring System data, January 2022-December 2022; Landrum & Brown analysis, 2024

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Aircraft Trip Length and Operational Profiles

Table 7-4 indicates the proportion of the 2022 departures that fell within each of the nine trip length categories for the Existing (2022) Condition.

TABLE 7-4: DEPARTURE STAGE LENGTH DISTRIBUTION – EXISTING (2022) CONDITION

Stage Length	Commercial Jets	Cargo Jets	Regional Jets	Turbo-Props	Cargo Props	GA Jets	GA Props	Total
1	17.0%	5.3%	3.9%	100%	100%	85.5%	100%	27.0%
2	40.0%	25.4%	96.1%	--	--	5.5%	--	34.6%
3	15.3%	12.6%	--	--	--	3.7%	--	13.3%
4	24.0%	41.6%	--	--	--	5.1%	--	21.6%
5	0.3%	0.0%	--	--	--	--	--	0.2%
6	2.3%	2.9%	--	--	--	0.3%	--	2.0%
7	0.7%	12.1%	--	--	--	0.5%	--	1.0%
8	0.1%	--	--	--	--	--	--	0.0%
9	0.2%	0.0%	--	--	--	--	--	0.2%
M	--	--	--	--	--	--	--	--

Sources: SEA EnvironmentalVue Monitoring System Data, January 2022-December 2022; Landrum & Brown analysis, 2024.

Typical destinations for Stage Length Category 1 (0-500 nautical miles) include Boise, Idaho; Portland, Oregon; and Vancouver, British Columbia. Typical destinations for Stage Length Category 2 distances (501-1,000 nautical miles) include Denver, Colorado; Las Vegas, Nevada; and Los Angeles, California. Typical destinations for Stage Length Category 3 distances (1,001-1,500 nautical miles) include Chicago, Illinois; Dallas, Texas; and Minneapolis-St. Paul, Minnesota. Typical destinations for Stage Length Category 4 distances (1,501-2,500 nautical miles) include Atlanta, Georgia; New York City, New York; and Toronto, Ontario. Typical destinations in the Stage Length Category 5 or greater (2,501 or more nautical miles) include destinations in Asia and Europe. The departure segment of the missed approaches are modeled as Stage Length Category 1.

7.1.1 Existing (2022) Condition Noise Contour

Exhibit 7-8: *Existing (2022) Condition Noise Contour*, graphically depicts the average annual noise contour for the Existing (2022) Condition. The 65 DNL noise contour of the Existing (2022) Condition encompasses 8.8 total square miles within the cities of Burien, Des Moines, and SeaTac, and unincorporated King County. The area in square miles of each DNL contour band is summarized in **Table 7-5**.

The 65 DNL contour extends approximately 3.4 miles to the north and 2.8 miles south of SEA. The area within the contour to the north and south is made up of a mix of single-family residential, multi-family residential, commercial, and industrial land uses.

TABLE 7-5: AREA (SQUARE MILES) OF 65, 70, AND 75 DNL NOISE CONTOURS – EXISTING (2022)

Alternative	DNL 65 - 70 dB	DNL 70 - 75 dB	DNL 75+ dB	DNL 65+ dB
Existing (2022)	5.41	2.14	1.24	8.79

Source: Landrum & Brown analysis, 2024.

7.1.2 Non-Compatible Land Use

Summaries of the residential population and housing units exposed to noise levels exceeding 65 DNL for the Existing (2022) Condition noise contour are provided in **Table 7-6**. A total of 6,216 housing units are located within the 65+ DNL noise contour.

TABLE 7-6: NON-COMPATIBLE LAND USE HOUSING AND POPULATION – EXISTING (2022) CONDITION

Mitigation Status/Land Use	DNL 65 - 70 dB	DNL 70 - 75 dB	DNL 65+ dB
Sound Insulation Completed			
Single-Family	3,100	93	3,193
Multi-Family	349	0	349
Mobile Home	0	0	0
Subtotal	3,449	93	3,542
Not Sound Insulated			
Single-Family	649	13	662
Multi-Family	1,887	0	1,887
Mobile Home	119	6	125
Subtotal	2,655	19	2,674
Total Housing Units	**6,104**	**112**	**6,216**
Estimated Population			
Total Estimated Population	**13,754**	**307**	**14,061**

Notes: Multi-family includes total units in a complex and were verified using King County assessor data. Population numbers are estimates based on the 2020 United States Census average household size per number of housing units.
Source: Landrum & Brown analysis, 2024.

A list of noise sensitive facilities within the 65+ DNL Noise Contour for the Existing (2022) Condition are listed in **Table 7-7**. There are nine schools (two have been sound insulated), 19 places of worship, three nursing homes, and two libraries within the 65+ DNL noise contour.

TABLE 7-7: NOISE SENSITIVE FACILITIES IN THE EXISTING (2022) CONDITION 65+ DNL NOISE CONTOUR

Map ID	Name
Schools	
S-1	Puget Sound Skills Center
S-3	Midway Elementary School
S-4	Mount Rainier High School
S-5	Southern Heights Elementary School
S-6	Pacific Middle School
S-7	Beverly Park Elementary School
S-8	Our Lady of Lourdes School
S-9	St. Philomena Catholic School
S-10	Glacier Middle School
Places of Worship	
C-1	Saint Philomena Catholic Church
C-2	Prince of Peace Lutheran Church
C-3	Samoan Christian Fellowship
C-4	Normandy Christian Church
C-6	Hope Church
C-7	Gospel Russian Baptist Church
C-8	The Mountain Church
C-9	Riverton Heights Baptist Church
C-10	Boulevard Park Presbyterian
C-11	Midway Community Covenant Church
C-12	Apostolic Bible Church of Jesus Christ
C-13	Highline 7th Day Adventist Church
C-14	Glen Acres Church of Christ
C-15	Kingdom Hall of Jehovah's Witnesses
C-17	Our Lady of Lourdes Church
C-18	Pacific Northwest United Methodist
C-19	Wat Buddharam Buddhist Temple
C-20	Hanuman Nagri Temple
C-21	Way of Salvation Church
Libraries	
L-1	Des Moines Library
L-2	Boulevard Park Library
Nursing Homes	
N-2	Wesley Homes Terrace
N-3	Wesley Homes Health Center
N-4	Wesley Homes Gardens and Bungalows

Source: Landrum & Brown analysis, 2024.

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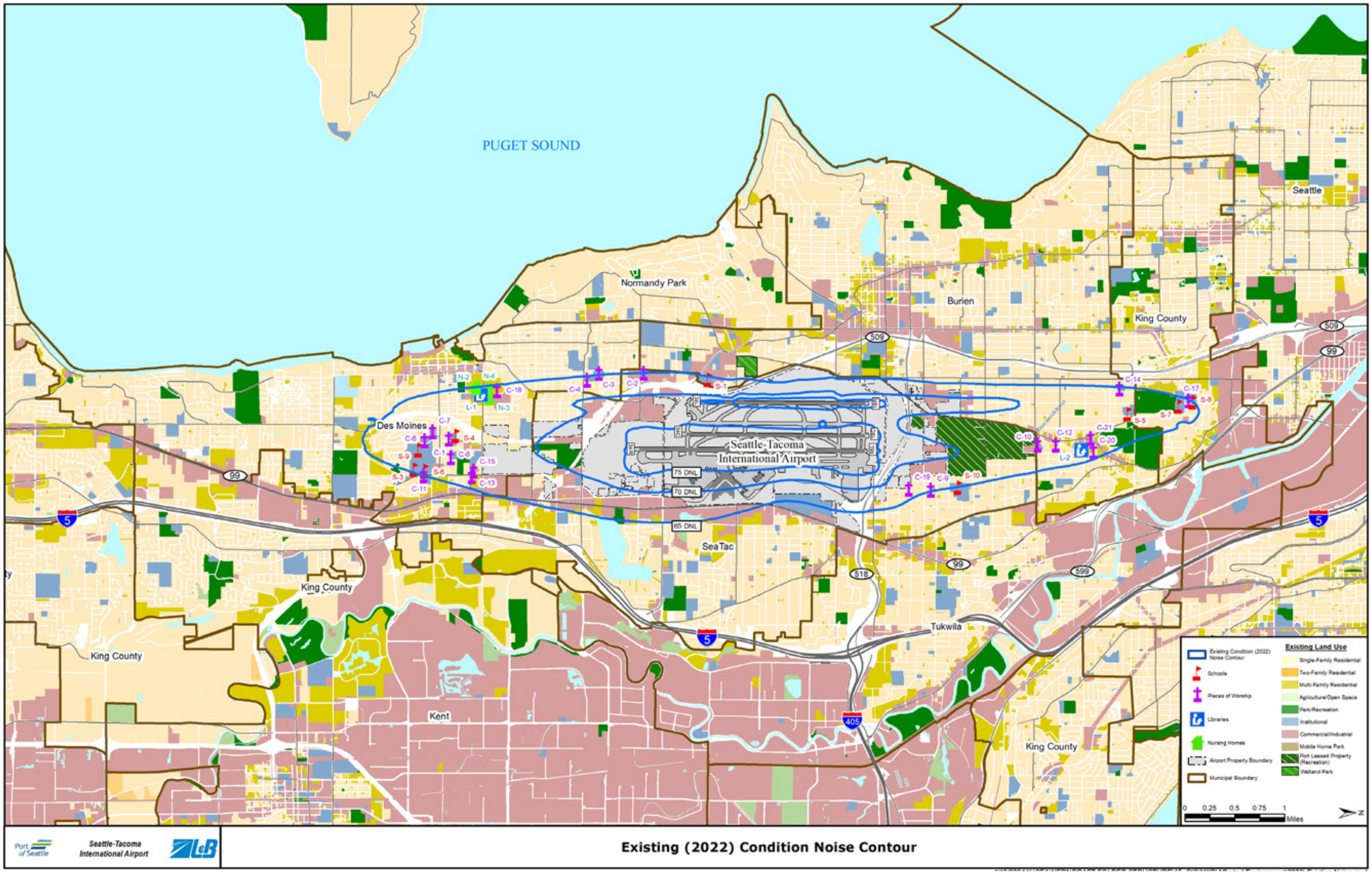
EXHIBIT 7-8: EXISTING (2022) CONDITION NOISE CONTOUR



Sources: AEDT Version 3f; Landrum & Brown analysis, 2024.

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7.2 Future Conditions

7.2.1 Future (2032) No Action

The following describes the input data and methodologies used in preparing the Future (2032) No Action noise contour, followed by the resulting noise exposure contours.

Aircraft Activity Levels and Fleet Mix

Table 7-8 shows the number of operations by detailed aircraft type and by time of day (daytime or nighttime). The Future (2032) No Action annual average day included 1,279 average annual day operations, 16 percent of which occurred during the nighttime hours of 10:00 p.m. to 6:59 a.m.

TABLE 7-8: AVERAGE DAILY OPERATIONS BY AEDT AIRFRAME AND ENGINE CODE – FUTURE (2032) NO ACTION

Airframe	Engine Code	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
Commercial Jets						
Airbus A220-100	16PW111	23.80	2.38	26.18	--	52.37
Airbus A220-300	16PW111	6.29	1.26	7.55	--	15.09
Airbus A220-300	16PW112	3.10	0.62	3.72	--	7.43
Airbus A319-100 Series	01P10IA020	--	0.01	0.00	0.00	0.01
Airbus A319-100 Series	3CM028	--	0.05	0.02	0.02	0.09
Airbus A319-100 Series	3IA006	--	1.04	0.52	0.52	2.08
Airbus A319-100 Series	3IA007	--	0.56	0.28	0.28	1.11
Airbus A319-100 Series	4CM035	--	0.04	0.02	0.02	0.08
Airbus A319-100 Series	8IA09	--	0.02	0.01	0.01	0.04
Airbus A320-200 Series	01P08CM105	6.14	1.84	4.91	3.07	15.96
Airbus A320-200 Series	01P10IA021	0.55	0.17	0.44	0.28	1.43
Airbus A320-200 Series	01P10IA022	0.12	0.04	0.10	0.06	0.31
Airbus A320-200 Series	1CM008	0.15	0.04	0.12	0.07	0.39
Airbus A320-200 Series	1CM009	0.61	0.18	0.49	0.30	1.58
Airbus A320-200 Series	1IA003	1.16	0.35	0.93	0.58	3.01
Airbus A320-200 Series	3CM026	0.66	0.20	0.53	0.33	1.72
Airbus A320-200 Series	8IA010	0.00	0.00	0.00	0.00	0.00
Airbus A320-NEO	01P20CM128	3.21	1.43	2.50	2.14	9.29
Airbus A320-NEO	01P22PW163	5.10	2.27	3.97	3.40	14.74
Airbus A321-200 Series	01P08CM104	1.03	0.39	0.86	0.55	2.84
Airbus A321-200 Series	01P10IA025	6.26	2.35	5.24	3.37	17.20
Airbus A321-200 Series	3CM025	1.06	0.40	0.89	0.57	2.93
Airbus A321-NEO	01P18PW157	4.57	2.54	6.09	1.01	14.21
Airbus A321-NEO	01P20CM132	13.54	7.52	18.06	3.01	42.14
Boeing 737-7	01P20CM136	1.19	0.30	1.19	0.30	2.99
Boeing 737-700 Series	3CM030	0.08	0.05	0.10	0.03	0.26
Boeing 737-700 Series	3CM031	2.81	1.56	3.37	1.01	8.75
Boeing 737-700 Series	3CM032	0.51	0.28	0.61	0.18	1.59
Boeing 737-700 Series	8CM051	0.00	0.00	0.00	0.00	0.01
Boeing 737-700 Series	8CM062	0.02	0.01	0.02	0.01	0.06
Boeing 737-700 Series	8CM063	0.48	0.27	0.57	0.17	1.48
Boeing 737-8	01P20CM135	0.31	0.08	0.31	0.08	0.77
Boeing 737-8	01P20CM136	10.02	2.51	10.02	2.51	25.05
Boeing 737-8	01P20CM140	9.24	2.31	9.24	2.31	23.11
Boeing 737-800 Series	01P11CM114	0.48	0.10	0.50	0.09	1.16

TABLE 7-8: AVERAGE DAILY OPERATIONS BY AEDT AIRFRAME AND ENGINE CODE – FUTURE (2032) NO ACTION (CONTINUED)

Airframe	Engine Code	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
Boeing 737-800 Series	01P11CM116	6.50	1.43	6.74	1.18	15.85
Boeing 737-800 Series	01P11CM122	3.55	0.78	3.68	0.64	8.65
Boeing 737-800 Series	01P11CM125	0.79	0.17	0.82	0.14	1.92
Boeing 737-800 Series	01P11CM126	0.07	0.02	0.08	0.01	0.18
Boeing 737-800 Series	3CM032	19.89	4.37	20.65	3.62	48.53
Boeing 737-800 Series	3CM034	1.92	0.42	1.99	0.35	4.69
Boeing 737-800 Series	8CM051	27.23	5.98	28.26	4.95	66.43
Boeing 737-800 Series	8CM064	0.20	0.04	0.21	0.04	0.48
Boeing 737-800 Series	8CM065	2.54	0.56	2.64	0.46	6.20
Boeing 737-800 Series	8CM066	11.94	2.62	12.39	2.17	29.13
Boeing 737-9	01P20CM136	0.52	0.09	0.40	0.20	1.21
Boeing 737-9	01P20CM140	20.41	3.40	15.87	7.94	47.62
Boeing 737-900-ER	01P11CM116	33.03	7.49	33.44	7.09	81.04
Boeing 737-900-ER	01P11CM121	94.44	21.41	95.59	20.26	231.70
Boeing 737-900-ER	01P11CM125	0.29	0.07	0.29	0.06	0.71
Boeing 737-900-ER	3CM034	1.33	0.30	1.35	0.29	3.26
Boeing 737-900-ER	8CM065	1.48	0.34	1.50	0.32	3.64
Boeing 737-900-ER_MA	01P11CM121_MA	3.19	0.11	1.60	0.06	4.95
Airbus A330-200 Series	2RR023	3.02	0.38	3.39	--	6.79
Airbus A330-200 Series	9PW094	0.04	0.01	0.05	--	0.10
Airbus A330-300 Series	2RR023	0.74	--	0.74	--	1.47
Airbus A330-300 Series	4GE080	0.75	--	0.75	--	1.49
Airbus A330-300 Series	7PW082	0.10	--	0.10	--	0.20
Airbus A330-300 Series	9PW094	2.11	--	2.11	--	4.21
Airbus A330-300 Series	9PW095	0.49	--	0.49	--	0.99
Airbus A330-900N Series (Neo)	02P23RR141	6.86	--	6.86	--	13.72
Airbus A350-900 series	01P18RR124	2.57	--	1.71	0.86	5.13
Boeing 767-400 ER	8GE101	0.49	--		0.49	0.98
Boeing 777-200-ER	10PW099	0.16	--	0.16	--	0.33
Boeing 777-200-ER	2RR027	0.58	--	0.58	--	1.16
Boeing 777-200-ER	3GE060	0.26	--	0.26	--	0.51
Boeing 777-200-ER	3GE064	0.00	--	0.00	--	0.01
Boeing 777-200-ER	8GE100	0.27	--	0.27	--	0.53
Boeing 777-300 ER	01P21GE217	1.73	--	1.15	0.58	3.45
Boeing 787-10 Dreamliner	01P17GE211	0.46	--	0.46	--	0.92
Boeing 787-10 Dreamliner	01P17GE213	0.99	--	0.99	--	1.98
Boeing 787-10 Dreamliner	02P23RR134	0.50	--	0.50	--	1.00
Boeing 787-8 Dreamliner	01P17GE206	1.45	--	1.45	--	2.89
Boeing 787-8 Dreamliner	01P17GE210	0.05	--	0.05	--	0.10
Boeing 787-8 Dreamliner	11GE137	2.28	--	2.28	--	4.57

TABLE 7-8: AVERAGE DAILY OPERATIONS BY AEDT AIRFRAME AND ENGINE CODE – FUTURE (2032) NO ACTION (CONTINUED)

Airframe	Engine Code	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
Boeing 787-8 Dreamliner	11GE138	5.61	--	5.61	--	11.22
Boeing 787-9 Dreamliner	01P17GE211	2.85	--	2.85	--	5.70
Boeing 787-9 Dreamliner	01P17GE214	0.02	--	0.02	--	0.04
Boeing 787-9 Dreamliner	02P23RR131	0.64	--	0.64	--	1.29
Boeing 787-9 Dreamliner	12RR067	2.94	--	2.94	--	5.89
Boeing 787-9 Dreamliner	12RR068	1.24	--	1.24	--	2.48
	Subtotal	371.03	83.12	374.51	77.99	906.65
Cargo Jets						
Airbus A300F4-600 Series	1GE020	0.01	--	0.01	--	0.01
Airbus A300F4-600 Series	1PW048	0.18	--	0.18	--	0.36
Airbus A300F4-600 Series	3GE056	0.33	--	0.33	--	0.66
Boeing 747-400 ERF	12PW102	0.27	0.54	0.54	0.27	1.62
Boeing 747-400BCF	01P03GE187	0.27	0.54	0.54	0.27	1.62
Boeing 747-8F	01P17GE215	0.40	--	0.40	--	0.79
Boeing 747-8F	13GE156	0.11	--	0.11	--	0.21
Boeing 747-8F	8GENX1	0.34	--	0.34	--	0.68
Boeing 767-200 Series Freighter	1GE010	1.31	2.62	2.62	1.31	7.85
Boeing 767-200 Series Freighter	1GE012	0.65	1.30	1.30	0.65	3.91
Boeing 767-200 Series Freighter	1PW026	0.12	0.23	0.23	0.12	0.70
Boeing 767-300 ER Freighter	1GE030	4.73	0.95	4.73	0.95	11.35
Boeing 767-300 ER Freighter	2GE055	0.47	0.09	0.47	0.09	1.12
Boeing 777 Freighter	01P21GE216	3.31	--	3.31	--	6.62
Boeing 777 Freighter	01P21GE217	0.08	--	0.08	--	0.16
Boeing MD-11 Freighter	12PW102	0.09	0.26	0.26	0.09	0.68
Boeing MD-11 Freighter	1GE031	0.43	1.29	1.29	0.43	3.43
Boeing MD-11 Freighter	1PW052	0.14	0.42	0.42	0.14	1.12
	Subtotal	13.21	8.23	17.14	4.31	42.89
Regional Jets						
Embraer ERJ175-LR	01P08GE197	138.94	17.08	142.35	13.67	312.04
Embraer ERJ175-LR_MA_Y2	01P08GE197_MA_Y2	1.59	0.20	0.79	0.10	2.68
	Subtotal	140.52	17.28	143.15	13.77	314.72
Cargo Props						
ATR 72-600 Freighter	PW127F	0.28	--	0.28	--	0.56
Cessna 208 Caravan	P6114A	1.59	--	1.59	--	3.19

TABLE 7-8: AVERAGE DAILY OPERATIONS BY AEDT AIRFRAME AND ENGINE CODE – FUTURE (2032) NO ACTION (CONTINUED)

Airframe	Engine Code	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
Cessna 208 Caravan	PT6A14	1.57	--	1.57	--	3.14
Cessna 408 SkyCourier	PT6A6B	0.28	--	0.28	--	0.56
Raytheon Beech 99	PT6A27	0.00	--	0.00	--	0.01
Raytheon Beech 99	PT6A36	0.25	--	0.25	--	0.50
	Subtotal	3.98	--	3.98	--	7.95
General Aviation						
Bombardier Challenger 350	01P14HN011	0.76	--	0.76	--	1.52
Cessna 172 Skyhawk	IO320	0.09	0.09	0.18	--	0.36
Dassault Falcon 50	1AS002	0.76	--	0.76	--	1.52
Embraer Phenom 300 (EMB-505)	PW530	0.17	--	0.17	--	0.35
Piper PA-31 Navajo	TIO540	0.02	--	0.02	--	0.05
Raytheon C-12 Huron	PT660A	0.08	--	0.08	--	0.17
	Subtotal	1.89	0.09	1.98	--	3.96
Other						
Boeing 737-900-ER_O1	01P11CM121_O1	0.49	0.11	0.49	0.10	1.20
Boeing 737-900-ER_O2	01P11CM125_O2	0.00	0.00	0.00	0.00	0.00
Boeing 737-900-ER_O3	3CM034_O3	0.01	0.00	0.01	0.00	0.02
Boeing 737-900-ER_O4	8CM065_O4	0.01	0.00	0.01	0.00	0.02
Boeing 737-900-ER_O7	01P11CM116_O7	0.17	0.04	0.17	0.04	0.41
Cessna 208 Caravan_O5	P6114A_O5	0.28	--	0.28	--	0.55
Cessna 208 Caravan_O6	PT6A14_O6	0.27	--	0.27	--	0.54
	Subtotal	1.22	0.15	1.23	0.14	2.74
Military						
Cessna 172 Skyhawk_M2	IO320_M2	0.00	--	0.00	--	0.01
Embraer Phenom 300 (EMB-505)_M1	PW530_M1	0.10	--	0.10	--	0.20
Raytheon C-12 Huron_M	PT660A_M	0.04	--	0.04	--	0.07
	Subtotal	0.14	--	0.14	--	0.27
	Grand Total	**531.98**	**108.88**	**542.11**	**96.21**	**1279.18**

Note: Totals may not sum due to rounding.
Day = 7:00 a.m. to 9:59 p.m., Night = 10:00 p.m. to 6:59 a.m.

Sources: Aviation Forecast Update, prepared by Port of Seattle/LeighFisher, 2023, Sustainable Airport Master Plan Near-Term Projects, Constrained Operating Growth Scenarios, Seattle-Tacoma International Airport, Landrum & Brown, September 2023, Landrum & Brown analysis, 2024.

Runway Definition

Under the Future (2032) No Action, none of the proposed airfield changes would occur and it is assumed that no changes to the runway locations would occur. Therefore, the runway definition discussed for the Existing (2022) Condition (see Section 7.1) would remain the same for the Future (2032) No Action.

Runway End Utilization

Under the Future (2032) No Action, the runway end utilization was estimated using operational output from the Total Airspace and Airport Modeler (TAAM) airfield simulation modeling.[12] The runway end utilization under the No Action condition would be influenced by airfield congestion and the total number of operations occurring at the Airport. **Table 7-9** presents the runway end utilization used for the modeling of the Future (2032) No Action.

TABLE 7-9: GENERALIZED RUNWAY END UTILIZATION SUMMARY – FUTURE (2032) NO ACTION

Aircraft Category	Runway End 16L	Runway End 16C	Runway End 16R	Runway End 34L	Runway End 34C	Runway End 34R
Daytime Arrivals						
Commercial Jets	10.33%	1.00%	59.67%	24.37%	0.50%	4.13%
Cargo Jets	55.00%	1.00%	15.00%	6.50%	0.50%	22.00%
Regional Jets	5.00%	1.00%	65.00%	26.50%	0.50%	2.00%
Cargo Props	23.05%	1.43%	46.52%	26.50%	0.93%	1.57%
General Aviation	26.00%	1.50%	43.50%	26.50%	1.00%	1.50%
Other	14.45%	1.22%	55.33%	26.50%	0.72%	1.78%
Military	26.00%	1.50%	43.50%	26.50%	1.00%	1.50%
Missed Approaches*	--	--	77.33%	22.67	--	--
Daytime Departures						
Commercial Jets	45.41%	25.59%	--	--	0.95%	28.05%
Cargo Jets	58.00%	13.00%	--	--	0.50%	28.50%
Regional Jets	44.00%	27.00%	--	--	1.00%	28.00%
Cargo Props	36.27%	32.16%	2.58%	1.72%	12.60%	14.68%
General Aviation	35.00%	33.00%	3.00%	2.00%	14.50%	12.50%
Other	39.98%	29.68%	1.34%	0.89%	7.03%	21.07%
Military	35.00%	33.00%	3.00%	2.00%	14.50%	12.50%
Missed Approaches*	--	--	77.33%	22.67	--	--
Nighttime Arrivals						
Commercial Jets	5.23%	1.00%	64.77%	26.41%	0.50%	2.09%
Cargo Jets	55.00%	1.00%	15.00%	6.50%	0.50%	22.00%
Regional Jets	5.00%	1.00%	65.00%	26.50%	0.50%	2.00%
Cargo Props	--	--	--	--	--	--
General Aviation	26.00%	1.50%	43.50%	26.50%	1.00%	1.50%
Other	5.00%	1.00%	65.00%	26.50%	0.50%	2.00%
Military	--	--	--	--	--	--
Missed Approaches*	--	--	80.98%	19.02%	--	--

[12] Environmental Review Airside Modeling, Seattle-Tacoma International Airport (LeighFisher, 2020)

TABLE 7-9: GENERALIZED RUNWAY END UTILIZATION SUMMARY – FUTURE (2032) NO ACTION (CONTINUED)

Aircraft Category	Runway End 16L	Runway End 16C	Runway End 16R	Runway End 34L	Runway End 34C	Runway End 34R
Nighttime Departures						
Commercial Jets	44.35%	26.65%	--	--	0.99%	28.01%
Cargo Jets	58.00%	13.00%	--	--	0.50%	28.50%
Regional Jets	44.00%	27.00%	--	--	1.00%	28.00%
Cargo Props	--	--	--	--	--	--
General Aviation	--	--	--	--	--	--
Other	44.00%	27.00%	--	--	1.00%	28.00%
Military	--	--	--	--	--	--
Missed Approaches*	--	--	80.98%	19.02%	--	--

Note: Day = 7:00 a.m. to 9:59 p.m., Night = 10:00 p.m. to 6:59 a.m.
* Missed approaches count as two arrivals and one departure for modeling purposes.
Sources: Aviation Forecast Update, prepared by Port of Seattle/LeighFisher, 2023, Sustainable Airport Master Plan Near-Term Projects, Constrained Operating Growth Scenarios, Seattle-Tacoma International Airport, Landrum & Brown, September 2023, Environmental Review Airside Modeling, Seattle-Tacoma International Airport, LeighFisher, 2020, Landrum & Brown analysis, 2024.

Engine Run-Ups

Under the Future (2032) No Action, no changes to run-up locations would occur. Therefore, the run-up locations discussed for the Existing (2022) Condition in Section 7.1 would remain the same for the Future (2032) No Action. The number of engine run-up operations are estimated for Future (2032) No Action conditions based on scaling the engine run-ups from 2022 for the number of total operations, assuming the same distribution across aircraft type. The resulting number of engine run-ups are presented below in **Table 7-10**.

TABLE 7-10: ANNUAL AIRCRAFT RUN-UP ACTIVITY – FUTURE (2032) NO ACTION

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
North Flow Primary Location						
Airbus A319-100 Series	3IA006	1.4	3.0	--	--	22,000 lbs.
Airbus A320-200 Series	01P08CM105	24.6	15.8	1.5	2	25,000 lbs.
Airbus A320-200 Series	1CM009	2.9	69.5	--	--	25,000 lbs.
Airbus A320-200 Series	3CM026	2.9	15.5	--	--	25,000 lbs.
Airbus A321-200 Series	3CM025	4.3	36.7	--	--	30,000 lbs.
Airbus A321-NEO	01P20CM132	--	--	1.5	2	30,000 lbs.
Airbus A330-200 Series	9PW094	8.7	27.7	--	--	71,100 lbs.
Airbus A330-300 Series	4GE080	1.4	37.0	--	--	67,500 lbs.
Airbus A330-900N Series (Neo)	02P23RR141	1.4	26.0	--	--	71,100 lbs.
Boeing 737-700 Series	3CM031	5.8	26.8	--	--	24,000 lbs.
Boeing 737-700 Series	3CM032	7.2	56.4	--	--	24,000 lbs.
Boeing 737-800 Series	01P11CM122	1.4	10.0	--	--	26,300 lbs.
Boeing 737-800 Series	3CM032	20.3	27.6	--	--	26,300 lbs.

TABLE 7-10: ANNUAL AIRCRAFT RUN-UP ACTIVITY – FUTURE (2032) NO ACTION (CONTINUED)

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
Boeing 737-800 Series	3CM034	1.4	9.0	--	--	26,300 lbs.
Boeing 737-800 Series	8CM051	2.9	40.5	--	--	26,300 lbs.
Boeing 737-800 Series	8CM066	4.3	33.0	--	--	26,300 lbs.
Boeing 737-9	01P20CM140	13.0	14.6	--	--	26,400 lbs.
Boeing 737-900-ER	01P11CM116	14.5	20.2	--	--	26,300 lbs.
Boeing 737-900-ER	01P11CM121	1.4	4.0	--	--	13,150 lbs.
Boeing 737-900-ER	01P11CM121	23.2	25.1	--	--	26,300 lbs.
Boeing MD-11 Freighter	1GE031	--	--	1.5	2	61,500 lbs.
Embraer ERJ175-LR	01P08GE197	1.4	6.0	--	--	6,900 lbs.
Embraer ERJ175-LR	01P08GE197	5.8	28.0	--	--	13,800 lbs.
South Flow Primary Location						
Airbus A319-100 Series	3IA006	1.4	15.0	--	--	22,000 lbs.
Airbus A319-100 Series	3IA007	1.4	26.0	1.5	11	22,000 lbs.
Airbus A320-200 Series	01P08CM105	2.9	6.0	--	--	12,500 lbs.
Airbus A320-200 Series	01P08CM105	40.6	12.9	--	--	25,000 lbs.
Airbus A320-200 Series	1CM009	7.2	31.6	--	--	25,000 lbs.
Airbus A321-NEO	01P20CM132	2.9	12.5	--	--	30,000 lbs.
Airbus A330-200 Series	2RR023	1.4	6.0	--	--	71,100 lbs.
Airbus A330-200 Series	9PW094	1.4	26.0	--	--	35,550 lbs.
Airbus A330-200 Series	9PW094	11.6	14.9	--	--	71,100 lbs.
Airbus A330-300 Series	4GE080	4.3	10.7	--	--	67,500 lbs.
Airbus A330-900N Series (Neo)	02P23RR141	4.3	26.7	--	--	71,100 lbs.
Boeing 737-700 Series	3CM031	1.4	20.0	1.5	2	12,000 lbs.
Boeing 737-700 Series	3CM031	23.2	17.6	--	--	24,000 lbs.
Boeing 737-700 Series	3CM032	5.8	31.5	--	--	24,000 lbs.
Boeing 737-800 Series	3CM032	4.3	18.3	--	--	13,150 lbs.
Boeing 737-800 Series	3CM032	60.8	18.3	--	--	26,300 lbs.
Boeing 737-800 Series	8CM051	15.9	21.0	--	--	26,300 lbs.
Boeing 737-800 Series	8CM065	1.4	6.0	--	--	26,300 lbs.
Boeing 737-800 Series	8CM066	1.4	3.0	1.5	2	13,150 lbs.
Boeing 737-800 Series	8CM066	34.8	10.7	--	--	26,300 lbs.
Boeing 737-9	01P20CM140	1.4	9.0	--	--	13,200 lbs.
Boeing 737-9	01P20CM140	30.4	10.4	--	--	26,400 lbs.
Boeing 737-900-ER	01P11CM116	1.4	3.0	--	--	13,150 lbs.
Boeing 737-900-ER	01P11CM116	30.4	15.7	2.9	2	26,300 lbs.
Boeing 737-900-ER	01P11CM121	1.4	8.0	--	--	13,150 lbs.
Boeing 737-900-ER	01P11CM121	78.2	25.5	--	--	26,300 lbs.
Boeing 767-200 Series Freighter	1GE012	1.4	6.0	--	--	48,000 lbs.
Boeing 767-300 ER Freighter	1GE030	4.3	21.0	--	--	60,000 lbs.
Boeing MD-11 Freighter	1GE031	2.9	44.5	--	--	61,500 lbs.

TABLE 7-10: ANNUAL AIRCRAFT RUN-UP ACTIVITY – FUTURE (2032) NO ACTION (CONTINUED)

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
Embraer ERJ175-LR	01P08GE197	10.1	11.2	--	--	13,800 lbs.
Tango X Location						
Airbus A330-200 Series	9PW094	1.4	38.0	--	--	71,100 lbs.
Total		543.3	--	11.6	--	--

Notes: Totals may not sum due to rounding.
Daytime = 7:00am – 9:59pm, Nighttime = 10:00pm – 6:59am.
Sources: Aviation Forecast Update, prepared by Port of Seattle/LeighFisher, 2023, Sustainable Airport Master Plan Near-Term Projects, Constrained Operating Growth Scenarios, Seattle-Tacoma International Airport, Landrum & Brown, September 2023, Landrum & Brown analysis, 2024.

Flight Tracks

Flight track locations for the Future (2032) No Action would not change. As such, the flight tracks for the Future (2032) No Action are expected to be the same as the Existing (2022) Condition. The flight track information discussed for the Existing (2022) Condition in Section 7.1 would remain the same for the Future (2032) No Action.

Aircraft Trip Length and Operational Profiles

Table 7-11 presents the departure stage length distribution for the Future (2032) No Action. The departure segment of the missed approaches is modeled as Stage Length Category 1.

TABLE 7-11: DEPARTURE STAGE LENGTH DISTRIBUTION – FUTURE (2032) NO ACTION

Stage Length	Commercial Jets	Cargo Jets	Regional Jets	Cargo Props	General Aviation	Other	Military	Total
1	3.61%	0.00%	73.72%	100.0%	100.0%	41.97%	100.0%	21.70%
2	45.95%	18.20%	22.63%	--	--	30.16%	--	38.81%
3	17.09%	26.73%	3.65%	--	--	14.75%	--	13.95%
4	25.38%	30.31%	--	--	--	13.11%	--	19.05%
5	--	--	--	--	--	--	--	--
6	3.20%	15.80%	--	--	--	--	--	2.80%
7	4.77%	8.95%	--	--	--	--	--	3.68%
8	--	--	--	--	--	--	--	--
9	--	--	--	--	--	--	--	--

Note: Totals may not sum due to rounding.
Sources: Aviation Forecast Update, prepared by Port of Seattle/LeighFisher, 2023, Sustainable Airport Master Plan Near-Term Projects, Constrained Operating Growth Scenarios, Seattle-Tacoma International Airport, Landrum & Brown, September 2023, Landrum & Brown analysis, 2024.

7.2.1.2 Future 2032 No Action Noise Contours

Exhibit 7-9: *Future (2032) No Action Noise Contour* depicts the 65, 70, and 75 DNL noise contours for the Future (2032) No Action. The area in square miles of each DNL contour band is summarized in **Table 7-12**.

The 65 DNL contour extends approximately 3.7 miles to the north and 3.3 miles south of SEA. The area within the contour to the north and south is made up of a mix of single-family residential, multi-family residential, commercial, and industrial land uses.

TABLE 7-12: AREA (SQUARE MILES) OF 65, 70, AND 75 DNL NOISE CONTOURS – FUTURE (2032) NO ACTION

Alternative	DNL 65 - 70 dB	DNL 70 - 75 dB	DNL 75+ dB	DNL 65+ dB
Existing (2022)	5.41	2.14	1.24	8.79
Future (2032) No Action	6.23	2.42	1.45	10.10
Change	0.82	0.28	0.21	1.31

Source: Landrum & Brown analysis, 2024.

7.2.1.3 Non-Compatible Land Use

Summaries of the residential population and housing units exposed to noise levels exceeding 65+ DNL for the Future (2032) No Action noise contour are provided in **Table 7-13**. A total of 9,518 housing units would be located within the 65+ DNL noise contour (an increase of 3,402 from the 2022 Existing Condition). The increase in housing units and population from the Existing Condition is due to the increase in aircraft operations and the increase in size of the 65+ DNL contour. For the "sound insulation completed" category, the additional areas within the 65+ DNL contour includes homes treated prior phases of the Port's Part 150 Noise Remedy Program, which extends back to 1985 (when the noise contours were much larger). Therefore, the increases in the numbers are solely due to the changes in the noise contour.

TABLE 7-13 NON-COMPATIBLE LAND USE HOUSING AND POPULATION – FUTURE (2032) NO ACTION

Mitigation Status/Land Use	DNL 65 - 70 dB	DNL 70 - 75 dB	DNL 65+ dB
Sound Insulation Completed			
Single-Family	3,720	426	4,146
Multi-Family	384	4	388
Mobile Home	0	0	0
Subtotal	4,104	430	4,534
Not Sound Insulated			
Single-Family	959	87	1,046
Multi-Family	3,772	10	3,782
Mobile Home	139	17	156
Subtotal	4,870	114	4,984
Total Housing Units	**8,974**	**544**	**9,518**
Estimated Population			
Total Estimated Population	**20,571**	**1,404**	**21,975**

Notes: Multi-family includes total units in a complex and were verified using King County assessor data. Population numbers are estimates based on the 2020 United States Census average household size per number of housing units.
Source: Landrum & Brown analysis, 2024.

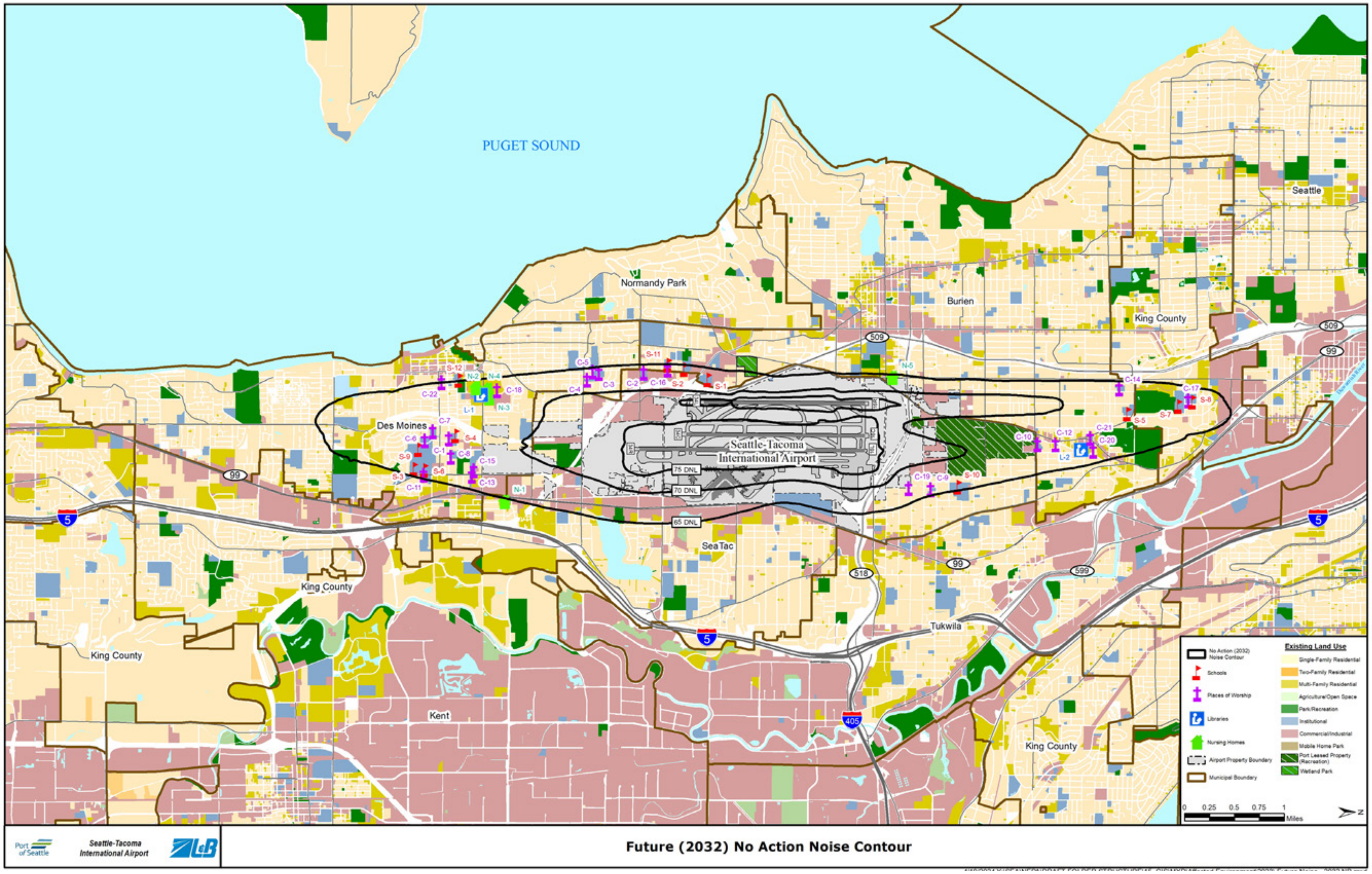
A list of noise sensitive within the 65+ DNL Noise Contour for the Future (2032) No Action are listed in **Table 7-14**. There would be 12 schools, 22 places of worship, five nursing homes, and two libraries within the 65 DNL noise contour. There are no noise sensitive facilities within the 70 or 75 DNL noise contours for the Future (2032) No Action.

TABLE 7-14: NOISE SENSITIVE FACILITIES IN THE FUTURE (2032) NO ACTION 65+ DNL NOISE CONTOUR

Map ID	Name
Schools	
S-1	Puget Sound Skills Center
S-2	Choice Academy – Homeschool Center
S-3	Midway Elementary School
S-4	Mount Rainier High School
S-5	Southern Heights Elementary School
S-6	Pacific Middle School
S-7	Beverly Park Elementary School
S-8	Our Lady of Lourdes School
S-9	St. Philomena Catholic School
S-10	Glacier Middle School
S-11	Community Chapel Christian School
S-12	Des Moines Elementary School
Places of Worship	
C-1	Saint Philomena Catholic Church
C-2	Prince of Peace Lutheran Church
C-3	Samoan Christian Fellowship
C-4	Normandy Christian Church
C-5	Southminster Presbyterian Church
C-6	Hope Church
C-7	Gospel Russian Baptist Church
C-8	The Mountain Church
C-9	Riverton Heights Baptist Church
C-10	Boulevard Park Presbyterian
C-11	Midway Community Covenant Church
C-12	Apostolic Bible Church of Jesus Christ
C-13	Highline 7th Day Adventist Church
C-14	Glen Acres Church of Christ
C-15	Kingdom Hall of Jehovah's Witnesses
C-16	New Testament Christian Church
C-17	Our Lady of Lourdes Church
C-18	Pacific Northwest United Methodist
C-19	Wat Buddharam Buddhist Temple
C-20	Hanuman Nagri Temple
C-21	Way of Salvation Church
C-22	Des Moines United Methodist Church
Libraries	
L-1	Des Moines Library
L-2	Boulevard Park Library
Nursing Homes	
N-1	Falcon Ridge Assisted Living
N-2	Wesley Homes Terrace
N-3	Wesley Homes Health Center
N-4	Wesley Homes Gardens and Bungalows
N-5	High West Residence

Source: Landrum & Brown analysis, 2024.

EXHIBIT 7-9: FUTURE (2032) NO ACTION NOISE CONTOUR



Sources: AEDT Version 3f; Landrum & Brown analysis, 2024.

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7.2.2 Future (2032) Proposed Action

The following describes the input data and methodologies used in preparing the Future (2032) Proposed Action noise contour, followed by the resulting noise exposure contours.

Aircraft Activity Levels and Fleet Mix

Table 7-15 shows the total number of operations by detailed aircraft type and by time of day (daytime or nighttime). The Future (2032) Proposed Action annual average day included 1,303 average-annual day operations, 16 percent of which occurred during the nighttime hours of 10:00 p.m. to 6:59 a.m. This is an increase of 24 average-annual day operations over the Future (2032) No Action condition.

TABLE 7-15: AVERAGE DAILY OPERATIONS BY AEDT AIRFRAME AND ENGINE CODE – FUTURE (2032) PROPOSED ACTION

Airframe	Engine Code	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
Commercial Jets						
Airbus A220-100	16PW111	24.27	2.43	26.70	--	53.40
Airbus A220-300	16PW111	6.41	1.28	7.69	--	15.39
Airbus A220-300	16PW112	3.16	0.63	3.79	--	7.58
Airbus A319-100 Series	01P10IA020	0.00	0.00	0.00	0.00	0.01
Airbus A319-100 Series	3CM028	0.02	0.03	0.02	0.02	0.09
Airbus A319-100 Series	3IA006	0.35	0.71	0.53	0.53	2.12
Airbus A319-100 Series	3IA007	0.19	0.38	0.28	0.28	1.14
Airbus A319-100 Series	4CM035	0.01	0.03	0.02	0.02	0.08
Airbus A319-100 Series	8IA09	0.01	0.01	0.01	0.01	0.04
Airbus A320-200 Series	01P08CM105	6.26	1.88	5.32	2.82	16.28
Airbus A320-200 Series	01P10IA021	0.56	0.17	0.48	0.25	1.46
Airbus A320-200 Series	01P10IA022	0.12	0.04	0.10	0.05	0.32
Airbus A320-200 Series	1CM008	0.15	0.05	0.13	0.07	0.40
Airbus A320-200 Series	1CM009	0.62	0.19	0.53	0.28	1.61
Airbus A320-200 Series	1IA003	1.18	0.35	1.00	0.53	3.07
Airbus A320-200 Series	3CM026	0.67	0.20	0.57	0.30	1.75
Airbus A320-200 Series	8IA010	0.00	0.00	0.00	0.00	0.00
Airbus A320-NEO	01P20CM128	2.91	1.82	2.55	2.19	9.47
Airbus A320-NEO	01P22PW163	4.62	2.89	4.05	3.47	15.03
Airbus A321-200 Series	01P08CM104	1.05	0.39	0.88	0.57	2.89
Airbus A321-200 Series	01P10IA025	6.38	2.39	5.34	3.43	17.54
Airbus A321-200 Series	3CM025	1.09	0.41	0.91	0.58	2.99
Airbus A321-NEO	01P18PW157	4.66	2.59	6.21	1.03	14.48
Airbus A321-NEO	01P20CM132	13.81	7.67	18.41	3.07	42.96
Airbus A330-200 Series	2RR023	3.15	0.31	3.46	--	6.92
Airbus A330-200 Series	9PW094	0.05	0.00	0.05	--	0.10
Airbus A330-300 Series	2RR023	0.75	--	0.75	--	1.50
Airbus A330-300 Series	4GE080	0.76	--	0.76	--	1.52
Airbus A330-300 Series	7PW082	0.10	--	0.10	--	0.21
Airbus A330-300 Series	9PW094	2.15	--	2.15	--	4.30
Airbus A330-300 Series	9PW095	0.50	--	0.50	--	1.01
Airbus A330-900N Series (Neo)	02P23RR141	6.99	--	6.99	--	13.99

TABLE 7-15: AVERAGE DAILY OPERATIONS BY AEDT AIRFRAME AND ENGINE CODE – FUTURE (2032) PROPOSED ACTION (CONTINUED)

Airframe	Engine Code	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
Airbus A350-900 series	01P18RR124	2.62	--	1.75	0.87	5.24
Boeing 737-7	01P20CM136	1.27	0.25	1.27	0.25	3.04
Boeing 737-700 Series	3CM030	0.07	0.07	0.10	0.03	0.26
Boeing 737-700 Series	3CM031	2.23	2.23	3.47	0.99	8.93
Boeing 737-700 Series	3CM032	0.41	0.41	0.63	0.18	1.62
Boeing 737-700 Series	8CM051	0.00	0.00	0.00	0.00	0.01
Boeing 737-700 Series	8CM062	0.02	0.02	0.03	0.01	0.06
Boeing 737-700 Series	8CM063	0.38	0.38	0.59	0.17	1.51
Boeing 737-8	01P20CM135	0.33	0.07	0.33	0.07	0.79
Boeing 737-8	01P20CM136	10.64	2.13	10.64	2.13	25.54
Boeing 737-8	01P20CM140	9.82	1.96	9.82	1.96	23.56
Boeing 737-800 Series	01P11CM114	0.49	0.10	0.50	0.10	1.19
Boeing 737-800 Series	01P11CM116	6.68	1.40	6.78	1.30	16.16
Boeing 737-800 Series	01P11CM122	3.64	0.77	3.70	0.71	8.82
Boeing 737-800 Series	01P11CM125	0.81	0.17	0.82	0.16	1.96
Boeing 737-800 Series	01P11CM126	0.08	0.02	0.08	0.01	0.19
Boeing 737-800 Series	3CM032	20.45	4.29	20.75	3.99	49.48
Boeing 737-800 Series	3CM034	1.97	0.41	2.00	0.39	4.78
Boeing 737-800 Series	8CM051	27.99	5.88	28.40	5.46	67.73
Boeing 737-800 Series	8CM064	0.20	0.04	0.21	0.04	0.49
Boeing 737-800 Series	8CM065	2.61	0.55	2.65	0.51	6.32
Boeing 737-800 Series	8CM066	12.27	2.58	12.46	2.40	29.70
Boeing 737-9	01P20CM136	0.53	0.08	0.39	0.22	1.23
Boeing 737-9	01P20CM140	20.97	3.31	15.45	8.83	48.56
Boeing 737-900-ER	01P11CM116	33.94	7.38	34.54	6.78	82.63
Boeing 737-900-ER	01P11CM121	97.03	21.09	98.74	19.39	236.26
Boeing 737-900-ER	01P11CM125	0.30	0.06	0.30	0.06	0.72
Boeing 737-900-ER	3CM034	1.37	0.30	1.39	0.27	3.33
Boeing 737-900-ER	8CM065	1.52	0.33	1.55	0.30	3.71
Boeing 737-900-ER_MA	01P11CM121_MA	3.25	0.11	1.63	0.06	5.05
Boeing 767-400 ER	8GE101	0.50	--	--	0.50	1.00
Boeing 777-200-ER	10PW099	0.17	--	0.17	--	0.34
Boeing 777-200-ER	2RR027	0.59	--	0.59	--	1.18
Boeing 777-200-ER	3GE060	0.26	--	0.26	--	0.52
Boeing 777-200-ER	3GE064	0.00	--	0.00	--	0.01
Boeing 777-200-ER	8GE100	0.27	--	0.27	--	0.54
Boeing 777-300 ER	01P21GE217	1.76	--	1.17	0.59	3.52
Boeing 787-10 Dreamliner	01P17GE211	0.47	--	0.47	--	0.93
Boeing 787-10 Dreamliner	01P17GE213	1.01	--	1.01	--	2.02
Boeing 787-10 Dreamliner	02P23RR134	0.51	--	0.51	--	1.02

TABLE 7-15: AVERAGE DAILY OPERATIONS BY AEDT AIRFRAME AND ENGINE CODE – FUTURE (2032) PROPOSED ACTION (CONTINUED)

Airframe	Engine Code	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
Boeing 787-8 Dreamliner	01P17GE206	1.47	--	1.47	--	2.95
Boeing 787-8 Dreamliner	01P17GE210	0.05	--	0.05	--	0.10
Boeing 787-8 Dreamliner	11GE137	2.33	--	2.33	--	4.66
Boeing 787-8 Dreamliner	11GE138	5.72	--	5.72	--	11.44
Boeing 787-9 Dreamliner	01P17GE211	2.91	--	2.91	--	5.81
Boeing 787-9 Dreamliner	01P17GE214	0.02	--	0.02	--	0.04
Boeing 787-9 Dreamliner	02P23RR131	0.66	--	0.66	--	1.31
Boeing 787-9 Dreamliner	12RR067	3.00	--	3.00	--	6.01
Boeing 787-9 Dreamliner	12RR068	1.27	--	1.27	--	2.53
Subtotal		*379.82*	*83.25*	*383.14*	*78.24*	*924.45*
Cargo Jets						
Airbus A300F4-600 Series	1GE020	0.01	--	0.01	--	0.01
Airbus A300F4-600 Series	1PW048	0.18	--	0.18	--	0.36
Airbus A300F4-600 Series	3GE056	0.33	--	0.33	--	0.66
Boeing 747-400 ERF	12PW102	0.27	0.54	0.54	0.27	1.62
Boeing 747-400BCF	01P03GE187	0.27	0.54	0.54	0.27	1.62
Boeing 747-8F	01P17GE215	0.40	--	0.40	--	0.79
Boeing 747-8F	13GE156	0.11	--	0.11	--	0.21
Boeing 747-8F	8GENX1	0.34	--	0.34	--	0.68
Boeing 767-200 Series Freighter	1GE010	1.31	2.62	2.62	1.31	7.85
Boeing 767-200 Series Freighter	1GE012	0.65	1.30	1.30	0.65	3.91
Boeing 767-200 Series Freighter	1PW026	0.12	0.23	0.23	0.12	0.70
Boeing 767-300 ER Freighter	1GE030	4.73	0.95	4.73	0.95	11.35
Boeing 767-300 ER Freighter	2GE055	0.47	0.09	0.47	0.09	1.12
Boeing 777 Freighter	01P21GE216	3.31	--	3.31	--	6.62
Boeing 777 Freighter	01P21GE217	0.08	--	0.08	--	0.16
Boeing MD-11 Freighter	12PW102	0.09	0.26	0.26	0.09	0.68
Boeing MD-11 Freighter	1GE031	0.43	1.29	1.29	0.43	3.43

TABLE 7-15: AVERAGE DAILY OPERATIONS BY AEDT AIRFRAME AND ENGINE CODE – FUTURE (2032) PROPOSED ACTION (CONTINUED)

Airframe	Engine Code	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
Boeing MD-11 Freighter	1PW052	0.14	0.42	0.42	0.14	1.12
Subtotal		*13.21*	*8.23*	*17.14*	*4.31*	*42.89*
Regional Jets						
Embraer ERJ175-LR	01P08GE197	142.69	16.39	141.62	17.46	318.17
Embraer ERJ175-LR_MA_Y2	01P08GE197_MA_Y2	1.62	0.20	0.81	0.10	2.73
Subtotal		*144.31*	*16.59*	*142.43*	*17.56*	*320.90*
Cargo Props						
ATR 72-600 Freighter	PW127F	0.28	--	0.28	--	0.56
Cessna 208 Caravan	P6114A	1.59	--	1.59	--	3.19
Cessna 208 Caravan	PT6A14	1.57	--	1.57	--	3.14
Cessna 408 SkyCourier	PT6A6B	0.28	--	0.28	--	0.56
Raytheon Beech 99	PT6A27	0.00	--	0.00	--	0.01
Raytheon Beech 99	PT6A36	0.25	--	0.25	--	0.50
Subtotal		*3.98*	--	*3.98*	--	*7.95*
General Aviation						
Bombardier Challenger 350	01P14HN011	0.76	--	0.76	--	1.52
Cessna 172 Skyhawk	IO320	0.09	0.09	0.18	--	0.36
Dassault Falcon 50	1AS002	0.76	--	0.76	--	1.52
Embraer Phenom 300 (EMB-505)	PW530	0.17	--	0.17	--	0.35
Piper PA-31 Navajo	TIO540	0.02	--	0.02	--	0.05
Raytheon C-12 Huron	PT660A	0.08	--	0.08	--	0.17
Subtotal		*1.89*	*0.09*	*1.98*	--	*3.96*
Other						
Boeing 737-900-ER_O1	01P11CM121_O1	0.49	0.11	0.50	0.10	1.20
Boeing 737-900-ER_O2	01P11CM125_O2	0.00	0.00	0.00	0.00	0.00
Boeing 737-900-ER_O3	3CM034_O3	0.01	0.00	0.01	0.00	0.02
Boeing 737-900-ER_O4	8CM065_O4	0.01	0.00	0.01	0.00	0.02
Boeing 737-900-ER_O7	01P11CM116_O7	0.17	0.04	0.17	0.03	0.41
Cessna 208 Caravan_O5	P6114A_O5	0.28	--	0.28	--	0.55
Cessna 208 Caravan_O6	PT6A14_O6	0.27	--	0.27	--	0.54
Subtotal		*1.22*	*0.15*	*1.23*	*0.13*	*2.74*
Military						
Cessna 172 Skyhawk_M2	IO320_M2	0.00	--	0.00	--	0.01
Embraer Phenom 300 (EMB-505)_M1	PW530_M1	0.10	--	0.10	--	0.20

TABLE 7-15: AVERAGE DAILY OPERATIONS BY AEDT AIRFRAME AND ENGINE CODE – FUTURE (2032) PROPOSED ACTION (CONTINUED)

Airframe	Engine Code	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
Raytheon C-12 Huron_M	PT660A_M	0.04	--	0.04	--	0.07
Subtotal		*0.14*	*--*	*0.14*	*--*	*0.27*
Total		**544.56**	**108.31**	**550.04**	**100.25**	**1303.16**

Note: Totals may not sum due to rounding.
Day = 7:00 a.m. to 9:59 p.m., Night = 10:00 p.m. to 6:59 a.m.
Sources: Aviation Forecast Update, prepared by Port of Seattle/LeighFisher, 2023, Sustainable Airport Master Plan Near-Term Projects, Constrained Operating Growth Scenarios, Seattle-Tacoma International Airport, Landrum & Brown, September 2023, Landrum & Brown analysis, 2024.

Runway Definition

Under the Future (2032) Proposed Action, no changes to the runway location or definition would occur. Therefore, the runway definition discussed for the Existing (2022) Condition in Section 7.1 would remain the same for the Future (2032) Proposed Action.

Runway End Utilization

Under the Future (2032) Proposed Action, the runway end utilization would be influenced by airfield congestion and the total number of operations occurring at the Airport, as well as the addition of several proposed taxiway improvements designed to enhance efficiency of the airfield. **Table 7-16** presents the runway end utilization for the Future (2032) Proposed Action.

TABLE 7-16: GENERALIZED RUNWAY END UTILIZATION SUMMARY – FUTURE (2032) PROPOSED ACTION

Aircraft Category	Runway End 16L	Runway End 16C	Runway End 16R	Runway End 34L	Runway End 34C	Runway End 34R
Daytime Arrivals						
Commercial Jets	10.18%	0.99%	58.92%	23.78%	0.99%	3.86%
Cargo Jets	55.00%	1.00%	15.00%	8.00%	1.00%	20.00%
Regional Jets	4.92%	0.98%	63.91%	25.57%	0.98%	1.97%
Cargo Props	23.05%	1.43%	46.52%	26.43%	1.00%	1.57%
General Aviation	26.00%	1.50%	43.50%	26.50%	1.00%	1.50%
Other	14.41%	1.22%	55.37%	26.22%	1.00%	1.78%
Military	26.00%	1.50%	43.50%	26.50%	1.00%	1.50%
Missed Approaches*	--	--	77.33%	22.67%	--	--
Daytime Departures						
Commercial Jets	45.41%	25.59%	--	--	0.95%	28.05%
Cargo Jets	58.00%	13.00%	--	--	0.50%	28.50%
Regional Jets	44.00%	27.00%	--	--	1.00%	28.00%
Cargo Props	35.84%	32.59%	2.58%	1.72%	12.60%	14.68%
General Aviation	34.50%	33.50%	3.00%	2.00%	14.50%	12.50%
Other	39.78%	29.88%	1.33%	0.89%	6.99%	21.12%
Military	34.50%	33.50%	3.00%	2.00%	14.50%	12.50%
Missed Approaches*	--	--	77.33%	22.67%	--	--

TABLE 7-16: GENERALIZED RUNWAY END UTILIZATION SUMMARY – FUTURE (2032) PROPOSED ACTION (CONTINUED)

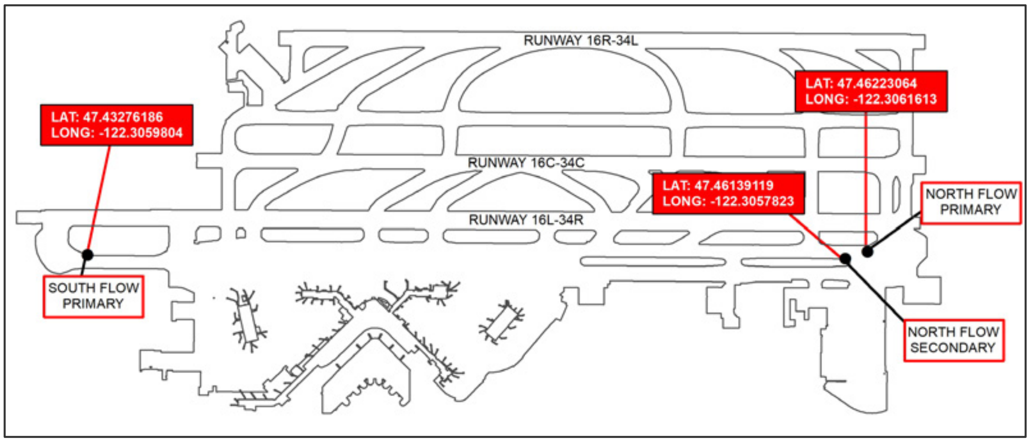
Aircraft Category	Runway End 16L	Runway End 16C	Runway End 16R	Runway End 34L	Runway End 34C	Runway End 34R
Nighttime Arrivals						
Commercial Jets	5.18%	1.00%	64.68%	25.88%	1.00%	2.06%
Cargo Jets	55.00%	1.00%	15.00%	8.00%	1.00%	20.00%
Regional Jets	4.91%	0.98%	63.82%	25.53%	0.98%	1.96%
Cargo Props	--	--	--	--	--	--
General Aviation	26.00%	1.50%	43.50%	26.50%	1.00%	1.50%
Other	5.00%	1.00%	65.00%	26.00%	1.00%	2.00%
Military	--	--	--	--	--	--
Missed Approaches*	--	--	80.98%	19.02%	--	--
Nighttime Departures						
Commercial Jets	44.35%	26.65%	--	--	0.99%	28.01%
Cargo Jets	58.00%	13.00%	--	--	0.50%	28.50%
Regional Jets	44.00%	27.00%	--	--	1.00%	28.00%
Cargo Props	--	--	--	--	--	--
General Aviation	--	--	--	--	--	--
Other	44.00%	27.00%	--	--	1.00%	28.00%
Military	--	--	--	--	--	--
Missed Approaches*	--	--	80.98%	19.02%	--	--

Note: Day = 7:00 a.m. to 9:59 p.m., Night = 10:00 p.m. to 6:59 a.m.
* Missed approaches count as two arrivals and one departure for modeling purposes.
Sources: Aviation Forecast Update, prepared by Port of Seattle/LeighFisher, 2023, Sustainable Airport Master Plan Near-Term Projects, Constrained Operating Growth Scenarios, Seattle-Tacoma International Airport, Landrum & Brown, September 2023, Environmental Review Airside Modeling, Seattle-Tacoma International Airport, LeighFisher, 2020, Landrum & Brown analysis, 2024.

Engine Run-Ups

Under the Future (2032) Proposed Action, changes to run-up locations would occur due to changes in the taxiways and new passenger terminal facilities. As a result, there would be fewer run-up locations and the locations would be on the north and south ends of the airfield. **Exhibit 7-10: *Proposed Action Run-up Locations*** shows the future location of the run-ups. The number and type of engine run-up operations for the Future (2032) Proposed Action are presented below in **Table 7-17**. The number of engine run-up operations were scaled up from 2022 levels assuming the same distribution across aircraft types.

EXHIBIT 7-10: PROPOSED ACTION RUN-UP LOCATIONS



Source: Port of Seattle

TABLE 7-17: ANNUAL AIRCRAFT RUN-UP ACTIVITY – FUTURE (2032) PROPOSED ACTION

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
North Flow Primary Location						
Airbus A319-100 Series	3IA006	1.5	3.0	--	--	22,000 lbs.
Airbus A320-200 Series	01P08CM105	25.1	15.8	1.5	2.0	25,000 lbs.
Airbus A320-200 Series	1CM009	3.0	69.5	--	--	25,000 lbs.
Airbus A320-200 Series	3CM026	3.0	15.5	--	--	25,000 lbs.
Airbus A321-200 Series	3CM025	4.4	36.7	--	--	30,000 lbs.
Airbus A321-NEO	01P20CM132			1.5	2.0	30,000 lbs.
Airbus A330-200 Series	9PW094	8.9	27.7	--	--	71,100 lbs.
Airbus A330-300 Series	4GE080	1.5	37.0	--	--	67,500 lbs.
Airbus A330-900N Series (Neo)	02P23RR141	1.5	26.0	--	--	71,100 lbs.
Boeing 737-700 Series	3CM031	5.9	26.8	--	--	24,000 lbs.
Boeing 737-700 Series	3CM032	7.4	56.4	--	--	24,000 lbs.
Boeing 737-800 Series	01P11CM122	1.5	10.0	--	--	26,300 lbs.
Boeing 737-800 Series	3CM032	20.7	27.6	--	--	26,300 lbs.
Boeing 737-800 Series	3CM034	1.5	9.0	--	--	26,300 lbs.
Boeing 737-800 Series	8CM051	3.0	40.5	--	--	26,300 lbs.
Boeing 737-800 Series	8CM066	4.4	33.0	--	--	26,300 lbs.
Boeing 737-9	01P20CM140	13.3	14.6	--	--	26,400 lbs.
Boeing 737-900-ER	01P11CM116	14.8	20.2	--	--	26,300 lbs.
Boeing 737-900-ER	01P11CM121	1.5	4.0	--	--	13,150 lbs.
Boeing 737-900-ER	01P11CM121	23.6	25.1	--	--	26,300 lbs.
Boeing MD-11 Freighter	1GE031	--	--	1.5	2.0	61,500 lbs.
Embraer ERJ175-LR	01P08GE197	1.5	6.0	--	--	6,900 lbs.
Embraer ERJ175-LR	01P08GE197	5.9	28.0	--	--	13,800 lbs.
South Flow Primary Location						
Airbus A319-100 Series	3IA006	1.5	15.0	--	--	22,000 lbs.

TABLE 7-17: ANNUAL AIRCRAFT RUN-UP ACTIVITY – FUTURE (2032) PROPOSED ACTION (CONTINUED)

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
Airbus A319-100 Series	3IA007	1.5	26.0	1.5	11.0	22,000 lbs.
Airbus A320-200 Series	01P08CM105	3.0	6.0	--	--	12,500 lbs.
Airbus A320-200 Series	01P08CM105	41.3	12.9	--	--	25,000 lbs.
Airbus A320-200 Series	1CM009	7.4	31.6	--	--	25,000 lbs.
Airbus A321-NEO	01P20CM132	3.0	12.5	--	--	30,000 lbs.
Airbus A330-200 Series	2RR023	1.5	6.0	--	--	71,100 lbs.
Airbus A330-200 Series	9PW094	1.5	26.0	--	--	35,550 lbs.
Airbus A330-200 Series	9PW094	11.8	14.9	--	--	71,100 lbs.
Airbus A330-300 Series	4GE080	4.4	10.7	--	--	67,500 lbs.
Airbus A330-900N Series (Neo)	02P23RR141	4.4	26.7	--	--	71,100 lbs.
Boeing 737-700 Series	3CM031	1.5	20.0	1.5	2.0	12,000 lbs.
Boeing 737-700 Series	3CM031	23.6	17.6	--	--	24,000 lbs.
Boeing 737-700 Series	3CM032	5.9	31.5	--	--	24,000 lbs.
Boeing 737-800 Series	3CM032	4.4	18.3	--	--	13,150 lbs.
Boeing 737-800 Series	3CM032	62.0	18.3	--	--	26,300 lbs.
Boeing 737-800 Series	8CM051	16.2	21.0	--	--	26,300 lbs.
Boeing 737-800 Series	8CM065	1.5	6.0			26,300 lbs.
Boeing 737-800 Series	8CM066	1.5	3.0	1.5	2.0	13,150 lbs.
Boeing 737-800 Series	8CM066	35.4	10.7	--	--	26,300 lbs.
Boeing 737-9	01P20CM140	1.5	9.0	--	--	13,200 lbs.
Boeing 737-9	01P20CM140	31.0	10.4	--	--	26,400 lbs.
Boeing 737-900-ER	01P11CM116	1.5	3.0	--	--	13,150 lbs.
Boeing 737-900-ER	01P11CM116	31.0	15.7	3.0	2.0	26,300 lbs.
Boeing 737-900-ER	01P11CM121	1.5	8.0	--	--	13,150 lbs.
Boeing 737-900-ER	01P11CM121	79.7	25.5	--	--	26,300 lbs.
Boeing 767-200 Series Freighter	1GE012	1.5	6.0	--	--	48,000 lbs.
Boeing 767-300 ER Freighter	1GE030	4.4	21.0	--	--	60,000 lbs.
Boeing MD-11 Freighter	1GE031	3.0	44.5	--	--	61,500 lbs.
Embraer ERJ175-LR	01P08GE197	10.3	11.2	--	--	13,800 lbs.
North Flow Secondary Location						
Airbus A330-200 Series	9PW094	1.5	38.0	--	--	71,100 lbs.
Total		**553.46**	**--**	**11.85**	**--**	**--**

Notes: Totals may not sum due to rounding.
Daytime = 7:00am – 9:59pm, Nighttime = 10:00pm – 6:59am.

Sources: Aviation Forecast Update, prepared by Port of Seattle/LeighFisher, 2023, Sustainable Airport Master Plan Near-Term Projects, Constrained Operating Growth Scenarios, Seattle-Tacoma International Airport, Landrum & Brown, September 2023, Landrum & Brown analysis, 2024.

Flight Tracks

Flight track locations for the Future (2032) Proposed Action are expected to be the same as the Existing (2022) Condition, because there are no changes to the runway locations and flight track proposed.[13] Therefore, the flight track location information discussed for the Existing (2022) Condition in Section 7.1 would remain the same for the Future (2032) Proposed Action.

Aircraft Departure Stage Length and Operational Profiles

Table 7-18 presents the departure stage length distribution for the Future (2032) Proposed Action. The departure segment of the missed approaches is modeled as Stage Length Category 1.

TABLE 7-18: DEPARTURE STAGE LENGTH DISTRIBUTION – FUTURE (2032) PROPOSED ACTION

Stage Length	Commercial Jets	Cargo Jets	Regional Jets	Cargo Props	General Aviation	Other	Military	Total
1	3.57%	--	74.09%	100.00%	100.00%	41.92%	100.00%	21.76%
2	44.89%	18.20%	22.43%	--	--	28.98%	--	38.03%
3	17.51%	26.73%	3.48%	--	--	15.37%	--	14.20%
4	25.96%	30.31%	--	--	--	13.74%	--	19.45%
5	--	--	--	--	--	--	--	--
6	3.38%	15.80%	--	--	--	--	--	2.92%
7	4.69%	8.95%	--	--	--	--	--	3.63%
8	--	--	--	--	--	--	--	--
9	--	--	--	--	--	--	--	--

Note: Totals may not sum due to rounding.
Sources: Aviation Forecast Update, prepared by Port of Seattle/LeighFisher, 2023, Sustainable Airport Master Plan Near-Term Projects, Constrained Operating Growth Scenarios, Seattle-Tacoma International Airport, Landrum & Brown, September 2023, Landrum & Brown analysis, 2024.

7.2.2.2 Future (2032) Proposed Action Noise Contours

Exhibit 7-11: *Future (2032) Proposed Action Noise Contour* depicts the 65, 70, and 75 DNL noise contour for the Future (2032) Proposed Action. The area in square miles of each DNL contour band is summarized in **Table 7-19**.

The 65+ DNL contour extends approximately 3.7 miles to the north and 3.3 miles south of SEA. The area within the contour to the north and south is made up of a mix of single-family residential, multi-family residential, commercial, and industrial land uses.

TABLE 7-19: AREA (SQUARE MILES) OF 65, 70, AND 75 DNL NOISE CONTOURS – FUTURE (2032) PROPOSED ACTION

Alternative	DNL 65 - 70 dB	DNL 70 - 75 dB	DNL 75+ dB	DNL 65+ dB
Future (2032) No Action	6.23	2.42	1.45	10.10
Future (2032) Proposed Action	6.33	2.45	1.47	10.25
Change	0.10	0.03	0.02	0.15

Source: Landrum & Brown analysis, 2024.

13 It is expected that the Runway 34R arrival profile will be slightly higher due to the relocation of the glide slope. This higher Runway 34R arrival profile was not specifically included in this analysis because AEDT does not provide a function to reflect this minor change. Furthermore, by not including the change in Runway 34R arrival profile this analysis represents a conservative evaluation of noise impacts.

7.2.2.3 Non-Compatible Land Use

Summaries of the residential population and housing units exposed to noise levels exceeding 65 DNL for the Future (2032) Proposed Action noise contour are provided in **Table 7-20**. A total of 9,855 housing units (an increase of 337 from the Future (2032) No Action) would be located within the Future (2032) Proposed Action 65+ DNL noise contour. The increase in housing units and population from the Future (2032) No Action is due to the increase in aircraft operations and the increase in size of the 65+ DNL contour. For the "sound insulation completed" category, the additional areas within the 65+ DNL contour includes homes treated during prior phases of the Port's Part 150 Noise Remedy Program, which extends back to 1985 (when the noise contours were much larger). Therefore, the increases in the numbers are solely due to the changes in the noise contour.

TABLE 7-20: NON-COMPATIBLE LAND USE HOUSING AND POPULATION – FUTURE (2032) PROPOSED ACTION

Mitigation Status/Land Use	DNL 65 - 70 dB	DNL 70 - 75 dB	DNL 65+ dB
Sound Insulation Completed			
Single-Family	3,819	439	4,258
Multi-Family	432	4	436
Mobile Home	0	0	0
Subtotal	4,251	443	4,694
Not Sound Insulated			
Single-Family	1,000	89	1,089
Multi-Family	3,885	10	3,895
Mobile Home	160	17	177
Subtotal	5,045	116	5,161
Total Housing Units	**9,296**	**559**	**9,855**
Estimated Population			
Total Estimated Population	**21,354**	**1,445**	**22,799**

Notes: Multi-family includes total units in a complex and were verified using King County assessor data. Population numbers are estimates based on the 2020 United States Census average household size per number of housing units.
Source: Landrum & Brown analysis, 2024.

A list of noise sensitive facilities within the 65+ DNL Noise Contour for the Future (2032) Proposed Action are listed in **Table 7-21**. The number of noise sensitive facilities within the 65+ DNL would be the same as the Future (2032) No Action, for a total of 12 schools, 22 places of worship, five nursing homes, and two libraries within the 65 DNL noise contour. There are no noise sensitive facilities within the 70 or 75 DNL noise contours for the Future (2032) Proposed Action.

TABLE 7-21: NOISE SENSITIVE FACILITIES IN THE FUTURE (2032) PROPOSED ACTION 65+ DNL NOISE CONTOUR

Map ID	Name
Schools	
S-1	Puget Sound Skills Center
S-2	Choice Academy – Homeschool Center
S-3	Midway Elementary School
S-4	Mount Rainier High School
S-5	Southern Heights Elementary School
S-6	Pacific Middle School
S-7	Beverly Park Elementary School
S-8	Our Lady of Lourdes School
S-9	St. Philomena Catholic School
S-10	Glacier Middle School
S-11	Community Chapel Christian School
S-12	Des Moines Elementary School
Places of Worship	
C-1	Saint Philomena Catholic Church
C-2	Prince of Peace Lutheran Church
C-3	Samoan Christian Fellowship
C-4	Normandy Christian Church
C-5	Southminster Presbyterian Church
C-6	Hope Church
C-7	Gospel Russian Baptist Church
C-8	The Mountain Church
C-9	Riverton Heights Baptist Church
C-10	Boulevard Park Presbyterian
C-11	Midway Community Covenant Church
C-12	Apostolic Bible Church of Jesus Christ
C-13	Highline 7th Day Adventist Church
C-14	Glen Acres Church of Christ
C-15	Kingdom Hall of Jehovah's Witnesses
C-16	New Testament Christian Church
C-17	Our Lady of Lourdes Church
C-18	Pacific Northwest United Methodist
C-19	Wat Buddharam Buddhist Temple
C-20	Hanuman Nagri Temple
C-21	Way of Salvation Church
C-22	Des Moines United Methodist Church
Libraries	
L-1	Des Moines Library
L-2	Boulevard Park Library
Nursing Homes	
N-1	Falcon Ridge Assisted Living
N-2	Wesley Homes Terrace
N-3	Wesley Homes Health Center
N-4	Wesley Homes Gardens and Bungalows
N-5	High West Residence

Source: Landrum & Brown analysis, 2024.

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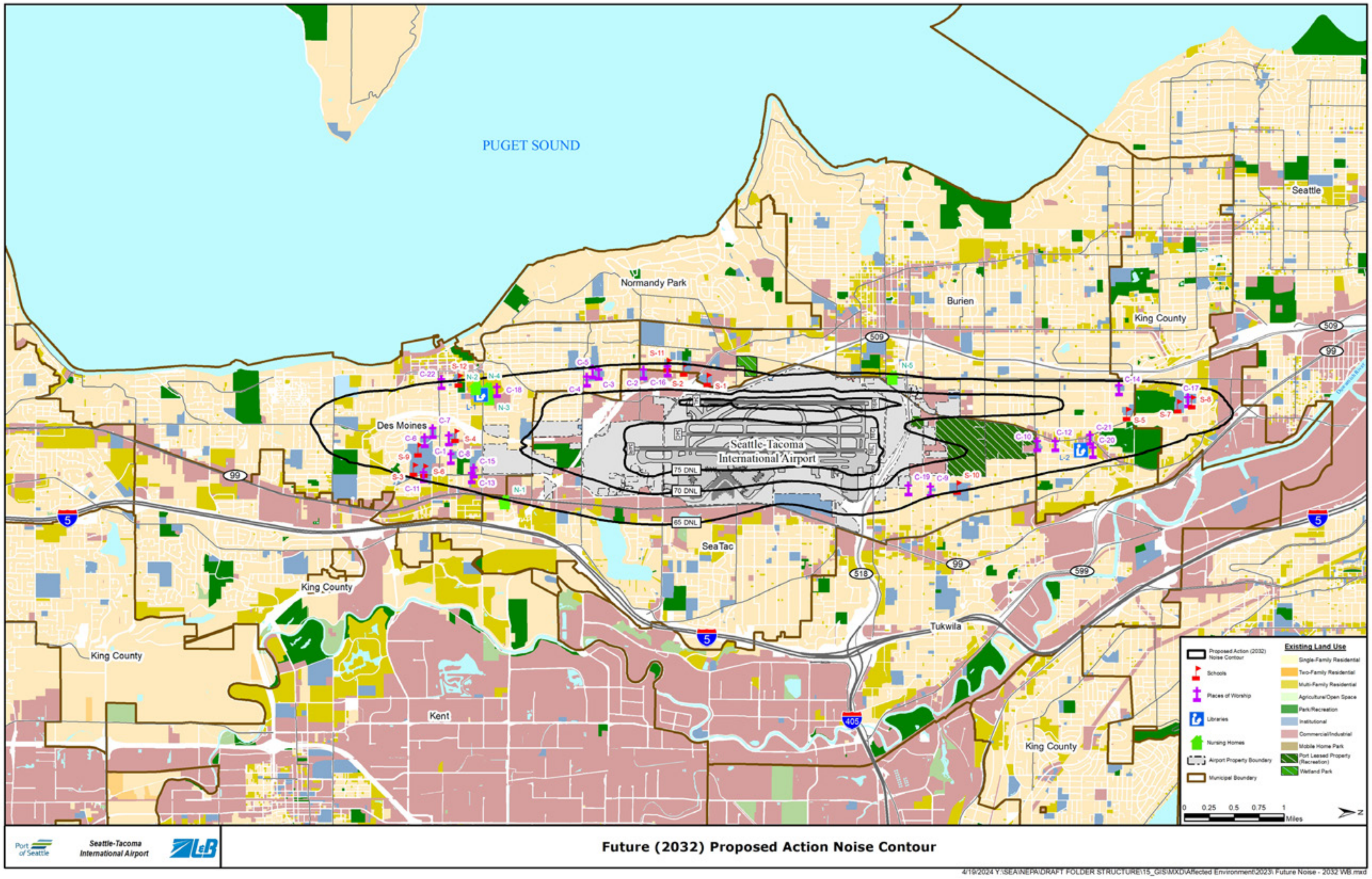
EXHIBIT 7-11: FUTURE (2032) PROPOSED ACTION NOISE CONTOUR



Sources: AEDT Version 3f; Landrum & Brown analysis, 2024.

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7.2.3 Future (2037) No Action

The following describes the input data and methodologies used in preparing the Future (2037) No Action noise contour, followed by the resulting noise exposure contours.

Aircraft Activity Levels and Fleet Mix

Table 7-22 shows the total number of operations by detailed aircraft type and by time of day (daytime or nighttime). The Future (2037) No Action annual average day included 1,301 average annual day operations, 15.4 percent of which occurred during the nighttime hours of 10:00 p.m. to 6:59 a.m.

TABLE 7-22: AVERAGE DAILY OPERATIONS BY AEDT AIRFRAME AND ENGINE CODE – FUTURE (2037) NO ACTION

Airframe	Engine Code	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
Commercial Jets						
Airbus A220-100	16PW111	31.48	3.15	34.63	--	69.26
Airbus A220-300	16PW111	11.98	--	11.98	--	23.95
Airbus A220-300	16PW112	5.90	--	5.90	--	11.80
Airbus A320-200 Series	01P08CM105	2.12	0.63	1.69	1.06	5.50
Airbus A320-200 Series	01P10IA021	0.19	0.06	0.15	0.10	0.49
Airbus A320-200 Series	01P10IA022	0.04	0.01	0.03	0.02	0.11
Airbus A320-200 Series	1CM008	0.05	0.02	0.04	0.03	0.13
Airbus A320-200 Series	1CM009	0.21	0.06	0.17	0.10	0.55
Airbus A320-200 Series	1IA003	0.40	0.12	0.32	0.20	1.04
Airbus A320-200 Series	3CM026	0.23	0.07	0.18	0.11	0.59
Airbus A320-200 Series	8IA010	0.00	0.00	0.00	0.00	0.00
Airbus A320-NEO	01P20CM128	5.45	2.42	4.24	3.63	15.74
Airbus A320-NEO	01P22PW163	8.65	3.84	6.72	5.76	24.97
Airbus A321-200 Series	01P08CM104	0.32	0.12	0.27	0.17	0.89
Airbus A321-200 Series	01P10IA025	1.96	0.74	1.64	1.05	5.39
Airbus A321-200 Series	3CM025	0.33	0.13	0.28	0.18	0.92
Airbus A321-NEO	01P18PW157	6.24	3.46	8.32	1.39	19.40
Airbus A321-NEO	01P20CM132	18.50	10.28	24.67	4.11	57.55
Airbus A330-200 Series	2RR023	3.06	0.38	3.44	--	6.89
Airbus A330-200 Series	9PW094	0.04	0.01	0.05	--	0.10
Airbus A330-300 Series	2RR023	0.75	--	0.75	--	1.49
Airbus A330-300 Series	4GE080	0.76	--	0.76	--	1.51
Airbus A330-300 Series	7PW082	0.10	--	0.10	--	0.20
Airbus A330-300 Series	9PW094	2.14	--	2.14	--	4.27
Airbus A330-300 Series	9PW095	0.50	--	0.50	--	1.00
Airbus A330-900N Series (Neo)	02P23RR141	7.54	--	7.54	--	15.08
Airbus A350-900 series	01P18RR124	4.45		2.97	1.48	8.90
Boeing 737-7	01P20CM136	1.85	0.46	1.85	0.46	4.63
Boeing 737-700 Series	3CM030	0.01	0.01	0.02	0.01	0.05
Boeing 737-700 Series	3CM031	0.45	0.45	0.59	0.30	1.78
Boeing 737-700 Series	3CM032	0.08	0.08	0.11	0.05	0.32
Boeing 737-700 Series	8CM051	0.00	0.00	0.00	0.00	0.00
Boeing 737-700 Series	8CM062	0.00	0.00	0.00	0.00	0.01
Boeing 737-700 Series	8CM063	0.08	0.08	0.10	0.05	0.30
Boeing 737-8	01P20CM135	0.70	0.18	0.70	0.18	1.76
Boeing 737-8	01P20CM136	22.83	5.71	22.83	5.71	57.08
Boeing 737-8	01P20CM140	21.06	5.27	21.06	5.27	52.65

TABLE 7-22: AVERAGE DAILY OPERATIONS BY AEDT AIRFRAME AND ENGINE CODE – FUTURE (2037) NO ACTION (CONTINUED)

Airframe	Engine Code	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
Boeing 737-800 Series	01P11CM114	0.33	0.06	0.33	0.06	0.78
Boeing 737-800 Series	01P11CM116	4.45	0.84	4.52	0.77	10.58
Boeing 737-800 Series	01P11CM122	2.43	0.46	2.46	0.42	5.77
Boeing 737-800 Series	01P11CM125	0.54	0.10	0.55	0.09	1.28
Boeing 737-800 Series	01P11CM126	0.05	0.01	0.05	0.01	0.12
Boeing 737-800 Series	3CM032	13.63	2.56	13.82	2.37	32.38
Boeing 737-800 Series	3CM034	1.32	0.25	1.33	0.23	3.13
Boeing 737-800 Series	8CM051	18.66	3.51	18.92	3.24	44.33
Boeing 737-800 Series	8CM064	0.14	0.03	0.14	0.02	0.32
Boeing 737-800 Series	8CM065	1.74	0.33	1.77	0.30	4.14
Boeing 737-800 Series	8CM066	8.18	1.54	8.30	1.42	19.44
Boeing 737-9	01P20CM136	1.13	0.19	0.88	0.44	2.63
Boeing 737-9	01P20CM140	44.38	7.40	34.52	17.26	103.55
Boeing 737-900-ER	01P11CM116	28.64	5.80	28.79	5.65	68.88
Boeing 737-900-ER	01P11CM121	81.53	16.52	81.98	16.07	196.11
Boeing 737-900-ER	01P11CM125	0.25	0.05	0.25	0.05	0.60
Boeing 737-900-ER	3CM034	1.15	0.23	1.16	0.23	2.77
Boeing 737-900-ER	8CM065	1.29	0.26	1.29	0.25	3.09
Boeing 737-900-ER_MA	01P11CM121_MA	3.25	0.11	1.62	0.06	5.04
Boeing 787-10 Dreamliner	01P17GE211	0.61	--	0.61	--	1.22
Boeing 787-10 Dreamliner	01P17GE213	1.32	--	1.32	--	2.64
Boeing 787-10 Dreamliner	02P23RR134	0.67	--	0.67	--	1.33
Boeing 787-8 Dreamliner	01P17GE206	1.94	--	1.94	--	3.89
Boeing 787-8 Dreamliner	01P17GE210	0.07	--	0.07	--	0.13
Boeing 787-8 Dreamliner	11GE137	3.07	--	3.07	--	6.14
Boeing 787-8 Dreamliner	11GE138	7.54	--	7.54	--	15.08
Boeing 787-9 Dreamliner	01P17GE211	4.73	--	4.73	--	9.45
Boeing 787-9 Dreamliner	01P17GE214	0.03	--	0.03	--	0.06
Boeing 787-9 Dreamliner	02P23RR131	1.07	--	1.07	--	2.13
Boeing 787-9 Dreamliner	12RR067	4.88	--	4.88	--	9.76
Boeing 787-9 Dreamliner	12RR068	2.06	--	2.06	--	4.11
Subtotal		*401.49*	*77.97*	*397.40*	*80.38*	*957.23*
Cargo Jets						
Boeing 747-400 ERF	12PW102	0.26	0.53	0.53	0.26	1.58
Boeing 747-400BCF	01P03GE187	0.26	0.53	0.53	0.26	1.58
Boeing 747-8F	01P17GE215	0.43	--	0.43	--	0.86
Boeing 747-8F	13GE156	0.11	--	0.11	--	0.23
Boeing 747-8F	8GENX1	0.37	--	0.37	--	0.75
Boeing 767-200 Series Freighter	1GE010	1.70	3.40	3.40	1.70	10.19
Boeing 767-200 Series Freighter	1GE012	0.85	1.69	1.69	0.85	5.07
Boeing 767-200 Series Freighter	1PW026	0.15	0.30	0.30	0.15	0.91
Boeing 767-300 ER Freighter	1GE030	5.72	1.43	5.72	1.43	14.31
Boeing 767-300 ER Freighter	2GE055	0.56	0.14	0.56	0.14	1.41
Boeing 777 Freighter	01P21GE216	5.05	--	5.05	--	10.11

TABLE 7-22: AVERAGE DAILY OPERATIONS BY AEDT AIRFRAME AND ENGINE CODE – FUTURE (2037) NO ACTION (CONTINUED)

Airframe	Engine Code	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
Boeing 777 Freighter	01P21GE217	0.12	--	0.12	--	0.24
Subtotal		*15.60*	*8.02*	*18.83*	*4.79*	*47.24*
Regional Jets						
Embraer ERJ175-LR	01P08GE197	125.85	13.20	124.09	14.96	278.10
Embraer ERJ175-LR_MA_Y2	01P08GE197_MA_Y2	1.61	0.20	0.81	0.10	2.72
Subtotal		127.46	13.40	124.89	15.06	280.82
Cargo Props						
ATR 72-600 Freighter	PW127F	0.44	--	0.44	--	0.88
Cessna 208 Caravan	P6114A	1.57	--	1.57	--	3.14
Cessna 208 Caravan	PT6A14	1.55	--	1.55	--	3.10
Cessna 408 SkyCourier	PT6A6B	0.44	--	0.44	--	0.88
Raytheon Beech 99	PT6A27	0.01	--	0.01	--	0.01
Raytheon Beech 99	PT6A36	0.32	--	0.32	--	0.64
Subtotal		*4.33*	--	*4.33*	--	*8.67*
General Aviation						
Bombardier Challenger 350	01P14HN011	0.78	--	0.78	--	1.57
Cessna 172 Skyhawk	IO320	0.08	0.08	0.16	--	0.33
Dassault Falcon 50	1AS002	0.78	--	0.78	--	1.57
Embraer Phenom 300 (EMB-505)	PW530	0.19	--	0.19	--	0.37
Piper PA-31 Navajo	TIO540	0.02	--	0.02	--	0.04
Raytheon C-12 Huron	PT660A	0.09	--	0.09	--	0.18
Subtotal		*1.95*	*0.08*	*2.03*	--	*4.06*
Other						
Boeing 737-900-ER_O1	01P11CM121_O1	0.50	0.10	0.50	0.10	1.20
Boeing 737-900-ER_O2	01P11CM125_O2	0.00	0.00	0.00	0.00	0.00
Boeing 737-900-ER_O3	3CM034_O3	0.01	0.00	0.01	0.00	0.02
Boeing 737-900-ER_O4	8CM065_O4	0.01	0.00	0.01	0.00	0.02
Boeing 737-900-ER_O7	01P11CM116_O7	0.17	0.03	0.17	0.03	0.41
Cessna 208 Caravan_O5	P6114A_O5	0.28	--	0.28	--	0.55
Cessna 208 Caravan_O6	PT6A14_O6	0.27	--	0.27	--	0.54
Subtotal	*Subtotal*	*1.23*	*0.14*	*1.24*	*0.13*	*2.74*
Military						
Cessna 172 Skyhawk_M2	IO320_M2	0.00	--	0.00	--	0.01
Embraer Phenom 300 (EMB-505)_M1	PW530_M1	0.10	--	0.10	--	0.20
Raytheon C-12 Huron_M	PT660A_M	0.04	--	0.04	--	0.07
Subtotal		*0.14*	--	*0.14*	--	*0.27*
Total		**552.22**	**99.62**	**548.85**	**100.34**	**1300.96**

Note: Totals may not sum due to rounding.
Day = 7:00 a.m. to 9:59 p.m., Night = 10:00 p.m. to 6:59 a.m.

Sources: Aviation Forecast Update, prepared by Port of Seattle/LeighFisher, 2023, Sustainable Airport Master Plan Near-Term Projects, Constrained Operating Growth Scenarios, Seattle-Tacoma International Airport, Landrum & Brown, September 2023, Landrum & Brown analysis, 2024.

Runway Definition

Under the Future (2037) No Action, none of the proposed airfield changes would occur and it is assumed that no changes to the runway locations would occur. Therefore, the runway definition discussed for the Existing (2022) Condition in Section 7.1 would remain the same for the Future (2037) No Action.

Runway End Utilization

Table 7-23 presents the runway end utilization used for the modeling of the Future (2037) No Action.

TABLE 7-23: GENERALIZED RUNWAY END UTILIZATION SUMMARY – FUTURE (2037) NO ACTION

Aircraft Category	Runway End 16L	Runway End 16C	Runway End 16R	Runway End 34L	Runway End 34C	Runway End 34R
Daytime Arrivals						
Commercial Jets	10.94%	1.00%	59.06%	24.12%	0.50%	4.38%
Cargo Jets	55.00%	1.00%	15.00%	6.50%	0.50%	22.00%
Regional Jets	5.00%	1.00%	65.00%	26.50%	0.50%	2.00%
Cargo Props	21.71%	1.40%	47.89%	26.50%	0.90%	1.60%
General Aviation	26.00%	1.50%	43.50%	26.50%	1.00%	1.50%
Other	14.34%	1.22%	55.43%	26.50%	0.72%	1.78%
Military	26.00%	1.50%	43.50%	26.50%	1.00%	1.50%
Missed Approaches*	--	--	77.33%	22.67%	--	--
Daytime Departures						
Commercial Jets	45.63%	25.37%	--	--	0.94%	28.06%
Cargo Jets	58.00%	13.00%	--	--	0.50%	28.50%
Regional Jets	44.00%	27.00%	--	--	1.00%	28.00%
Cargo Props	44.00%	24.61%	2.39%	1.59%	11.74%	15.67%
General Aviation	44.00%	24.00%	3.00%	2.00%	14.50%	12.50%
Other	44.00%	25.67%	1.33%	0.89%	6.99%	21.12%
Military	44.00%	24.00%	3.00%	2.00%	14.50%	12.50%
Missed Approaches*	--	--	77.33%	22.67%	--	--
Nighttime Arrivals						
Commercial Jets	5.25%	1.00%	64.75%	26.40%	0.50%	2.10%
Cargo Jets	55.00%	1.00%	15.00%	6.50%	0.50%	22.00%
Regional Jets	5.00%	1.00%	65.00%	26.50%	0.50%	2.00%
Cargo Props	--	--	--	--	--	--
General Aviation	26.00%	1.50%	43.50%	26.50%	1.00%	1.50%
Other	5.00%	1.00%	65.00%	26.50%	0.50%	2.00%
Military	--	--	--	--	--	--
Missed Approaches*	--	--	80.98%%	19.02%	--	--
Nighttime Departures						
Commercial Jets	44.26%	26.74%	--	--	0.99%	28.01%
Cargo Jets	58.00%	13.00%	--	--	0.50%	28.50%
Regional Jets	44.00%	27.00%	--	--	1.00%	28.00%
Cargo Props	--	--	--	--	--	--
General Aviation	--	--	--	--	--	--
Other	44.00%	27.00%	--	--	1.00%	28.00%
Military	--	--	--	--	--	--
Missed Approaches*	--	--	80.98%%	19.02%	--	--

Note: Day = 7:00 a.m. to 9:59 p.m., Night = 10:00 p.m. to 6:59 a.m.
* Missed approaches count as two arrivals and one departure for modeling purposes.
Sources: Aviation Forecast Update, prepared by Port of Seattle/LeighFisher, 2023, Sustainable Airport Master Plan Near-Term Projects, Constrained Operating Growth Scenarios, Seattle-Tacoma International Airport, Landrum & Brown, September 2023, Environmental Review Airside Modeling, Seattle-Tacoma International Airport, LeighFisher, 2020, Landrum & Brown analysis, 2024.

Engine Run-Ups

Under the Future (2037) No Action, no changes to run-up locations would occur. Therefore, the run-up locations discussed for the Existing (2022) Condition in Section 7.1 would remain the same for the Future (2037) No Action. The numbers of engine run-up operations are estimated for Future (2037) No Action conditions based on scaling the engine run-ups from 2022 for the number of total operations, assuming the same distribution across aircraft type. The resulting numbers of engine run-ups are presented below in **Table 7-24**.

TABLE 7-24: ANNUAL AIRCRAFT RUN-UP ACTIVITY – FUTURE (2037) NO ACTION

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
North Flow Primary Location						
Airbus A320-200 Series	01P08CM105	25.4	15.8	2.0	2.0	25,000 lbs.
Airbus A320-200 Series	1CM009	3.0	69.5	--	--	25,000 lbs.
Airbus A320-200 Series	3CM026	3.0	15.5	--	--	25,000 lbs.
Airbus A321-200 Series	3CM025	4.5	36.7	--	--	30,000 lbs.
Airbus A321-NEO	01P20CM132	--	--	2.0	2.0	30,000 lbs.
Airbus A330-200 Series	9PW094	9.0	27.7	--	--	71,100 lbs.
Airbus A330-300 Series	4GE080	1.5	37.0	--	--	67,500 lbs.
Airbus A330-900N Series (Neo)	02P23RR141	1.5	26.0	--	--	71,100 lbs.
Boeing 737-700 Series	3CM031	6.0	26.8	--	--	24,000 lbs.
Boeing 737-700 Series	3CM032	7.5	56.4	--	--	24,000 lbs.
Boeing 737-800 Series	01P11CM122	1.5	10.0	--	--	26,300 lbs.
Boeing 737-800 Series	3CM032	20.9	27.6	--	--	26,300 lbs.
Boeing 737-800 Series	3CM034	1.5	9.0	--	--	26,300 lbs.
Boeing 737-800 Series	8CM051	3.0	40.5	--	--	26,300 lbs.
Boeing 737-800 Series	8CM066	4.5	33.0	--	--	26,300 lbs.
Boeing 737-9	01P20CM140	13.4	14.6	--	--	26,400 lbs.
Boeing 737-900-ER	01P11CM116	14.9	20.2	--	--	26,300 lbs.
Boeing 737-900-ER	01P11CM121	23.9	25.1	--	--	13,150 lbs.
Boeing 737-900-ER	01P11CM121	1.5	4.0	--	--	26,300 lbs.
Embraer ERJ175-LR	01P08GE197	1.5	6.0	--	--	6,900 lbs.
Embraer ERJ175-LR	01P08GE197	6.0	28.0	--	--	13,800 lbs.
South Flow Primary Location						
Airbus A320-200 Series	01P08CM105	3.0	6.0	--	--	12,500 lbs.
Airbus A320-200 Series	01P08CM105	41.8	12.9	--	--	25,000 lbs.
Airbus A320-200 Series	1CM009	7.5	31.6	--	--	25,000 lbs.
Airbus A321-NEO	01P20CM132	3.0	12.5	--	--	30,000 lbs.

TABLE 7-24: ANNUAL AIRCRAFT RUN-UP ACTIVITY – FUTURE (2037) NO ACTION (CONTINUED)

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
Airbus A330-200 Series	2RR023	1.5	6.0	--	--	71,100 lbs.
Airbus A330-200 Series	9PW094	1.5	26.0	--	--	35,550 lbs.
Airbus A330-200 Series	9PW094	11.9	14.9	--	--	71,100 lbs.
Airbus A330-300 Series	4GE080	4.5	10.7	--	--	67,500 lbs.
Airbus A330-900N Series (Neo)	02P23RR141	4.5	26.7	--	--	71,100 lbs.
Boeing 737-700 Series	3CM031	1.5	20.0	2.0	2.0	12,000 lbs.
Boeing 737-700 Series	3CM031	23.9	17.6	--	--	24,000 lbs.
Boeing 737-700 Series	3CM032	6.0	31.5	--	--	24,000 lbs.
Boeing 737-700 Series	3CM032	62.7	18.3	--	--	26,300 lbs.
Boeing 737-800 Series	3CM032	4.5	18.3	--	--	13,150 lbs.
Boeing 737-800 Series	8CM051	16.4	21.0	--	--	26,300 lbs.
Boeing 737-800 Series	8CM065	1.5	6.0	--	--	26,300 lbs.
Boeing 737-800 Series	8CM066	1.5	3.0	2.0	2.0	13,150 lbs.
Boeing 737-800 Series	8CM066	35.8	10.7	--	--	26,300 lbs.
Boeing 737-9	01P20CM140	1.5	9.0	--	--	13,200 lbs.
Boeing 737-9	01P20CM140	31.4	10.4	--	--	26,400 lbs.
Boeing 737-900-ER	01P11CM116	1.5	3.0	--	--	13,150 lbs.
Boeing 737-900-ER	01P11CM116	31.4	15.7	3.9	2.0	26,300 lbs.
Boeing 737-900-ER	01P11CM121	1.5	8.0	--	--	13,150 lbs.
Boeing 737-900-ER	01P11CM121	80.6	25.5	--	--	26,300 lbs.
Boeing 767-200 Series Freighter	1GE012	1.5	6.0	--	--	48,000 lbs.
Boeing 767-300 ER Freighter	1GE030	4.5	21.0	--	--	60,000 lbs.
Embraer ERJ175-LR	01P08GE197	10.5	11.1	--	--	13,800 lbs.
Tango X Location						
Airbus A330-200 Series	9PW094	1.5	38.0	--	--	71,100 lbs.
	Total	552.6	--	11.8	--	

Notes: Totals may not sum due to rounding.
Daytime = 7:00am – 9:59pm, Nighttime = 10:00pm – 6:59am.

Sources: Aviation Forecast Update, prepared by Port of Seattle/LeighFisher, 2023, Sustainable Airport Master Plan Near-Term Projects, Constrained Operating Growth Scenarios, Seattle-Tacoma International Airport, Landrum & Brown, September 2023, Landrum & Brown analysis, 2024.

Flight Tracks

Flight track locations for the Future (2037) No Action would not change. As such, the flight tracks for the Future (2037) No Action are expected to be the same as the Existing (2022) Condition. The flight track information discussed for the Existing (2022) Condition in Section 7.1 would remain the same for the Future (2037) No Action.

Aircraft Trip Length and Operational Profiles

Table 7-25 presents the departure stage length distribution for the Future (2037) No Action. The departure segment of the missed approaches is modeled as Stage Length Category 1.

TABLE 7-25: DEPARTURE STAGE LENGTH DISTRIBUTION – FUTURE (2037) NO ACTION

Stage Length	Commercial Jets	Cargo Jets	Regional Jets	Cargo Props	General Aviation	Other	Military	Total
1	3.33%	--	75.95%	100.00%	100.00%	41.97%	100.00%	19.88%
2	44.28%	13.31%	20.25%	--	--	29.18%	--	37.51%
3	14.56%	26.95%	3.80%	--	--	14.75%	--	12.55%
4	28.77%	29.48%	--	--	--	14.10%	--	22.29%
5	--	--	--	--	--	--	--	--
6	3.66%	21.91%	--	--	--	--	--	3.49%
7	5.39%	8.35%	--	--	--	--	--	4.28%
8	--	--	--	--	--	--	--	--
9	--	--	--	--	--	--	--	--

Note: Totals may not sum due to rounding.
Sources: Aviation Forecast Update, prepared by Port of Seattle/LeighFisher, 2023, Sustainable Airport Master Plan Near-Term Projects, Constrained Operating Growth Scenarios, Seattle-Tacoma International Airport, Landrum & Brown, September 2023, Landrum & Brown analysis, 2024.

7.2.3.2 Future 2037 No Action Noise Contours

Exhibit 7-12: *Future (2037) No Action Noise Contour* depicts the 65, 70, and 75 DNL noise contour for the Future (2037) No Action. The area in square miles of each DNL contour band is summarized in **Table 7-26**. The 65+ DNL of the Future (2037) No Action is smaller than the 65+ DNL of the Future (2032) No Action Alternative due to the increase in the number of Boeing 737-7/8/9 MAX aircraft in the fleet. The MAX aircraft have a substantially smaller noise footprint than the aircraft they are replacing (Boeing 737-700/800/900 aircraft).

The 65+ DNL contour extends approximately 3.6 miles to the north and 3.0 miles south of SEA. The area within the contour to the north and south is made up of a mix of single-family residential, multi-family residential, commercial, and industrial land uses.

TABLE 7-26: AREA (SQUARE MILES) OF 65, 70, AND 75 DNL NOISE CONTOURS – FUTURE (2037) NO ACTION

Alternative	DNL 65 – 70 dB	DNL 70 – 75 dB	DNL 75+ dB	DNL 65+ dB
Future (2032) No Action	6.23	2.42	1.45	10.10
Future (2037) No Action	5.67	2.17	1.32	9.16
Change	-0.56	-0.25	-0.13	-0.94

Source: Landrum & Brown, 2024.

7.2.3.3 Non-Compatible Land Use

Summaries of the residential population and housing units exposed to noise levels exceeding 65+ DNL for the Future (2037) No Action noise contour are provided in **Table 7-27**. A total of 7,166 housing units would be located within the 65+ DNL noise contour. The decrease in housing units and population from the Future (2032) No Action is due to the previously mentioned increase of Boeing 737 MAX aircraft in 2037, resulting in a decrease in size of the 65+ DNL contour. For the "sound insulation completed," the additional areas within the 65 DNL contour include homes treated during prior phases of the Port's Part 150 Noise Remedy Program, which extends back to 1985 (when the noise contours were much larger). Therefore, the increases in the numbers are solely due to the changes in the noise contour.

TABLE 7-27: NON-COMPATIBLE LAND USE HOUSING AND POPULATION – FUTURE (2037) NO ACTION

Mitigation Status/Land Use	DNL 65 - 70 dB	DNL 70 - 75 dB	DNL 65+ dB
Sound Insulation Completed			
Single-Family	3,247	299	3,546
Multi-Family	321	4	325
Mobile Home	0	0	0
Subtotal	3,568	303	3,871
Not Sound Insulated			
Single-Family	783	54	837
Multi-Family	2,356	0	2,356
Mobile Home	91	11	102
Subtotal	3,230	65	3,295
Total Housing Units	**6,798**	**368**	**7,166**
Estimated Population			
Total Estimated Population	**15,331**	**966**	**16,297**

Notes: Multi-family includes total units in a complex and were verified using King County assessor data. Population numbers are estimates based on the 2020 United States Census average household size per number of housing units.
Source: Landrum & Brown analysis, 2024.

A list of noise sensitive facilities within the 65+ DNL noise contour for the Future (2037) No Action are listed in **Table 7-28**. There would be 10 schools, 21 places of worship, four nursing homes, and two libraries within the 65+ DNL noise contour. There are no noise sensitive facilities within the 70 or 75 DNL noise contours for the Future (2037) No Action.

TABLE 7-28: NOISE SENSITIVE FACILITIES IN THE FUTURE (2037) NO ACTION 65+ DNL NOISE CONTOUR

Map ID	Name
Schools	
S-1	Puget Sound Skills Center
S-2	Choice Academy – Homeschool Center
S-3	Midway Elementary School
S-4	Mount Rainier High School
S-5	Southern Heights Elementary School
S-6	Pacific Middle School
S-7	Beverly Park Elementary School
S-8	Our Lady of Lourdes School
S-9	St. Philomena Catholic School
S-10	Glacier Middle School
Places of Worship	
C-1	Saint Philomena Catholic Church
C-2	Prince of Peace Lutheran Church
C-3	Samoan Christian Fellowship
C-4	Normandy Christian Church
C-5	Southminster Presbyterian Church
C-6	Hope Church
C-7	Gospel Russian Baptist Church
C-8	The Mountain Church
C-9	Riverton Heights Baptist Church
C-10	Boulevard Park Presbyterian
C-11	Midway Community Covenant Church
C-12	Apostolic Bible Church of Jesus Christ
C-13	Highline 7th Day Adventist Church
C-14	Glen Acres Church of Christ
C-15	Kingdom Hall of Jehovah's Witnesses
C-16	New Testament Christian Church
C-17	Our Lady of Lourdes Church
C-18	Pacific Northwest United Methodist
C-19	Wat Buddharam Buddhist Temple
C-20	Hanuman Nagri Temple
C-21	Way of Salvation Church
Libraries	
L-1	Des Moines Library
L-2	Boulevard Park Library
Nursing Homes	
N-2	Wesley Homes Terrace
N-3	Wesley Homes Health Center
N-4	Wesley Homes Gardens and Bungalows
N-5	High West Residence

Source: Landrum & Brown analysis, 2024.

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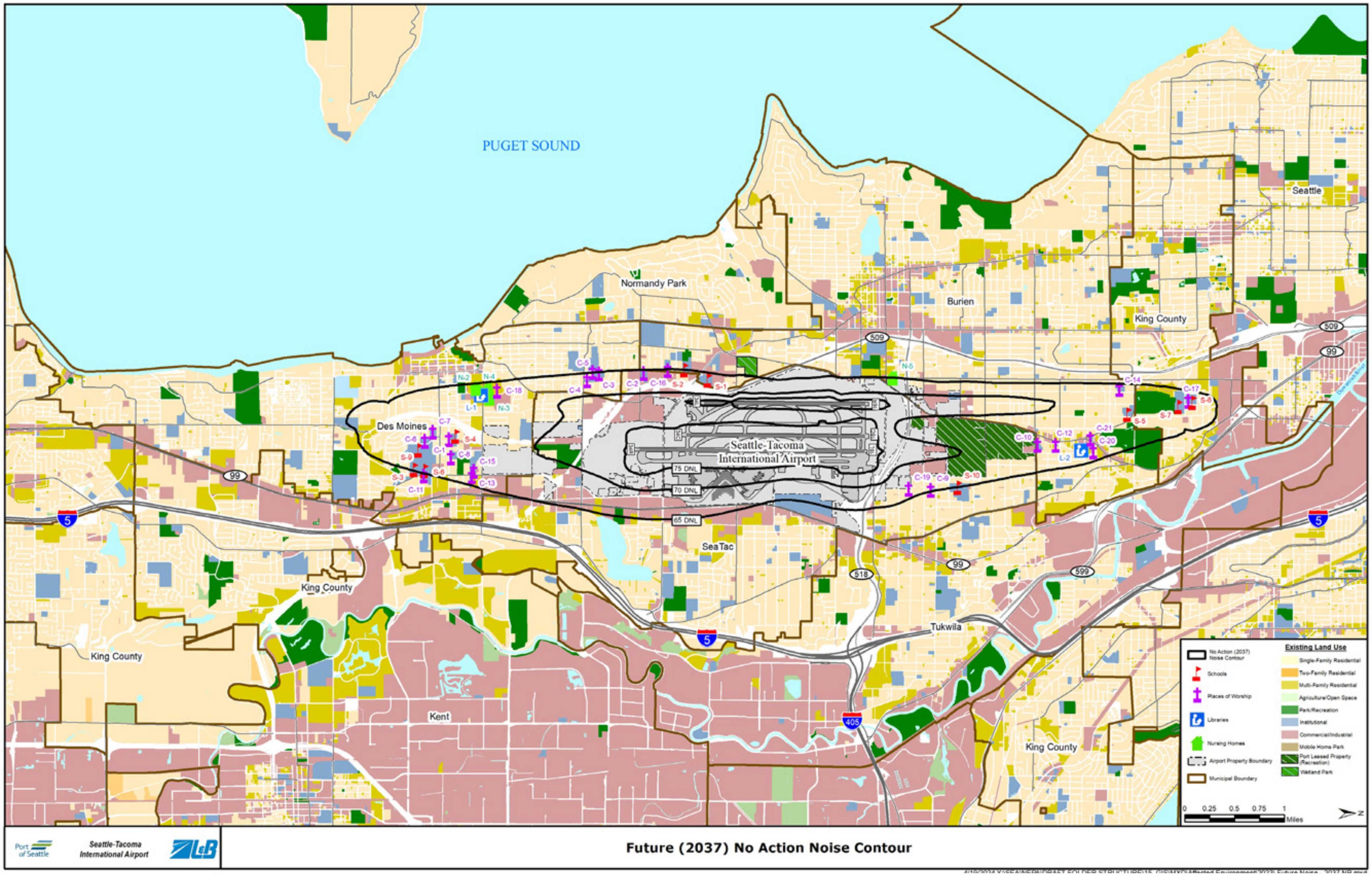
EXHIBIT 7-12: FUTURE (2037) NO ACTION NOISE CONTOUR



Sources: AEDT Version 3f; Landrum & Brown analysis, 2024.

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7.2.4 Future (2037) Proposed Action

The following describes the input data and methodologies used in preparing the Future (2037) Proposed Action noise contour, followed by the resulting noise exposure contours.

Aircraft Activity Levels and Fleet Mix

Table 7-29 shows the total number of operations by detailed aircraft type and by time of day (daytime or nighttime). The Future (2037) Proposed Action annual average day included 1,397 average annual day operations, 15.8 percent of which occurred during the nighttime hours of 10:00 p.m. to 6:59 a.m. This is an increase of 96 average annual day operations over the Future (2037) No Action condition.

TABLE 7-29: AVERAGE DAILY OPERATIONS BY AEDT AIRFRAME AND ENGINE CODE – FUTURE (2037) PROPOSED ACTION

Airframe	Engine Code	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
Commercial Jets						
Airbus A220-100	16PW111	33.92	3.39	37.31		74.62
Airbus A220-300	16PW111	10.75	2.15	12.91		25.81
Airbus A220-300	16PW112	5.30	1.06	6.36		12.71
Airbus A320-200 Series	01P08CM105	2.28	0.68	1.94	1.03	5.93
Airbus A320-200 Series	01P10IA021	0.20	0.06	0.17	0.09	0.53
Airbus A320-200 Series	01P10IA022	0.04	0.01	0.04	0.02	0.11
Airbus A320-200 Series	1CM008	0.06	0.02	0.05	0.03	0.14
Airbus A320-200 Series	1CM009	0.23	0.07	0.19	0.10	0.59
Airbus A320-200 Series	1IA003	0.43	0.13	0.37	0.19	1.12
Airbus A320-200 Series	3CM026	0.25	0.07	0.21	0.11	0.64
Airbus A320-200 Series	8IA010	0.00	0.00	0.00	0.00	0.00
Airbus A320-NEO	01P20CM128	5.22	3.26	4.57	3.91	16.96
Airbus A320-NEO	01P22PW163	8.28	5.17	7.24	6.21	26.91
Airbus A321-200 Series	01P08CM104	0.35	0.13	0.29	0.19	0.96
Airbus A321-200 Series	01P10IA025	2.11	0.79	1.77	1.14	5.81
Airbus A321-200 Series	3CM025	0.36	0.13	0.30	0.19	0.99
Airbus A321-NEO	01P18PW157	6.72	3.73	8.96	1.49	20.91
Airbus A321-NEO	01P20CM132	19.93	11.07	26.58	4.43	62.01
Airbus A330-200 Series	2RR023	3.37	0.34	3.71		7.42
Airbus A330-200 Series	9PW094	0.05	0.00	0.05		0.11
Airbus A330-300 Series	2RR023	0.80		0.80		1.61
Airbus A330-300 Series	4GE080	0.82		0.82		1.63
Airbus A330-300 Series	7PW082	0.11		0.11		0.22
Airbus A330-300 Series	9PW094	2.30		2.30		4.61
Airbus A330-300 Series	9PW095	0.54		0.54		1.08
Airbus A330-900N Series (Neo)	02P23RR141	8.12		8.12		16.25
Airbus A350-900 series	01P18RR124	4.79		3.20	1.60	9.59
Boeing 737-7	01P20CM136	2.08	0.42	2.08	0.42	4.99
Boeing 737-700 Series	3CM030	0.01	0.01	0.02	0.01	0.06
Boeing 737-700 Series	3CM031	0.48	0.48	0.75	0.21	1.92
Boeing 737-700 Series	3CM032	0.09	0.09	0.14	0.04	0.35
Boeing 737-700 Series	8CM051	0.00	0.00	0.00	0.00	0.00

TABLE 7-29: AVERAGE DAILY OPERATIONS BY AEDT AIRFRAME AND ENGINE CODE – FUTURE (2037) PROPOSED ACTION (CONTINUED)

Airframe	Engine Code	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
Boeing 737-700 Series	8CM062	0.00	0.00	0.01	0.00	0.01
Boeing 737-700 Series	8CM063	0.08	0.08	0.13	0.04	0.33
Boeing 737-8	01P20CM135	0.79	0.16	0.79	0.16	1.90
Boeing 737-8	01P20CM136	25.63	5.13	25.63	5.13	61.50
Boeing 737-8	01P20CM140	23.64	4.73	23.64	4.73	56.73
Boeing 737-800 Series	01P11CM114	0.35	0.07	0.35	0.07	0.84
Boeing 737-800 Series	01P11CM116	4.71	0.99	4.78	0.92	11.40
Boeing 737-800 Series	01P11CM122	2.57	0.54	2.61	0.50	6.22
Boeing 737-800 Series	01P11CM125	0.57	0.12	0.58	0.11	1.38
Boeing 737-800 Series	01P11CM126	0.05	0.01	0.05	0.01	0.13
Boeing 737-800 Series	3CM032	14.42	3.03	14.63	2.81	34.89
Boeing 737-800 Series	3CM034	1.39	0.29	1.41	0.27	3.37
Boeing 737-800 Series	8CM051	19.74	4.14	20.03	3.85	47.76
Boeing 737-800 Series	8CM064	0.14	0.03	0.15	0.03	0.35
Boeing 737-800 Series	8CM065	1.84	0.39	1.87	0.36	4.46
Boeing 737-800 Series	8CM066	8.66	1.82	8.78	1.69	20.95
Boeing 737-9	01P20CM136	1.22	0.19	0.90	0.51	2.83
Boeing 737-9	01P20CM140	48.18	7.61	35.50	20.29	111.57
Boeing 737-900-ER	01P11CM116	30.48	6.63	31.02	6.09	74.22
Boeing 737-900-ER	01P11CM121	86.79	18.87	88.32	17.34	211.32
Boeing 737-900-ER	01P11CM125	0.27	0.06	0.27	0.05	0.65
Boeing 737-900-ER	3CM034	1.23	0.27	1.25	0.25	2.99
Boeing 737-900-ER	8CM065	1.37	0.30	1.39	0.27	3.33
Boeing 737-900-ER_MA	01P11CM121_MA	3.49	0.12	1.74	0.06	5.41
Boeing 787-10 Dreamliner	01P17GE211	0.66		0.66		1.31
Boeing 787-10 Dreamliner	01P17GE213	1.42		1.42		2.84
Boeing 787-10 Dreamliner	02P23RR134	0.72		0.72		1.43
Boeing 787-8 Dreamliner	01P17GE206	2.09		2.09		4.19
Boeing 787-8 Dreamliner	01P17GE210	0.07		0.07		0.14
Boeing 787-8 Dreamliner	11GE137	3.31		3.31		6.61
Boeing 787-8 Dreamliner	11GE138	8.13		8.13		16.25
Boeing 787-9 Dreamliner	01P17GE211	5.09		5.09		10.18
Boeing 787-9 Dreamliner	01P17GE214	0.03		0.03		0.07
Boeing 787-9 Dreamliner	02P23RR131	1.15		1.15		2.30
Boeing 787-9 Dreamliner	12RR067	5.26		5.26		10.52
Boeing 787-9 Dreamliner	12RR068	2.22		2.22		4.43
Subtotal		*427.75*	*88.86*	*427.86*	*86.94*	*1031.41*
Cargo Jets						
Boeing 747-400 ERF	12PW102	0.26	0.53	0.53	0.26	1.58
Boeing 747-400BCF	01P03GE187	0.26	0.53	0.53	0.26	1.58

TABLE 7-29: AVERAGE DAILY OPERATIONS BY AEDT AIRFRAME AND ENGINE CODE – FUTURE (2037) PROPOSED ACTION (CONTINUED)

Airframe	Engine Code	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
Boeing 747-8F	01P17GE215	0.43		0.43		0.86
Boeing 747-8F	13GE156	0.11		0.11		0.23
Boeing 747-8F	8GENX1	0.37		0.37		0.75
Boeing 767-200 Series Freighter	1GE010	1.70	3.40	3.40	1.70	10.19
Boeing 767-200 Series Freighter	1GE012	0.85	1.69	1.69	0.85	5.07
Boeing 767-200 Series Freighter	1PW026	0.15	0.30	0.30	0.15	0.91
Boeing 767-300 ER Freighter	1GE030	5.96	1.19	5.96	1.19	14.31
Boeing 767-300 ER Freighter	2GE055	0.59	0.12	0.59	0.12	1.41
Boeing 777 Freighter	01P21GE216	5.05		5.05		10.11
Boeing 777 Freighter	01P21GE217	0.12		0.12		0.24
	Subtotal	15.86	7.75	19.09	4.53	47.24
Regional Jets						
Embraer ERJ175-LR	01P08GE197	134.39	15.44	133.38	16.44	299.66
Embraer ERJ175-LR_MA_Y2	01P08GE197_MA_Y2	1.73	0.22	0.87	0.11	2.92
Subtotal		*136.12*	*15.65*	*134.25*	*16.55*	*302.58*
Cargo Props						
ATR 72-600 Freighter	PW127F	0.44		0.44		0.88
Cessna 208 Caravan	P6114A	1.57		1.57		3.14
Cessna 208 Caravan	PT6A14	1.55		1.55		3.10
Cessna 408 SkyCourier	PT6A6B	0.44		0.44		0.88
Raytheon Beech 99	PT6A27	0.01		0.01		0.01
Raytheon Beech 99	PT6A36	0.32		0.32		0.64
Subtotal		*4.33*	--	*4.33*	--	*8.67*
General Aviation						
Bombardier Challenger 350	01P14HN011	0.78	--	0.78	--	1.57
Cessna 172 Skyhawk	IO320	0.08	0.08	0.16	--	0.33
Dassault Falcon 50	1AS002	0.78	--	0.78	--	1.57
Embraer Phenom 300 (EMB-505)	PW530	0.19	--	0.19	--	0.37
Piper PA-31 Navajo	TIO540	0.02	--	0.02	--	0.04
Raytheon C-12 Huron	PT660A	0.09	--	0.09	--	0.18
Subtotal		*1.95*	*0.08*	*2.03*	--	*4.06*
Other						
Boeing 737-900-ER_O1	01P11CM121_O1	0.49	0.11	0.50	0.10	1.20
Boeing 737-900-ER_O2	01P11CM125_O2	0.00	0.00	0.00	0.00	0.00

TABLE 7-29: AVERAGE DAILY OPERATIONS BY AEDT AIRFRAME AND ENGINE CODE – FUTURE (2037) PROPOSED ACTION (CONTINUED)

Airframe	Engine Code	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
Boeing 737-900-ER_O3	3CM034_O3	0.01	0.00	0.01	0.00	0.02
Boeing 737-900-ER_O4	8CM065_O4	0.01	0.00	0.01	0.00	0.02
Boeing 737-900-ER_O7	01P11CM116_O7	0.17	0.04	0.17	0.03	0.41
Cessna 208 Caravan_O5	P6114A_O5	0.28	--	0.28	--	0.55
Cessna 208 Caravan_O6	PT6A14_O6	0.27	--	0.27	--	0.54
Subtotal		*1.22*	*0.15*	*1.23*	*0.13*	*2.74*
Military						
Cessna 172 Skyhawk_M2	IO320_M2	0.00	--	0.00	--	0.01
Embraer Phenom 300 (EMB-505)_M1	PW530_M1	0.10	--	0.10	--	0.20
Raytheon C-12 Huron_M	PT660A_M	0.04	--	0.04	--	0.07
Subtotal		*0.14*	--	*0.14*	--	*0.27*
Total		**587.38**	**112.49**	**588.93**	**108.16**	**1396.96**

Note: Totals may not sum due to rounding.
Day = 7:00 a.m. to 9:59 p.m., Night = 10:00 p.m. to 6:59 a.m.
Sources: Aviation Forecast Update, prepared by Port of Seattle/LeighFisher, 2023, Sustainable Airport Master Plan Near-Term Projects, Constrained Operating Growth Scenarios, Seattle-Tacoma International Airport, Landrum & Brown, September 2023, Landrum & Brown analysis, 2024.

Runway Definition

Under the Future (2037) Proposed Action, no changes to the runway location or definition would occur. Therefore, the runway definition discussed for the Existing (2022) Condition in Section 7.1 would remain the same for the Future (2037) Proposed Action.

Runway End Utilization

Table 7-30 presents the runway end utilization for the Future (2037) Proposed Action.

TABLE 7-30: GENERALIZED RUNWAY END UTILIZATION SUMMARY – FUTURE (2037) PROPOSED ACTION

Aircraft Category	Runway End 16L	Runway End 16C	Runway End 16R	Runway End 34L	Runway End 34C	Runway End 34R
Daytime Arrivals						
Regional Jets	5.00%	1.00%	65.00%	26.00%	1.00%	2.00%
Cargo Props	23.86%	1.45%	45.70%	26.45%	1.00%	1.55%
General Aviation	26.00%	1.50%	43.50%	26.50%	1.00%	1.50%
Other	14.41%	1.22%	55.37%	26.22%	1.00%	1.78%
Military	26.00%	1.50%	43.50%	26.50%	1.00%	1.50%
Missed Approaches*	--	--	77.33%	22.67%	--	--
Daytime Departures						
Commercial Jets	45.64%	25.36%	--	--	0.94%	28.06%
Cargo Jets	58.00%	13.00%	--	--	0.50%	28.50%
Regional Jets	44.00%	27.00%	--	--	1.00%	28.00%
Cargo Props	35.47%	32.84%	2.69%	1.80%	13.12%	14.08%
General Aviation	34.50%	33.50%	3.00%	2.00%	14.50%	12.50%
Other	39.78%	29.88%	1.33%	0.89%	6.99%	21.12%
Military	34.50%	33.50%	3.00%	2.00%	14.50%	12.50%
Missed Approaches*	--	--	77.33%	22.67%	--	--
Nighttime Arrivals						
Commercial Jets	5.19%	1.00%	64.81%	25.93%	1.00%	2.07%
Cargo Jets	55.00%	1.00%	15.00%	7.00%	1.00%	21.00%
Regional Jets	5.00%	1.00%	65.00%	26.00%	1.00%	2.00%
Cargo Props	--	--	--	--	--	--
General Aviation	26.00%	1.50%	43.50%	26.50%	1.00%	1.50%
Other	5.00%	1.00%	65.00%	26.00%	1.00%	2.00%
Military	--	--	--	--	--	--
Missed Approaches*	--	--	80.98%	19.02%	--	--
Nighttime Departures						
Commercial Jets	44.26%	26.74%	--	--	0.99%	28.01%
Cargo Jets	58.00%	13.00%	--	--	0.50%	28.50%
Regional Jets	44.00%	27.00%	--	--	1.00%	28.00%
Cargo Props	--	--	--	--	--	--
General Aviation	--	--	--	--	--	--
Other	44.00%	27.00%	--	--	1.00%	28.00%
Military	--	--	--	--	--	--
Missed Approaches*	--	--	80.98%	19.02%	--	--

Note: Day = 7:00 a.m. to 9:59 p.m., Night = 10:00 p.m. to 6:59 a.m.
* Missed approaches count as two arrivals and one departure for modeling purposes.
Sources: Aviation Forecast Update, prepared by Port of Seattle/LeighFisher, 2023, Sustainable Airport Master Plan Near-Term Projects, Constrained Operating Growth Scenarios, Seattle-Tacoma International Airport, Landrum & Brown, September 2023, Environmental Review Airside Modeling, Seattle-Tacoma International Airport, LeighFisher, 2020, Landrum & Brown analysis, 2024.

Engine Run-Ups

Under the Future (2037) Proposed Action, changes to run-up locations would occur due to changes in the taxiways and new passenger terminal facilities. The result is that there would be fewer total run-up locations and the locations would be on the north and south ends of the airfield, in the same location as the Future (2032) Proposed Action. Exhibit 7-10 shows the location of the run-ups for this condition. The number and type of engine run-up operations for the Future (2037) Proposed Action are presented below in **Table 7-31**. The number of engine run-up operations were scaled up from 2022 levels assuming the same distribution across aircraft types.

TABLE 7-31: ANNUAL AIRCRAFT RUN-UP ACTIVITY – FUTURE (2037) PROPOSED ACTION

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
North Flow Primary Location						
Airbus A320-200 Series	01P08CM105	27.3	15.8	2.1	2.0	25,000 lbs.
Airbus A320-200 Series	1CM009	3.2	69.5	--	--	25,000 lbs.
Airbus A320-200 Series	3CM026	3.2	15.5	--	--	25,000 lbs.
Airbus A321-200 Series	3CM025	4.8	36.7	--	--	30,000 lbs.
Airbus A321-NEO	01P20CM132			2.1	2.0	30,000 lbs.
Airbus A330-200 Series	9PW094	9.6	27.7	--	--	71,100 lbs.
Airbus A330-300 Series	4GE080	1.6	37.0	--	--	67,500 lbs.
Airbus A330-900N Series (Neo)	02P23RR141	1.6	26.0	--	--	71,100 lbs.
Boeing 737-700 Series	3CM031	6.4	26.8	--	--	24,000 lbs.
Boeing 737-700 Series	3CM032	8.0	56.4	--	--	24,000 lbs.
Boeing 737-800 Series	01P11CM122	1.6	10.0	--	--	26,300 lbs.
Boeing 737-800 Series	3CM032	22.4	27.6	--	--	26,300 lbs.
Boeing 737-800 Series	3CM034	1.6	9.0	--	--	26,300 lbs.
Boeing 737-800 Series	8CM051	3.2	40.5	--	--	26,300 lbs.
Boeing 737-800 Series	8CM066	4.8	33.0	--	--	26,300 lbs.
Boeing 737-9	01P20CM140	14.4	14.6	--	--	26,400 lbs.
Boeing 737-900-ER	01P11CM116	16.0	20.2	--	--	26,300 lbs.
Boeing 737-900-ER	01P11CM121	1.6	4.0	--	--	13,150 lbs.
Boeing 737-900-ER	01P11CM121	25.7	25.1	--	--	26,300 lbs.
Embraer ERJ175-LR	01P08GE197	1.6	6.0	--	--	6,900 lbs.
Embraer ERJ175-LR	01P08GE197	6.4	28.0	--	--	13,800 lbs.
South Flow Primary Location						
Airbus A320-200 Series	01P08CM105	3.2	6.0	--	--	12,500 lbs.
Airbus A320-200 Series	01P08CM105	44.9	12.9	--	--	25,000 lbs.
Airbus A320-200 Series	1CM009	8.0	31.6	--	--	25,000 lbs.
Airbus A321-NEO	01P20CM132	3.2	12.5	--	--	30,000 lbs.
Airbus A330-200 Series	2RR023	1.6	6.0	--	--	71,100 lbs.
Airbus A330-200 Series	9PW094	1.6	26.0	--	--	35,550 lbs.
Airbus A330-200 Series	9PW094	12.8	14.9	--	--	71,100 lbs.
Airbus A330-300 Series	4GE080	4.8	10.7	--	--	67,500 lbs.
Airbus A330-900N Series (Neo)	02P23RR141	4.8	26.7	--	--	71,100 lbs.
Boeing 737-700 Series	3CM031	1.6	20.0	2.1	2.0	12,000 lbs.
Boeing 737-700 Series	3CM031	25.7	17.6	--	--	24,000 lbs.
Boeing 737-700 Series	3CM032	6.4	31.5	--	--	24,000 lbs.
Boeing 737-700 Series	3CM032	67.3	18.3	--	--	26,300 lbs.
Boeing 737-800 Series	3CM032	4.8	18.3	--	--	13,150 lbs.
Boeing 737-800 Series	8CM051	17.6	21.0	--	--	26,300 lbs.
Boeing 737-800 Series	8CM065	1.6	6.0	--	--	26,300 lbs.

TABLE 7-31: ANNUAL AIRCRAFT RUN-UP ACTIVITY – FUTURE (2037) PROPOSED ACTION (CONTINUED)

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
Boeing 737-800 Series	8CM066	1.6	3.0	2.1	2.0	13,150 lbs.
Boeing 737-800 Series	8CM066	38.5	10.7	--	--	26,300 lbs.
Boeing 737-9	01P20CM140	1.6	9.0	--	--	13,200 lbs.
Boeing 737-9	01P20CM140	33.7	10.4	--	--	26,400 lbs.
Boeing 737-900-ER	01P11CM116	1.6	3.0	--	--	13,150 lbs.
Boeing 737-900-ER	01P11CM116	33.7	15.7	4.2	2.0	26,300 lbs.
Boeing 737-900-ER	01P11CM121	1.6	8.0	--	--	13,150 lbs.
Boeing 737-900-ER	01P11CM121	86.6	25.5	--	--	26,300 lbs.
Boeing 767-200 Series Freighter	1GE012	1.6	6.0	--	--	48,000 lbs.
Boeing 767-300 ER Freighter	1GE030	4.8	21.0	--	--	60,000 lbs.
Embraer ERJ175-LR	01P08GE197	11.2	11.2	--	--	13,800 lbs.
North Flow Secondary Location						
Airbus A330-200 Series	9PW094	1.6	38.0	--	--	71,100 lbs.
Total		593.3	--	12.7	--	--

Notes: Totals may not sum due to rounding.
Daytime = 7:00am – 9:59pm, Nighttime = 10:00pm – 6:59am.

Sources: Aviation Forecast Update, prepared by Port of Seattle/LeighFisher, 2023, Sustainable Airport Master Plan Near-Term Projects, Constrained Operating Growth Scenarios, Seattle-Tacoma International Airport, Landrum & Brown, September 2023, Landrum & Brown analysis, 2024.

Flight Tracks

Flight track locations for the Future (2037) Proposed Action are expected to be the same as the Existing (2022) conditions because there are no changes to the runway locations and no flight track changes are being proposed.[14] Therefore, the flight track location information discussed for the Existing (2022) Condition in Section 7.1 would remain the same for the Future (2037) Proposed Action.

Aircraft Departure Stage Length and Operational Profiles

Table 7-32 presents the departure stage length distribution for the Future (2037) Proposed Action. The departure segment of the missed approaches is modeled as Stage Length Category 1.

14 It is expected that the Runway 34R arrival profile will be slightly higher due to the relocation of the glide slope. This higher Runway 34R arrival profile was not specifically included in this analysis because AEDT does not provide a function to reflect this minor change. Furthermore, by not including the change in Runway 34R arrival profile this analysis represents a conservative evaluation of noise impacts.

TABLE 7-32: DEPARTURE STAGE LENGTH DISTRIBUTION – FUTURE (2037) PROPOSED ACTION

Stage Length	Commercial Jets	Cargo Jets	Regional Jets	Cargo Props	General Aviation	Other	Military	Total
1	3.41%	--	76.22%	100.00%	100.00%	42.15%	100.00%	19.99%
2	44.77%	11.09%	20.12%	--	--	28.92%	--	37.85%
3	14.81%	30.28%	3.66%	--	--	15.08%	--	12.79%
4	27.84%	28.37%	--	--	--	13.85%	--	21.56%
5	--	--	--	--	--	--	--	--
6	4.00%	21.91%	--	--	--	--	--	3.70%
7	5.17%	8.35%	--	--	--	--	--	4.11%
8	--	--	--	--	--	--	--	--
9	--	--	--	--	--	--	--	--

Note: Totals may not sum due to rounding.
Sources: Aviation Forecast Update, prepared by Port of Seattle/LeighFisher, 2023, Sustainable Airport Master Plan Near-Term Projects, Constrained Operating Growth Scenarios, Seattle-Tacoma International Airport, Landrum & Brown, September 2023, Landrum & Brown analysis, 2024.

7.2.4.2 Future 2037 Proposed Action Noise Contours

Exhibit 7-13 *Future (2037) Proposed Action Noise Contour* depicts the 65, 70, and 75 DNL noise contour for the Future (2037) Proposed Action. The area in square miles of each DNL contour band is summarized in **Table 7-33**.

The 65+ DNL contour extends approximately 3.7 miles to the north and 3.2 miles south of SEA. The area within the contour to the north and south is made up of a mix of single-family residential, multi-family residential, commercial, and industrial land uses.

TABLE 7-33: AREA (SQUARE MILES) OF 65, 70, AND 75 DNL NOISE CONTOURS – FUTURE (2037) PROPOSED ACTION

Alternative	DNL 65 - 70 dB	DNL 70 - 75 dB	DNL 75+ dB	DNL 65+ dB
Future (2037) No Action	5.67	2.17	1.32	9.16
Future (2037) Proposed Action	6.08	2.34	1.39	9.82
Change	0.41	0.17	0.07	0.66

Source: Landrum & Brown, 2024.

7.2.4.3 Non-Compatible Land Use

Summaries of the residential population and housing units exposed to noise levels exceeding 65+ DNL for the Future (2037) Proposed Action noise contour are provided in **Table 7-34**. A total of 9,017 housing units (an increase of 1,851 from the Future (2037) No Action) would be located within the Future (2037) Proposed Action 65+ DNL noise contour. The increase in housing units and population from the No Action is due to the increased aircraft operations forecast for the Future (2037) Proposed Action and the increase in size of the 65+ DNL noise contour. For the “sound insulation completed,” the additional areas within the 65+ DNL contour include homes treated during prior phases of the Port’s Part 150 Noise Remedy Program, which extends back to 1985 (when the noise contours were much larger). Therefore, the increases in the numbers are solely due to the changes in the noise contour.

TABLE 7-34: NON-COMPATIBLE LAND USE HOUSING AND POPULATION – FUTURE (2037) PROPOSED ACTION

Mitigation Status/Land Use	DNL 65 - 70 dB	DNL 70 - 75 dB	DNL 65+ dB
Sound Insulation Completed			
Single-Family	3,570	389	3,959
Multi-Family	362	4	366
Mobile Home	0	0	0
Subtotal	3,932	393	4,325
Not Sound Insulated			
Single-Family	917	72	989
Multi-Family	3,572	0	3,572
Mobile Home	114	17	131
Subtotal	4,603	89	4,692
Total Housing Units	**8,535**	**482**	**9,017**
Estimated Population			
Total Estimated Population	**19,468**	**1,268**	**20,736**

Notes: Multi-family includes total units in a complex and were verified using King County assessor data. Population numbers are estimates based on the 2020 United States Census average household size per number of housing units.
Source: Landrum & Brown analysis, 2024.

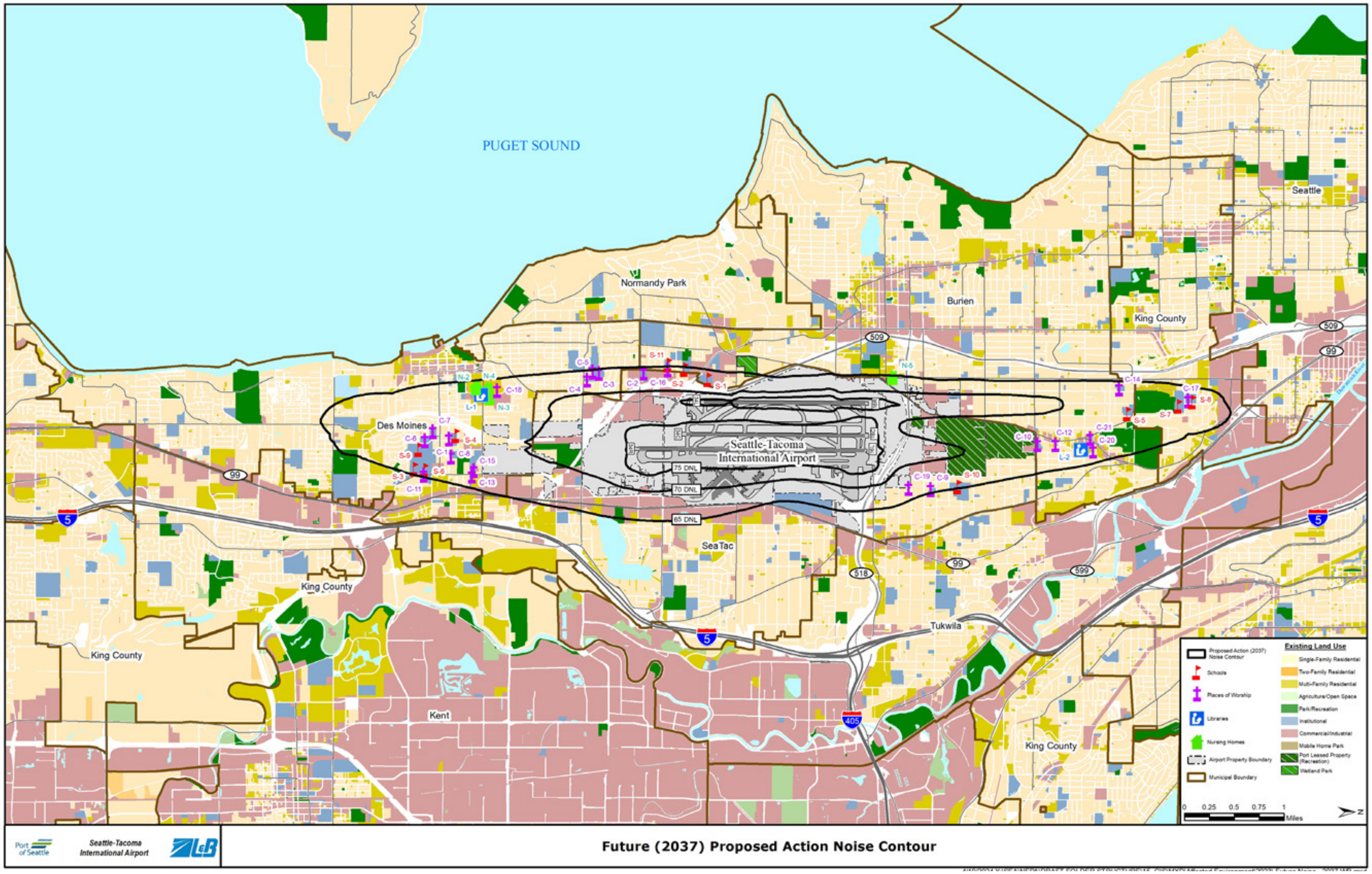
A list of noise sensitive facilities within the 65+ DNL noise contour for the Future (2037) Proposed Action are listed in **Table 7-35**. There would be 11 schools, 21 places of worship, four nursing homes, and two libraries within the 65 DNL noise contour. There are no noise sensitive facilities within the 70 or 75 DNL noise contours for the Future (2037) Proposed Action.

TABLE 7-35: NOISE SENSITIVE FACILITIES IN THE FUTURE (2037) PROPOSED ACTION 65+ DNL NOISE CONTOUR

Map ID	Name
Schools	
S-1	Puget Sound Skills Center
S-2	Choice Academy – Homeschool Center
S-3	Midway Elementary School
S-4	Mount Rainier High School
S-5	Southern Heights Elementary School
S-6	Pacific Middle School
S-7	Beverly Park Elementary School
S-8	Our Lady of Lourdes School
S-9	St. Philomena Catholic School
S-10	Glacier Middle School
S-11	Community Chapel Christian School
Places of Worship	
C-1	Saint Philomena Catholic Church
C-2	Prince of Peace Lutheran Church
C-3	Samoan Christian Fellowship
C-4	Normandy Christian Church
C-5	Southminster Presbyterian Church
C-6	Hope Church
C-7	Gospel Russian Baptist Church
C-8	The Mountain Church
C-9	Riverton Heights Baptist Church
C-10	Boulevard Park Presbyterian
C-11	Midway Community Covenant Church
C-12	Apostolic Bible Church of Jesus Christ
C-13	Highline 7th Day Adventist Church
C-14	Glen Acres Church of Christ
C-15	Kingdom Hall of Jehovah's Witnesses
C-16	New Testament Christian Church
C-17	Our Lady of Lourdes Church
C-18	Pacific Northwest United Methodist
C-19	Wat Buddharam Buddhist Temple
C-20	Hanuman Nagri Temple
C-21	Way of Salvation Church
Libraries	
L-1	Des Moines Library
L-2	Boulevard Park Library
Nursing Homes	
N-2	Wesley Homes Terrace
N-3	Wesley Homes Health Center
N-4	Wesley Homes Gardens and Bungalows
N-5	High West Residence

Source: Landrum & Brown analysis, 2024.

EXHIBIT 7-13: FUTURE (2037) PROPOSED ACTION NOISE CONTOUR



Sources: AEDT Version 3f; Landrum & Brown analysis, 2024.

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8. Significant Impact Conclusion

The Future (2032) Proposed Action noise contour would be larger than the Future (2032) No Action by 0.15 square miles due primarily to the 24 additional average annual day operations (see **Exhibit 9-1, *Comparison of Future (2032) Proposed Action/Hybrid Terminal Option and Future (2032) No Action Noise Contours***). Within the area of increased noise exposure associated with the Future (2032) Proposed Alternative there would be 337 additional housing units and 824 additional people within the 65+ DNL. The Future (2032) Proposed Action would not increase noise by 1.5 DNL or more for a noise sensitive area at or above the 65 DNL (the range of increase was between 0.0 DNL and 0.6 DNL) or that would be exposed at or above the 65 DNL level due to a 1.5 dB or greater increase, when compared to the Future (2032) No Action, as shown in **Exhibit 9-2, *Area of 1.5 dB Increase Within the 65+ DNL of the 2032 Proposed Action Noise Contour***. Therefore, no significant noise impact would occur as a result of implementing the Future (2032) Proposed Action. The results would be the same for the Hybrid Terminal Option.

The Future (2037) Proposed Action noise contour would be larger than the Future (2037) No Action by 0.66 square miles due primarily to the 96 additional average annual day operations (see **Exhibit 9-3, *Comparison of Future (2037) Proposed Action/Hybrid Terminal Option and Future (2037) No Action Noise Contours)***. Within the area of increased noise exposure associated with the Future (2037) Proposed Alternative there would be 1,851 additional housing units and 4,439 additional population within the 65+ DNL. The Future (2037) Proposed Action would not increase noise by 1.5 DNL or more for a noise sensitive area at or above the 65 DNL (the range of increase was between 0.0 DNL and 0.6 DNL) or that would be exposed at or above the 65 DNL level due to a 1.5 dB or greater increase, when compared to the Future (2037) No Action, as shown in **Exhibit 9-4, *Area of 1.5 dB Increase Within the 65+ DNL of the 2037 Proposed Action Noise Contour***. Therefore, no significant noise impact would occur as a result of implementing the Future (2037) Proposed Action. The results would be the same for the Hybrid Terminal Option.

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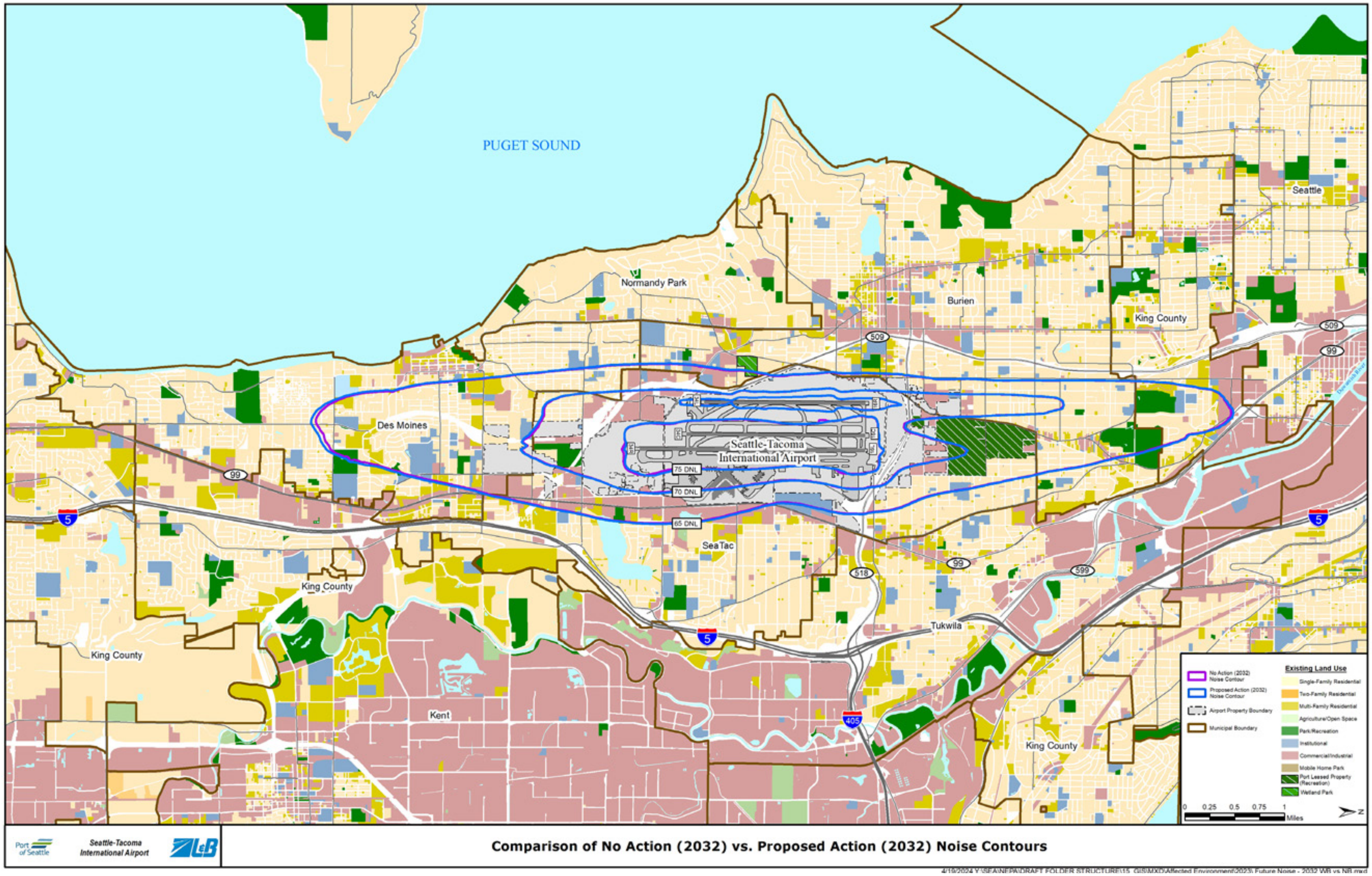
EXHIBIT 9-1: COMPARISON OF FUTURE (2032) PROPOSED ACTION/HYBRID TERMINAL OPTION AND FUTURE (2032) NO ACTION NOISE CONTOURS



Sources: AEDT Version 3f; Landrum & Brown analysis, 2024.

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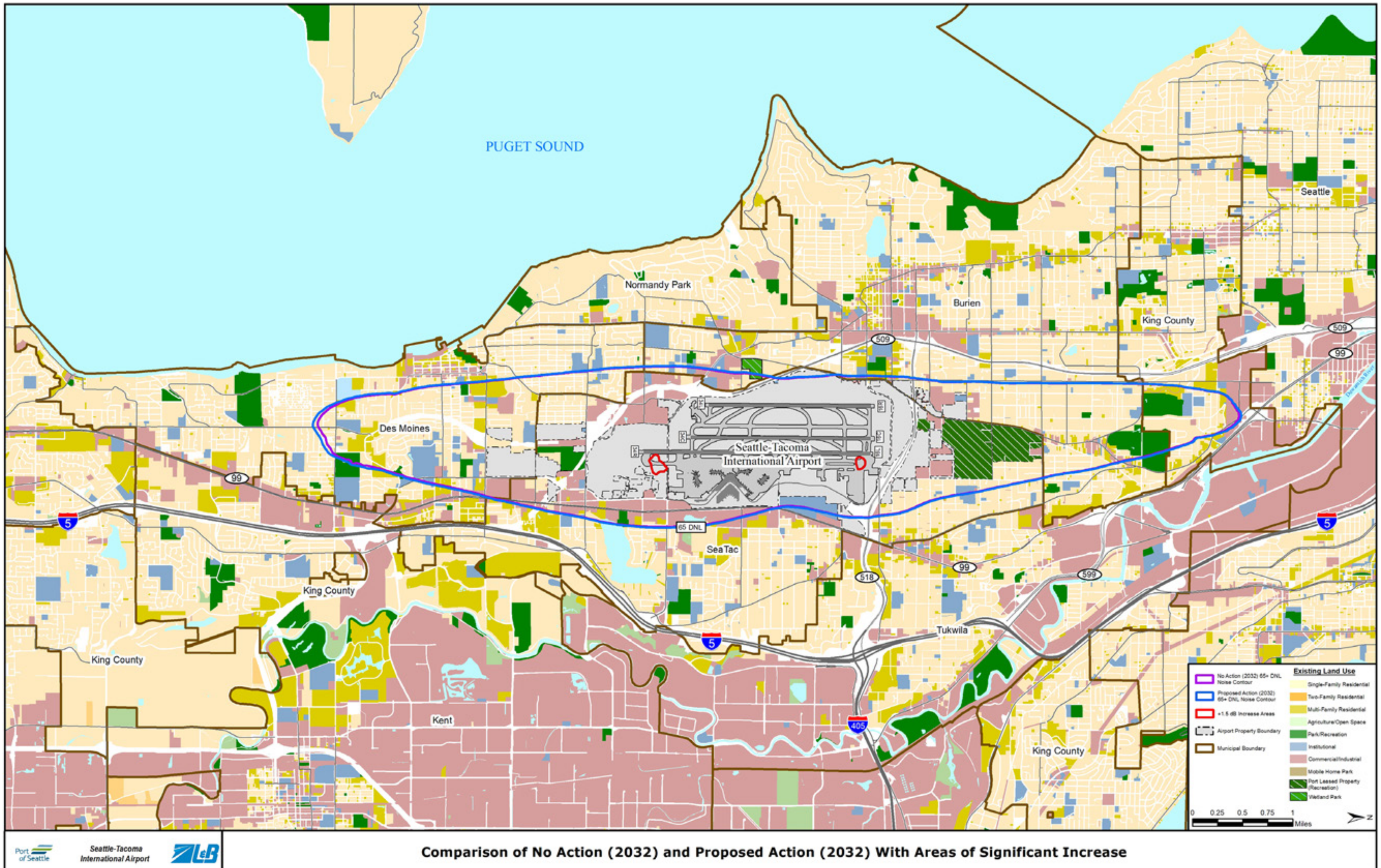
EXHIBIT 9-2: AREA OF 1.5 DB INCREASE WITHIN THE 65+ DNL OF THE 2032 PROPOSED ACTION NOISE CONTOUR



Sources: AEDT Version 3f; Landrum & Brown analysis, 2024.

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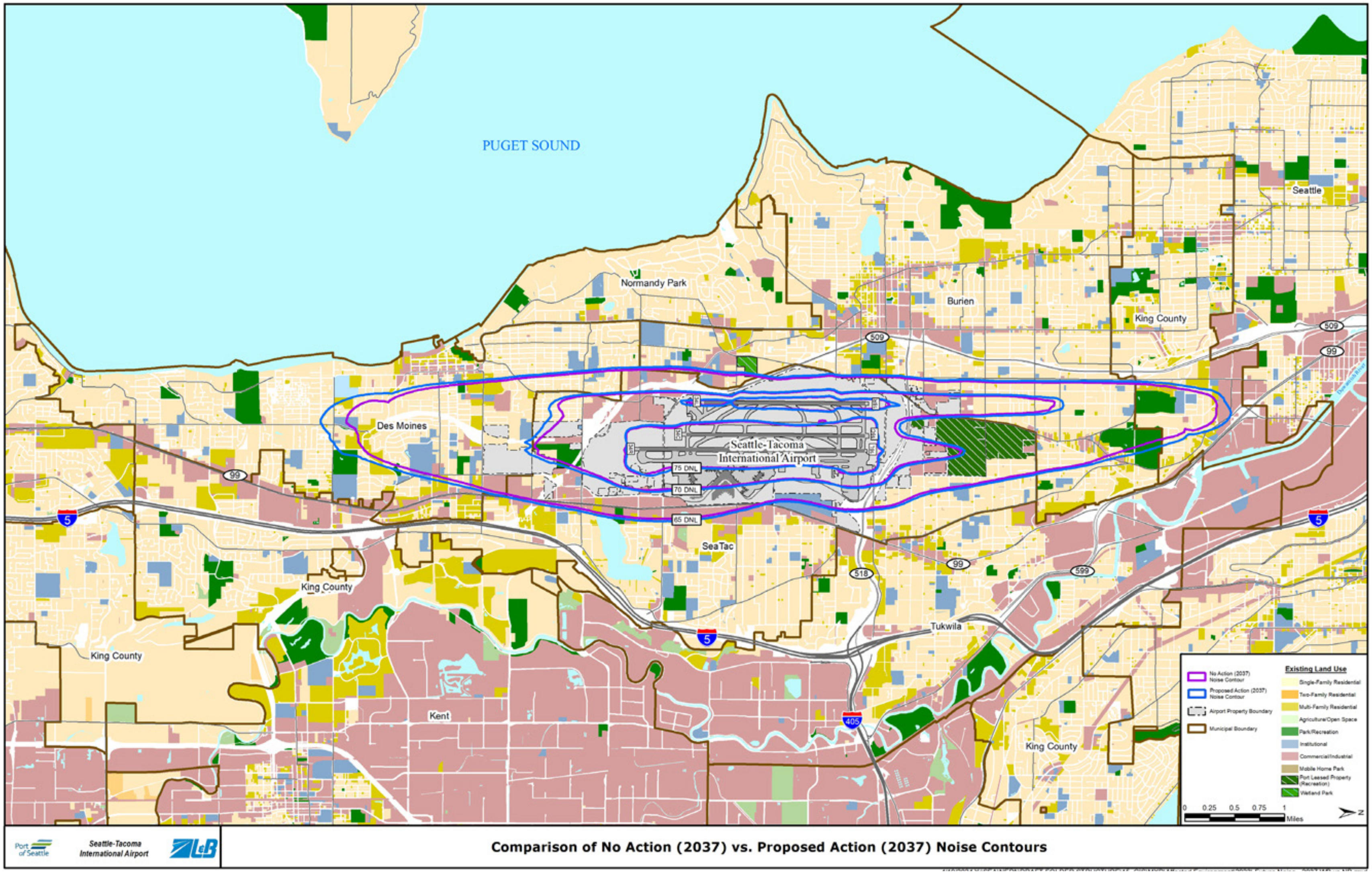
EXHIBIT 9-3: COMPARISON OF FUTURE (2037) PROPOSED ACTION/HYBRID TERMINAL OPTION AND FUTURE (2037) NO ACTION NOISE CONTOURS



Sources: AEDT Version 3f; Landrum & Brown analysis, 2024.

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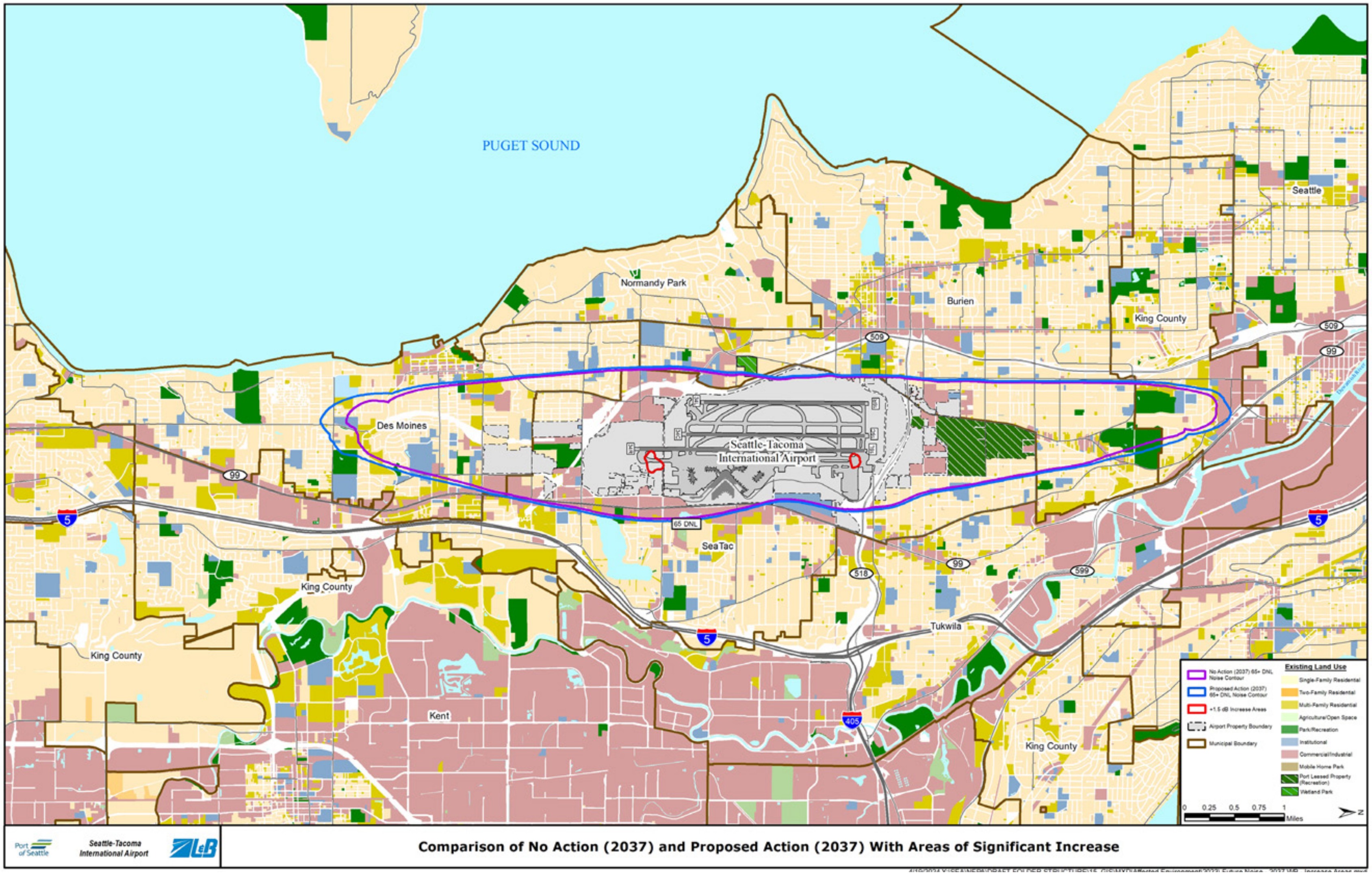
EXHIBIT 9-4: **AREA OF 1.5 DB INCREASE WITHIN THE 65+ DNL OF THE 2037 PROPOSED ACTION NOISE CONTOUR**



Sources: AEDT Version 3f; Landrum & Brown analysis, 2024.

APPENDIX J

Noise and Noise-Compatible Land Use

Noise Modeling Protocol

memorandum

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Project: SEA SAMP Environmental Review
Subject: SAMP Environmental Review Noise Protocol
From: Landrum & Brown, Inc.
Date: February 8, 2024

The approved noise and modeling protocol for the SEA SAMP Environmental Review had the modeling using AEDT Version 3e. The protocol was based on airframes and engines that were available in AEDT Version 3e. As part of the protocol, aircraft substitutions were required to capture forecasted aircraft, Boeing 737-7 and the Cessna 408 Sky Courier. In AEDT Version 3e, the Boeing 737-7 was substituted with the Boeing 737-8 and the Cessna 408 Sky Courier was substituted with the Shorts 330-200 Series.

On December 13, 2023, AEDT Version 3f was released and included the Boeing 737-7 and the Cessna 408 SkyCourier. As a result, the decision was made to update the noise modeling using AEDT Version 3f. The following is a summary of the differences between the Airframes, Engines and Aircraft Noise and Performance (ANP) data included in the AEDT Version 3e and AEDT Version 3f studies for the SEA SAMP Environmental Review. AEDT Version 3f studies did not require substitutions for the Boeing 737-7 and the Cessna 408 Sky Courier.

Aircraft Noise & Performance Modifications

Airframe	Engine Code	AEDT 3e Anp	AEDT 3f ANP	Existing/ Future
Airbus A320-NEO	01P20CM128	A320-271N	A320-270N	Existing \ Future
Airbus A320-NEO	01P20CM132	A320-271N	A320-270N	Existing \ Future
Gulfstream G200	7PW077	CNA750	CL600	Existing
Cessna 208 Caravan	P6114A	PA42	CNA208	Existing \ Future
Cessna 208 Caravan	PT6A36	PA42	CNA208	Existing \ Future

Airframe Modifications

AEDT 3e Airframe	AEDT 3e Engine Code	AEDT 3f Airframe	AEDT 3f Engine Code	Existing \ Future
Raytheon Super King Air 200	PT660A	Raytheon C-12 Huron	PT660A	Existing \ Future
Shorts 330-200 Series	PT6A6B	Cessna 408 SkyCourier	PT6A6B	Future
Boeing 737-8_7MAX	01P20CM136	Boeing 737-7	01P20CM136	Future

Engine Modifications

AEDT 3e Airframe	AEDT 3e Engine Code	AEDT 3f Airframe	AEDT 3f Engine Code	Existing \ Future
Boeing 787-10 Dreamliner	17GE179	Boeing 787-10 Dreamliner	01P17GE213	Existing \ Future
Bombardier CS100	01P220PW183	Bombardier CS100	04P20PW196	Existing
Bombardier CS300	01P220PW183	Bombardier CS300	04P20PW196	Existing
Bombardier CS300	01P220PW184	Bombardier CS300	04P20PW197	Existing

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Table 17 was updated to include the accurate number of 737-9 operations. See bold in table.

Table 17 Alternative 2: 2037 Proposed Action Fleet Mix (Airframe, ANP ID, and AEDT Engine Code) and Operations

Airframe	Anp Id	Engine Code	Annual Operations
Commercial Jets			
Boeing 737-9	7378MAX	01P20CM136	1033.0
Boeing 737-9	7378MAX	01P20CM140	40723.9

Source: L&B Analysis, 2023.

Tables 22 and 23 were updated to reflect the correct day night percentages for the Narrowbody Jet.

Table 22 Alternative 1: 2037 No Action Arrival Day/Night Split per Operator Category

Operator Category	Day	Night
Passenger		
Narrowbody Jet	81.9%	18.1%
Grand Total	**84.7%**	**15.3%**

Source: L&B Analysis, 2023.

Table 23 Alternative 1: 2037 No Action Departure Day/Night Split per Operator Category

Operator Category	Day	Night
Passenger		
Narrow Body Jet	81.6%	18.4%
Grand Total	**84.5%**	**15.5%**

Source: L&B Analysis, 2023.

In addition, Tables 26 through 29 have been updated to include the Boeing 767-300 Freighter run up operations.

Table 26 Alternative 1: 2032 No Action Aircraft Run-up Activity

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
North Flow Primary Location						
Airbus A319-100 Series	3IA006	1.4	3.0	--	--	22,000 lbs
Airbus A320-200 Series	01P08CM105	24.6	15.8	1.5	2	25,000 lbs
Airbus A320-200 Series	1CM009	2.9	69.5	--	--	25,000 lbs
Airbus A320-200 Series	3CM026	2.9	15.5	--	--	25,000 lbs
Airbus A321-200 Series	3CM025	4.3	36.7	--	--	30,000 lbs
Airbus A321-NEO	01P20CM132	--	--	1.5	2	30,000 lbs
Airbus A330-200 Series	9PW094	8.7	27.7	--	--	71,100 lbs
Airbus A330-300 Series	4GE080	1.4	37.0	--	--	67,500 lbs
Airbus A330-900N Series (Neo)	02P23RR141	1.4	26.0	--	--	71,100 lbs
Boeing 737-700 Series	3CM031	5.8	26.8	--	--	24,000 lbs
Boeing 737-700 Series	3CM032	7.2	56.4	--	--	24,000 lbs
Boeing 737-800 Series	01P11CM122	1.4	10.0	--	--	26,300 lbs
Boeing 737-800 Series	3CM032	20.3	27.6	--	--	26,300 lbs
Boeing 737-800 Series	3CM034	1.4	9.0	--	--	26,300 lbs
Boeing 737-800 Series	8CM051	2.9	40.5	--	--	26,300 lbs
Boeing 737-800 Series	8CM066	4.3	33.0	--	--	26,300 lbs
Boeing 737-9	01P20CM140	13.0	14.6	--	--	26,400 lbs

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Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
Boeing 737-900-ER	01P11CM116	14.5	20.2	--	--	26,300 lbs
Boeing 737-900-ER	01P11CM121	1.4	4.0	--	--	13,150 lbs
Boeing 737-900-ER	01P11CM121	23.2	25.1	--	--	26,300 lbs
Boeing MD-11 Freighter	1GE031	--	--	1.5	2	61,500 lbs
Embraer ERJ175-LR	01P08GE197	1.4	6.0	--	--	6,900 lbs
Embraer ERJ175-LR	01P08GE197	5.8	28.0	--	--	13,800 lbs
Tango X Location						
Airbus A330-200 Series	9PW094	1.4	38.0	--	--	71,100 lbs
South Flow Primary Location						
Airbus A319-100 Series	3IA006	1.4	15.0	--	--	22,000 lbs
Airbus A319-100 Series	3IA007	1.4	26.0	1.5	11	22,000 lbs
Airbus A320-200 Series	01P08CM105	2.9	6.0	--	--	12,500 lbs
Airbus A320-200 Series	01P08CM105	40.6	12.9	--	--	25,000 lbs
Airbus A320-200 Series	1CM009	7.2	31.6	--	--	25,000 lbs
Airbus A321-NEO	01P20CM132	2.9	12.5	--	--	30,000 lbs
Airbus A330-200 Series	2RR023	1.4	6.0	--	--	71,100 lbs
Airbus A330-200 Series	9PW094	1.4	26.0	--	--	35,550 lbs
Airbus A330-200 Series	9PW094	11.6	14.9	--	--	71,100 lbs
Airbus A330-300 Series	4GE080	4.3	10.7	--	--	67,500 lbs
Airbus A330-900N Series (Neo)	02P23RR141	4.3	26.7	--	--	71,100 lbs
Boeing 737-700 Series	3CM031	1.4	20.0	1.5	2	12,000 lbs
Boeing 737-700 Series	3CM031	23.2	17.6	--	--	24,000 lbs
Boeing 737-700 Series	3CM032	5.8	31.5	--	--	24,000 lbs
Boeing 737-800 Series	3CM032	4.3	18.3	--	--	13,150 lbs
Boeing 737-800 Series	3CM032	60.8	18.3	--	--	26,300 lbs
Boeing 737-800 Series	8CM051	15.9	21.0	--	--	26,300 lbs
Boeing 737-800 Series	8CM065	1.4	6.0	--	--	26,300 lbs
Boeing 737-800 Series	8CM066	1.4	3.0	1.5	2	13,150 lbs
Boeing 737-800 Series	8CM066	34.8	10.7	--	--	26,300 lbs
Boeing 737-9	01P20CM140	1.4	9.0	--	--	13,200 lbs
Boeing 737-9	01P20CM140	30.4	10.4	--	--	26,400 lbs
Boeing 737-900-ER	01P11CM116	1.4	3.0	--	--	13,150 lbs
Boeing 737-900-ER	01P11CM116	30.4	15.7	2.9	2	26,300 lbs
Boeing 737-900-ER	01P11CM121	1.4	8.0	--	--	13,150 lbs
Boeing 737-900-ER	01P11CM121	78.2	25.5	--	--	26,300 lbs
Boeing 767-200 Series Freighter	1GE012	1.4	6.0	--	--	48,000 lbs
Boeing 767-300 ER Freighter	1GE030	4.3	21.0	--	--	60,000 lbs
Boeing MD-11 Freighter	1GE031	2.9	44.5	--	--	61,500 lbs
Embraer ERJ175-LR	01P08GE197	10.1	11.2	--	--	13,800 lbs
	Total	**543.3**	**--**	**11.6**	**--**	

Notes: Totals may not equal sum total due to rounding.
Daytime = 7:00am – 9:59pm, Nighttime = 10:00pm – 6:59am.

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TABLE 27 ALTERNATIVE 2: 2032 PROPOSED ACTION AIRCRAFT RUN-UP ACTIVITY

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
North Flow Primary Location						
Airbus A319-100 Series	3IA006	1.5	3.0	--	--	22,000 lbs
Airbus A320-200 Series	01P08CM105	25.1	15.8	1.5	2.0	25,000 lbs
Airbus A320-200 Series	1CM009	3.0	69.5	--	--	25,000 lbs
Airbus A320-200 Series	3CM026	3.0	15.5	--	--	25,000 lbs
Airbus A321-200 Series	3CM025	4.4	36.7	--	--	30,000 lbs
Airbus A321-NEO	01P20CM132			1.5	2.0	30,000 lbs
Airbus A330-200 Series	9PW094	8.9	27.7	--	--	71,100 lbs
Airbus A330-300 Series	4GE080	1.5	37.0	--	--	67,500 lbs
Airbus A330-900N Series (Neo)	02P23RR141	1.5	26.0	--	--	71,100 lbs
Boeing 737-700 Series	3CM031	5.9	26.8	--	--	24,000 lbs
Boeing 737-700 Series	3CM032	7.4	56.4	--	--	24,000 lbs
Boeing 737-800 Series	01P11CM122	1.5	10.0	--	--	26,300 lbs
Boeing 737-800 Series	3CM032	20.7	27.6	--	--	26,300 lbs
Boeing 737-800 Series	3CM034	1.5	9.0	--	--	26,300 lbs
Boeing 737-800 Series	8CM051	3.0	40.5	--	--	26,300 lbs
Boeing 737-800 Series	8CM066	4.4	33.0	--	--	26,300 lbs
Boeing 737-9	01P20CM140	13.3	14.6	--	--	26,400 lbs
Boeing 737-900-ER	01P11CM116	14.8	20.2	--	--	26,300 lbs
Boeing 737-900-ER	01P11CM121	1.5	4.0	--	--	13,150 lbs
Boeing 737-900-ER	01P11CM121	23.6	25.1	--	--	26,300 lbs
Boeing MD-11 Freighter	1GE031	--	--	1.5	2.0	61,500 lbs
Embraer ERJ175-LR	01P08GE197	1.5	6.0	--	--	6,900 lbs
Embraer ERJ175-LR	01P08GE197	5.9	28.0	--	--	13,800 lbs
North Flow Secondary Location						
Airbus A330-200 Series	9PW094	1.5	38.0	--	--	71,100 lbs
South Flow Primary Location						
Airbus A319-100 Series	3IA006	1.5	15.0	--	--	22,000 lbs
Airbus A319-100 Series	3IA007	1.5	26.0	1.5	11.0	22,000 lbs
Airbus A320-200 Series	01P08CM105	3.0	6.0	--	--	12,500 lbs
Airbus A320-200 Series	01P08CM105	41.3	12.9	--	--	25,000 lbs
Airbus A320-200 Series	1CM009	7.4	31.6	--	--	25,000 lbs
Airbus A321-NEO	01P20CM132	3.0	12.5	--	--	30,000 lbs
Airbus A330-200 Series	2RR023	1.5	6.0	--	--	71,100 lbs
Airbus A330-200 Series	9PW094	1.5	26.0	--	--	35,550 lbs
Airbus A330-200 Series	9PW094	11.8	14.9	--	--	71,100 lbs
Airbus A330-300 Series	4GE080	4.4	10.7	--	--	67,500 lbs
Airbus A330-900N Series (Neo)	02P23RR141	4.4	26.7	--	--	71,100 lbs
Boeing 737-700 Series	3CM031	1.5	20.0	1.5	2.0	12,000 lbs
Boeing 737-700 Series	3CM031	23.6	17.6	--	--	24,000 lbs
Boeing 737-700 Series	3CM032	5.9	31.5	--	--	24,000 lbs
Boeing 737-800 Series	3CM032	4.4	18.3	--	--	13,150 lbs
Boeing 737-800 Series	3CM032	62.0	18.3	--	--	26,300 lbs

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
Boeing 737-800 Series	8CM051	16.2	21.0	--	--	26,300 lbs
Boeing 737-800 Series	8CM065	1.5	6.0			26,300 lbs
Boeing 737-800 Series	8CM066	1.5	3.0	1.5	2.0	13,150 lbs
Boeing 737-800 Series	8CM066	35.4	10.7	--	--	26,300 lbs
Boeing 737-9	01P20CM140	1.5	9.0	--	--	13,200 lbs
Boeing 737-9	01P20CM140	31.0	10.4	--	--	26,400 lbs
Boeing 737-900-ER	01P11CM116	1.5	3.0	--	--	13,150 lbs
Boeing 737-900-ER	01P11CM116	31.0	15.7	3.0	2.0	26,300 lbs
Boeing 737-900-ER	01P11CM121	1.5	8.0	--	--	13,150 lbs
Boeing 737-900-ER	01P11CM121	79.7	25.5	--	--	26,300 lbs
Boeing 767-200 Series Freighter	1GE012	1.5	6.0	--	--	48,000 lbs
Boeing 767-300 ER Freighter	1GE030	4.4	21.0	--	--	60,000 lbs
Boeing MD-11 Freighter	1GE031	3.0	44.5	--	--	61,500 lbs
Embraer ERJ175-LR	01P08GE197	10.3	11.2	--	--	13,800 lbs
	Total	**553.46**	**--**	**11.85**	**--**	**--**

Notes: Totals may not equal sum total due to rounding.
Daytime = 7:00am – 9:59pm, Nighttime = 10:00pm – 6:59am.

Table 28 Alternative 1: 2037 No Action Aircraft Run-up Activity

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
North Flow Primary Location						
Airbus A320-200 Series	01P08CM105	25.4	15.8	2.0	2.0	25,000 lbs.
Airbus A320-200 Series	1CM009	3.0	69.5	--	--	25,000 lbs.
Airbus A320-200 Series	3CM026	3.0	15.5	--	--	25,000 lbs.
Airbus A321-200 Series	3CM025	4.5	36.7	--	--	30,000 lbs.
Airbus A321-NEO	01P20CM132	--	--	2.0	2.0	30,000 lbs.
Airbus A330-200 Series	9PW094	9.0	27.7	--	--	71,100 lbs.
Airbus A330-300 Series	4GE080	1.5	37.0	--	--	67,500 lbs.
Airbus A330-900N Series (Neo)	02P23RR141	1.5	26.0	--	--	71,100 lbs.
Boeing 737-700 Series	3CM031	6.0	26.8	--	--	24,000 lbs.
Boeing 737-700 Series	3CM032	7.5	56.4	--	--	24,000 lbs.
Boeing 737-800 Series	01P11CM122	1.5	10.0	--	--	26,300 lbs.
Boeing 737-800 Series	3CM032	20.9	27.6	--	--	26,300 lbs.
Boeing 737-800 Series	3CM034	1.5	9.0	--	--	26,300 lbs.
Boeing 737-800 Series	8CM051	3.0	40.5	--	--	26,300 lbs.
Boeing 737-800 Series	8CM066	4.5	33.0	--	--	26,300 lbs.
Boeing 737-9	01P20CM140	13.4	14.6	--	--	26,400 lbs.
Boeing 737-900-ER	01P11CM116	14.9	20.2	--	--	26,300 lbs.
Boeing 737-900-ER	01P11CM121	23.9	25.1	--	--	13,150 lbs.
Boeing 737-900-ER	01P11CM121	1.5	4.0	--	--	26,300 lbs.
Embraer ERJ175-LR	01P08GE197	1.5	6.0	--	--	6,900 lbs.
Embraer ERJ175-LR	01P08GE197	6.0	28.0	--	--	13,800 lbs.

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Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
Tango X Location						
Airbus A330-200 Series	9PW094	1.5	38.0	--	--	71,100 lbs.
South Flow Primary Location						
Airbus A320-200 Series	01P08CM105	3.0	6.0	--	--	12,500 lbs.
Airbus A320-200 Series	01P08CM105	41.8	12.9	--	--	25,000 lbs.
Airbus A320-200 Series	1CM009	7.5	31.6	--	--	25,000 lbs.
Airbus A321-NEO	01P20CM132	3.0	12.5	--	--	30,000 lbs.
Airbus A330-200 Series	2RR023	1.5	6.0	--	--	71,100 lbs.
Airbus A330-200 Series	9PW094	1.5	26.0	--	--	35,550 lbs.
Airbus A330-200 Series	9PW094	11.9	14.9	--	--	71,100 lbs.
Airbus A330-300 Series	4GE080	4.5	10.7	--	--	67,500 lbs.
Airbus A330-900N Series (Neo)	02P23RR141	4.5	26.7	--	--	71,100 lbs.
Boeing 737-700 Series	3CM031	1.5	20.0	2.0	2.0	12,000 lbs.
Boeing 737-700 Series	3CM031	23.9	17.6	--	--	24,000 lbs.
Boeing 737-700 Series	3CM032	6.0	31.5	--	--	24,000 lbs.
Boeing 737-700 Series	3CM032	62.7	18.3	--	--	26,300 lbs.
Boeing 737-800 Series	3CM032	4.5	18.3	--	--	13,150 lbs.
Boeing 737-800 Series	8CM051	16.4	21.0	--	--	26,300 lbs.
Boeing 737-800 Series	8CM065	1.5	6.0	--	--	26,300 lbs.
Boeing 737-800 Series	8CM066	1.5	3.0	2.0	2.0	13,150 lbs.
Boeing 737-800 Series	8CM066	35.8	10.7	--	--	26,300 lbs.
Boeing 737-9	01P20CM140	1.5	9.0	--	--	13,200 lbs.
Boeing 737-9	01P20CM140	31.4	10.4	--	--	26,400 lbs.
Boeing 737-900-ER	01P11CM116	1.5	3.0	--	--	13,150 lbs.
Boeing 737-900-ER	01P11CM116	31.4	15.7	3.9	2.0	26,300 lbs.
Boeing 737-900-ER	01P11CM121	1.5	8.0	--	--	13,150 lbs.
Boeing 737-900-ER	01P11CM121	80.6	25.5	--	--	26,300 lbs.
Boeing 767-200 Series Freighter	1GE012	1.5	6.0	--	--	48,000 lbs.
Boeing 767-300 ER Freighter	1GE030	4.5	21.0	--	--	60,000 lbs.
Embraer ERJ175-LR	01P08GE197	10.5	11.1	--	--	13,800 lbs.
	Total	**552.6**	**--**	**11.8**	**--**	**--**

Notes: Totals may not equal sum total due to rounding.
Daytime = 7:00am – 9:59pm, Nighttime = 10:00pm – 6:59am.

Table 29 Alternative 2: 2037 Proposed Action Aircraft Run-up Activity

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
North Flow Primary Location						
Airbus A320-200 Series	01P08CM105	27.3	15.8	2.1	2.0	25,000 lbs.
Airbus A320-200 Series	1CM009	3.2	69.5	--	--	25,000 lbs.
Airbus A320-200 Series	3CM026	3.2	15.5	--	--	25,000 lbs.
Airbus A321-200 Series	3CM025	4.8	36.7	--	--	30,000 lbs.
Airbus A321-NEO	01P20CM132			2.1	2.0	30,000 lbs.

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Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
Airbus A330-200 Series	9PW094	9.6	27.7	--	--	71,100 lbs.
Airbus A330-300 Series	4GE080	1.6	37.0	--	--	67,500 lbs.
Airbus A330-900N Series (Neo)	02P23RR141	1.6	26.0	--	--	71,100 lbs.
Boeing 737-700 Series	3CM031	6.4	26.8	--	--	24,000 lbs.
Boeing 737-700 Series	3CM032	8.0	56.4	--	--	24,000 lbs.
Boeing 737-800 Series	01P11CM122	1.6	10.0	--	--	26,300 lbs.
Boeing 737-800 Series	3CM032	22.4	27.6	--	--	26,300 lbs.
Boeing 737-800 Series	3CM034	1.6	9.0	--	--	26,300 lbs.
Boeing 737-800 Series	8CM051	3.2	40.5	--	--	26,300 lbs.
Boeing 737-800 Series	8CM066	4.8	33.0	--	--	26,300 lbs.
Boeing 737-9	01P20CM140	14.4	14.6	--	--	26,400 lbs.
Boeing 737-900-ER	01P11CM116	16.0	20.2	--	--	26,300 lbs.
Boeing 737-900-ER	01P11CM121	1.6	4.0	--	--	13,150 lbs.
Boeing 737-900-ER	01P11CM121	25.7	25.1	--	--	26,300 lbs.
Embraer ERJ175-LR	01P08GE197	1.6	6.0	--	--	6,900 lbs.
Embraer ERJ175-LR	01P08GE197	6.4	28.0	--	--	13,800 lbs.
North Flow Secondary Location						
Airbus A330-200 Series	9PW094	1.6	38.0	--	--	71,100 lbs.
South Flow Primary Location						
Airbus A320-200 Series	01P08CM105	3.2	6.0	--	--	12,500 lbs.
Airbus A320-200 Series	01P08CM105	44.9	12.9	--	--	25,000 lbs.
Airbus A320-200 Series	1CM009	8.0	31.6	--	--	25,000 lbs.
Airbus A321-NEO	01P20CM132	3.2	12.5	--	--	30,000 lbs.
Airbus A330-200 Series	2RR023	1.6	6.0	--	--	71,100 lbs.
Airbus A330-200 Series	9PW094	1.6	26.0	--	--	35,550 lbs.
Airbus A330-200 Series	9PW094	12.8	14.9	--	--	71,100 lbs.
Airbus A330-300 Series	4GE080	4.8	10.7	--	--	67,500 lbs.
Airbus A330-900N Series (Neo)	02P23RR141	4.8	26.7	--	--	71,100 lbs.
Boeing 737-700 Series	3CM031	1.6	20.0	2.1	2.0	12,000 lbs.
Boeing 737-700 Series	3CM031	25.7	17.6	--	--	24,000 lbs.
Boeing 737-700 Series	3CM032	6.4	31.5	--	--	24,000 lbs.
Boeing 737-700 Series	3CM032	67.3	18.3	--	--	26,300 lbs.
Boeing 737-800 Series	3CM032	4.8	18.3	--	--	13,150 lbs.
Boeing 737-800 Series	8CM051	17.6	21.0	--	--	26,300 lbs.
Boeing 737-800 Series	8CM065	1.6	6.0	--	--	26,300 lbs.
Boeing 737-800 Series	8CM066	1.6	3.0	2.1	2.0	13,150 lbs.
Boeing 737-800 Series	8CM066	38.5	10.7	--	--	26,300 lbs.
Boeing 737-9	01P20CM140	1.6	9.0	--	--	13,200 lbs.
Boeing 737-9	01P20CM140	33.7	10.4	--	--	26,400 lbs.
Boeing 737-900-ER	01P11CM116	1.6	3.0	--	--	13,150 lbs.
Boeing 737-900-ER	01P11CM116	33.7	15.7	4.2	2.0	26,300 lbs.
Boeing 737-900-ER	01P11CM121	1.6	8.0	--	--	13,150 lbs.
Boeing 737-900-ER	01P11CM121	86.6	25.5	--	--	26,300 lbs.
Boeing 767-200 Series Freighter	1GE012	1.6	6.0	--	--	48,000 lbs.
Boeing 767-300 ER Freighter	1GE030	4.8	21.0	--	--	60,000 lbs.

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Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
Embraer ERJ175-LR	01P08GE197	11.2	11.2	--	--	13,800 lbs.
	Total	**593.3**	**--**	**12.7**	**--**	**--**

Notes: Totals may not equal sum total due to rounding.
Daytime = 7:00am – 9:59pm, Nighttime = 10:00pm – 6:59am.

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Noise Modeling Protocol
Existing and Future Conditions

FINAL – September 2023

PREPARED FOR
Port of Seattle

PREPARED BY
Landrum & Brown, Incorporated

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1 Existing Condition Noise Modeling Methodology

For aviation noise analyses, the Federal Aviation Administration (FAA) has determined that the cumulative noise energy exposure of individuals to noise resulting from aviation activities must be established in terms of annual Day-Night Sound Equivalent (DNL), the FAA's primary noise metric. To evaluate aircraft noise, the FAA has an approved computer model, the Aviation Environmental Design Tool (AEDT) that simulates aircraft activity at an airport. AEDT replaced the Integrated Noise Model (INM), as the tool for environmental modeling of FAA actions to determine if significant noise impacts would result. The analysis of the noise exposure for the existing conditions and the future alternatives around Seattle-Tacoma International Airport (SEA or Airport) will be prepared using the FAA's AEDT Version 3e.

The noise pattern calculated by the AEDT for an airport is a function of several factors, including: the number of aircraft operations during the period evaluated, the types of aircraft flown, the time of day when they are flown, the way they are flown, how frequently each runway is used for landing and takeoff, and the routes of flight used to and from the runways. Substantial variations in any one of these factors may, when extended over a long period of time, cause marked changes to the noise pattern.

The following sections present the methodology and modeling input assumptions for the Existing (2022) condition. The methodology and modeling input assumptions for the future conditions are presented later in this document.

1.1 Aircraft Activity Levels and Fleet Mix

According to the FAA's Air Traffic Activity System (ATADS), there were 401,351 total annual operations at SEA from January 2022 through December 2022. Specific aircraft types and times of operation were obtained from the Port of Seattle's 2022 EnvironmentalVue Flight Track Monitoring System data. Additionally, specific airframe and engine combinations were developed from the EnvironmentalVue Flight Track Monitoring System data at SEA and an airline fleet database downloaded from Diio Mi[1]. **Table 1** presents the Existing (2022) condition fleet operations at SEA by airframe and engine code for each aircraft category. Missed approach operational totals are included in Table 1. For more information on missed approaches including time of day, runway use, flight track location and allocation input parameters, see **Appendix B**.

Table 1 Fleet Mix (Airframe, ANP ID, and AEDT Engine Code) and Operations

AIRFRAME	ANP ID	ENGINE CODE	ANNUAL OPERATIONS
Commercial Jets			
Airbus A319-100 Series	A319-131	01P10IA020	10.1
Airbus A319-100 Series	A319-131	3CM028	87.8
Airbus A319-100 Series	A319-131	3IA006	1,977.1
Airbus A319-100 Series	A319-131	3IA007	1,058.7
Airbus A319-100 Series	A319-131	4CM035	78.7
Airbus A319-100 Series	A319-131	8IA09	36.3
Airbus A320-200 Series	A320-211	01P08CM105	13,637.0
Airbus A320-200 Series	A320-232	01P10IA021	1,224.2
Airbus A320-200 Series	A320-232	01P10IA022	264.4
Airbus A320-200 Series	A320-211	1CM008	333.1
Airbus A320-200 Series	A320-211	1CM009	1,351.4
Airbus A320-200 Series	A320-232	1IA003	2,575.6
Airbus A320-200 Series	A320-211	3CM026	1,466.4
Airbus A320-200 Series	A320-232	8IA010	2.0
Airbus A320-NEO	A320-271N	01P20CM128	679.2
Airbus A320-NEO	A320-271N	01P22PW163	1,077.9
Airbus A321-200 Series	A321-232	01P08CM104	994.1
Airbus A321-200 Series	A321-232	01P10IA025	6,031.3

[1] Diio Mi: Market Intelligence for the Aviation Industry, Accessed on February 3, 2022, https://mi.diio.net. Diio Mi is a standard airline industry source of information.

Table 1 Fleet Mix (Airframe, ANP ID, and AEDT Engine Code) and Operations (Continued)

AIRFRAME	ANP ID	ENGINE CODE	ANNUAL OPERATIONS
Airbus A321-200 Series	A321-232	3CM025	1,026.4
Airbus A321-NEO	A321-232	01P18PW157	1,612.8
Airbus A321-NEO	A321-232	01P20CM132	4,783.8
Airbus A330-200 Series	A330-343	2RR023	1,834.8
Airbus A330-200 Series	A330-343	9PW094	26.2
Airbus A330-300 Series	A330-343	2RR023	486.5
Airbus A330-300 Series	A330-301	4GE080	493.5
Airbus A330-300 Series	A330-343	7PW082	66.6
Airbus A330-300 Series	A330-301	9PW094	1,393.8
Airbus A330-300 Series	A330-301	9PW095	327.0
Airbus A330-900N Series (Neo)	A330-343	02P23RR141	2,659.4
Airbus A340-300 Series	A340-211	2CM015	53.5
Airbus A350-1000 Series	A350-941	18RR080	4.0
Airbus A350-900 series	A350-941	01P18RR124	764.0
Boeing 717-200 Series	717200	4BR002	1.0
Boeing 737-300 Series	737300	1CM004	6.1
Boeing 737-300 Series	737300	1CM005	8.1
Boeing 737-700 Series	737700	3CM030	424.9
Boeing 737-700 Series	737700	3CM031	14,350.5
Boeing 737-700 Series	737700	3CM032	2,611.9
Boeing 737-700 Series	737700	8CM051	10.1
Boeing 737-700 Series	737700	8CM062	104.0
Boeing 737-700 Series	737700	8CM063	2,434.3
Boeing 737-8	7378MAX	01P20CM135	41.4
Boeing 737-8	7378MAX	01P20CM136	1,340.3
Boeing 737-8	7378MAX	01P20CM140	1,236.3
Boeing 737-800 Series	737800	01P11CM114	399.7
Boeing 737-800 Series	737800	01P11CM116	5,439.9
Boeing 737-800 Series	737800	01P11CM122	2,968.2
Boeing 737-800 Series	737800	01P11CM125	660.0
Boeing 737-800 Series	737800	01P11CM126	62.6
Boeing 737-800 Series	737800	3CM032	16,652.6
Boeing 737-800 Series	737800	3CM034	1,607.7
Boeing 737-800 Series	737800	8CM051	22795.9
Boeing 737-800 Series	737800	8CM064	165.5
Boeing 737-800 Series	737800	8CM065	2,128.5
Boeing 737-800 Series	737800	8CM066	9,996.6
Boeing 737-800BCF	737800	3CM034	137.3
Boeing 737-9	7378MAX	01P20CM136	517.7
Boeing 737-9	7378MAX	01P20CM140	20,410.0
Boeing 737-900 Series	737800	01P11CM114	806.4
Boeing 737-900 Series	737800	8CM051	9,114.5
Boeing 737-900-ER	737800	01P11CM116	19,205.0
Boeing 737-900-ER	737800	01P11CM121	54527.4
Boeing 737-900-ER_MA	737800_MA	01P11CM121_MA	1554.5
Boeing 737-900-ER	737800	01P11CM125	167.5
Boeing 737-900-ER	737800	3CM034	773.1
Boeing 737-900-ER	737800	8CM065	861.9
Boeing 757-200 Series	757PW	4PW072	5,722.4
Boeing 757-200 Series	757PW	4PW073	197.8
Boeing 757-200 Series	757RR	5RR038	567.2
Boeing 757-200 Series	757RR	5RR039	37.3
Boeing 757-300 Series	757300	3RR028	2.0
Boeing 757-300 Series	757300	5RR039	10.1
Boeing 757-300 Series	757300	XPW204	1,741.0

Table 1 Fleet Mix (Airframe, ANP ID, and AEDT Engine Code) and Operations (Continued)

AIRFRAME	ANP ID	ENGINE CODE	ANNUAL OPERATIONS
Boeing 767-300 ER	7673ER	12PW102	12.1
Boeing 767-300 ER	7673ER	1GE029	75.7
Boeing 767-300 ER	7673ER	1GE030	752.9
Boeing 767-300 ER	7673ER	1PW043	543.0
Boeing 767-300 ER	7673ER	1RR011	1.0
Boeing 767-300 ER	7673ER	2GE055	303.8
Boeing 767-400 ER	767400	8GE101	263.4
Boeing 777-200-ER	777200	10PW099	81.7
Boeing 777-200-ER	777200	2RR027	287.6
Boeing 777-200-ER	777200	3GE060	127.2
Boeing 777-200-ER	777200	3GE064	2.0
Boeing 777-200-ER	777200	8GE100	132.2
Boeing 777-200-LR	777300	01P21GE216	50.5
Boeing 777-200-LR	777300	01P21GE217	188.7
Boeing 777-300 ER	7773ER	01P21GE217	1,389.7
Boeing 787-10 Dreamliner	7879	01P17GE211	132.2
Boeing 787-10 Dreamliner	7879	02P23RR134	144.3
Boeing 787-10 Dreamliner	7879	17GE179	285.6
Boeing 787-8 Dreamliner	7878R	01P17GE206	120.1
Boeing 787-8 Dreamliner	7878R	01P17GE210	4.0
Boeing 787-8 Dreamliner	7878R	11GE137	189.7
Boeing 787-8 Dreamliner	7878R	11GE138	466.3
Boeing 787-9 Dreamliner	7879	01P17GE211	890.2
Boeing 787-9 Dreamliner	7879	01P17GE214	6.1
Boeing 787-9 Dreamliner	7879	02P23RR131	200.8
Boeing 787-9 Dreamliner	7879	12RR067	919.4
Boeing 787-9 Dreamliner	7879	12RR068	387.6
Bombardier CRJ-900-ER	CRJ9-ER	01P08GE190	22.2
Bombardier CS100	737700	01P20PW183	9,770.5
Bombardier CS300	737700	01P20PW183	97.9
Bombardier CS300	737700	01P20PW184	2,180.0
Bombardier Global Express	BD-700-1A10	01P04BR013	4.3
Embraer ERJ175-LR	EMB175	01P08GE197	67693.6
Embraer ERJ175-LR_MA	EMB175_MA	01P08GE197_MA	839.5
		Subtotal	***338,782.9***
Cargo Jets			
Airbus A300F4-600 Series	A300-622R	1GE020	3.0
Airbus A300F4-600 Series	A300-622R	1PW048	85.8
Airbus A300F4-600 Series	A300-622R	3GE056	155.4
Boeing 747-400 ERF	747400RN	12PW102	88.8
Boeing 747-400 Series	747400	1GE024	790.2
Boeing 747-400 Series Freighter	747400	01P03GE187	76.7
Boeing 747-400 Series Freighter	747400	1GE024	6.1
Boeing 747-400 Series Freighter	747400	1PW041	7.1
Boeing 747-400 Series Freighter	747400	4RR037	74.7
Boeing 747-400BCF	747400	1GE024	249.3
Boeing 747-400BCF	747400	1PW041	10.1
Boeing 747-8F	7478	01P17GE215	280.6
Boeing 747-8F	7478	13GE156	74.7
Boeing 747-8F	7478	8GENX1	242.2
Boeing 757-200 Series Freighter	757RR	3RR028	101.9
Boeing 757-200 Series Freighter	757PW	4PW072	48.4
Boeing 757-200 Series Freighter	757PW	4PW073	49.5
Boeing 757-200 Series Freighter	757RR	5RR039	2.0
Boeing 767-200 Series Freighter	767CF6	1GE010	259.4

Table 1 Fleet Mix (Airframe, ANP ID, and AEDT Engine Code) and Operations (Continued)

AIRFRAME	ANP ID	ENGINE CODE	ANNUAL OPERATIONS
Boeing 767-200 Series Freighter	767CF6	1GE012	129.2
Boeing 767-200 Series Freighter	767JT9	1PW026	23.2
Boeing 767-300 ER Freighter	7673ER	1GE030	5,679.0
Boeing 767-300 ER Freighter	7673ER	2GE055	559.1
Boeing 767-300BCF	767300	2GE055	57.5
Boeing 777 Freighter	777200	01P21GE216	1,016.3
Boeing 777 Freighter	777300	01P21GE217	24.2
Boeing 777-200-LR_C	777300_C	01P21GE216_C	40.4
Boeing MD-10-30	DC1030	3GE074	64.6
Boeing MD-11 Freighter	MD11PW	12PW102	296.7
Boeing MD-11 Freighter	MD11GE	1GE031	1,489.7
Boeing MD-11 Freighter	MD11PW	1PW052	484.4
		Subtotal	***12,470.3***
Regional Jets			
Bombardier CRJ-200-LR	CL600	01P05GE189	6.5
Bombardier CRJ-700	CRJ9-ER	01P08GE192	6.1
Bombardier CRJ-700-ER	CRJ9-ER	01P08GE190	12.1
Bombardier CRJ-700-ER	CRJ9-ER	01P08GE192	94.9
Bombardier CRJ-700-ER	CRJ9-ER	5GE083	47.4
		Subtotal	***166.9***
Turboprop			
Bombardier de Havilland Dash 8 Q400	DHC830	PW150A	44,587.6
Raytheon Beech 99	DHC6	PT6A27	10.8
Raytheon Beech 99	DHC6	PT6A36	596.2
Raytheon Super King Air 200	C12	PT660A	4.3
Raytheon Super King Air 200	DHC6	PT6A42	2.2
		Subtotal	***45,201.0***
Cargo Prop			
Cessna 208 Caravan	PA42	P6114A	1,162.3
Cessna 208 Caravan	CNA208	PT6A14	1,146.2
Raytheon Super King Air 300	DHC6	PT660A	72.1
		Subtotal	***2,380.6***
GA Jets			
Bombardier Challenger 300	CL600	01P14HN011	36.6
Bombardier Challenger 300	CL600	11HN003	37.7
Bombardier Challenger 350	CL600	01P14HN011	142.1
Bombardier Challenger 600	CL600	01P05GE189	37.7
Bombardier Challenger 600	CL601	1GE034	25.8
Bombardier Global 5000	BD-700-1A11	01P04BR013	28.0
Bombardier Global 5500	BD-700-1A11	01P20BR015	2.2
Bombardier Learjet 35A/36A (C-21A)	C21A	1AS001	3.2
Bombardier Learjet 40	LEAR35	TFE731	5.4
Bombardier Learjet 45	LEAR35	1AS001	14.0
Bombardier Learjet 45	LEAR35	TFE731	36.6
Bombardier Learjet 60	LEAR35	7PW077	22.6
Bombardier Learjet 70	LEAR35	1AS002	2.2
Cessna 560 Citation Encore	CNA560E	PW530	10.8
Cessna 560 Citation Excel	CNA560XL	PW530	36.6
Cessna 560 Citation Ultra	CNA560U	1PW038	8.6
Cessna 560 Citation XLS	CNA560XL	PW530	59.7
Cessna 680 Citation Sovereign	CNA680	03P14PW194	15.8
Cessna 680 Citation Sovereign	CNA680	7PW078	31.7
Cessna 680-A Citation Latitude	CNA680	7PW078	83.9
Cessna 700 Citation Longitude	CNA680	01P18HN013	15.1
Cessna 750 Citation X	CNA750	6AL024	82.8

Table 1 Fleet Mix (Airframe, ANP ID, and AEDT Engine Code) and Operations (Continued)

AIRFRAME	ANP ID	ENGINE CODE	ANNUAL OPERATIONS
Cessna CitationJet CJ2 (Cessna 525A)	CNA525C	1PW036	31.2
Cessna CitationJet CJ3 (Cessna 525B)	CNA525C	1PW038	66.7
Dassault Falcon 2000	CNA750	CF700D	58.1
Dassault Falcon 50	FAL900EX	1AS002	196.5
Embraer Legacy 450 (EMB-545)	CNA510	01P14HN014	49.5
Embraer Phenom 300 (EMB-505)	CNA55B	PW530	42.1
Gulfstream G200	CNA750	7PW077	24.8
Gulfstream G450	GIV	11RR048	29.1
Gulfstream G650	G650ER	01P11BR016	23.7
Gulfstream G650ER	G650ER	01P11BR016	15.1
Gulfstream IV-SP	GIV	11RR048	7.5
Gulfstream V-SP	GV	01P06BR014	29.1
Honda HA-420 Hondajet	CNA680	PW610F	18.7
Raytheon Beechjet 400	MU3001	1PW037	23.7
Raytheon Hawker 800	LEAR35	1AS002	36.0
		Subtotal	***1,390.5***
GA Prop			
Beechcraft Bonanza 35 (FAS)	GASEPV	TIO540	22.3
Cessna 150 Series	GASEPF	O200	18.0
Cessna 152 (FAS)	GASEPF	O200	70.5
Cessna 172 Skyhawk	CNA172	IO320	461.8
Cessna 182	CNA182	IO360	97.2
Cessna 206	CNA20T	TIO540	15.1
Cirrus SR22 Turbo (FAS)	COMSEP	TIO540	69.1
Mooney M20-K	GASEPV	TSIO36	16.6
Pilatus PC-12	CNA208	PT6A67	54.7
Piper PA-28 Cherokee Series	GASEPF	IO320	59.7
Raytheon Beech Bonanza 36	GASEPV	TIO540	18.7
		Subtotal	***903.7***
Military			
Embraer Phenom 300 (EMB-505)_M	CNA55B_M	PW530_M	40.0
Raytheon Super King Air 200_M	C12_M	PT660A_M	14.0
Cessna 172 Skyhawk_M	CNA172_M	IO320_M	1.0
		Subtotal	***55.0***
		Grand Total	**401,351.0**

Note: Totals may not sum due to rounding.
Source: SEA EnvironmentalVue 2022, L&B Analysis, 2023.

1.2 Day/Night Operating Characteristics

Through analysis of the EnvironmentalVue Flight Track Monitoring System data, 10 operator categories were developed for aircraft operating at SEA. **Table 2** and **Table 3** presents the assumed day and night operating characteristics assumptions for the Existing (2022) condition per operator category.

Table 2 Arrival Day/Night Split per Operator Category

Operator Category	Day	Night
Passenger		
Heavy Jet	87.7%	12.3%
Narrow Body Jet	85.2%	14.8%
Regional Jet	95.1%	4.9%
Turboprop	89.1%	10.9%
Cargo		
Heavy Jet	59.3%	40.7%
Narrow Body Jet	96.0%	4.0%
Prop	100.0%	0.0%
General Aviation		
Jet	95.6%	4.4%
Turboprop	100.0%	0.0%
Prop	85.3%	14.7%
Grand Total	**85.1%**	**14.9%**

Source: SEA EnvironmentalVue 2022, L&B Analysis, 2023.

Table 3 Departure Day/Night Split per Operator Category

Operator Category	Day	Night
Passenger		
Heavy Jet	91.0%	9.0%
Narrow Body Jet	82.7%	17.3%
Regional Jet	68.8%	31.2%
Turboprop	87.4%	12.6%
Cargo		
Heavy Jet	62.5%	37.5%
Narrow Body Jet	11.0%	89.0%
Prop	97.6%	2.4%
General Aviation		
Jet	95.2%	4.8%
Turboprop	99.7%	0.3%
Prop	94.8%	5.2%
Grand Total	**83.0%**	**17.0%**

Source: SEA EnvironmentalVue 2022, L&B Analysis, 2023.

1.3 Aircraft Runup Activity Levels

Depending on the frequency, engine run-ups may influence the size and location of noise exposure contours. **Exhibit 1** shows the North and South primary and secondary aircraft run-up locations at SEA. Aircraft utilizing the North Flow Primary location are oriented at 340 degrees, while aircraft utilizing the South Flow Primary location are oriented at 160 degrees. Aircraft run-up activity logs were utilized to determine the amount of run-up operations, the location of the run-up, average duration and the associated airframe and engine. A total of 477 run-up operations were reported in the run-up activity logs at SEA in 2022. **Table 4** presents the amount of run-up operations, average duration and thrust settings per airframe and engine type that occurred at each SEA run-up location in 2022. The AEDT run-up fleet mix below is representative of all run-ups occurring at SEA. There are a total of 23 different AEDT airframes that were identified, AEDT engine codes were assigned based on airline.

Exhibit 1: Aircraft Run-up Locations

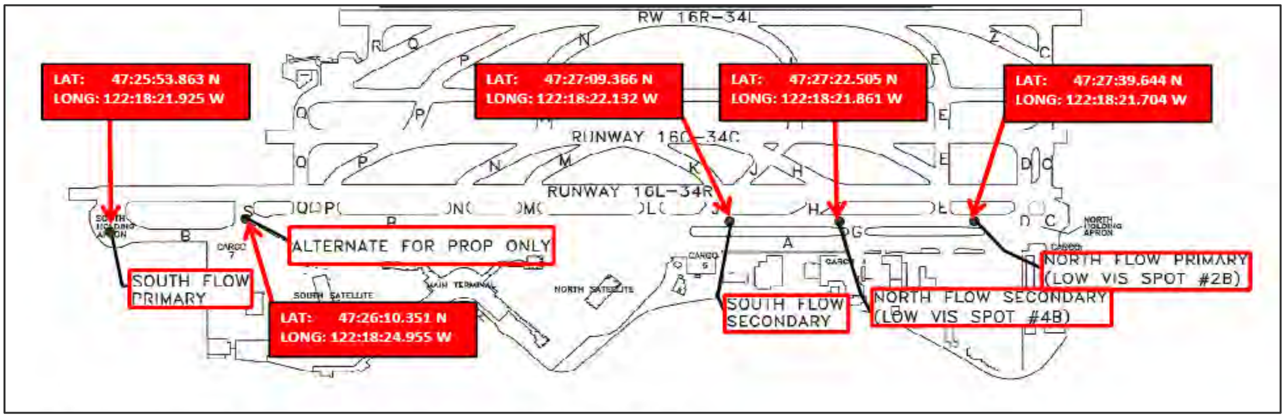


Table 4 Aircraft Run-up Activity

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings (lbs.)
North Flow Primary Location						
Airbus A319-100 Series	3IA006	1.0	3.0	--	--	22000
Airbus A320-200 Series	01P08CM105	17.0	15.8	1.0	2.0	25000
Airbus A320-200 Series	1CM009	2.0	69.5	--	--	25000
Airbus A320-200 Series	3CM026	2.0	15.5	--	--	25000
Airbus A321-200 Series	3CM025	3.0	36.7	--	--	30000
Airbus A321-NEO	01P20CM132	--	--	1.0	2.0	30000
Airbus A330-200 Series	9PW094	6.0	27.7	--	--	71100
Airbus A330-300 Series	4GE080	1.0	37.0	--	--	67500
Airbus A330-900N Series (Neo)	02P23RR141	1.0	26.0	--	--	71100
Boeing 737-700 Freighter	3CM031	5.0	16.8	--	--	24000
Boeing 737-700 Series	3CM031	4.0	26.8	--	--	24000
Boeing 737-700 Series	3CM032	5.0	56.4	--	--	24000
Boeing 737-800 Series	01P11CM122	1.0	10.0	--	--	26300
Boeing 737-800 Series	3CM032	14.0	27.6	--	--	26300
Boeing 737-800 Series	3CM034	1.0	9.0	--	--	26300
Boeing 737-800 Series	8CM051	2.0	40.5	--	--	26300
Boeing 737-800 Series	8CM066	3	33.0	--	--	26300
Boeing 737-9	01P20CM140	9.0	14.6	--	--	26400
Boeing 737-900 Series	8CM051	10.0	8.0	--	--	26300
Boeing 737-900-ER	01P11CM116	10.0	20.2	--	--	26300
Boeing 737-900-ER	01P11CM121	16.0	25.1	--	--	26300
Boeing 737-900-ER	01P11CM121	1.0	4.0	--	--	13150
Boeing MD-11 Freighter	1GE031	--	--	1.0	2.0	61500
Bombardier de Havilland Dash 8 Q400	PW150A	7.0	15.9	--	--	4918
Cessna 560 Citation Encore	PW530	1.0	15.0	--	--	3313
Embraer ERJ175-LR	01P08GE197	4.0	28.0	--	--	13800
Embraer ERJ175-LR	01P08GE197	1.0	6.0	--	--	6900
South Primary Location						
Airbus A319-100 Series	3IA006	1.0	15.0	--	--	22000
Airbus A319-100 Series	3IA007	1.0	26.0	1.0	11.0	22000
Airbus A320-200 Series	01P08CM105	28.0	12.9	--	--	25000
Airbus A320-200 Series	01P08CM105	2.0	6.0	--	--	12500
Airbus A320-200 Series	1CM009	5.0	31.6	--	--	25000
Airbus A321-NEO	01P20CM132	2.0	12.5	--	--	30000
Airbus A330-200 Series	2RR023	1.0	6.0	--	--	71100
Airbus A330-200 Series	9PW094	8.0	14.9	--	--	71100
Airbus A330-200 Series	9PW094	1.0	26.0	--	--	35550
Airbus A330-300 Series	4GE080	3.0	10.7	--	--	67500
Airbus A330-900N Series (Neo)	02P23RR141	3.0	26.7	--	--	71100

Table 4 Aircraft Run-up Activity (Continued)

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings (lbs.)
Boeing 737-700 Freighter	3CM031	11.0	27.8	--	--	24000
Boeing 737-700 Freighter	3CM031	1.0	5.0	--	--	12000
Boeing 737-700 Series	3CM031	16.0	17.6	--	--	24000
Boeing 737-700 Series	3CM031	1.0	20.0	1.0	2.0	12000
Boeing 737-700 Series	3CM032	4.0	31.5	--	--	24000
Boeing 737-800 Series	3CM032	42.0	18.3	--	--	26300
Boeing 737-800 Series	3CM032	3.0	18.3	--	--	13150
Boeing 737-800 Series	8CM051	11.0	21.0	--	--	26300
Boeing 737-800 Series	8CM065	1.0	6.0	--	--	26300
Boeing 737-800 Series	8CM066	24.0	10.7	--	--	26300
Boeing 737-800 Series	8CM066	1.0	3.0	1.0	2.0	13150
Boeing 737-800BCF	3CM034	1.0	11.0	--	--	26300
Boeing 737-9	01P20CM140	21.0	10.4	--	--	26400
Boeing 737-9	01P20CM140	1.0	9.0	--	--	13200
Boeing 737-900 Series	01P11CM114	1.0	4.0	--	--	26300
Boeing 737-900 Series	8CM051	22.0	8.7	--	--	26300
Boeing 737-900 Series	8CM051	1.0	26.0	2.0	2.0	13150
Boeing 737-900-ER	01P11CM116	21.0	15.7	2.0	2.0	26300
Boeing 737-900-ER	01P11CM116	1.0	3.0	--	--	13150
Boeing 737-900-ER	01P11CM121	54.0	25.5	--	--	26300
Boeing 737-900-ER	01P11CM121	1.0	8.0	--	--	13150
Boeing 757-200 Series	4PW072	2.0	36.5	--	--	38300
Boeing 757-300 Series	XPW204	4.0	27.0	--	--	43100
Boeing 767-200 Series Freighter	1GE012	1.0	6.0	--	--	48000
Boeing 767-300 ER Freighter	1GE030	3.0	21.0	--	--	60000
Boeing MD-11 Freighter	1GE031	2.0	44.5	--	--	61500
Bombardier de Havilland Dash 8 Q400	PW150A	23.0	15.2	--	--	4918
Bombardier de Havilland Dash 8 Q400	PW150A	1.0	10.0	--	--	2459
Bombardier Learjet 60	7PW077	1.0	9.0	--	--	3500
Cessna 560 Citation Encore	PW530	1.0	4.0	--	--	3313
Embraer ERJ175-LR	01P08GE197	7.0	11.1	--	--	13800
Tango X Location						
Airbus A330-200 Series	9PW094	1.0	38.0	--	--	71100
	Total	**467.0**		**10.0**		

Source: SEA Runup log 2022, L&B Analysis, 2023.

1.4 Runway Definition

SEA is a commercial service airport that currently encompasses 2,500 acres (approximately 3.9 square miles) in King County. The airfield system consists of 3 runways, (16L/34R, 16C/34C, 16R/34L) oriented in a north-south direction. **Table 5** provides the length and width of the current runways at SEA used in AEDT.

Table 5 Runways

Runway	Length (feet)	Width (feet)
16R/34L	8,500	150
16C/34C	9,425	150
16L/34R	11,899	150

Source: AEDT Version 3e.

Table 6 provides the coordinates, elevation, crossing height and glide slope of the current runway ends at SEA used in AEDT:

Table 6 Runway End Definition

Runway End	Latitude	Longitude	Elevation (feet)	Crossing Height (feet)	Glide Slope (degrees)
16L	47.4637952222	-122.307750222	432.3	76	3
34R	47.4311722778	-122.30803825	346.7	81	2.75*
16C	47.4638098611	-122.31098375	429.4	71	3
34C	47.4379712778	-122.311209833	362.9	73	3
16R	47.4638363611	-122.317856833	414.8	69	3
34L	47.4405338056	-122.318058056	356.2	75	3

*AEDT utilizes a standard 3.0-degree glide on arrival profiles. Runway 34R glide slope of 2.75 is modeled as a 3.0-degree glide slope until threshold crossing.
Source: AEDT Version 3e.

1.5 Runway End Utilization

Average-annual day runway end utilization was derived from EnvironmentalVue Flight Track Monitoring System data from January 2022 through December 2022. The Airport primarily operates in a south flow configuration due to the prevailing winds. A review of EnvironmentalVue Flight Track Monitoring System 2022 data shows that SEA operated in south flow configuration approximately 70 percent of the time, and in north flow configuration approximately 30 percent of the time.

Table 7 and **Table 8** present the assumed arrival and departure runway utilization for the existing (2022) condition that was developed from the EnvironmentalVue Flight Track Monitoring System data. The runway utilization was developed for each of the 10 operator categories occurring at SEA.

Table 7 Arrival Runway Utilization per Operator Category

Operator Category	16C	16L	16R	34C	34L	34R	Total
Passenger							
Heavy Jet	0.4%	54.6%	16.0%	0.3%	7.1%	21.6%	100.0%
Narrow Body Jet	1.0%	2.7%	66.2%	0.6%	28.2%	1.3%	100.0%
Regional Jet	0.0%	4.9%	68.1%	0.0%	26.9%	0.0%	100.0%
Turboprop	0.4%	1.5%	70.4%	0.3%	26.8%	0.6%	100.0%
Cargo							
Heavy Jet	3.8%	47.0%	20.7%	2.5%	8.3%	17.7%	100.0%
Narrow Body Jet	1.0%	9.0%	62.0%	0.0%	26.0%	2.0%	100.0%
Prop	0.5%	9.4%	59.7%	0.5%	29.6%	0.4%	100.0%
General Aviation							
Jet	0.6%	1.7%	63.6%	0.3%	32.9%	0.9%	100.0%
Turboprop	0.3%	29.7%	39.6%	0.3%	19.7%	10.4%	100.0%
Prop	6.1%	7.0%	49.7%	3.5%	19.9%	13.8%	100.0%
Overall Arrival Total	**1.0%**	**6.1%**	**63.1%**	**0.6%**	**26.6%**	**2.6%**	**100.0%**

Note: Totals may not sum due to rounding.
Source: SEA Environmental Vue 2022, L&B Analysis, 2023.

Table 8 Departure Runway Utilization per Operator Category

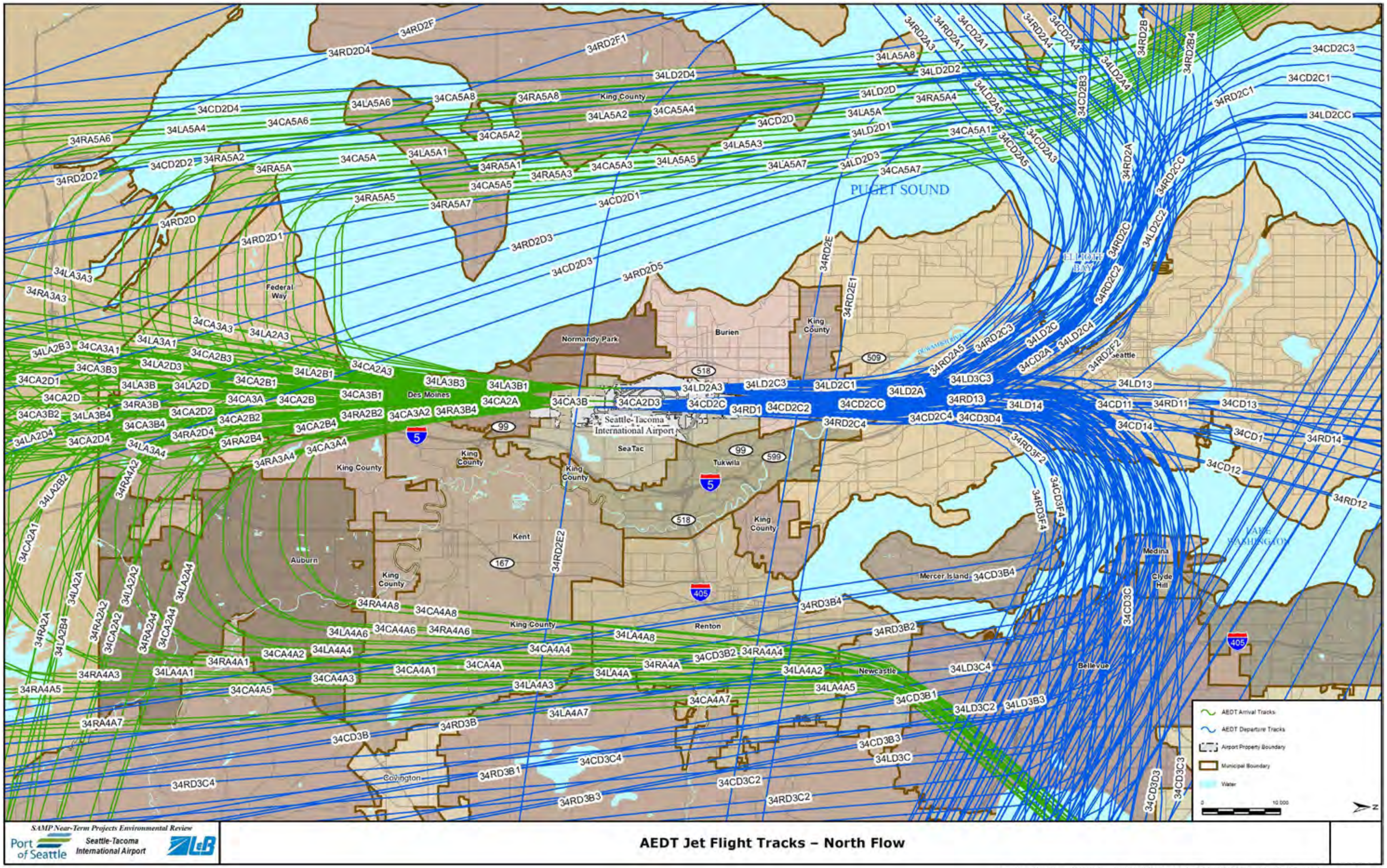
Operator Category	16C	16L	16R	34C	34L	34R	Total
Passenger							
Heavy Jet	0.6%	68.6%	0.0%	0.3%	0.0%	30.5%	100.0%
Narrow Body Jet	4.4%	66.4%	0.0%	0.8%	0.0%	28.4%	100.0%
Regional Jet	2.4%	71.0%	0.0%	0.0%	0.0%	26.6%	100.0%
Turboprop	8.9%	63.0%	0.0%	1.8%	0.0%	26.3%	100.0%
Cargo							
Heavy Jet	2.5%	70.4%	0.0%	1.6%	0.0%	25.5%	100.0%
Narrow Body Jet	0.0%	63.0%	0.0%	0.0%	0.0%	37.0%	100.0%
Prop	30.4%	47.7%	0.1%	2.7%	0.0%	19.1%	100.0%
General Aviation							
Jet	63.9%	5.2%	0.0%	30.1%	0.1%	0.7%	100.0%
Turboprop	12.1%	63.4%	0.0%	1.4%	0.0%	23.2%	100.0%
Prop	42.7%	11.5%	8.1%	33.1%	4.6%	0.0%	100.0%
Overall Departure Total	**5.1%**	**65.8%**	**0.0%**	**1.1%**	**0.0%**	**28.0%**	**100.0%**

Note: Totals may not sum due to rounding.
Source: SEA EnvironmentalVue 2022, L&B Analysis, 2023.

1.6 Flight Tracks

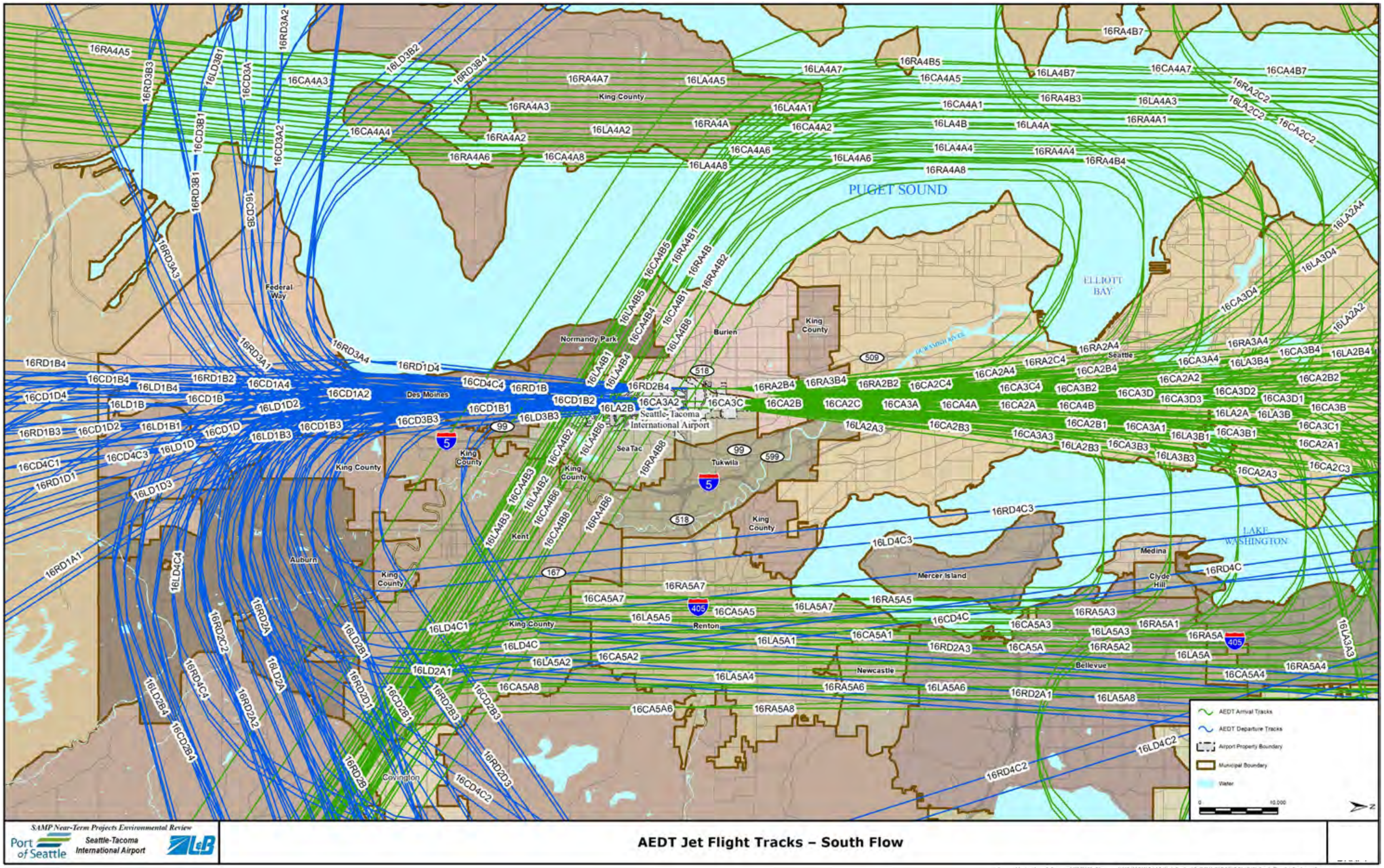
There are two components to flight tracks used for noise modeling, flight track definition/location and percentage of use. Flight track definition and percent utilization was based on EnvironmentalVue Flight Track Monitoring System data from the months of January, February, March, April, May, July, September and October of 2022 and previous studies. The North Flow and South Flow Jet flight tracks are presented in Exhibit 2 and Exhibit 3. The North Flow and South Flow Turboprop and Prop flight tracks are presented in **Exhibit 2** and **Exhibit 3**. Flight tracks for missed approaches are provided in **Exhibit 4** and **Exhibit 5**. Flight track utilization percentages are presented in **Appendix A**.

Exhibit 2: North Flow Jet Flight Tracks



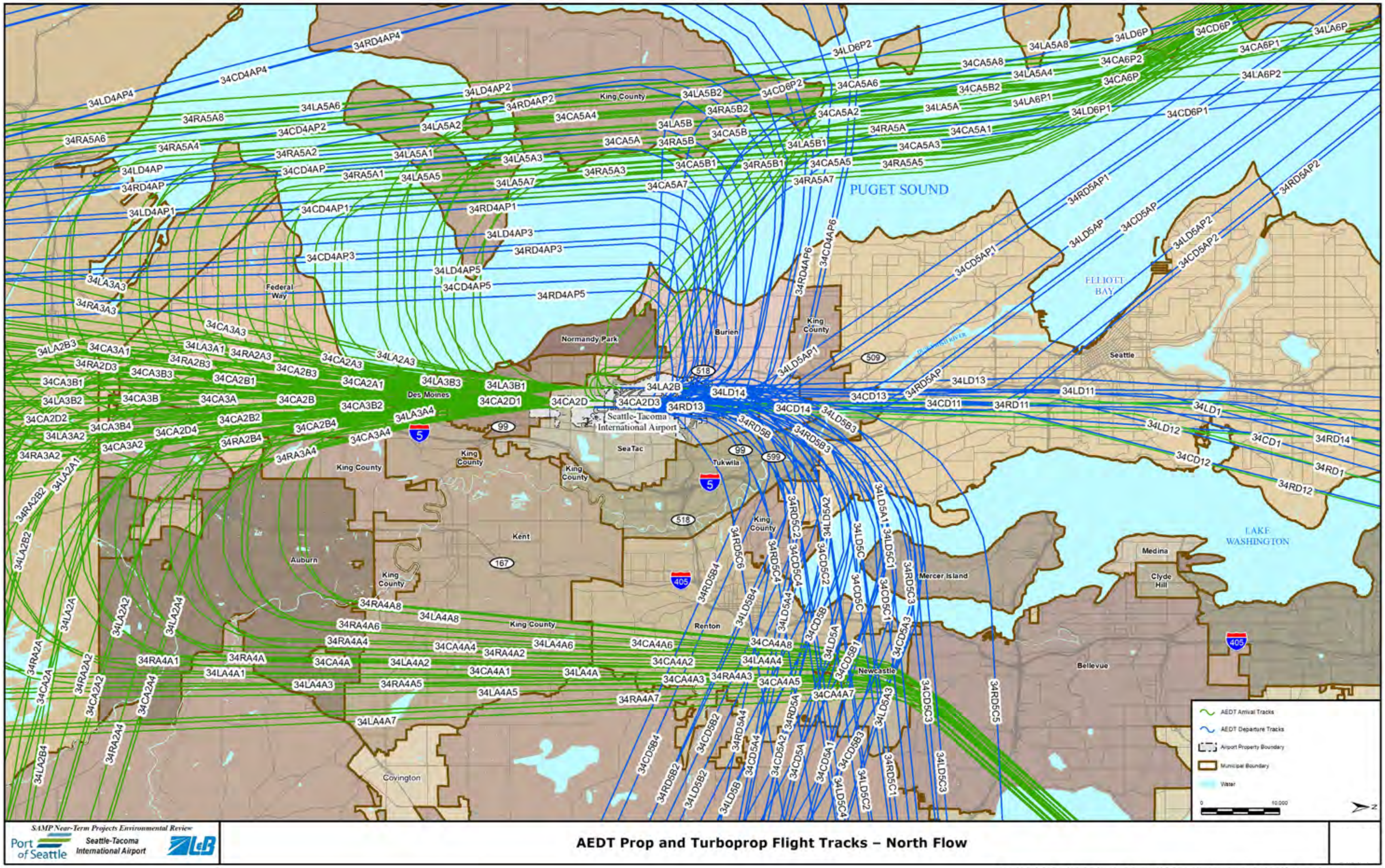
Source: Source: SEA EnvironmentalVue 2022, L&B Analysis, 2023.

Exhibit 3: South Flow Jet Flight Tracks



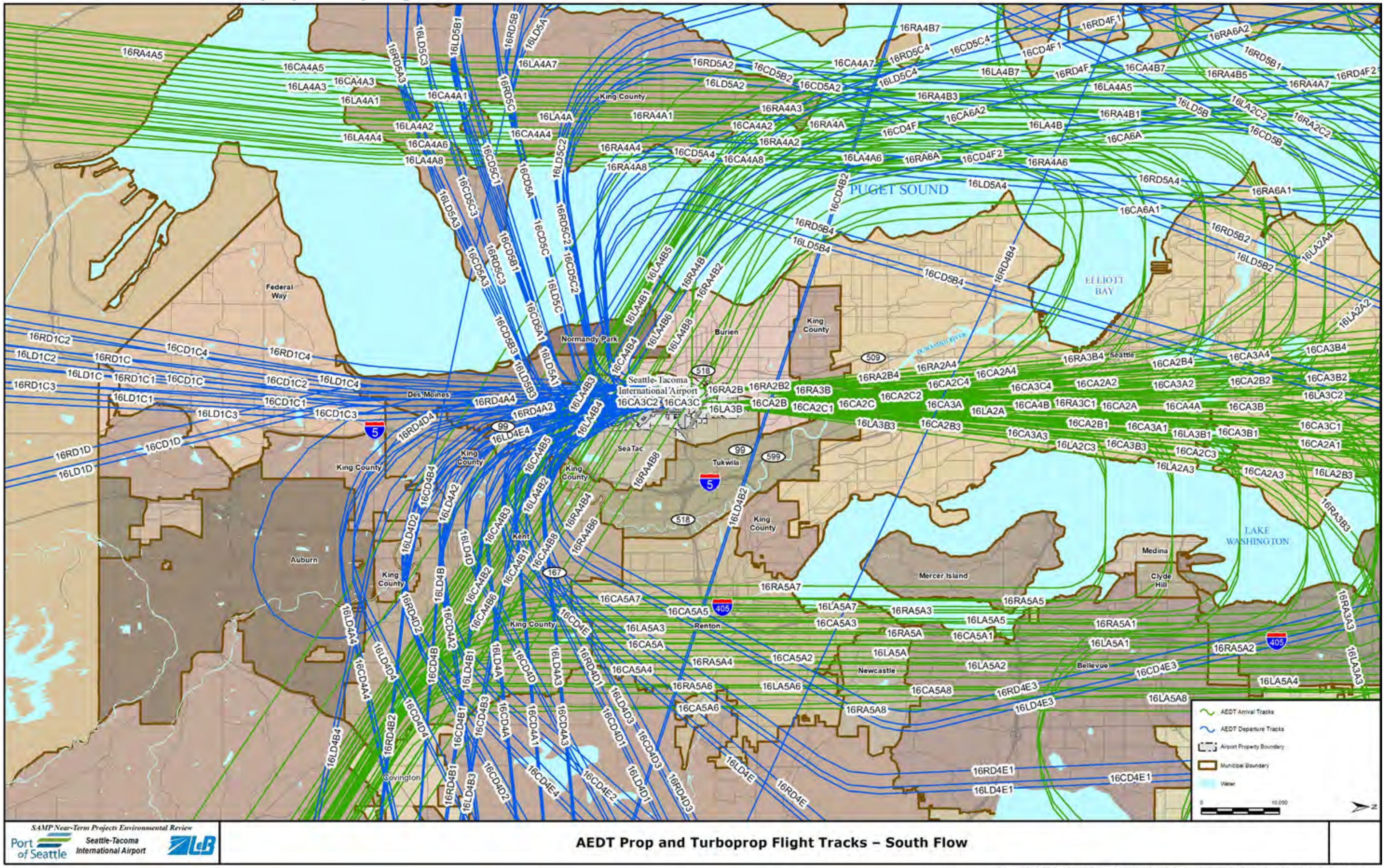
Source: SEA EnvironmentalVue 2022, L&B Analysis, 2023.

Exhibit 4: North Flow Turboprop & Prop Flight Tracks



Source: SEA EnvironmentalVue 2022, L&B Analysis, 2023.

Exhibit 5: South Flow Turboprop & Prop Flight Tracks



Source: SEA EnvironmentalVue 2022, L&B Analysis, 2023.

1.7 Aircraft Weight, Trip Length

Aircraft weight during departure is a factor in the dispersion of noise because it impacts the rate at which an aircraft is able to climb. Generally, the heavier an aircraft is, the slower the rate of climb and the wider the dispersion of noise along its route of flight. Where specific aircraft weights are unknown, the AEDT uses the distance flown to the first stop as a surrogate for the weight, by assuming that the weight has a direct relationship with the fuel load necessary to reach the first destination. The AEDT groups trip lengths into nine categories; these categories are provided in **Table 9**.

Table 9 Daytime Stage Length Distribution

Category	Stage Length
1	0-500 nautical miles
2	500-1000 nautical miles
3	1000-1500 nautical miles
4	1500-2500 nautical miles
5	2500-3500 nautical miles
6	3500-4500 nautical miles
7	4500-5500 nautical miles
8	5500-6500 nautical miles
9	6500-11000 nautical miles
M	Maximum range at maximum take-off weight

Source: L&B Analysis, 2023

The trip lengths modeled for the Existing (2022) condition are based upon the distance to destinations from SEA that were reported in the EnvironmentalVue Flight Track Monitoring System data from January 2022 through December of 2022. **Table 10** and **Table 11** present the assumed daytime and nighttime stage length distributions for each of the 10 operator categories.

Table 10 Daytime Stage Length Distribution

Operator Category	1	2	3	4	5	6	7	8	9	Total
Passenger										
Heavy Jet	1.8%	0.5%	1.8%	25.2%	1.4%	52.9%	10.2%	1.3%	4.9%	100.0%
Narrow Body Jet	17.2%	44.7%	15.1%	22.7%	0.3%	0.0%	0.0%	0.0%	0.0%	100.0%
Regional Jet	5.6%	94.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Turboprop	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Cargo										
Heavy Jet	7.2%	38.9%	8.8%	31.8%	0.0%	1.7%	11.6%	0.0%	0.0%	100.0%
Narrow Body Jet	18.2%	54.5%	0.0%	27.3%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Prop	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
General Aviation										
Jet	85.2%	5.3%	3.7%	5.0%	0.0%	0.3%	0.5%	0.0%	0.0%	100.0%
Turboprop	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Prop	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

Note: Totals may not sum due to rounding.
Source: SEA EnvironmentalVue 2022, L&B Analysis, 2023.

Table 11 Nighttime Stage Length Distribution

Operator Category	1	2	3	4	5	6	7	8	9	Total
Passenger										
Heavy Jet	1.0%	0.8%	5.3%	18.6%	0.0%	5.4%	68.8%	0.1%	0.0%	100.0%
Narrow Body Jet	20.3%	28.9%	20.4%	30.4%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Regional Jet	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Turboprop	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Cargo										
Heavy Jet	2.3%	3.8%	19.4%	55.8%	0.0%	5.1%	13.4%	0.0%	0.0%	100.0%
Narrow Body Jet	0.0%	0.0%	1.1%	98.9%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Prop	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
General Aviation										
Jet	74.4%	16.4%	2.0%	7.2%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Turboprop	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Prop	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

Note: Totals may not sum due to rounding.
Source: SEA EnvironmentalVue 2022, L&B Analysis, 2023.

1.8 Atmospheric Conditions

Weather is an important factor in the performance of aircraft and the amount of noise generated on landing and takeoff. AEDT default weather parameters are based on Integrated Surface Data (ISD)[2] average weather data (2012 -2021) from the National Oceanic and Atmospheric Administration. **Table 12** shows the default AEDT atmospheric settings for SEA:

Table 12 Atmospheric Conditions

Atmospheric Element	AEDT SEA Value - Default
Temperature	52.67° Fahrenheit
Sea Level Pressure	1,018.13 millibars
Static Pressure	1,001.43 millibars
Dew Point	43.82° Fahrenheit
Relative Humidity	71.79%
Wind Speed	6.74 knots

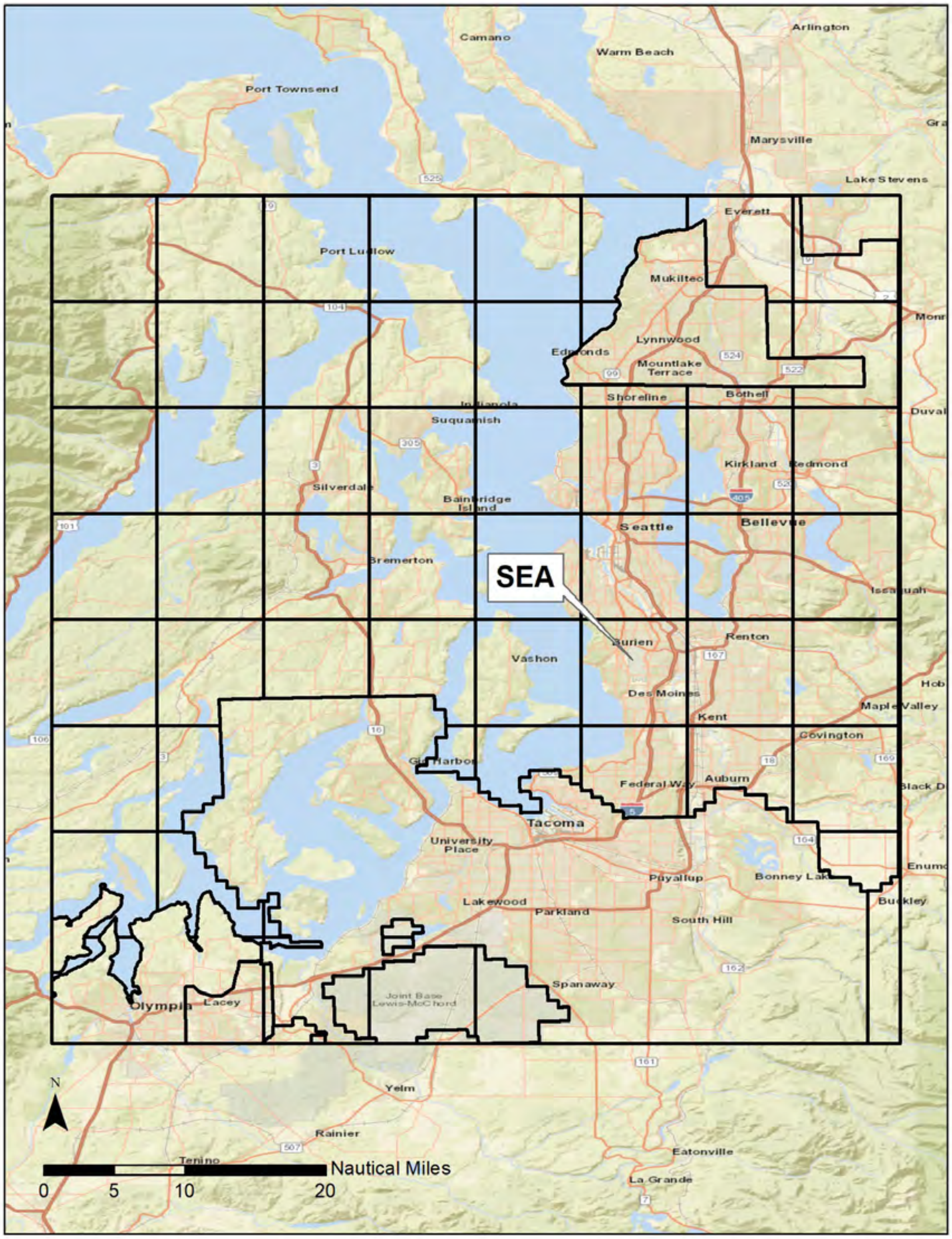
Source: AEDT Version 3e.

1.9 Topographic Data

High resolution topographic data will be utilized from the United States Geological Survey (USGS) National Elevation Dataset[3] repository for the areas surrounding SEA. The topographic data is in GeoTIFF format with a resolution of 1/3 Arc Second (approximately 32.8 feet or 10 meters). The topographic data was published on June 8, 2023. **Exhibit 6** shows the extent of the topographic data that will be utilized in the modeling.

[2] https://www.ncdc.noaa.gov/isd, provided in AEDT Version 3e.
[3] https://www.usgs.gov/core-science-systems/ngp/tnm-delivery

Exhibit 6: Topographic Data Extent



2 Future Conditions Noise Modeling Methodology

This report presents the inputs used to model the three alternatives analyzed in the Sustainable Airport Master Plan (SAMP) Near-Term Projects (NTPs) Environmental Assessment (EA) at Seattle-Tacoma International Airport (SEA) for the years 2032 and 2037. The alternatives included in the EA are Alternative 1: 2032 and 2037 No Action, Alternative 2: 2032 and 2037 Proposed Action, Alternative 3: 2032 and 2037 Hybrid Terminal Option. The Proposed Action and the Hybrid Terminal Option for 2032 and 2037 have the same inputs for noise modeling. As a result, only the Proposed Action inputs are presented in this protocol.

Table 13 presents the annual-average day operations for each alternative in 2032 and 2037.

Table 13 Future Annual Operations

Alternative	Total Operations
2032	
Alternative 1: No Action	466,900
Alternative 2: Proposed Action	475,655
2037	
Alternative 1: No Action	474,874
Alternative 2: Proposed Action	509,892

Source: Aviation Activity Forecast Update, prepared by Leigh Fisher, September 2023, Constrained Operations Growth Scenario; prepared by Landrum & Brown, July 2023.

2.1 Aircraft Activity Levels and Fleet Mix

Fleet mix percentages for the future activity levels were derived from the Aviation Activity Forecast Update, Table 5. Engine codes were assigned based on the engine codes from the Existing (2022) condition. The fleet mix for each alternative in 2032 and 2037 is presented in **Tables 14, 15, 16,** and **17,** respectively.

Table 14 Alternative 1: 2032 No Action Fleet Mix (Airframe, ANP ID, and AEDT Engine Code) and Operations

AIRFRAME	ANP ID	ENGINE CODE	ANNUAL OPERATIONS
Commercial Jets			
Airbus A220-100	737700	16PW111	19113.9
Airbus A220-300	737700	16PW111	5507.9
Airbus A220-300	737700	16PW112	2712.8
Airbus A319-100 Series	A319-131	01P10IA020	3.9
Airbus A319-100 Series	A319-131	3CM028	33.7
Airbus A319-100 Series	A319-131	3IA006	759.9
Airbus A319-100 Series	A319-131	3IA007	406.9
Airbus A319-100 Series	A319-131	4CM035	30.3
Airbus A319-100 Series	A319-131	8IA09	14.0
Airbus A320-200 Series	A320-211	01P08CM105	5826.4
Airbus A320-200 Series	A320-232	01P10IA021	523.0
Airbus A320-200 Series	A320-232	01P10IA022	113.0
Airbus A320-200 Series	A320-211	1CM008	142.3
Airbus A320-200 Series	A320-211	1CM009	577.4
Airbus A320-200 Series	A320-232	1IA003	1100.4
Airbus A320-200 Series	A320-211	3CM026	626.5
Airbus A320-200 Series	A320-232	8IA010	0.9
Airbus A320-NEO	A320-271N	01P20CM128	3389.8
Airbus A320-NEO	A320-271N	01P22PW163	5379.4
Airbus A321-200 Series	A321-232	01P08CM104	1034.9
Airbus A321-200 Series	A321-232	01P10IA025	6278.9
Airbus A321-200 Series	A321-232	3CM025	1068.5

Table 14 Alternative 1: 2032 No Action Fleet Mix (Airframe, ANP ID, and AEDT Engine Code) and Operations (Continued)

AIRFRAME	ANP ID	ENGINE CODE	ANNUAL OPERATIONS
Airbus A321-NEO	A321-232	01P18PW157	5185.0
Airbus A321-NEO	A321-232	01P20CM132	15379.9
Boeing 737-700 Series	737700	3CM030	94.6
Boeing 737-700 Series	737700	3CM031	3195.1
Boeing 737-700 Series	737700	3CM032	581.5
Boeing 737-700 Series	737700	8CM051	2.2
Boeing 737-700 Series	737700	8CM062	23.1
Boeing 737-700 Series	737700	8CM063	542.0
Boeing 737-8	7378MAX	01P20CM135	282.3
Boeing 737-8	7378MAX	01P20CM136	9143.8
Boeing 737-8	7378MAX	01P20CM140	8434.6
Boeing 737-8_MAX7	7378MAX_MAX7	01P20CM136_MAX7	1089.7
Boeing 737-800 Series	737800	01P11CM114	425.1
Boeing 737-800 Series	737800	01P11CM116	5786.0
Boeing 737-800 Series	737800	01P11CM122	3157.1
Boeing 737-800 Series	737800	01P11CM125	702.0
Boeing 737-800 Series	737800	01P11CM126	66.6
Boeing 737-800 Series	737800	3CM032	17712.2
Boeing 737-800 Series	737800	3CM034	1710.0
Boeing 737-800 Series	737800	8CM051	24246.4
Boeing 737-800 Series	737800	8CM064	176.0
Boeing 737-800 Series	737800	8CM065	2263.9
Boeing 737-800 Series	737800	8CM066	10632.7
Boeing 737-9	7378MAX	01P20CM136	440.9
Boeing 737-9	7378MAX	01P20CM140	17382.6
Boeing 737-900-ER	737800	01P11CM116	29580.5
Boeing 737-900-ER	737800	01P11CM121	84571.7
Boeing 737-900-ER_MA	737800	01P11CM121_MA	1808.4
Boeing 737-900-ER	737800	01P11CM125	258.0
Boeing 737-900-ER	737800	3CM034	1190.7
Boeing 737-900-ER	737800	8CM065	1327.5
Airbus A330-200 Series	A330-343	2RR023	2478.1
Airbus A330-200 Series	A330-343	9PW094	35.4
Airbus A330-300 Series	A330-343	2RR023	536.8
Airbus A330-300 Series	A330-301	4GE080	544.6
Airbus A330-300 Series	A330-343	7PW082	73.5
Airbus A330-300 Series	A330-301	9PW094	1538.1
Airbus A330-300 Series	A330-301	9PW095	360.8
Airbus A330-900N Series (Neo)	A330-343	02P23RR141	5007.1
Airbus A350-900 series	A350-941	01P18RR124	1874.2
Boeing 767-400 ER	767400	8GE101	357.8
Boeing 777-200-ER	777200	10PW099	120.3
Boeing 777-200-ER	777200	2RR027	423.2
Boeing 777-200-ER	777200	3GE060	187.1
Boeing 777-200-ER	777200	3GE064	3.0
Boeing 777-200-ER	777200	8GE100	194.5
Boeing 777-300 ER	7773ER	01P21GE217	1259.5
Boeing 787-10 Dreamliner	7879	01P17GE211	334.0
Boeing 787-10 Dreamliner	7879	02P23RR134	364.6
Boeing 787-10 Dreamliner	7879	17GE179	721.6
Boeing 787-8 Dreamliner	7878R	01P17GE206	1055.2
Boeing 787-8 Dreamliner	7878R	01P17GE210	35.5

Table 14 Alternative 1: 2032 No Action Fleet Mix (Airframe, ANP ID, and AEDT Engine Code) and Operations (Continued)

AIRFRAME	ANP ID	ENGINE CODE	ANNUAL OPERATIONS
Boeing 787-8 Dreamliner	7878R	11GE137	1667.0
Boeing 787-8 Dreamliner	7878R	11GE138	4096.5
Boeing 787-9 Dreamliner	7879	01P17GE211	2081.3
Boeing 787-9 Dreamliner	7879	01P17GE214	14.2
Boeing 787-9 Dreamliner	7879	02P23RR131	469.6
Boeing 787-9 Dreamliner	7879	12RR067	2149.7
Boeing 787-9 Dreamliner	7879	12RR068	906.1
		Subtotal	***330,926.5***
Cargo Jets			
Airbus A300F4-600 Series	A300-622R	1GE020	4.7
Airbus A300F4-600 Series	A300-622R	1PW048	133.1
Airbus A300F4-600 Series	A300-622R	3GE056	241.2
Boeing 747-400 ERF	747400RN	12PW102	590.0
Boeing 747-400BCF	747400	01P03GE187	590.0
Boeing 747-8F	7478	01P17GE215	288.8
Boeing 747-8F	7478	13GE156	76.9
Boeing 747-8F	7478	8GENX1	249.3
Boeing 767-200 Series Freighter	767CF6	1GE010	2866.1
Boeing 767-200 Series Freighter	767CF6	1GE012	1427.5
Boeing 767-200 Series Freighter	767JT9	1PW026	256.5
Boeing 767-300 ER Freighter	7673ER	1GE030	4142.2
Boeing 767-300 ER Freighter	7673ER	2GE055	407.8
Boeing 777 Freighter	777200	01P21GE216	2415.4
Boeing 777 Freighter	777300	01P21GE217	57.6
Boeing MD-11 Freighter	MD11PW	12PW102	249.3
Boeing MD-11 Freighter	MD11GE	1GE031	1251.6
Boeing MD-11 Freighter	MD11PW	1PW052	407.0
		Subtotal	***15,655.0***
Regional Jets			
Embraer ERJ175-LR	EMB175	01P08GE197	113894.7
Embraer ERJ175-LR_MA	EMB175_MA	01P08GE197_MA	976.6
		Subtotal	***114,871.3***
Cargo Prop			
ATR 72-600 Freighter	DHC830	PW127F	204.0
Cessna 208 Caravan	PA42	P6114A	1162.6
Cessna 208 Caravan	CNA208	PT6A14	1146.4
Raytheon Beech 99	DHC6	PT6A27	3.3
Raytheon Beech 99	DHC6	PT6A36	181.7
Shorts 330-200 Series	SD330	PT6A6B	204.0
		Subtotal	***2,902.0***
Other			
Cessna 208 Caravan_O	PA42_O	P6114A_O	201.4
Cessna 208 Caravan_O	PA42_O	PT6A14_O	198.6
Boeing 737-900-ER_O	737800_O	01P11CM116_O	149.5
Boeing 737-900-ER_O	737800_O	01P11CM121_O	436.5
Boeing 737-900-ER_O	737800_O	01P11CM125_O	1.3
Boeing 737-900-ER_O	737800_O	3CM034_O	6.0
Boeing 737-900-ER_O	737800_O	8CM065_O	6.7
		Subtotal	***1,000.0***
GA Jet			
Bombardier Challenger 350	CL600	01P14HN011	554.5
Dassault Falcon 50	FAL900EX	1AS002	554.5

Table 14 Alternative 1: 2032 No Action Fleet Mix (Airframe, ANP ID, and AEDT Engine Code) and Operations (Continued)

AIRFRAME	ANP ID	ENGINE CODE	ANNUAL OPERATIONS
Embraer Phenom 300 (EMB-505)	CNA55B	PW530	126.0
		Subtotal	***1,235.0***
GA Prop			
Raytheon Super King Air 200	C12	PT660A	61.0
Cessna 172 Skyhawk	CNA172	IO320	132.0
Piper PA-31 Navajo	BEC58P	TIO540	17.0
		Subtotal	***210.0***
Military			
Embraer Phenom 300 (EMB-505)_M	CNA55B_M	PW530_M	72.0
Raytheon Super King Air 200_M	C12_M	PT660A_M	26.0
Cessna 172 Skyhawk_M	CNA172_M	IO320_M	2.0
		Subtotal	***100.0***
		Grand Total	***466,899.8***

Note: Totals may not sum due to rounding.
Source: L&B Analysis, 2023.

Table 15 Alternative 2: 2032 Proposed Action Fleet Mix (Airframe, ANP ID, and AEDT Engine Code) and Operations

AIRFRAME	ANP ID	ENGINE CODE	ANNUAL OPERATIONS
Commercial Jets			
Airbus A220-100	737700	16PW111	19489.2
Airbus A220-300	737700	16PW111	5616.0
Airbus A220-300	737700	16PW112	2766.1
Airbus A319-100 Series	A319-131	01P10IA020	4.0
Airbus A319-100 Series	A319-131	3CM028	34.4
Airbus A319-100 Series	A319-131	3IA006	774.8
Airbus A319-100 Series	A319-131	3IA007	414.9
Airbus A319-100 Series	A319-131	4CM035	30.8
Airbus A319-100 Series	A319-131	8IA09	14.2
Airbus A320-200 Series	A320-211	01P08CM105	5940.8
Airbus A320-200 Series	A320-232	01P10IA021	533.3
Airbus A320-200 Series	A320-232	01P10IA022	115.2
Airbus A320-200 Series	A320-211	1CM008	145.1
Airbus A320-200 Series	A320-211	1CM009	588.7
Airbus A320-200 Series	A320-232	1IA003	1122.0
Airbus A320-200 Series	A320-211	3CM026	638.8
Airbus A320-200 Series	A320-232	8IA010	0.9
Airbus A320-NEO	A320-271N	01P20CM128	3456.4
Airbus A320-NEO	A320-271N	01P22PW163	5485.0
Airbus A321-200 Series	A321-232	01P08CM104	1055.2
Airbus A321-200 Series	A321-232	01P10IA025	6402.2
Airbus A321-200 Series	A321-232	3CM025	1089.5
Airbus A321-NEO	A321-232	01P18PW157	5286.9
Airbus A321-NEO	A321-232	01P20CM132	15681.9
Boeing 737-700 Series	737700	3CM030	96.5
Boeing 737-700 Series	737700	3CM031	3257.8
Boeing 737-700 Series	737700	3CM032	593.0
Boeing 737-700 Series	737700	8CM051	2.3
Boeing 737-700 Series	737700	8CM062	23.6
Boeing 737-700 Series	737700	8CM063	552.6
Boeing 737-8	7378MAX	01P20CM135	287.8

Table 15 Alternative 2: 2032 Proposed Action Fleet Mix (Airframe, ANP ID, and AEDT Engine Code) and Operations (Continued)

AIRFRAME	ANP ID	ENGINE CODE	ANNUAL OPERATIONS
Boeing 737-8	7378MAX	01P20CM136	9323.4
Boeing 737-8	7378MAX	01P20CM140	8600.2
Boeing 737-8_MAX7	7378MAX_MAX7	01P20CM136_MAX7	1111.1
Boeing 737-800 Series	737800	01P11CM114	433.4
Boeing 737-800 Series	737800	01P11CM116	5899.6
Boeing 737-800 Series	737800	01P11CM122	3219.1
Boeing 737-800 Series	737800	01P11CM125	715.8
Boeing 737-800 Series	737800	01P11CM126	67.9
Boeing 737-800 Series	737800	3CM032	18060.0
Boeing 737-800 Series	737800	3CM034	1743.6
Boeing 737-800 Series	737800	8CM051	24722.5
Boeing 737-800 Series	737800	8CM064	179.5
Boeing 737-800 Series	737800	8CM065	2308.4
Boeing 737-800 Series	737800	8CM066	10841.5
Boeing 737-9	7378MAX	01P20CM136	449.6
Boeing 737-9	7378MAX	01P20CM140	17723.9
Boeing 737-900-ER	737800	01P11CM116	30161.3
Boeing 737-900-ER	737800	01P11CM121	86233.9
Boeing 737-900-ER_MA	737800_MA	01P11CM121_MA	1842.3
Boeing 737-900-ER	737800	01P11CM125	263.1
Boeing 737-900-ER	737800	3CM034	1214.1
Boeing 737-900-ER	737800	8CM065	1353.6
Airbus A330-200 Series	A330-343	2RR023	2526.7
Airbus A330-200 Series	A330-343	9PW094	36.1
Airbus A330-300 Series	A330-343	2RR023	547.4
Airbus A330-300 Series	A330-301	4GE080	555.3
Airbus A330-300 Series	A330-343	7PW082	74.9
Airbus A330-300 Series	A330-301	9PW094	1568.3
Airbus A330-300 Series	A330-301	9PW095	367.9
Airbus A330-900N Series (Neo)	A330-343	02P23RR141	5106.3
Airbus A350-900 series	A350-941	01P18RR124	1911.1
Boeing 767-400 ER	767400	8GE101	364.8
Boeing 777-200-ER	777200	10PW099	122.6
Boeing 777-200-ER	777200	2RR027	431.5
Boeing 777-200-ER	777200	3GE060	190.8
Boeing 777-200-ER	777200	3GE064	3.0
Boeing 777-200-ER	777200	8GE100	198.3
Boeing 777-300 ER	7773ER	01P21GE217	1284.2
Boeing 787-10 Dreamliner	7879	01P17GE211	340.6
Boeing 787-10 Dreamliner	7879	02P23RR134	371.8
Boeing 787-10 Dreamliner	7879	17GE179	735.8
Boeing 787-8 Dreamliner	7878R	01P17GE206	1075.9
Boeing 787-8 Dreamliner	7878R	01P17GE210	36.2
Boeing 787-8 Dreamliner	7878R	11GE137	1699.7
Boeing 787-8 Dreamliner	7878R	11GE138	4176.9
Boeing 787-9 Dreamliner	7879	01P17GE211	2122.2
Boeing 787-9 Dreamliner	7879	01P17GE214	14.4
Boeing 787-9 Dreamliner	7879	02P23RR131	478.8
Boeing 787-9 Dreamliner	7879	12RR067	2191.9
Boeing 787-9 Dreamliner	7879	12RR068	923.9
		Subtotal	***337,425.5***

Table 15 Alternative 2: 2032 Proposed Action Fleet Mix (Airframe, ANP ID, and AEDT Engine Code) and Operations (Continued)

AIRFRAME	ANP ID	ENGINE CODE	ANNUAL OPERATIONS
Cargo Jets			
Airbus A300F4-600 Series	A300-622R	1GE020	4.7
Airbus A300F4-600 Series	A300-622R	1PW048	133.1
Airbus A300F4-600 Series	A300-622R	3GE056	241.2
Boeing 747-400 ERF	747400RN	12PW102	590.0
Boeing 747-400BCF	747400	01P03GE187	590.0
Boeing 747-8F	7478	01P17GE215	288.8
Boeing 747-8F	7478	13GE156	76.9
Boeing 747-8F	7478	8GENX1	249.3
Boeing 767-200 Series Freighter	767CF6	1GE010	2866.1
Boeing 767-200 Series Freighter	767CF6	1GE012	1427.5
Boeing 767-200 Series Freighter	767JT9	1PW026	256.5
Boeing 767-300 ER Freighter	7673ER	1GE030	4142.2
Boeing 767-300 ER Freighter	7673ER	2GE055	407.8
Boeing 777 Freighter	777200	01P21GE216	2415.4
Boeing 777 Freighter	777300	01P21GE217	57.6
Boeing MD-11 Freighter	MD11PW	12PW102	249.3
Boeing MD-11 Freighter	MD11GE	1GE031	1251.6
Boeing MD-11 Freighter	MD11PW	1PW052	407.0
		Subtotal	***15,655.0***
Regional Jets			
Embraer ERJ175-LR	EMB175	01P08GE197	116132.0
Embraer ERJ175-LR_MA	EMB175_MA	01P08GE197_MA	994.9
		Subtotal	***117,126.9***
Cargo Prop			
ATR 72-600 Freighter	DHC830	PW127F	204.0
Cessna 208 Caravan	PA42	P6114A	1162.6
Cessna 208 Caravan	CNA208	PT6A14	1146.4
Raytheon Beech 99	DHC6	PT6A27	3.3
Raytheon Beech 99	DHC6	PT6A36	181.7
Shorts 330-200 Series	SD330	PT6A6B	204.0
		Subtotal	***2,902.0***
Other			
Cessna 208 Caravan_O	PA42_O	P6114A_O	201.4
Cessna 208 Caravan_O	PA42_O	PT6A14_O	198.6
Boeing 737-900-ER_O	737800_O	01P11CM116_O	149.5
Boeing 737-900-ER_O	737800_O	01P11CM121_O	436.5
Boeing 737-900-ER_O	737800_O	01P11CM125_O	1.3
Boeing 737-900-ER_O	737800_O	3CM034_O	6.0
Boeing 737-900-ER_O	737800_O	8CM065_O	6.7
		Subtotal	***1,000.0***
GA Jets			
Bombardier Challenger 350	CL600	01P14HN011	554.5
Dassault Falcon 50	FAL900EX	1AS002	554.5
Embraer Phenom 300 (EMB-505)	CNA55B	PW530	126.0
		Subtotal	***1,235.0***
GA Prop			
Raytheon Super King Air 200	C12	PT660A	61.0
Cessna 172 Skyhawk	CNA172	IO320	132.0
Piper PA-31 Navajo	BEC58P	TIO540	17.0
		Subtotal	***210.0***

Table 15 Alternative 2: 2032 Proposed Action Fleet Mix (Airframe, ANP ID, and AEDT Engine Code) and Operations (Continued)

AIRFRAME	ANP ID	ENGINE CODE	ANNUAL OPERATIONS
Military			
Embraer Phenom 300 (EMB-505)_M	CNA55B_M	PW530_M	72.0
Raytheon Super King Air 200_M	C12_M	PT660A_M	26.0
Cessna 172 Skyhawk_M	CNA172_M	IO320_M	2.0
		Subtotal	***100.00***
		Grand Total	**475,654.4**

Note: Totals may not sum due to rounding.
Source: L&B Analysis, 2023.

Table 16 Alternative 1: 2037 No Action Fleet Mix (Airframe, ANP ID, and AEDT Engine Code) and Operations

AIRFRAME	ANP ID	ENGINE CODE	ANNUAL OPERATIONS
Commercial Jets			
Airbus A220-100	737700	16PW111	25278.7
Airbus A220-300	737700	16PW111	8743.4
Airbus A220-300	737700	16PW112	4306.4
Airbus A320-200 Series	A320-211	01P08CM105	2008.6
Airbus A320-200 Series	A320-232	01P10IA021	180.3
Airbus A320-200 Series	A320-232	01P10IA022	38.9
Airbus A320-200 Series	A320-211	1CM008	49.1
Airbus A320-200 Series	A320-211	1CM009	199.0
Airbus A320-200 Series	A320-232	1IA003	379.4
Airbus A320-200 Series	A320-211	3CM026	216.0
Airbus A320-200 Series	A320-232	8IA010	0.3
Airbus A320-NEO	A320-271N	01P20CM128	5744.3
Airbus A320-NEO	A320-271N	01P22PW163	9115.7
Airbus A321-200 Series	A321-232	01P08CM104	324.3
Airbus A321-200 Series	A321-232	01P10IA025	1967.7
Airbus A321-200 Series	A321-232	3CM025	334.9
Airbus A321-NEO	A321-232	01P18PW157	7082.1
Airbus A321-NEO	A321-232	01P20CM132	21006.9
Boeing 737-700 Series	737700	3CM030	19.3
Boeing 737-700 Series	737700	3CM031	650.6
Boeing 737-700 Series	737700	3CM032	118.4
Boeing 737-700 Series	737700	8CM051	0.5
Boeing 737-700 Series	737700	8CM062	4.7
Boeing 737-700 Series	737700	8CM063	110.4
Boeing 737-8	7378MAX	01P20CM135	643.2
Boeing 737-8	7378MAX	01P20CM136	20834.7
Boeing 737-8	7378MAX	01P20CM140	19218.7
Boeing 737-8_MAX7	7378MAX_MAX7	01P20CM136_MAX7	1690.9
Boeing 737-800 Series	737800	01P11CM114	283.7
Boeing 737-800 Series	737800	01P11CM116	3861.1
Boeing 737-800 Series	737800	01P11CM122	2106.8
Boeing 737-800 Series	737800	01P11CM125	468.5
Boeing 737-800 Series	737800	01P11CM126	44.4
Boeing 737-800 Series	737800	3CM032	11819.7
Boeing 737-800 Series	737800	3CM034	1141.1
Boeing 737-800 Series	737800	8CM051	16180.1
Boeing 737-800 Series	737800	8CM064	117.5
Boeing 737-800 Series	737800	8CM065	1510.8
Boeing 737-800 Series	737800	8CM066	7095.4
Boeing 737-9	7378MAX	01P20CM136	958.8
Boeing 737-9	7378MAX	01P20CM140	37795.0

Table 16 Alternative 1: 2037 No Action Fleet Mix (Airframe, ANP ID, and AEDT Engine Code) and Operations (Continued)

AIRFRAME	ANP ID	ENGINE CODE	ANNUAL OPERATIONS
Boeing 737-900-ER	737800	01P11CM116	25141.9
Boeing 737-900-ER	737800	01P11CM121	71579.3
Boeing 737-900-ER_MA	737800_MA	01P11CM121_MA	1839.3
Boeing 737-900-ER	737800	01P11CM125	219.3
Boeing 737-900-ER	737800	3CM034	1012.1
Boeing 737-900-ER	737800	8CM065	1128.3
Airbus A330-200 Series	A330-343	2RR023	2514.0
Airbus A330-200 Series	A330-343	9PW094	36.0
Airbus A330-300 Series	A330-343	2RR023	544.5
Airbus A330-300 Series	A330-301	4GE080	552.5
Airbus A330-300 Series	A330-343	7PW082	74.6
Airbus A330-300 Series	A330-301	9PW094	1560.2
Airbus A330-300 Series	A330-301	9PW095	366.0
Airbus A330-900N Series (Neo)	A330-343	02P23RR141	5503.2
Airbus A350-900 series	A350-941	01P18RR124	3247.4
Boeing 787-10 Dreamliner	7879	01P17GE211	445.2
Boeing 787-10 Dreamliner	7879	02P23RR134	486.0
Boeing 787-10 Dreamliner	7879	17GE179	961.8
Boeing 787-8 Dreamliner	7878R	01P17GE206	1418.2
Boeing 787-8 Dreamliner	7878R	01P17GE210	47.7
Boeing 787-8 Dreamliner	7878R	11GE137	2240.5
Boeing 787-8 Dreamliner	7878R	11GE138	5505.9
Boeing 787-9 Dreamliner	7879	01P17GE211	3449.3
Boeing 787-9 Dreamliner	7879	01P17GE214	23.5
Boeing 787-9 Dreamliner	7879	02P23RR131	778.2
Boeing 787-9 Dreamliner	7879	12RR067	3562.7
Boeing 787-9 Dreamliner	7879	12RR068	1501.7
		Subtotal	***349,389.2***
Cargo Jets			
Boeing 747-400 ERF	747400RN	12PW102	577.0
Boeing 747-400BCF	747400	01P03GE187	577.0
Boeing 747-8F	7478	01P17GE215	315.1
Boeing 747-8F	7478	13GE156	83.9
Boeing 747-8F	7478	8GENX1	272.0
Boeing 767-200 Series Freighter	767CF6	1GE010	3718.6
Boeing 767-200 Series Freighter	767CF6	1GE012	1852.1
Boeing 767-200 Series Freighter	767JT9	1PW026	332.8
Boeing 767-300 ER Freighter	7673ER	1GE030	5221.4
Boeing 767-300 ER Freighter	7673ER	2GE055	514.1
Boeing 777 Freighter	777200	01P21GE216	3690.1
Boeing 777 Freighter	777300	01P21GE217	87.9
		Subtotal	***17,242.0***
Regional Jets			
Embraer ERJ175-LR	EMB175	01P08GE197	101505.5
Embraer ERJ175-LR_MA	EMB175_MA	01P08GE197_MA	993.2
		Subtotal	***102,498.7***

Table 16 Alternative 1: 2037 No Action Fleet Mix (Airframe, ANP ID, and AEDT Engine Code) and Operations

AIRFRAME	ANP ID	ENGINE CODE	ANNUAL OPERATIONS
Cargo Prop			
ATR 72-600 Freighter	DHC830	PW127F	323.0
Cessna 208 Caravan	PA42	P6114A	1147.0
Cessna 208 Caravan	CNA208	PT6A14	1131.0
Raytheon Beech 99	DHC6	PT6A27	4.2
Raytheon Beech 99	DHC6	PT6A36	234.8
Shorts 330-200 Series	SD330	PT6A6B	323.0
		Subtotal	***3,163.0***
Other			
Cessna 208 Caravan_O	PA42_O	P6114A_O	201.4
Cessna 208 Caravan_O	PA42_O	PT6A14_O	198.6
Boeing 737-900-ER_O	737800_O	01P11CM116_O	149.5
Boeing 737-900-ER_O	737800_O	01P11CM121_O	436.5
Boeing 737-900-ER_O	737800_O	01P11CM125_O	1.3
Boeing 737-900-ER_O	737800_O	3CM034_O	6.0
Boeing 737-900-ER_O	737800_O	8CM065_O	6.7
		Subtotal	***1,000.0***
GA Jets			
Bombardier Challenger 350	CL600	01P14HN011	572.0
Dassault Falcon 50	FAL900EX	1AS002	572.0
Embraer Phenom 300 (EMB-505)	CNA55B	PW530	136.0
		Subtotal	***1,280.0***
GA Prop			
Raytheon Super King Air 200	C12	PT660A	67.0
Cessna 172 Skyhawk	CNA172	IO320	120.0
Piper PA-31 Navajo	BEC58P	TIO540	14.0
		Subtotal	***201.0***
Military			
Embraer Phenom 300 (EMB-505)_M	CNA55B_M	PW530_M	72.0
Raytheon Super King Air 200_M	C12_M	PT660A_M	26.0
Cessna 172 Skyhawk_M	CNA172_M	IO320_M	2.0
		Subtotal	***100.0***
		Grand Total	**474,874.0**

Note: Totals may not sum due to rounding.
Source: L&B Analysis, 2023.

Table 17 Alternative 2: 2037 Proposed Action Fleet Mix (Airframe, ANP ID, and AEDT Engine Code) and Operations

AIRFRAME	ANP ID	ENGINE CODE	ANNUAL OPERATIONS
Commercial Jets			
Airbus A220-100	737700	16PW111	27237.6
Airbus A220-300	737700	16PW111	9420.9
Airbus A220-300	737700	16PW112	4640.2
Airbus A320-200 Series	A320-211	01P08CM105	2164.2
Airbus A320-200 Series	A320-232	01P10IA021	194.3
Airbus A320-200 Series	A320-232	01P10IA022	42.0
Airbus A320-200 Series	A320-211	1CM008	52.9
Airbus A320-200 Series	A320-211	1CM009	214.5
Airbus A320-200 Series	A320-232	1IA003	408.8
Airbus A320-200 Series	A320-211	3CM026	232.7
Airbus A320-200 Series	A320-232	8IA010	0.3
Airbus A320-NEO	A320-271N	01P20CM128	6189.4
Airbus A320-NEO	A320-271N	01P22PW163	9822.1
Airbus A321-200 Series	A321-232	01P08CM104	349.5

Table 17 Alternative 2: 2037 Proposed Action Fleet Mix (Airframe, ANP ID, and AEDT Engine Code) and Operations (Continued)

AIRFRAME	ANP ID	ENGINE CODE	ANNUAL OPERATIONS
Airbus A321-200 Series	A321-232	01P10IA025	2120.2
Airbus A321-200 Series	A321-232	3CM025	360.8
Airbus A321-NEO	A321-232	01P18PW157	7630.9
Airbus A321-NEO	A321-232	01P20CM132	22634.8
Boeing 737-700 Series	737700	3CM030	20.8
Boeing 737-700 Series	737700	3CM031	701.0
Boeing 737-700 Series	737700	3CM032	127.6
Boeing 737-700 Series	737700	8CM051	0.5
Boeing 737-700 Series	737700	8CM062	5.1
Boeing 737-700 Series	737700	8CM063	118.9
Boeing 737-8	7378MAX	01P20CM135	693.1
Boeing 737-8	7378MAX	01P20CM136	22449.2
Boeing 737-8	7378MAX	01P20CM140	20708.1
Boeing 737-8_MAX7	7378MAX_MAX7	01P20CM136_MAX7	1822.0
Boeing 737-800 Series	737800	01P11CM114	305.7
Boeing 737-800 Series	737800	01P11CM116	4160.3
Boeing 737-800 Series	737800	01P11CM122	2270.0
Boeing 737-800 Series	737800	01P11CM125	504.8
Boeing 737-800 Series	737800	01P11CM126	47.9
Boeing 737-800 Series	737800	3CM032	12735.6
Boeing 737-800 Series	737800	3CM034	1229.6
Boeing 737-800 Series	737800	8CM051	17433.9
Boeing 737-800 Series	737800	8CM064	126.6
Boeing 737-800 Series	737800	8CM065	1627.8
Boeing 737-800 Series	737800	8CM066	7645.2
Boeing 737-9	7378MAX	01P20CM136	45.2
Boeing 737-9	7378MAX	01P20CM140	1780.5
Boeing 737-900-ER	737800	01P11CM116	27090.2
Boeing 737-900-ER	737800	01P11CM121	77133.1
Boeing 737-900-ER_MA	737800_MA	01P11CM121_MA	1975.0
Boeing 737-900-ER	737800	01P11CM125	236.3
Boeing 737-900-ER	737800	3CM034	1090.5
Boeing 737-900-ER	737800	8CM065	1215.8
Airbus A330-200 Series	A330-343	2RR023	2708.8
Airbus A330-200 Series	A330-343	9PW094	38.7
Airbus A330-300 Series	A330-343	2RR023	586.7
Airbus A330-300 Series	A330-301	4GE080	595.3
Airbus A330-300 Series	A330-343	7PW082	80.3
Airbus A330-300 Series	A330-301	9PW094	1681.1
Airbus A330-300 Series	A330-301	9PW095	394.4
Airbus A330-900N Series (Neo)	A330-343	02P23RR141	5929.6
Airbus A350-900 series	A350-941	01P18RR124	3499.1
Boeing 787-10 Dreamliner	7879	01P17GE211	479.7
Boeing 787-10 Dreamliner	7879	02P23RR134	523.7
Boeing 787-10 Dreamliner	7879	17GE179	1036.3
Boeing 787-8 Dreamliner	7878R	01P17GE206	1528.1
Boeing 787-8 Dreamliner	7878R	01P17GE210	51.4
Boeing 787-8 Dreamliner	7878R	11GE137	2414.1
Boeing 787-8 Dreamliner	7878R	11GE138	5932.6
Boeing 787-9 Dreamliner	7879	01P17GE211	3716.6
Boeing 787-9 Dreamliner	7879	01P17GE214	25.3
Boeing 787-9 Dreamliner	7879	02P23RR131	838.5
Boeing 787-9 Dreamliner	7879	12RR067	3838.8

Table 17 Alternative 2: 2037 Proposed Action Fleet Mix (Airframe, ANP ID, and AEDT Engine Code) and Operations (Continued)

AIRFRAME	ANP ID	ENGINE CODE	ANNUAL OPERATIONS
Boeing 787-9 Dreamliner	7879	12RR068	1618.1
		Subtotal	***376,464.5***
Cargo Jets			
Boeing 747-400 ERF	747400RN	12PW102	577.0
Boeing 747-400BCF	747400	01P03GE187	577.0
Boeing 747-8F	7478	01P17GE215	315.1
Boeing 747-8F	7478	13GE156	83.9
Boeing 747-8F	7478	8GENX1	272.0
Boeing 767-200 Series Freighter	767CF6	1GE010	3718.6
Boeing 767-200 Series Freighter	767CF6	1GE012	1852.1
Boeing 767-200 Series Freighter	767JT9	1PW026	332.8
Boeing 767-300 ER Freighter	7673ER	1GE030	5221.4
Boeing 767-300 ER Freighter	7673ER	2GE055	514.1
Boeing 777 Freighter	777200	01P21GE216	3690.1
Boeing 777 Freighter	777300	01P21GE217	87.9
		Subtotal	***17,242.0***
Regional Jets			
Embraer ERJ175-LR	EMB175	01P08GE197	109375.2
Embraer ERJ175-LR_MA	EMB175_MA	01P08GE197_MA	1066.5
		Subtotal	***110,441.7***
Cargo Prop			
ATR 72-600 Freighter	DHC830	PW127F	323.0
Cessna 208 Caravan	PA42	P6114A	1147.0
Cessna 208 Caravan	CNA208	PT6A14	1131.0
Raytheon Beech 99	DHC6	PT6A27	4.2
Raytheon Beech 99	DHC6	PT6A36	234.8
Shorts 330-200 Series	SD330	PT6A6B	323.0
		Subtotal	***3,163.0***
Other			
Cessna 208 Caravan_O	PA42_O	P6114A_O	201.4
Cessna 208 Caravan_O	PA42_O	PT6A14_O	198.6
Boeing 737-900-ER_O	737800_O	01P11CM116_O	149.5
Boeing 737-900-ER_O	737800_O	01P11CM121_O	436.5
Boeing 737-900-ER_O	737800_O	01P11CM125_O	1.3
Boeing 737-900-ER_O	737800_O	3CM034_O	6.0
Boeing 737-900-ER_O	737800_O	8CM065_O	6.7
		Subtotal	***1,000.0***
GA Jets			
Bombardier Challenger 350	CL600	01P14HN011	572.0
Dassault Falcon 50	FAL900EX	1AS002	572.0
Embraer Phenom 300 (EMB-505)	CNA55B	PW530	136.0
		Subtotal	***1,280.0***
GA Prop			
Raytheon Super King Air 200	C12	PT660A	67.0
Cessna 172 Skyhawk	CNA172	IO320	120.0
Piper PA-31 Navajo	BEC58P	TIO540	14.0
		Subtotal	***201.0***

Table 17 Alternative 2: 2037 Proposed Action Fleet Mix (Airframe, ANP ID, and AEDT Engine Code) and Operations (Continued)

AIRFRAME	ANP ID	ENGINE CODE	ANNUAL OPERATIONS
Military			
Raytheon Super King Air 200_M	CNA55B_M	PT660A_M	26.0
Embraer Phenom 300 (EMB-505)_M	C12_M	PW530_M	72.0
Cessna 172 Skyhawk_M	CNA172_M	IO320_M	2.0
		Subtotal	***100.0***
		Grand Total	**509,892.2**

Note: Totals may not sum due to rounding.
Source: L&B Analysis, 2023.

2.2 Day/Night Operating Characteristics

Table 18 through Table 25 present the day and night percentages per operator category for each alternative in 2032 and 2037. The day and night percentages were calculated using operational output from the Total Airspace and Airport Modeler (TAAM) airfield simulation modeling.[4]

Table 18 Alternative 1: 2032 No Action Arrival Day/Night Split per Operator Category

Operator Category	Day	Night
Passenger		
Heavy Jet	99.0%	1.0%
Narrow Body Jet	79.9%	20.1%
Regional Jet	89.1%	10.9%
Cargo		
Heavy Jet	61.6%	38.4%
Prop	100.0%	0.0%
General Aviation		
Jet	100.0%	0.0%
Turboprop	100.0%	0.0%
Prop	55.7%	44.3%
Grand Total	**82.9%**	**17.1%**

Source: L&B Analysis, 2023.

Table 19 Alternative 1: 2032 No Action Departure Day/Night Split per Operator Category

Operator Category	Day	Night
Passenger		
Heavy Jet	95.1%	4.9%
Narrow Body Jet	81.5%	18.5%
Regional Jet	91.2%	8.8%
Cargo		
Heavy Jet	79.9%	20.1%
Prop	100.0%	0.0%
General Aviation		
Jet	100.0%	0.0%
Turboprop	100.0%	0.0%
Prop	100.0%	0.0%
Grand Total	**84.9%**	**15.1%**

Source: L&B Analysis, 2023.

[4] See Appendix A, Forecast and Operational Assumptions for more information regarding the TAAM modeling results.

Table 20 Alternative 2: 2032 Proposed Action Arrival Day/Night Split per Operator Category

Operator Category	Day	Night
Passenger		
Heavy Jet	99.2%	0.8%
Narrow Body Jet	80.3%	19.7%
Regional Jet	89.7%	10.3%
Cargo		
Heavy Jet	61.6%	38.4%
Prop	100.0%	0.0%
General Aviation		
Jet	100.0%	0.0%
Turboprop	100.0%	0.0%
Prop	55.7%	44.3%
Grand Total	**83.3%**	**16.7%**

Source: L&B Analysis, 2023.

Table 21 Alternative 2: 2032 Proposed Action Departure Day/Night Split per Operator Category

Operator Category	Day	Night
Passenger		
Heavy Jet	95.1%	4.9%
Narrow Body Jet	81.8%	18.2%
Regional Jet	89.0%	11.0%
Cargo		
Heavy Jet	79.9%	20.1%
Prop	100.0%	0.0%
General Aviation		
Jet	100.0%	0.0%
Turboprop	100.0%	0.0%
Prop	100.0%	0.0%
Grand Total	**84.5%**	**15.5%**

Source: L&B Analysis, 2023.

Table 22 Alternative 1: 2037 No Action Arrival Day/Night Split per Operator Category

Operator Category	Day	Night
Passenger		
Heavy Jet	99.2%	0.8%
Narrow Body Jet	82.5%	17.5%
Regional Jet	90.5%	9.5%
Cargo		
Heavy Jet	66.1%	33.9%
Prop	100.0%	0.0%
General Aviation		
Jet	100.0%	0.0%
Turboprop	100.0%	0.0%
Prop	55.2%	44.8%
Grand Total	**85.1%**	**14.9%**

Source: L&B Analysis, 2023.

Table 23 Alternative 1: 2037 No Action Departure Day/Night Split per Operator Category

Operator Category	Day	Night
Passenger		
Heavy Jet	96.9%	3.1%
Narrow Body Jet	81.8%	18.2%
Regional Jet	89.2%	10.8%
Cargo		
Heavy Jet	79.7%	20.3%
Prop	100.0%	0.0%
General Aviation		
Jet	100.0%	0.0%
Turboprop	100.0%	0.0%
Prop	100.0%	0.0%
Grand Total	**84.6%**	**15.4%**

Source: L&B Analysis, 2023.

Table 24 Alternative 2: 2037 Proposed Action Arrival Day/Night Split per Operator Category

Operator Category	Day	Night
Passenger		
Heavy Jet	99.3%	0.7%
Narrow Body Jet	80.9%	19.1%
Regional Jet	89.7%	10.3%
Cargo		
Heavy Jet	67.2%	32.8%
Prop	100.0%	0.0%
General Aviation		
Jet	100.0%	0.0%
Turboprop	100.0%	0.0%
Prop	55.2%	44.8%
Grand Total	**83.8%**	**16.2%**

Source: L&B Analysis, 2023.

Table 25 Alternative 2: 2037 Proposed Action Departure Day/Night Split per Operator Category

Operator Category	Day	Night
Passenger		
Heavy Jet	96.9%	3.1%
Narrow Body Jet	81.5%	18.5%
Regional Jet	89.0%	11.0%
Cargo		
Heavy Jet	80.8%	19.2%
Prop	100.0%	0.0%
General Aviation		
Jet	100.0%	0.0%
Turboprop	100.0%	0.0%
Prop	100.0%	0.0%
Grand Total	**84.4%**	**15.6%**

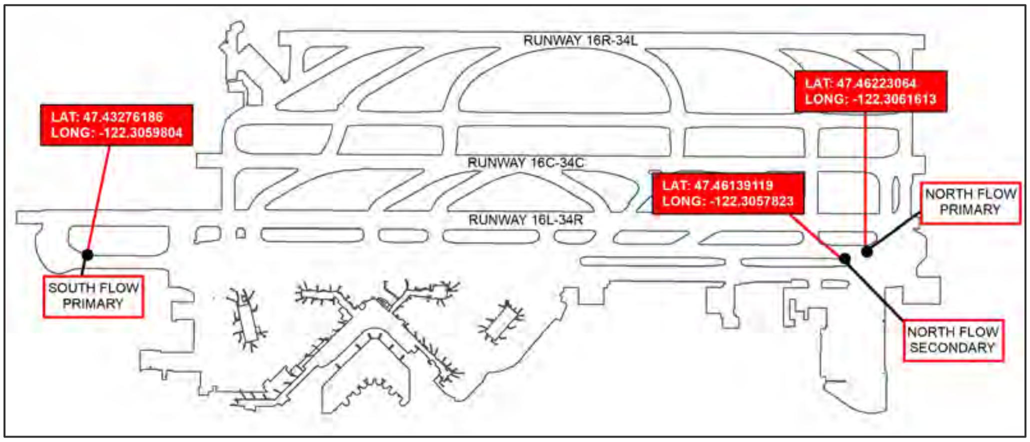
Source: L&B Analysis, 2023.

2.3 Aircraft Run Up Activity Levels

No changes to run-up locations would occur in Alternative 1: 2032 and 2037 No Action conditions. Therefore, the run-up locations discussed for the Existing (2022) condition would remain the same for Alternative 1. The number of engine run-up operations were determined for Alternative 1: 2032 and 2037 No Action conditions by scaling the engine run-ups from 2022 for the number of total operations, assuming the same distribution across aircraft type.

In Alternative 2: 2032 and 2037 Proposed Action conditions, changes to run-up locations would occur due to changes in the taxiways and new passenger terminal facilities. As a result, the locations would be located towards the north and south ends of the airfield. **Exhibit 7: *Proposed Action Run-up Locations*** shows the future location of the run-ups. In Alternative 2, the number of engine run-up operations were scaled up from 2022 levels assuming the same distribution across aircraft types.

Exhibit 7: Proposed Action Run-up Locations



Tables 26 through 29 present the amount of run-up operations, average duration and thrust settings per airframe and engine type that occurred at each SEA run-up location for each alternative in the future conditions.

Table 26 Alternative 1: 2032 No Action Aircraft Run-up Activity

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings (lbs)
North Flow Primary Location						
Airbus A319-100 Series	3IA006	1.5	3.0	--	--	22000
Airbus A320-200 Series	01P08CM105	24.8	15.8	1.5	2.0	25000
Airbus A320-200 Series	1CM009	2.9	69.5	--	--	25000
Airbus A320-200 Series	3CM026	2.9	15.5	--	--	25000
Airbus A321-200 Series	3CM025	4.4	36.7	--	--	30000
Airbus A321-NEO	01P20CM132	--	--	1.5	2.0	30000
Airbus A330-200 Series	9PW094	8.8	27.7	--	--	71100
Airbus A330-300 Series	4GE080	1.5	37.0	--	--	67500
Airbus A330-900N Series (Neo)	02P23RR141	1.5	26.0	--	--	71100
Boeing 737-700 Series	3CM031	5.8	26.8	--	--	24000
Boeing 737-700 Series	3CM032	7.3	56.4	--	--	24000
Boeing 737-800 Series	01P11CM122	1.5	10.0	--	--	26300
Boeing 737-800 Series	3CM032	20.4	27.6	--	--	26300
Boeing 737-800 Series	3CM034	1.5	9.0	--	--	26300
Boeing 737-800 Series	8CM051	2.9	40.5	--	--	26300
Boeing 737-800 Series	8CM066	4.4	33.0	--	--	26300
Boeing 737-9	01P20CM140	13.1	14.6	--	--	26400
Boeing 737-900-ER	01P11CM116	14.6	20.2	--	--	26300
Boeing 737-900-ER	01P11CM121	23.4	25.1	--	--	26300
Boeing 737-900-ER	01P11CM121	1.5	4.0	--	--	13150
Boeing MD-11 Freighter	1GE031	--	--	1.5	2.0	61500
Embraer ERJ175-LR	01P08GE197	5.8	28.0	--	--	13800
Embraer ERJ175-LR	01P08GE197	1.5	6.0	--	--	6900

Table 26 Alternative 1: 2032 No Action Aircraft Run-up Activity

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings (lbs)
South Flow Primary Location						
Airbus A319-100 Series	3IA006	1.5	15.0	--	--	22000
Airbus A319-100 Series	3IA007	1.5	26.0	1.5	11.0	22000
Airbus A320-200 Series	01P08CM105	40.9	12.9	--	--	25000
Airbus A320-200 Series	01P08CM105	2.9	6.0	--	--	12500
Airbus A320-200 Series	1CM009	7.3	31.6	--	--	25000
Airbus A321-NEO	01P20CM132	2.9	12.5	--	--	30000
Airbus A330-200 Series	2RR023	1.5	6.0	--	--	71100
Airbus A330-200 Series	9PW094	11.7	14.9	--	--	71100
Airbus A330-200 Series	9PW094	1.5	26.0	--	--	35550
Airbus A330-300 Series	4GE080	4.4	10.7	--	--	67500
Airbus A330-900N Series (Neo)	02P23RR141	4.4	26.7	--	--	71100
Boeing 737-700 Series	3CM031	23.4	17.6	--	--	24000
Boeing 737-700 Series	3CM031	1.5	20.0	1.5	2.0	12000
Boeing 737-700 Series	3CM032	5.8	31.5	--	--	24000
Boeing 737-800 Series	3CM032	61.3	18.3	--	--	26300
Boeing 737-800 Series	3CM032	4.4	18.3	--	--	13150
Boeing 737-800 Series	8CM051	16.1	21.0	--	--	26300
Boeing 737-800 Series	8CM065	1.5	6.0	--	--	26300
Boeing 737-800 Series	8CM066	35.0	10.7	--	--	26300
Boeing 737-800 Series	8CM066	1.5	3.0	1.5	2.0	13150
Boeing 737-9	01P20CM140	30.7	10.4	--	--	26400
Boeing 737-9	01P20CM140	1.5	9.0	--	--	13200
Boeing 737-900-ER	01P11CM116	30.7	15.7	2.9	2.0	26300
Boeing 737-900-ER	01P11CM116	1.5	3.0	--	--	13150
Boeing 737-900-ER	01P11CM121	78.9	25.5	--	--	26300
Boeing 737-900-ER	01P11CM121	1.5	8.0	--	--	13150
Boeing 767-200 Series Freighter	1GE012	1.5	6.0	--	--	48000
Boeing MD-11 Freighter	1GE031	2.9	44.5	--	--	61500
Embraer ERJ175-LR	01P08GE197	10.2	11.1	--	--	13800
North Flow Secondary Location						
Airbus A330-200 Series	9PW094	1.4	38.0	--	--	71100
	Total	**543.3**	**--**	**11.6**	**--**	**--**

Notes: Totals may not sum total due to rounding.
Daytime = 7:00am – 9:59pm, Nighttime = 10:00pm – 6:59am.

Table 27 Alternative 2: 2032 Proposed Action Aircraft Run-up Activity

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
North Flow Primary Location						
Airbus A319-100 Series	3IA006	1.5	3.0	--	--	22000
Airbus A320-200 Series	01P08CM105	25.3	15.8	1.5	2.0	25000
Airbus A320-200 Series	1CM009	3.0	69.5	--	--	25000
Airbus A320-200 Series	3CM026	3.0	15.5	--	--	25000
Airbus A321-200 Series	3CM025	4.5	36.7	--	--	30000
Airbus A321-NEO	01P20CM132	--	--	1.5	2.0	30000
Airbus A330-200 Series	9PW094	8.9	27.7	--	--	71100
Airbus A330-300 Series	4GE080	1.5	37.0	--	--	67500
Airbus A330-900N Series (Neo)	02P23RR141	1.5	26.0	--	--	71100
Boeing 737-700 Series	3CM031	6.0	26.8	--	--	24000

Table 27 Alternative 2: 2032 Proposed Action Aircraft Run-up Activity (Continued)

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
Boeing 737-700 Series	3CM032	7.4	56.4	--	--	24000
Boeing 737-800 Series	01P11CM122	1.5	10.0	--	--	26300
Boeing 737-800 Series	3CM032	20.8	27.6	--	--	26300
Boeing 737-800 Series	3CM034	1.5	9.0	--	--	26300
Boeing 737-800 Series	8CM051	3.0	40.5	--	--	26300
Boeing 737-800 Series	8CM066	4.5	33.0	--	--	26300
Boeing 737-9	01P20CM140	13.4	14.6	--	--	26400
Boeing 737-900-ER	01P11CM116	14.9	20.2	--	--	26300
Boeing 737-900-ER	01P11CM121	23.8	25.1	--	--	26300
Boeing 737-900-ER	01P11CM121	1.5	4.0	--	--	13150
Boeing MD-11 Freighter	1GE031	--	--	1.5	2.0	61500
Embraer ERJ175-LR	01P08GE197	6.0	28.0	--	--	13800
Embraer ERJ175-LR	01P08GE197	1.5	6.0	--	--	6900
South Flow Primary Location						
Airbus A319-100 Series	3IA006	1.5	15.0	--	--	22000
Airbus A319-100 Series	3IA007	1.5	26.0	1.5	11.0	22000
Airbus A320-200 Series	01P08CM105	41.7	12.9	--	--	25000
Airbus A320-200 Series	01P08CM105	3.0	6.0	--	--	12500
Airbus A320-200 Series	1CM009	7.4	31.6	--	--	25000
Airbus A321-NEO	01P20CM132	3.0	12.5	--	--	30000
Airbus A330-200 Series	2RR023	1.5	6.0	--	--	71100
Airbus A330-200 Series	9PW094	11.9	14.9	--	--	71100
Airbus A330-200 Series	9PW094	1.5	26.0	--	--	35550
Airbus A330-300 Series	4GE080	4.5	10.7	--	--	67500
Airbus A330-900N Series (Neo)	02P23RR141	4.5	26.7	--	--	71100
Boeing 737-700 Series	3CM031	23.8	17.6	--	--	24000
Boeing 737-700 Series	3CM031	1.5	20.0	1.5	2.0	12000
Boeing 737-700 Series	3CM032	6.0	31.5	--	--	24000
Boeing 737-800 Series	3CM032	62.5	18.3	--	--	26300
Boeing 737-800 Series	3CM032	4.5	18.3	--	--	13150
Boeing 737-800 Series	8CM051	16.4	21.0	--	--	26300
Boeing 737-800 Series	8CM065	1.5	6.0	--	--	26300
Boeing 737-800 Series	8CM066	35.7	10.7	--	--	26300
Boeing 737-800 Series	8CM066	1.5	3.0	1.5	2.0	13150
Boeing 737-9	01P20CM140	31.2	10.4	--	--	26400
Boeing 737-9	01P20CM140	1.5	9.0	--	--	13200
Boeing 737-900-ER	01P11CM116	31.2	15.7	3.0	2.0	26300
Boeing 737-900-ER	01P11CM116	1.5	3.0	--	--	13150
Boeing 737-900-ER	01P11CM121	80.3	25.5	--	--	26300
Boeing 737-900-ER	01P11CM121	1.5	8.0	--	--	13150
Boeing 767-200 Series Freighter	1GE012	1.5	6.0	--	--	48000
Boeing MD-11 Freighter	1GE031	3.0	44.5	--	--	61500
Embraer ERJ175-LR	01P08GE197	10.4	11.1	--	--	13800
North Flow Secondary Location						
Airbus A330-200 Series	9PW094	1.5	38.0		--	71100
Total		**553.5**	**--**	**11.9**	**--**	**--**

Notes: Totals may not sum total due to rounding.
Daytime = 7:00am – 9:59pm, Nighttime = 10:00pm – 6:59am.

Table 28 Alternative 1: 2037 No Action Aircraft Run-up Activity

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
North Flow Primary Location						
Airbus A320-200 Series	01P08CM105	25.6	15.8	2.0	2.0	25000
Airbus A320-200 Series	1CM009	3.0	69.5	--	--	25000
Airbus A320-200 Series	3CM026	3.0	15.5	--	--	25000
Airbus A321-200 Series	3CM025	4.5	36.7	--	--	30000
Airbus A321-NEO	01P20CM132	--	--	2.0	2.0	30000
Airbus A330-200 Series	9PW094	9.0	27.7	--	--	71100
Airbus A330-300 Series	4GE080	1.5	37.0	--	--	67500
Airbus A330-900N Series (Neo)	02P23RR141	1.5	26.0	--	--	71100
Boeing 737-700 Series	3CM031	6.0	26.8	--	--	24000
Boeing 737-700 Series	3CM032	7.5	56.4	--	--	24000
Boeing 737-800 Series	01P11CM122	1.5	10.0	--	--	26300
Boeing 737-800 Series	3CM032	21.1	27.6	--	--	26300
Boeing 737-800 Series	3CM034	1.5	9.0	--	--	26300
Boeing 737-800 Series	8CM051	3.0	40.5	--	--	26300
Boeing 737-800 Series	8CM066	4.5	33.0	--	--	26300
Boeing 737-9	01P20CM140	13.6	14.6	--	--	26400
Boeing 737-900-ER	01P11CM116	15.1	20.2	--	--	26300
Boeing 737-900-ER	01P11CM121	24.1	25.1	--	--	26300
Boeing 737-900-ER	01P11CM121	1.5	4.0	--	--	13150
Embraer ERJ175-LR	01P08GE197	6.0	28.0	--	--	13800
Embraer ERJ175-LR	01P08GE197	1.5	6.0	--	--	6900
South Flow Primary Location						
Airbus A320-200 Series	01P08CM105	42.2	12.9	--	--	25000
Airbus A320-200 Series	01P08CM105	3.0	6.0	--	--	12500
Airbus A320-200 Series	1CM009	7.5	31.6	--	--	25000
Airbus A321-NEO	01P20CM132	3.0	12.5	--	--	30000
Airbus A330-200 Series	2RR023	1.5	6.0	--	--	71100
Airbus A330-200 Series	9PW094	12.0	14.9	--	--	71100
Airbus A330-200 Series	9PW094	1.5	26.0	--	--	35550
Airbus A330-300 Series	4GE080	4.5	10.7	--	--	67500
Airbus A330-900N Series (Neo)	02P23RR141	4.5	26.7	--	--	71100
Boeing 737-700 Series	3CM031	24.1	17.6	--	--	24000
Boeing 737-700 Series	3CM031	1.5	20.0	2.0	2.0	12000
Boeing 737-700 Series	3CM032	6.0	31.5	--	--	24000
Boeing 737-800 Series	3CM032	63.2	18.3	--	--	26300
Boeing 737-800 Series	3CM032	4.5	18.3	--	--	13150
Boeing 737-800 Series	8CM051	16.6	21.0	--	--	26300
Boeing 737-800 Series	8CM065	1.5	6.0	--	--	26300
Boeing 737-800 Series	8CM066	36.1	10.7	--	--	26300
Boeing 737-800 Series	8CM066	1.5	3.0	2.0	2.0	13150
Boeing 737-9	01P20CM140	31.6	10.4	--	--	26400
Boeing 737-9	01P20CM140	1.5	9.0	--	--	13200
Boeing 737-900-ER	01P11CM116	31.6	15.7	3.9	2.0	26300
Boeing 737-900-ER	01P11CM116	1.5	3.0	--	--	13150
Boeing 737-900-ER	01P11CM121	81.3	25.5	--	--	26300
Boeing 737-900-ER	01P11CM121	1.5	8.0	--	--	13150
Boeing 767-200 Series Freighter	1GE012	1.5	6.0	--	--	48000

Table 28 Alternative 1: 2037 No Action Aircraft Run-up Activity (Continued)

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
Embraer ERJ175-LR	01P08GE197	10.5	11.1	--	--	13800
North Flow Secondary Location						
Airbus A330-200 Series	9PW094	1.5	38.0	--	--	71100
Total		**552.5**	**--**	**11.8**	**--**	**--**

Notes: Totals may not sum total due to rounding.
Daytime = 7:00am – 9:59pm, Nighttime = 10:00pm – 6:59am.

Table 29 Alternative 2: 2037 Proposed Action Aircraft Run-up Activity

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
North Flow Primary Location						
Airbus A320-200 Series	01P08CM105	27.5	15.8	2.1	2.0	25000
Airbus A320-200 Series	1CM009	3.2	69.5	--	--	25000
Airbus A320-200 Series	3CM026	3.2	15.5	--	--	25000
Airbus A321-200 Series	3CM025	4.8	36.7	--	--	30000
Airbus A321-NEO	01P20CM132	--	--	2.1	2.0	30000
Airbus A330-200 Series	9PW094	9.7	27.7	--	--	71100
Airbus A330-300 Series	4GE080	1.6	37.0	--	--	67500
Airbus A330-900N Series (Neo)	02P23RR141	1.6	26.0	--	--	71100
Boeing 737-700 Series	3CM031	6.5	26.8	--	--	24000
Boeing 737-700 Series	3CM032	8.1	56.4	--	--	24000
Boeing 737-800 Series	01P11CM122	1.6	10.0	--	--	26300
Boeing 737-800 Series	3CM032	22.6	27.6	--	--	26300
Boeing 737-800 Series	3CM034	1.6	9.0	--	--	26300
Boeing 737-800 Series	8CM051	3.2	40.5	--	--	26300
Boeing 737-800 Series	8CM066	4.8	33.0	--	--	26300
Boeing 737-9	01P20CM140	14.5	14.6	--	--	26400
Boeing 737-900-ER	01P11CM116	16.2	20.2	--	--	26300
Boeing 737-900-ER	01P11CM121	25.9	25.1	--	--	26300
Boeing 737-900-ER	01P11CM121	1.6	4.0	--	--	13150
Embraer ERJ175-LR	01P08GE197	6.5	28.0	--	--	13800
Embraer ERJ175-LR	01P08GE197	1.6	6.0	--	--	6900
South Flow Primary Location						
Airbus A320-200 Series	01P08CM105	45.3	12.9	--	--	25000
Airbus A320-200 Series	01P08CM105	3.2	6.0	--	--	12500
Airbus A320-200 Series	1CM009	8.1	31.6	--	--	25000
Airbus A321-NEO	01P20CM132	3.2	12.5	--	--	30000
Airbus A330-200 Series	2RR023	1.6	6.0	--	--	71100
Airbus A330-200 Series	9PW094	12.9	14.9	--	--	71100
Airbus A330-200 Series	9PW094	1.6	26.0	--	--	35550
Airbus A330-300 Series	4GE080	4.8	10.7	--	--	67500
Airbus A330-900N Series (Neo)	02P23RR141	4.8	26.7	--	--	71100
Boeing 737-700 Series	3CM031	25.9	17.6	--	--	24000
Boeing 737-700 Series	3CM031	1.6	20.0	2.1	2.0	12000
Boeing 737-700 Series	3CM032	6.5	31.5	--	--	24000
Boeing 737-800 Series	3CM032	67.9	18.3	--	--	26300
Boeing 737-800 Series	3CM032	4.8	18.3	--	--	13150

Table 29 Alternative 2: 2037 Proposed Action Aircraft Run-up Activity (Continued)

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
Boeing 737-800 Series	8CM051	17.8	21.0	--	--	26300
Boeing 737-800 Series	8CM065	1.6	6.0	--	--	26300
Boeing 737-800 Series	8CM066	38.8	10.7	--	--	26300
Boeing 737-800 Series	8CM066	1.6	3.0	2.1	2.0	13150
Boeing 737-9	01P20CM140	33.9	10.4	--	--	26400
Boeing 737-9	01P20CM140	1.6	9.0	--	--	13200
Boeing 737-900-ER	01P11CM116	33.9	15.7	4.2	2.0	26300
Boeing 737-900-ER	01P11CM116	1.6	3.0	--	--	13150
Boeing 737-900-ER	01P11CM121	87.3	25.5	--	--	26300
Boeing 737-900-ER	01P11CM121	1.6	8.0	--	--	13150
Boeing 767-200 Series Freighter	1GE012	1.6	6.0	--	--	48000
Embraer ERJ175-LR	01P08GE197	11.3	11.1	--	--	13800
North Flow Secondary Location						
Airbus A330-200 Series	9PW094	1.5	38.0	--	--	71100
Total		**593.3**	**--**	**12.7**	**--**	**--**

Notes: Totals may not sum total due to rounding.
Daytime = 7:00am – 9:59pm, Nighttime = 10:00pm – 6:59am.

2.4 Runway Definition

No changes to the runway location or definition would occur in any of the alternatives. Therefore, the runway definition discussed for the Existing (2022) condition would remain the same for the alternatives in 2032 and 2037.

2.5 Runway End Utilization

The runway end utilization for the alternatives was estimated using operational output from the TAAM airfield simulation modeling. The runway end utilization under the alternatives in 2032 and 2037 would be influenced by airfield congestion and the total number of operations occurring at the Airport. Several taxiway improvements designed to enhance efficiency of the airfield influence Alternative 2. **Table 30 through Table 37** present the assumed arrival and departure runway utilization by operator category for the alternatives in 2032 and 2037.

Table 30 Alternative 1: 2032 No Action Arrival Runway Utilization per Operator Category

Operator Category	16C	16L	16R	34C	34L	34R	Total
Passenger							
Heavy Jet	1.0%	55.0%	15.0%	0.5%	6.5%	22.0%	100.0%
Narrow Body Jet	1.0%	5.0%	65.0%	0.5%	26.5%	2.0%	100.0%
Regional Jet	1.0%	5.0%	65.0%	0.5%	26.5%	2.0%	100.0%
Cargo							
Heavy Jet	1.0%	55.0%	15.0%	0.5%	6.5%	22.0%	100.0%
Prop	1.4%	23.4%	46.1%	0.9%	26.5%	1.6%	100.0%
General Aviation							
Jet	1.5%	26.0%	43.5%	1.0%	26.5%	1.5%	100.0%
Turboprop	1.5%	26.0%	43.5%	1.0%	26.5%	1.5%	100.0%
Prop	1.5%	26.0%	43.5%	1.0%	26.5%	1.5%	100.0%
Overall Arrival Total	**1.0%**	**10.0%**	**60.0%**	**0.5%**	**24.6%**	**3.9%**	**100.0%**

Note: Totals may not sum due to rounding.
Source: L&B Analysis, 2023.

Table 31 Alternative 1: 2032 No Action Departure Runway Utilization per Operator Category

Operator Category	16C	16L	16R	34C	34L	34R	Total
Passenger							
Heavy Jet	13.0%	58.0%	0.0%	0.5%	0.0%	28.5%	100.0%
Narrow Body Jet	27.0%	44.0%	0.0%	1.0%	0.0%	28.0%	100.0%
Regional Jet	27.0%	44.0%	0.0%	1.0%	0.0%	28.0%	100.0%
Cargo							
Heavy Jet	13.0%	58.0%	0.0%	0.5%	0.0%	28.5%	100.0%
Prop	32.3%	36.1%	2.6%	12.8%	1.8%	14.4%	100.0%
General Aviation							
Jet	33.0%	35.0%	3.0%	14.5%	2.0%	12.5%	100.0%
Turboprop	33.0%	35.0%	3.0%	14.5%	2.0%	12.5%	100.0%
Prop	33.0%	35.0%	3.0%	14.5%	2.0%	12.5%	100.0%
Overall Departure Total	**25.7%**	**45.3%**	**0.0%**	**1.1%**	**0.0%**	**27.9%**	**100.0%**

Note: Totals may not sum due to rounding.
Source: L&B Analysis, 2023.

Table 32 Alternative 2: 2032 Proposed Action Arrival Runway Utilization per Operator Category

Operator Category	16C	16L	16R	34C	34L	34R	Total
Passenger							
Heavy Jet	1.0%	55.0%	15.0%	1.0%	8.0%	20.0%	100.0%
Narrow Body Jet	1.0%	5.0%	65.0%	1.0%	26.0%	2.0%	100.0%
Regional Jet	1.0%	5.0%	65.0%	1.0%	26.0%	2.0%	100.0%
Cargo							
Heavy Jet	1.0%	55.0%	15.0%	1.0%	8.0%	20.0%	100.0%
Prop	1.4%	23.4%	46.1%	1.0%	26.4%	1.6%	100.0%
General Aviation							
Jet	1.5%	26.0%	43.5%	1.0%	26.5%	1.5%	100.0%
Turboprop	1.5%	26.0%	43.5%	1.0%	26.5%	1.5%	100.0%
Prop	1.5%	26.0%	43.5%	1.0%	26.5%	1.5%	100.0%
Overall Arrival Total	**1.0%**	**10.0%**	**60.0%**	**1.0%**	**24.3%**	**3.7%**	**100.0%**

Note: Totals may not sum due to rounding.
Source: L&B Analysis, 2023.

Table 33 Alternative 2: 2032 Proposed Action Departure Runway Utilization per Operator Category

Operator Category	16C	16L	16R	34C	34L	34R	Total
Passenger							
Heavy Jet	13.0%	58.0%	0.0%	0.5%	0.0%	28.5%	100.0%
Narrow Body Jet	27.0%	44.0%	0.0%	1.0%	0.0%	28.0%	100.0%
Regional Jet	27.0%	44.0%	0.0%	1.0%	0.0%	28.0%	100.0%
Cargo							
Heavy Jet	13.0%	58.0%	0.0%	0.5%	0.0%	28.5%	100.0%
Prop	32.7%	35.7%	2.6%	12.8%	1.8%	14.4%	100.0%
General Aviation							
Jet	33.5%	34.5%	3.0%	14.5%	2.0%	12.5%	100.0%
Turboprop	33.5%	34.5%	3.0%	14.5%	2.0%	12.5%	100.0%
Prop	33.5%	34.5%	3.0%	14.5%	2.0%	12.5%	100.0%
Overall Departure Total	**25.7%**	**45.2%**	**0.0%**	**1.1%**	**0.0%**	**27.9%**	**100.0%**

Note: Totals may not sum due to rounding.
Source: L&B Analysis, 2023.

Table 34 Alternative 1: 2037 No Action Arrival Runway Utilization per Operator Category

Operator Category	16C	16L	16R	34C	34L	34R	Total
Passenger							
Heavy Jet	1.0%	55.0%	15.0%	0.5%	6.5%	22.0%	100.0%
Narrow Body Jet	1.0%	5.0%	65.0%	0.5%	26.5%	2.0%	100.0%
Regional Jet	1.0%	5.0%	65.0%	0.5%	26.5%	2.0%	100.0%
Cargo							
Heavy Jet	1.0%	55.0%	15.0%	0.5%	6.5%	22.0%	100.0%
Prop	1.4%	22.2%	47.4%	0.9%	26.5%	1.6%	100.0%
General Aviation							
Jet	1.5%	26.0%	43.5%	1.0%	26.5%	1.5%	100.0%
Turboprop	1.5%	26.0%	43.5%	1.0%	26.5%	1.5%	100.0%
Prop	1.5%	26.0%	43.5%	1.0%	26.5%	1.5%	100.0%
Overall Arrival Total	**1.0%**	**10.7%**	**59.3%**	**0.5%**	**24.3%**	**4.2%**	**100.0%**

Note: Totals may not sum due to rounding.
Source: L&B Analysis, 2023.

Table 35 Alternative 1: 2037 No Action Departure Runway Utilization per Operator Category

Operator Category	16C	16L	16R	34C	34L	34R	Total
Passenger							
Heavy Jet	13.0%	58.0%	0.0%	0.5%	0.0%	28.5%	100.0%
Narrow Body Jet	27.0%	44.0%	0.0%	1.0%	0.0%	28.0%	100.0%
Regional Jet	27.0%	44.0%	0.0%	1.0%	0.0%	28.0%	100.0%
Cargo							
Heavy Jet	13.0%	58.0%	0.0%	0.5%	0.0%	28.5%	100.0%
Prop	24.5%	44.0%	2.5%	12.1%	1.6%	15.3%	100.0%
General Aviation							
Jet	24.0%	44.0%	3.0%	14.5%	2.0%	12.5%	100.0%
Turboprop	24.0%	44.0%	3.0%	14.5%	2.0%	12.5%	100.0%
Prop	24.0%	44.0%	3.0%	14.5%	2.0%	12.5%	100.0%
Overall Departure Total	**25.4%**	**45.5%**	**0.0%**	**1.1%**	**0.0%**	**27.9%**	**100.0%**

Note: Totals may not sum due to rounding.
Source: L&B Analysis, 2023.

Table 36 Alternative 2: 2037 Proposed Action Arrival Runway Utilization per Operator Category

Operator Category	16C	16L	16R	34C	34L	34R	Total
Passenger							
Heavy Jet	1.0%	55.0%	15.0%	1.0%	7.0%	21.0%	100.0%
Narrow Body Jet	1.0%	5.0%	65.0%	1.0%	26.0%	2.0%	100.0%
Regional Jet	1.0%	5.0%	65.0%	1.0%	26.0%	2.0%	100.0%
Cargo							
Heavy Jet	1.0%	55.0%	15.0%	1.0%	7.0%	21.0%	100.0%
Prop	1.5%	24.1%	45.4%	1.0%	26.5%	1.5%	100.0%
General Aviation							
Jet	1.5%	26.0%	43.5%	1.0%	26.5%	1.5%	100.0%
Turboprop	1.5%	26.0%	43.5%	1.0%	26.5%	1.5%	100.0%
Prop	1.5%	26.0%	43.5%	1.0%	26.5%	1.5%	100.0%
Overall Arrival Total	**1.0%**	**10.6%**	**59.4%**	**1.0%**	**24.0%**	**4.0%**	**100.0%**

Note: Totals may not sum due to rounding.
Source: L&B Analysis, 2023.

Table 37 Alternative 2: 2037 Proposed Action Departure Runway Utilization per Operator Category

Operator Category	16C	16L	16R	34C	34L	34R	Total
Passenger							
Heavy Jet	13.0%	58.0%	0.0%	0.5%	0.0%	28.5%	100.0%
Narrow Body Jet	27.0%	44.0%	0.0%	1.0%	0.0%	28.0%	100.0%
Regional Jet	27.0%	44.0%	0.0%	1.0%	0.0%	28.0%	100.0%
Cargo							
Heavy Jet	13.0%	58.0%	0.0%	0.5%	0.0%	28.5%	100.0%
Prop	32.9%	35.4%	2.7%	13.3%	1.8%	13.9%	100.0%
General Aviation							
Jet	33.5%	34.5%	3.0%	14.5%	2.0%	12.5%	100.0%
Turboprop	33.5%	34.5%	3.0%	14.5%	2.0%	12.5%	100.0%
Prop	33.5%	34.5%	3.0%	14.5%	2.0%	12.5%	100.0%
Overall Departure Total	**25.5%**	**45.4%**	**0.0%**	**1.1%**	**0.0%**	**27.9%**	**100.0%**

Note: Totals may not sum due to rounding.
Source: L&B Analysis, 2023.

2.6 Flight Tracks

Flight track locations for the alternatives in 2032 and 2037 would not change. As such, the flight tracks for Alternative 1 and Alternative 2 in 2032 and 2037 are expected to be the same as the Existing (2022) condition.[5]

2.7 Aircraft Weight, Trip Length

Table 38 through Table 45 presents the departure stage length distributions for each of the alternatives. The stage length was estimated for each alternative in 2032 and 2037 by using operational output from the TAAM airfield simulation modeling.

Table 38 Alternative 1: 2032 No Action Daytime Stage Length Distribution

Operator Category	1	2	3	4	5	6	7	8	9	Total
Passenger										
Heavy Jet	0.0%	6.4%	0.0%	2.0%	0.0%	38.3%	53.3%	0.0%	0.0%	100.0%
Narrow Body Jet	3.9%	53.5%	17.4%	25.3%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Regional Jet	72.8%	23.2%	4.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Cargo										
Heavy Jet	0.0%	22.8%	27.4%	22.0%	0.0%	19.8%	8.1%	0.0%	0.0%	100.0%
Prop	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
General Aviation										
Jet	57.6%	0.0%	0.0%	42.4%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Turboprop	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Prop	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

Note: Totals may not sum due to rounding.
Source: L&B Analysis, 2023.

[5] In Alternative 2, it is expected that the Runway 34R arrival profile will be slightly higher due to the relocation of the glide slope. This higher Runway 34R arrival profile was not specifically included in this analysis because AEDT does not provide a function to reflect this minor change. Furthermore, by not including the change in Runway 34R arrival profile this analysis represents a conservative evaluation of noise impacts.

Table 39 Alternative 1: 2032 No Action Nighttime Stage Length Distribution

Operator Category	1	2	3	4	5	6	7	8	9	Total
Passenger										
Heavy Jet	0.0%	0.0%	25.5%	0.0%	0.0%	0.0%	74.5%	0.0%	0.0%	100.0%
Narrow Body Jet	4.4%	33.4%	24.2%	38.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Regional Jet	83.3%	16.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Cargo										
Heavy Jet	0.0%	0.0%	24.1%	63.4%	0.0%	0.0%	12.5%	0.0%	0.0%	100.0%
Prop	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
General Aviation										
Jet	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Turboprop	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Prop	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Note: Totals may not sum due to rounding.
Source: L&B Analysis, 2023.

Table 40 Alternative 2: 2032 Proposed Action Daytime Stage Length Distribution

Operator Category	1	2	3	4	5	6	7	8	9	Total
Passenger										
Heavy Jet	0.0%	5.1%	0.0%	2.0%	0.0%	40.4%	52.4%	0.0%	0.0%	100.0%
Narrow Body Jet	3.8%	52.0%	17.9%	26.3%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Regional Jet	72.7%	23.4%	3.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Cargo										
Heavy Jet	0.0%	22.8%	27.4%	22.0%	0.0%	19.8%	8.1%	0.0%	0.0%	100.0%
Prop	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
General Aviation										
Jet	57.6%	0.0%	0.0%	42.4%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Turboprop	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Prop	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

Note: Totals may not sum due to rounding.
Source: L&B Analysis, 2023.

Table 41 Alternative 2: 2032 Proposed Action Nighttime Stage Length Distribution

Operator Category	1	2	3	4	5	6	7	8	9	Total
Passenger										
Heavy Jet	0.0%	0.0%	25.5%	0.0%	0.0%	0.0%	74.5%	0.0%	0.0%	100.0%
Narrow Body Jet	4.5%	33.9%	24.5%	37.1%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Regional Jet	85.7%	14.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Cargo										
Heavy Jet	0.0%	0.0%	24.1%	63.4%	0.0%	0.0%	12.5%	0.0%	0.0%	100.0%
Prop	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
General Aviation										
Jet	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Turboprop	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Prop	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Note: Totals may not sum due to rounding.
Source: L&B Analysis, 2023.

Table 42 Alternative 1: 2037 No Action Daytime Stage Length Distribution

Operator Category	1	2	3	4	5	6	7	8	9	Total
Passenger										
Heavy Jet	0.0%	8.3%	0.0%	1.7%	0.0%	37.7%	52.3%	0.0%	0.0%	100.0%
Narrow Body Jet	4.0%	51.0%	14.8%	30.1%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Regional Jet	74.5%	21.3%	4.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Cargo										
Heavy Jet	0.0%	16.7%	25.5%	22.7%	0.0%	27.5%	7.7%	0.0%	0.0%	100.0%
Prop	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
General Aviation										
Jet	57.7%	0.0%	0.0%	42.3%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Turboprop	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Prop	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

Note: Totals may not sum due to rounding.
Source: L&B Analysis, 2023.

Table 43 Alternative 1: 2037 No Action Nighttime Stage Length Distribution

Operator Category	1	2	3	4	5	6	7	8	9	Total
Passenger										
Heavy Jet	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
Narrow Body Jet	2.2%	36.2%	22.4%	39.1%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Regional Jet	88.2%	11.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Cargo										
Heavy Jet	0.0%	0.0%	32.8%	56.2%	0.0%	0.0%	11.0%	0.0%	0.0%	100.0%
Prop	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
General Aviation										
Jet	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Turboprop	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Prop	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Note: Totals may not sum due to rounding.
Source: L&B Analysis, 2023.

Table 44 Alternative 2: 2037 Proposed Action Daytime Stage Length Distribution

Operator Category	1	2	3	4	5	6	7	8	9	Total
Passenger										
Heavy Jet	0.0%	6.6%	0.0%	2.1%	0.0%	41.2%	50.1%	0.0%	0.0%	100.0%
Narrow Body Jet	3.8%	52.7%	15.4%	28.1%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Regional Jet	74.7%	21.2%	4.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Cargo										
Heavy Jet	0.0%	13.7%	30.6%	21.0%	0.0%	27.1%	7.6%	0.0%	0.0%	100.0%
Prop	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
General Aviation										
Jet	57.7%	0.0%	0.0%	42.3%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Turboprop	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Prop	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

Note: Totals may not sum due to rounding.
Source: L&B Analysis, 2023.

Table 45 Alternative 2: 2037 Proposed Action Nighttime Stage Length Distribution

Operator Category	1	2	3	4	5	6	7	8	9	Total
Passenger										
Heavy Jet	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
Narrow Body Jet	3.6%	33.0%	21.4%	42.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Regional Jet	88.9%	11.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Cargo										
Heavy Jet	0.0%	0.0%	28.9%	59.5%	0.0%	0.0%	11.6%	0.0%	0.0%	100.0%
Prop	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
General Aviation										
Jet	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Turboprop	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Prop	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Note: Totals may not sum due to rounding.
Source: L&B Analysis, 2023.

Appendix A

Table A-1 Arrival and Departure Flight Track Utilization

Operation Type	Runway	Track Name	Jet Track %	Turboprop Track %	Prop Track %	Notes
A	16C	16CA2A	1.57%	1.78%	--	Jet, Turbo
A	16C	16CA2A1	0.52%	2.07%	--	Jet, Turbo
A	16C	16CA2A2	0.71%	0.36%	--	Jet, Turbo
A	16C	16CA2A3	0.43%	0.06%	--	Jet, Turbo
A	16C	16CA2A4	0.34%	0.59%	--	Jet, Turbo
A	16C	16CA2B	4.67%	3.55%	--	Jet, Turbo
A	16C	16CA2B1	1.09%	2.61%	--	Jet, Turbo
A	16C	16CA2B2	1.09%	2.61%	--	Jet, Turbo
A	16C	16CA2B3	0.41%	2.43%	--	Jet, Turbo
A	16C	16CA2B4	0.52%	2.37%	--	Jet, Turbo
A	16C	16CA2C	0.40%	0.18%	--	Jet, Turbo
A	16C	16CA2C1	0.29%	0.53%	--	Jet, Turbo
A	16C	16CA2C2	0.09%	0.30%	--	Jet, Turbo
A	16C	16CA2C3	0.11%	0.41%	--	Jet, Turbo
A	16C	16CA2C4	0.02%	0.30%	--	Jet, Turbo
A	16C	16CA3A	2.09%	1.54%	--	Jet, Turbo
A	16C	16CA3A1	0.71%	1.78%	--	Jet, Turbo
A	16C	16CA3A2	1.65%	1.78%	--	Jet, Turbo
A	16C	16CA3A3	0.24%	1.48%	--	Jet, Turbo
A	16C	16CA3A4	0.71%	0.59%	--	Jet, Turbo
A	16C	16CA3B	4.72%	5.33%	--	Jet, Turbo
A	16C	16CA3B1	2.78%	5.92%	--	Jet, Turbo
A	16C	16CA3B2	2.78%	2.96%	--	Jet, Turbo
A	16C	16CA3B3	0.90%	2.96%	--	Jet, Turbo
A	16C	16CA3B4	0.52%	1.48%	--	Jet, Turbo
A	16C	16CA3C	2.37%	2.13%	--	Jet, Turbo
A	16C	16CA3C1	0.71%	0.59%	--	Jet, Turbo
A	16C	16CA3C2	1.47%	1.78%	--	Jet, Turbo
A	16C	16CA3C3	0.15%	0.59%	--	Jet, Turbo
A	16C	16CA3C4	0.24%	0.87%	--	Jet, Turbo
A	16C	16CA3D	0.75%	--	--	Jet Only
A	16C	16CA3D1	0.38%	--	--	Jet Only
A	16C	16CA3D2	0.38%	--	--	Jet Only
A	16C	16CA3D3	0.38%	--	--	Jet Only
A	16C	16CA3D4	0.38%	--	--	Jet Only
A	16C	16CA4A	6.57%	5.91%	--	Jet, Turbo
A	16C	16CA4A1	5.61%	3.55%	--	Jet, Turbo
A	16C	16CA4A2	5.61%	3.55%	--	Jet, Turbo
A	16C	16CA4A3	5.04%	2.37%	--	Jet, Turbo
A	16C	16CA4A4	5.04%	4.74%	--	Jet, Turbo
A	16C	16CA4A5	4.67%	2.37%	--	Jet, Turbo
A	16C	16CA4A6	4.67%	4.74%	--	Jet, Turbo
A	16C	16CA4A7	1.65%	2.37%	--	Jet, Turbo
A	16C	16CA4A8	1.65%	1.18%	--	Jet, Turbo
A	16C	16CA4B	0.54%	0.31%	--	Jet, Turbo
A	16C	16CA4B1	0.09%	0.14%	--	Jet, Turbo
A	16C	16CA4B2	0.09%	0.14%	--	Jet, Turbo
A	16C	16CA4B3	0.04%	0.09%	--	Jet, Turbo
A	16C	16CA4B4	0.04%	0.09%	--	Jet, Turbo
A	16C	16CA4B5	0.02%	0.05%	--	Jet, Turbo

Operation Type	Runway	Track Name	Jet Track %	Turboprop Track %	Prop Track %	Notes
A	16C	16CA4B6	0.02%	0.05%	--	Jet, Turbo
A	16C	16CA4B7	0.04%	0.02%	--	Jet, Turbo
A	16C	16CA4B8	0.04%	0.02%	--	Jet, Turbo
A	16C	16CA5A	7.49%	4.73%	--	Jet, Turbo
A	16C	16CA5A1	1.28%	2.37%	--	Jet, Turbo
A	16C	16CA5A2	5.61%	3.55%	--	Jet, Turbo
A	16C	16CA5A3	0.52%	1.78%	--	Jet, Turbo
A	16C	16CA5A4	5.61%	1.78%	--	Jet, Turbo
A	16C	16CA5A5	0.09%	0.89%	--	Jet, Turbo
A	16C	16CA5A6	0.90%	0.89%	--	Jet, Turbo
A	16C	16CA5A7	0.05%	0.18%	--	Jet, Turbo
A	16C	16CA5A8	0.43%	0.18%	--	Jet, Turbo
A	16C	16CA5B	--	--	--	Not In Use
A	16C	16CA5B1	--	--	--	Not In Use
A	16C	16CA5B2	--	--	--	Not In Use
A	16C	16CA5B3	--	--	--	Not In Use
A	16C	16CA5B4	--	--	--	Not In Use
A	16C	16CA5B5	--	--	--	Not In Use
A	16C	16CA5B6	--	--	--	Not In Use
A	16C	16CA5B7	--	--	--	Not In Use
A	16C	16CA5B8	--	--	--	Not In Use
A	16C	16CA6A	--	--	67.74%	Prop Only
A	16C	16CA6A1	--	--	16.13%	Prop Only
A	16C	16CA6A2	--	--	16.13%	Prop Only
A	16L	16LA2A	1.57%	1.78%	--	Jet, Turbo
A	16L	16LA2A1	0.52%	2.07%	--	Jet, Turbo
A	16L	16LA2A2	0.71%	0.36%	--	Jet, Turbo
A	16L	16LA2A3	0.43%	0.06%	--	Jet, Turbo
A	16L	16LA2A4	0.34%	0.59%	--	Jet, Turbo
A	16L	16LA2B	4.67%	3.55%	--	Jet, Turbo
A	16L	16LA2B1	1.09%	2.61%	--	Jet, Turbo
A	16L	16LA2B2	1.09%	2.61%	--	Jet, Turbo
A	16L	16LA2B3	0.41%	2.43%	--	Jet, Turbo
A	16L	16LA2B4	0.52%	2.37%	--	Jet, Turbo
A	16L	16LA2C	0.40%	0.18%	--	Jet, Turbo
A	16L	16LA2C1	0.29%	0.53%	--	Jet, Turbo
A	16L	16LA2C2	0.09%	0.30%	--	Jet, Turbo
A	16L	16LA2C3	0.11%	0.41%	--	Jet, Turbo
A	16L	16LA2C4	0.02%	0.30%	--	Jet, Turbo
A	16L	16LA3A	2.09%	1.54%	50.00%	Jet, Turbo, Prop
A	16L	16LA3A1	0.71%	1.78%	20.00%	Jet, Turbo, Prop
A	16L	16LA3A2	1.65%	1.78%	20.00%	Jet, Turbo, Prop
A	16L	16LA3A3	0.24%	1.48%	10.00%	Jet, Turbo, Prop
A	16L	16LA3A4	0.71%	0.59%	10.00%	Jet, Turbo, Prop
A	16L	16LA3B	4.72%	5.33%	--	Jet, Turbo
A	16L	16LA3B1	2.78%	5.92%	--	Jet, Turbo
A	16L	16LA3B2	2.78%	2.96%	--	Jet, Turbo
A	16L	16LA3B3	0.90%	2.96%	--	Jet, Turbo
A	16L	16LA3B4	0.52%	1.48%	--	Jet, Turbo
A	16L	16LA3C	2.37%	2.13%	--	Jet, Turbo
A	16L	16LA3C1	0.71%	0.59%	--	Jet, Turbo
A	16L	16LA3C2	1.47%	1.78%	--	Jet, Turbo
A	16L	16LA3C3	0.15%	0.59%	--	Jet, Turbo
A	16L	16LA3C4	0.24%	0.87%	--	Jet, Turbo

Operation Type	Runway	Track Name	Jet Track %	Turboprop Track %	Prop Track %	Notes
A	16L	16LA3D	0.75%		--	Jet Only
A	16L	16LA3D1	0.38%		--	Jet Only
A	16L	16LA3D2	0.38%		--	Jet Only
A	16L	16LA3D3	0.38%		--	Jet Only
A	16L	16LA3D4	0.38%		--	Jet Only
A	16L	16LA4A	6.57%	5.91%	--	Jet, Turbo
A	16L	16LA4A1	5.61%	3.55%	--	Jet, Turbo
A	16L	16LA4A2	5.61%	3.55%	--	Jet, Turbo
A	16L	16LA4A3	5.04%	2.37%	--	Jet, Turbo
A	16L	16LA4A4	5.04%	4.74%	--	Jet, Turbo
A	16L	16LA4A5	4.67%	2.37%	--	Jet, Turbo
A	16L	16LA4A6	4.67%	4.74%	--	Jet, Turbo
A	16L	16LA4A7	1.65%	2.37%	--	Jet, Turbo
A	16L	16LA4A8	1.65%	1.18%	--	Jet, Turbo
A	16L	16LA4B	0.54%	0.31%	--	Jet, Turbo
A	16L	16LA4B1	0.09%	0.14%	--	Jet, Turbo
A	16L	16LA4B2	0.09%	0.14%	--	Jet, Turbo
A	16L	16LA4B3	0.04%	0.09%	--	Jet, Turbo
A	16L	16LA4B4	0.04%	0.09%	--	Jet, Turbo
A	16L	16LA4B5	0.02%	0.05%	--	Jet, Turbo
A	16L	16LA4B6	0.02%	0.05%	--	Jet, Turbo
A	16L	16LA4B7	0.04%	0.02%	--	Jet, Turbo
A	16L	16LA4B8	0.04%	0.02%	--	Jet, Turbo
A	16L	16LA5A	7.49%	4.73%	--	Jet, Turbo
A	16L	16LA5A1	1.28%	2.37%	--	Jet, Turbo
A	16L	16LA5A2	5.61%	3.55%	--	Jet, Turbo
A	16L	16LA5A3	0.52%	1.78%	--	Jet, Turbo
A	16L	16LA5A4	5.61%	1.78%	--	Jet, Turbo
A	16L	16LA5A5	0.09%	0.89%	--	Jet, Turbo
A	16L	16LA5A6	0.90%	0.89%	--	Jet, Turbo
A	16L	16LA5A7	0.05%	0.18%	--	Jet, Turbo
A	16L	16LA5A8	0.43%	0.18%	--	Jet, Turbo
A	16L	16LA5B	--	--	--	Not In Use
A	16L	16LA5B1	--	--	--	Not In Use
A	16L	16LA5B2	--	--	--	Not In Use
A	16L	16LA5B3	--	--	--	Not In Use
A	16L	16LA5B4	--	--	--	Not In Use
A	16L	16LA5B5	--	--	--	Not In Use
A	16L	16LA5B6	--	--	--	Not In Use
A	16L	16LA5B7	--	--	--	Not In Use
A	16L	16LA5B8	--	--	--	Not In Use
A	16R	16RA2A	1.62%	1.78%	12.10%	Jet, Turbo, Prop
A	16R	16RA2A1	0.56%	2.07%	5.10%	Jet, Turbo, Prop
A	16R	16RA2A2	0.75%	0.36%	5.10%	Jet, Turbo, Prop
A	16R	16RA2A3	0.47%	0.06%	3.18%	Jet, Turbo, Prop
A	16R	16RA2A4	0.38%	0.59%	3.18%	Jet, Turbo, Prop
A	16R	16RA2B	4.71%	3.55%	--	Jet, Turbo
A	16R	16RA2B1	1.13%	2.61%	--	Jet, Turbo
A	16R	16RA2B2	1.13%	2.61%	--	Jet, Turbo
A	16R	16RA2B3	0.45%	2.43%	--	Jet, Turbo
A	16R	16RA2B4	0.56%	2.37%	--	Jet, Turbo
A	16R	16RA2C	0.44%	0.18%	--	Jet, Turbo
A	16R	16RA2C1	0.33%	0.53%	--	Jet, Turbo
A	16R	16RA2C2	0.13%	0.30%	--	Jet, Turbo

Operation Type	Runway	Track Name	Jet Track %	Turboprop Track %	Prop Track %	Notes
A	16R	16RA2C3	0.15%	0.41%	--	Jet, Turbo
A	16R	16RA2C4	0.06%	0.30%	--	Jet, Turbo
A	16R	16RA3A	2.14%	1.54%	6.37%	Jet, Turbo, Prop
A	16R	16RA3A1	0.75%	1.78%	5.10%	Jet, Turbo, Prop
A	16R	16RA3A2	1.69%	1.78%	5.10%	Jet, Turbo, Prop
A	16R	16RA3A3	0.28%	1.48%	1.91%	Jet, Turbo, Prop
A	16R	16RA3A4	0.75%	0.59%	1.91%	Jet, Turbo, Prop
A	16R	16RA3B	4.76%	5.33%	--	Jet, Turbo
A	16R	16RA3B1	2.82%	5.92%	--	Jet, Turbo
A	16R	16RA3B2	2.82%	2.96%	--	Jet, Turbo
A	16R	16RA3B3	0.94%	2.96%	--	Jet, Turbo
A	16R	16RA3B4	0.56%	1.48%	--	Jet, Turbo
A	16R	16RA3C	2.41%	2.13%	--	Jet, Turbo
A	16R	16RA3C1	0.75%	0.59%	--	Jet, Turbo
A	16R	16RA3C2	1.51%	1.78%	--	Jet, Turbo
A	16R	16RA3C3	0.19%	0.59%	--	Jet, Turbo
A	16R	16RA3C4	0.28%	0.87%	--	Jet, Turbo
A	16R	16RA4A	6.61%	5.91%	5.73%	Jet, Turbo, Prop
A	16R	16RA4A1	5.65%	3.55%	1.27%	Jet, Turbo, Prop
A	16R	16RA4A2	5.65%	3.55%	1.27%	Jet, Turbo, Prop
A	16R	16RA4A3	5.08%	2.37%	--	Jet, Turbo
A	16R	16RA4A4	5.08%	4.74%	--	Jet, Turbo
A	16R	16RA4A5	4.71%	2.37%	--	Jet, Turbo
A	16R	16RA4A6	4.71%	4.74%	--	Jet, Turbo
A	16R	16RA4A7	1.69%	2.37%	--	Jet, Turbo
A	16R	16RA4A8	1.69%	1.18%	--	Jet, Turbo
A	16R	16RA4B	0.58%	0.31%	--	Jet, Turbo
A	16R	16RA4B1	0.13%	0.14%	--	Jet, Turbo
A	16R	16RA4B2	0.13%	0.14%	--	Jet, Turbo
A	16R	16RA4B3	0.08%	0.09%	--	Jet, Turbo
A	16R	16RA4B4	0.08%	0.09%	--	Jet, Turbo
A	16R	16RA4B5	0.07%	0.05%	--	Jet, Turbo
A	16R	16RA4B6	0.07%	0.05%	--	Jet, Turbo
A	16R	16RA4B7	0.04%	0.02%	--	Jet, Turbo
A	16R	16RA4B8	0.04%	0.02%	--	Jet, Turbo
A	16R	16RA5A	7.53%	4.73%	--	Jet, Turbo
A	16R	16RA5A1	1.32%	2.37%	--	Jet, Turbo
A	16R	16RA5A2	5.65%	3.55%	--	Jet, Turbo
A	16R	16RA5A3	0.56%	1.78%	--	Jet, Turbo
A	16R	16RA5A4	5.65%	1.78%	--	Jet, Turbo
A	16R	16RA5A5	0.13%	0.89%	--	Jet, Turbo
A	16R	16RA5A6	0.94%	0.89%	--	Jet, Turbo
A	16R	16RA5A7	0.09%	0.18%	--	Jet, Turbo
A	16R	16RA5A8	0.47%	0.18%	--	Jet, Turbo
A	16R	16RA5B	--	--	--	Not In Use
A	16R	16RA5B1	--	--	--	Not In Use
A	16R	16RA5B2	--	--	--	Not In Use
A	16R	16RA5B3	--	--	--	Not In Use
A	16R	16RA5B4	--	--	--	Not In Use
A	16R	16RA5B5	--	--	--	Not In Use
A	16R	16RA5B6	--	--	--	Not In Use
A	16R	16RA5B7	--	--	--	Not In Use
A	16R	16RA5B8	--	--	--	Not In Use
A	16R	16RA6A	--	--	28.66%	Prop Only

Operation Type	Runway	Track Name	Jet Track %	Turboprop Track %	Prop Track %	Notes
A	16R	16RA6A1	--	--	7.01%	Prop Only
A	16R	16RA6A2	--	--	7.01%	Prop Only
A	34C	34CA2A	1.60%	0.97%	2.82%	Jet, Turbo, Prop
A	34C	34CA2A1	1.89%	1.36%	1.79%	Jet, Turbo, Prop
A	34C	34CA2A2	0.81%	0.58%	1.79%	Jet, Turbo, Prop
A	34C	34CA2A3	1.89%	1.36%	0.46%	Jet, Turbo, Prop
A	34C	34CA2A4	0.81%	0.58%	0.46%	Jet, Turbo, Prop
A	34C	34CA2B	4.29%	2.73%	--	Jet, Turbo
A	34C	34CA2B1	2.71%	1.95%	--	Jet, Turbo
A	34C	34CA2B2	2.71%	1.95%	--	Jet, Turbo
A	34C	34CA2B3	2.17%	1.56%	--	Jet, Turbo
A	34C	34CA2B4	2.17%	1.56%	--	Jet, Turbo
A	34C	34CA2C	--	--	--	Not In Use
A	34C	34CA2C1	--	--	--	Not In Use
A	34C	34CA2C2	--	--	--	Not In Use
A	34C	34CA2C3	--	--	--	Not In Use
A	34C	34CA2C4	--	--	--	Not In Use
A	34C	34CA2D	1.60%	0.97%	--	Jet, Turbo
A	34C	34CA2D1	0.81%	0.58%	--	Jet, Turbo
A	34C	34CA2D2	1.89%	1.36%	--	Jet, Turbo
A	34C	34CA2D3	0.81%	0.58%	--	Jet, Turbo
A	34C	34CA2D4	1.89%	1.36%	--	Jet, Turbo
A	34C	34CA3A	14.17%	11.61%	2.82%	Jet, Turbo, Prop
A	34C	34CA3A1	8.86%	7.23%	1.79%	Jet, Turbo, Prop
A	34C	34CA3A2	8.86%	7.23%	1.79%	Jet, Turbo, Prop
A	34C	34CA3A3	2.29%	1.87%	0.46%	Jet, Turbo, Prop
A	34C	34CA3A4	2.29%	1.87%	0.46%	Jet, Turbo, Prop
A	34C	34CA3B	0.94%	0.89%	--	Jet, Turbo
A	34C	34CA3B1	0.94%	0.89%	--	Jet, Turbo
A	34C	34CA3B2	0.94%	0.89%	--	Jet, Turbo
A	34C	34CA3B3	0.94%	0.89%	--	Jet, Turbo
A	34C	34CA3B4	0.94%	0.89%	--	Jet, Turbo
A	34C	34CA3C	--	--	--	Not In Use
A	34C	34CA3C1	--	--	--	Not In Use
A	34C	34CA3C2	--	--	--	Not In Use
A	34C	34CA3C3	--	--	--	Not In Use
A	34C	34CA3C4	--	--	--	Not In Use
A	34C	34CA4A	4.21%	5.50%	7.58%	Jet, Turbo, Prop
A	34C	34CA4A1	4.21%	5.50%	6.52%	Jet, Turbo, Prop
A	34C	34CA4A2	3.19%	4.34%	6.52%	Jet, Turbo, Prop
A	34C	34CA4A3	3.19%	4.34%	4.13%	Jet, Turbo, Prop
A	34C	34CA4A4	1.85%	2.89%	4.13%	Jet, Turbo, Prop
A	34C	34CA4A5	1.85%	2.89%	1.95%	Jet, Turbo, Prop
A	34C	34CA4A6	0.82%	1.45%	1.95%	Jet, Turbo, Prop
A	34C	34CA4A7	0.82%	1.45%	0.68%	Jet, Turbo, Prop
A	34C	34CA4A8	0.41%	0.58%	0.68%	Jet, Turbo, Prop
A	34C	34CA5A	1.95%	3.82%	--	Jet, Turbo
A	34C	34CA5A1	1.23%	3.30%	--	Jet, Turbo
A	34C	34CA5A2	2.25%	3.30%	--	Jet, Turbo
A	34C	34CA5A3	0.61%	2.08%	--	Jet, Turbo
A	34C	34CA5A4	1.95%	2.08%	--	Jet, Turbo
A	34C	34CA5A5	0.20%	0.87%	--	Jet, Turbo
A	34C	34CA5A6	1.23%	0.87%	--	Jet, Turbo
A	34C	34CA5A7	0.20%	0.35%	--	Jet, Turbo

Operation Type	Runway	Track Name	Jet Track %	Turboprop Track %	Prop Track %	Notes
A	34C	34CA5A8	0.61%	0.17%	--	Jet, Turbo
A	34C	34CA5B	--	0.17%	--	Turbo Only
A	34C	34CA5B1	--	0.17%	--	Turbo Only
A	34C	34CA5B2	--	0.17%	--	Turbo Only
A	34C	34CA5C	--	--	--	Not In Use
A	34C	34CA5C1	--	--	--	Not In Use
A	34C	34CA5C2	--	--	--	Not In Use
A	34C	34CA5C3	--	--	--	Not In Use
A	34C	34CA5C4	--	--	--	Not In Use
A	34C	34CA5C5	--	--	--	Not In Use
A	34C	34CA5C6	--	--	--	Not In Use
A	34C	34CA5C7	--	--	--	Not In Use
A	34C	34CA5C8	--	--	--	Not In Use
A	34C	34CA6P	--	--	34.70%	Prop Only
A	34C	34CA6P1	--	--	8.26%	Prop Only
A	34C	34CA6P2	--	--	8.26%	Prop Only
A	34L	34LA2A	1.60%	0.97%	2.82%	Jet, Turbo, Prop
A	34L	34LA2A1	1.89%	1.36%	1.79%	Jet, Turbo, Prop
A	34L	34LA2A2	0.81%	0.58%	1.79%	Jet, Turbo, Prop
A	34L	34LA2A3	1.89%	1.36%	0.46%	Jet, Turbo, Prop
A	34L	34LA2A4	0.81%	0.58%	0.46%	Jet, Turbo, Prop
A	34L	34LA2B	4.29%	2.73%	--	Jet, Turbo
A	34L	34LA2B1	2.71%	1.95%	--	Jet, Turbo
A	34L	34LA2B2	2.71%	1.95%	--	Jet, Turbo
A	34L	34LA2B3	2.17%	1.56%	--	Jet, Turbo
A	34L	34LA2B4	2.17%	1.56%	--	Jet, Turbo
A	34L	34LA2C	--	--	--	Not In Use
A	34L	34LA2C1	--	--	--	Not In Use
A	34L	34LA2C2	--	--	--	Not In Use
A	34L	34LA2C3	--	--	--	Not In Use
A	34L	34LA2C4	--	--	--	Not In Use
A	34L	34LA2D	1.60%	0.97%	--	Jet, Turbo
A	34L	34LA2D1	0.81%	0.58%	--	Jet, Turbo
A	34L	34LA2D2	1.89%	1.36%	--	Jet, Turbo
A	34L	34LA2D3	0.81%	0.58%	--	Jet, Turbo
A	34L	34LA2D4	1.89%	1.36%	--	Jet, Turbo
A	34L	34LA3A	14.17%	11.61%	2.82%	Jet, Turbo, Prop
A	34L	34LA3A1	8.86%	7.23%	1.79%	Jet, Turbo, Prop
A	34L	34LA3A2	8.86%	7.23%	1.79%	Jet, Turbo, Prop
A	34L	34LA3A3	2.29%	1.87%	0.46%	Jet, Turbo, Prop
A	34L	34LA3A4	2.29%	1.87%	0.46%	Jet, Turbo, Prop
A	34L	34LA3B	0.94%	0.89%	--	Jet, Turbo
A	34L	34LA3B1	0.94%	0.89%	--	Jet, Turbo
A	34L	34LA3B2	0.94%	0.89%	--	Jet, Turbo
A	34L	34LA3B3	0.94%	0.89%	--	Jet, Turbo
A	34L	34LA3B4	0.94%	0.89%	--	Jet, Turbo
A	34L	34LA3C	--	--	--	Not In Use
A	34L	34LA3C1	--	--	--	Not In Use
A	34L	34LA3C2	--	--	--	Not In Use
A	34L	34LA3C3	--	--	--	Not In Use
A	34L	34LA3C4	--	--	--	Not In Use
A	34L	34LA4A	4.21%	5.50%	7.58%	Jet, Turbo, Prop
A	34L	34LA4A1	4.21%	5.50%	6.52%	Jet, Turbo, Prop
A	34L	34LA4A2	3.19%	4.34%	6.52%	Jet, Turbo, Prop

Operation Type	Runway	Track Name	Jet Track %	Turboprop Track %	Prop Track %	Notes
A	34L	34LA4A3	3.19%	4.34%	4.13%	Jet, Turbo, Prop
A	34L	34LA4A4	1.85%	2.89%	4.13%	Jet, Turbo, Prop
A	34L	34LA4A5	1.85%	2.89%	1.95%	Jet, Turbo, Prop
A	34L	34LA4A6	0.82%	1.45%	1.95%	Jet, Turbo, Prop
A	34L	34LA4A7	0.82%	1.45%	0.68%	Jet, Turbo, Prop
A	34L	34LA4A8	0.41%	0.58%	0.68%	Jet, Turbo, Prop
A	34L	34LA5A	1.95%	3.82%	--	Jet, Turbo
A	34L	34LA5A1	1.23%	3.30%	--	Jet, Turbo
A	34L	34LA5A2	2.25%	3.30%	--	Jet, Turbo
A	34L	34LA5A3	0.61%	2.08%	--	Jet, Turbo
A	34L	34LA5A4	1.95%	2.08%	--	Jet, Turbo
A	34L	34LA5A5	0.20%	0.87%	--	Jet, Turbo
A	34L	34LA5A6	1.23%	0.87%	--	Jet, Turbo
A	34L	34LA5A7	0.20%	0.35%	--	Jet, Turbo
A	34L	34LA5A8	0.61%	0.17%	--	Jet, Turbo
A	34L	34LA5B	--	0.17%	--	Turbo Only
A	34L	34LA5B1	--	0.17%	--	Turbo Only
A	34L	34LA5B2	--	0.17%	--	Turbo Only
A	34L	34LA5C	--	--	--	Not In Use
A	34L	34LA5C1	--	--	--	Not In Use
A	34L	34LA5C2	--	--	--	Not In Use
A	34L	34LA5C3	--	--	--	Not In Use
A	34L	34LA5C4	--	--	--	Not In Use
A	34L	34LA5C5	--	--	--	Not In Use
A	34L	34LA5C6	--	--	--	Not In Use
A	34L	34LA5C7	--	--	--	Not In Use
A	34L	34LA5C8	--	--	--	Not In Use
A	34L	34LA6P	--	--	34.70%	Prop Only
A	34L	34LA6P1	--	--	8.26%	Prop Only
A	34L	34LA6P2	--	--	8.26%	Prop Only
A	34R	34RA2A	1.60%	0.97%	3.51%	Jet, Turbo, Prop
A	34R	34RA2A1	1.89%	1.36%	2.22%	Jet, Turbo, Prop
A	34R	34RA2A2	0.81%	0.58%	2.22%	Jet, Turbo, Prop
A	34R	34RA2A3	1.89%	1.36%	0.57%	Jet, Turbo, Prop
A	34R	34RA2A4	0.81%	0.58%	0.57%	Jet, Turbo, Prop
A	34R	34RA2B	4.29%	2.73%	--	Jet, Turbo
A	34R	34RA2B1	2.71%	1.95%	--	Jet, Turbo
A	34R	34RA2B2	2.71%	1.95%	--	Jet, Turbo
A	34R	34RA2B3	2.17%	1.56%	--	Jet, Turbo
A	34R	34RA2B4	2.17%	1.56%	--	Jet, Turbo
A	34R	34RA2C	--	--	--	Not In Use
A	34R	34RA2C1	--	--	--	Not In Use
A	34R	34RA2C2	--	--	--	Not In Use
A	34R	34RA2C3	--	--	--	Not In Use
A	34R	34RA2C4	--	--	--	Not In Use
A	34R	34RA2D	1.60%	0.97%	--	Jet, Turbo
A	34R	34RA2D1	0.81%	0.58%	--	Jet, Turbo
A	34R	34RA2D2	1.89%	1.36%	--	Jet, Turbo
A	34R	34RA2D3	0.81%	0.58%	--	Jet, Turbo
A	34R	34RA2D4	1.89%	1.36%	--	Jet, Turbo
A	34R	34RA3A	14.17%	11.61%	3.51%	Jet, Turbo, Prop
A	34R	34RA3A1	8.86%	7.23%	2.22%	Jet, Turbo, Prop
A	34R	34RA3A2	8.86%	7.23%	2.22%	Jet, Turbo, Prop
A	34R	34RA3A3	2.29%	1.87%	0.57%	Jet, Turbo, Prop

Operation Type	Runway	Track Name	Jet Track %	Turboprop Track %	Prop Track %	Notes
A	34R	34RA3A4	2.29%	1.87%	0.57%	Jet, Turbo, Prop
A	34R	34RA3B	0.94%	0.89%	--	Jet, Turbo
A	34R	34RA3B1	0.94%	0.89%	--	Jet, Turbo
A	34R	34RA3B2	0.94%	0.89%	--	Jet, Turbo
A	34R	34RA3B3	0.94%	0.89%	--	Jet, Turbo
A	34R	34RA3B4	0.94%	0.89%	--	Jet, Turbo
A	34R	34RA3C	--	--	--	Not In Use
A	34R	34RA3C1	--	--	--	Not In Use
A	34R	34RA3C2	--	--	--	Not In Use
A	34R	34RA3C3	--	--	--	Not In Use
A	34R	34RA3C4	--	--	--	Not In Use
A	34R	34RA4A	4.21%	5.50%	18.16%	Jet, Turbo, Prop
A	34R	34RA4A1	4.21%	5.50%	15.63%	Jet, Turbo, Prop
A	34R	34RA4A2	3.19%	4.34%	15.63%	Jet, Turbo, Prop
A	34R	34RA4A3	3.19%	4.34%	9.90%	Jet, Turbo, Prop
A	34R	34RA4A4	1.85%	2.89%	9.90%	Jet, Turbo, Prop
A	34R	34RA4A5	1.85%	2.89%	4.66%	Jet, Turbo, Prop
A	34R	34RA4A6	0.82%	1.45%	4.66%	Jet, Turbo, Prop
A	34R	34RA4A7	0.82%	1.45%	1.64%	Jet, Turbo, Prop
A	34R	34RA4A8	0.41%	0.58%	1.64%	Jet, Turbo, Prop
A	34R	34RA5A	1.95%	3.82%	--	Jet, Turbo
A	34R	34RA5A1	1.23%	3.30%	--	Jet, Turbo
A	34R	34RA5A2	2.25%	3.30%	--	Jet, Turbo
A	34R	34RA5A3	0.61%	2.08%	--	Jet, Turbo
A	34R	34RA5A4	1.95%	2.08%	--	Jet, Turbo
A	34R	34RA5A5	0.20%	0.87%	--	Jet, Turbo
A	34R	34RA5A6	1.23%	0.87%	--	Jet, Turbo
A	34R	34RA5A7	0.20%	0.35%	--	Jet, Turbo
A	34R	34RA5A8	0.61%	0.17%	--	Jet, Turbo
A	34R	34RA5B	--	0.17%	--	Turbo Only
A	34R	34RA5B1	--	0.17%	--	Turbo Only
A	34R	34RA5B2	--	0.17%	--	Turbo Only
A	34R	34RA5C	--	--	--	Not In Use
A	34R	34RA5C1	--	--	--	Not In Use
A	34R	34RA5C2	--	--	--	Not In Use
A	34R	34RA5C3	--	--	--	Not In Use
A	34R	34RA5C4	--	--	--	Not In Use
A	34R	34RA5C5	--	--	--	Not In Use
A	34R	34RA5C6	--	--	--	Not In Use
A	34R	34RA5C7	--	--	--	Not In Use
A	34R	34RA5C8	--	--	--	Not In Use
D	16C	16CD1A	6.52%	--	--	Jet Only
D	16C	16CD1A1	0.84%	--	--	Jet Only
D	16C	16CD1A2	0.84%	--	--	Jet Only
D	16C	16CD1A3	0.21%	--	--	Jet Only
D	16C	16CD1A4	0.21%	--	--	Jet Only
D	16C	16CD1B	2.99%	--	--	Jet Only
D	16C	16CD1B1	0.42%	--	--	Jet Only
D	16C	16CD1B2	0.42%	--	--	Jet Only
D	16C	16CD1B3	0.21%	--	--	Jet Only
D	16C	16CD1B4	0.21%	--	--	Jet Only
D	16C	16CD1C	0.00%	10.75%	--	Jet, Turbo
D	16C	16CD1C1	0.00%	2.37%	--	Jet, Turbo
D	16C	16CD1C2	0.00%	3.95%	--	Jet, Turbo

Operation Type	Runway	Track Name	Jet Track %	Turboprop Track %	Prop Track %	Notes
D	16C	16CD1C3	0.00%	7.91%	--	Jet, Turbo
D	16C	16CD1C4	0.00%	2.37%	--	Jet, Turbo
D	16C	16CD1D	10.53%	1.98%	--	Jet, Turbo
D	16C	16CD1D1	4.21%	--	--	Jet Only
D	16C	16CD1D2	4.21%	--	--	Jet Only
D	16C	16CD1D3	2.10%	--	--	Jet Only
D	16C	16CD1D4	2.10%	--	--	Jet Only
D	16C	16CD2A	1.09%	--	--	Jet Only
D	16C	16CD2A1	0.84%	--	--	Jet Only
D	16C	16CD2A2	0.84%	--	--	Jet Only
D	16C	16CD2A3	0.21%	--	--	Jet Only
D	16C	16CD2A4	0.21%	--	--	Jet Only
D	16C	16CD2B	1.25%	--	--	Jet Only
D	16C	16CD2B1	0.53%	--	--	Jet Only
D	16C	16CD2B2	0.53%	--	--	Jet Only
D	16C	16CD2B3	0.32%	--	--	Jet Only
D	16C	16CD2B4	0.32%	--	--	Jet Only
D	16C	16CD2C	0.42%	--	--	Jet Only
D	16C	16CD2C1	0.32%	--	--	Jet Only
D	16C	16CD2C2	0.11%	--	--	Jet Only
D	16C	16CD2C3	0.32%	--	--	Jet Only
D	16C	16CD2C4	0.11%	--	--	Jet Only
D	16C	16CD2D	13.05%	--	--	Jet Only
D	16C	16CD2D1	6.40%	--	--	Jet Only
D	16C	16CD2D2	2.10%	--	--	Jet Only
D	16C	16CD2D3	6.40%	--	--	Jet Only
D	16C	16CD2D4	2.10%	--	--	Jet Only
D	16C	16CD3A	11.11%	--	--	Jet Only
D	16C	16CD3A1	0.63%	--	--	Jet Only
D	16C	16CD3A2	0.63%	--	--	Jet Only
D	16C	16CD3A3	0.21%	--	--	Jet Only
D	16C	16CD3A4	0.21%	--	--	Jet Only
D	16C	16CD3B	8.42%	--	--	Jet Only
D	16C	16CD3B1	0.21%	--	--	Jet Only
D	16C	16CD3B2	2.53%	--	--	Jet Only
D	16C	16CD3B3	0.21%	--	--	Jet Only
D	16C	16CD3B4	0.84%	--	--	Jet Only
D	16C	16CD4A	--	7.92%	--	Turbo Only
D	16C	16CD4A1	--	2.57%	--	Turbo Only
D	16C	16CD4A2	--	2.57%	--	Turbo Only
D	16C	16CD4A3	--	1.98%	--	Turbo Only
D	16C	16CD4A4	--	1.98%	--	Turbo Only
D	16C	16CD4B	--	14.68%	--	Turbo Only
D	16C	16CD4B1	--	0.79%	--	Turbo Only
D	16C	16CD4B2	--	2.57%	--	Turbo Only
D	16C	16CD4B3	--	0.40%	--	Turbo Only
D	16C	16CD4B4	--	0.79%	--	Turbo Only
D	16C	16CD4C	0.54%	--	--	Jet Only
D	16C	16CD4C1	0.21%	--	--	Jet Only
D	16C	16CD4C2	0.42%	--	--	Jet Only
D	16C	16CD4C3	0.08%	--	--	Jet Only
D	16C	16CD4C4	0.27%	--	--	Jet Only
D	16C	16CD4D	--	6.42%	8.75%	Turbo, Prop
D	16C	16CD4D1	--	2.47%	2.50%	Turbo, Prop

Operation Type	Runway	Track Name	Jet Track %	Turboprop Track %	Prop Track %	Notes
D	16C	16CD4D2	--	1.48%	2.50%	Turbo, Prop
D	16C	16CD4D3	--	2.47%	10.00%	Turbo, Prop
D	16C	16CD4D4	--	1.48%	10.00%	Turbo, Prop
D	16C	16CD4E	--	2.43%	--	Turbo Only
D	16C	16CD4E1	--	1.48%	--	Turbo Only
D	16C	16CD4E2	--	1.48%	--	Turbo Only
D	16C	16CD4E3	--	0.99%	--	Turbo Only
D	16C	16CD4E4	--	0.99%	--	Turbo Only
D	16C	16CD4F			35.00%	Prop Only
D	16C	16CD4F1			18.75%	Prop Only
D	16C	16CD4F2			12.50%	Prop Only
D	16C	16CD5A	--	0.47%	--	Turbo Only
D	16C	16CD5A1	--	0.16%	--	Turbo Only
D	16C	16CD5A2	--	0.16%	--	Turbo Only
D	16C	16CD5A3	--	0.10%	--	Turbo Only
D	16C	16CD5A4	--	0.10%	--	Turbo Only
D	16C	16CD5B	--	2.65%	--	Turbo Only
D	16C	16CD5B1	--	1.48%	--	Turbo Only
D	16C	16CD5B2	--	1.48%	--	Turbo Only
D	16C	16CD5B3	--	0.99%	--	Turbo Only
D	16C	16CD5B4	--	0.99%	--	Turbo Only
D	16C	16CD5C	--	1.58%	--	Turbo Only
D	16C	16CD5C1	--	0.79%	--	Turbo Only
D	16C	16CD5C2	--	0.79%	--	Turbo Only
D	16C	16CD5C3	--	0.49%	--	Turbo Only
D	16C	16CD5C4	--	0.49%	--	Turbo Only
D	16L	16LD1A	6.52%	--	--	Jet Only
D	16L	16LD1A1	0.84%	--	--	Jet Only
D	16L	16LD1A2	0.84%	--	--	Jet Only
D	16L	16LD1A3	0.21%	--	--	Jet Only
D	16L	16LD1A4	0.21%	--	--	Jet Only
D	16L	16LD1B	2.99%	--	--	Jet Only
D	16L	16LD1B1	0.42%	--	--	Jet Only
D	16L	16LD1B2	0.42%	--	--	Jet Only
D	16L	16LD1B3	0.21%	--	--	Jet Only
D	16L	16LD1B4	0.21%	--	--	Jet Only
D	16L	16LD1C	--	10.75%	--	Turbo Only
D	16L	16LD1C1	--	2.37%	--	Turbo Only
D	16L	16LD1C2	--	3.95%	--	Turbo Only
D	16L	16LD1C3	--	7.91%	--	Turbo Only
D	16L	16LD1C4	--	2.37%	--	Turbo Only
D	16L	16LD1D	10.53%	1.98%	--	Jet, Turbo
D	16L	16LD1D1	4.21%	--	--	Jet Only
D	16L	16LD1D2	4.21%	--	--	Jet Only
D	16L	16LD1D3	2.10%	--	--	Jet Only
D	16L	16LD1D4	2.10%	--	--	Jet Only
D	16L	16LD2A	1.09%	--	--	Jet Only
D	16L	16LD2A1	0.84%	--	--	Jet Only
D	16L	16LD2A2	0.84%	--	--	Jet Only
D	16L	16LD2A3	0.21%	--	--	Jet Only
D	16L	16LD2A4	0.21%	--	--	Jet Only
D	16L	16LD2B	1.25%	--	--	Jet Only
D	16L	16LD2B1	0.53%	--	--	Jet Only
D	16L	16LD2B2	0.53%	--	--	Jet Only

Operation Type	Runway	Track Name	Jet Track %	Turboprop Track %	Prop Track %	Notes
D	16L	16LD2B3	0.32%	--	--	Jet Only
D	16L	16LD2B4	0.32%	--	--	Jet Only
D	16L	16LD2C	0.42%	--	--	Jet Only
D	16L	16LD2C1	0.32%	--	--	Jet Only
D	16L	16LD2C2	0.11%	--	--	Jet Only
D	16L	16LD2C3	0.32%	--	--	Jet Only
D	16L	16LD2C4	0.11%	--	--	Jet Only
D	16L	16LD2D	13.05%	--	--	Jet Only
D	16L	16LD2D1	6.40%	--	--	Jet Only
D	16L	16LD2D2	2.10%	--	--	Jet Only
D	16L	16LD2D3	6.40%	--	--	Jet Only
D	16L	16LD2D4	2.10%	--	--	Jet Only
D	16L	16LD3A	11.11%	--	--	Jet Only
D	16L	16LD3A1	0.63%	--	--	Jet Only
D	16L	16LD3A2	0.63%	--	--	Jet Only
D	16L	16LD3A3	0.21%	--	--	Jet Only
D	16L	16LD3A4	0.21%	--	--	Jet Only
D	16L	16LD3B	8.42%	--	--	Jet Only
D	16L	16LD3B1	0.21%	--	--	Jet Only
D	16L	16LD3B2	2.53%	--	--	Jet Only
D	16L	16LD3B3	0.21%	--	--	Jet Only
D	16L	16LD3B4	0.84%	--	--	Jet Only
D	16L	16LD4A	--	7.92%	--	Turbo Only
D	16L	16LD4A1	--	2.57%	--	Turbo Only
D	16L	16LD4A2	--	2.57%	--	Turbo Only
D	16L	16LD4A3	--	1.98%	--	Turbo Only
D	16L	16LD4A4	--	1.98%	--	Turbo Only
D	16L	16LD4B	--	14.68%	--	Turbo Only
D	16L	16LD4B1	--	0.79%	--	Turbo Only
D	16L	16LD4B2	--	2.57%	--	Turbo Only
D	16L	16LD4B3	--	0.40%	--	Turbo Only
D	16L	16LD4B4	--	0.79%	--	Turbo Only
D	16L	16LD4C	0.54%	--	--	Jet Only
D	16L	16LD4C1	0.21%	--	--	Jet Only
D	16L	16LD4C2	0.42%	--	--	Jet Only
D	16L	16LD4C3	0.08%	--	--	Jet Only
D	16L	16LD4C4	0.27%	--	--	Jet Only
D	16L	16LD4D	--	6.42%	61.45%	Turbo, Prop
D	16L	16LD4D1	--	2.47%	13.25%	Turbo, Prop
D	16L	16LD4D2	--	1.48%	6.02%	Turbo, Prop
D	16L	16LD4D3	--	2.47%	13.25%	Turbo, Prop
D	16L	16LD4D4	--	1.48%	6.02%	Turbo, Prop
D	16L	16LD4E	--	2.43%	--	Turbo Only
D	16L	16LD4E1	--	1.48%	--	Turbo Only
D	16L	16LD4E2	--	1.48%	--	Turbo Only
D	16L	16LD4E3	--	0.99%	--	Turbo Only
D	16L	16LD4E4	--	0.99%	--	Turbo Only
D	16L	16LD5A	--	0.47%	--	Turbo Only
D	16L	16LD5A1	--	0.16%	--	Turbo Only
D	16L	16LD5A2	--	0.16%	--	Turbo Only
D	16L	16LD5A3	--	0.10%	--	Turbo Only
D	16L	16LD5A4	--	0.10%	--	Turbo Only
D	16L	16LD5B	--	2.65%	--	Turbo Only
D	16L	16LD5B1	--	1.48%	--	Turbo Only

Operation Type	Runway	Track Name	Jet Track %	Turboprop Track %	Prop Track %	Notes
D	16L	16LD5B2	--	1.48%	--	Turbo Only
D	16L	16LD5B3	--	0.99%	--	Turbo Only
D	16L	16LD5B4	--	0.99%	--	Turbo Only
D	16L	16LD5C	--	1.58%	--	Turbo Only
D	16L	16LD5C1	--	0.79%	--	Turbo Only
D	16L	16LD5C2	--	0.79%	--	Turbo Only
D	16L	16LD5C3	--	0.49%	--	Turbo Only
D	16L	16LD5C4	--	0.49%	--	Turbo Only
D	16R	16RD1A	6.52%	--	--	Jet Only
D	16R	16RD1A1	0.84%	--	--	Jet Only
D	16R	16RD1A2	0.84%	--	--	Jet Only
D	16R	16RD1A3	0.21%	--	--	Jet Only
D	16R	16RD1A4	0.21%	--	--	Jet Only
D	16R	16RD1B	2.99%	--	--	Jet Only
D	16R	16RD1B1	0.42%	--	--	Jet Only
D	16R	16RD1B2	0.42%	--	--	Jet Only
D	16R	16RD1B3	0.21%	--	--	Jet Only
D	16R	16RD1B4	0.21%	--	--	Jet Only
D	16R	16RD1C	--	10.75%	--	Turbo Only
D	16R	16RD1C1	--	2.37%	--	Turbo Only
D	16R	16RD1C2	--	3.95%	--	Turbo Only
D	16R	16RD1C3	--	7.91%	--	Turbo Only
D	16R	16RD1C4	--	2.37%	--	Turbo Only
D	16R	16RD1D	10.53%	1.98%	--	Jet, Turbo
D	16R	16RD1D1	4.21%	--	--	Jet Only
D	16R	16RD1D2	4.21%	--	--	Jet Only
D	16R	16RD1D3	2.10%	--	--	Jet Only
D	16R	16RD1D4	2.10%	--	--	Jet Only
D	16R	16RD2A	1.09%	--	--	Jet Only
D	16R	16RD2A1	0.84%	--	--	Jet Only
D	16R	16RD2A2	0.84%	--	--	Jet Only
D	16R	16RD2A3	0.21%	--	--	Jet Only
D	16R	16RD2A4	0.21%	--	--	Jet Only
D	16R	16RD2B	1.25%	--	--	Jet Only
D	16R	16RD2B1	0.53%	--	--	Jet Only
D	16R	16RD2B2	0.53%	--	--	Jet Only
D	16R	16RD2B3	0.32%	--	--	Jet Only
D	16R	16RD2B4	0.32%	--	--	Jet Only
D	16R	16RD2C	0.42%	--	--	Jet Only
D	16R	16RD2C1	0.32%	--	--	Jet Only
D	16R	16RD2C2	0.11%	--	--	Jet Only
D	16R	16RD2C3	0.32%	--	--	Jet Only
D	16R	16RD2C4	0.11%	--	--	Jet Only
D	16R	16RD2D	13.05%	--	--	Jet Only
D	16R	16RD2D1	6.40%	--	--	Jet Only
D	16R	16RD2D2	2.10%	--	--	Jet Only
D	16R	16RD2D3	6.40%	--	--	Jet Only
D	16R	16RD2D4	2.10%	--	--	Jet Only
D	16R	16RD3A	11.11%	--	--	Jet Only
D	16R	16RD3A1	0.63%	--	--	Jet Only
D	16R	16RD3A2	0.63%	--	--	Jet Only
D	16R	16RD3A3	0.21%	--	--	Jet Only
D	16R	16RD3A4	0.21%	--	--	Jet Only
D	16R	16RD3B	8.42%	--	--	Jet Only

Operation Type	Runway	Track Name	Jet Track %	Turboprop Track %	Prop Track %	Notes
D	16R	16RD3B1	0.21%	--	--	Jet Only
D	16R	16RD3B2	2.53%	--	--	Jet Only
D	16R	16RD3B3	0.21%	--	--	Jet Only
D	16R	16RD3B4	0.84%	--	--	Jet Only
D	16R	16RD4A	--	7.92%	--	Turbo Only
D	16R	16RD4A1	--	2.57%	--	Turbo Only
D	16R	16RD4A2	--	2.57%	--	Turbo Only
D	16R	16RD4A3	--	1.98%	--	Turbo Only
D	16R	16RD4A4	--	1.98%	--	Turbo Only
D	16R	16RD4B	--	14.68%	--	Turbo Only
D	16R	16RD4B1	--	0.79%	--	Turbo Only
D	16R	16RD4B2	--	2.57%	--	Turbo Only
D	16R	16RD4B3	--	0.40%	--	Turbo Only
D	16R	16RD4B4	--	0.79%	--	Turbo Only
D	16R	16RD4C	0.54%	--	--	Jet Only
D	16R	16RD4C1	0.21%	--	--	Jet Only
D	16R	16RD4C2	0.42%	--	--	Jet Only
D	16R	16RD4C3	0.08%	--	--	Jet Only
D	16R	16RD4C4	0.27%	--	--	Jet Only
D	16R	16RD4D	--	6.42%	--	Turbo Only
D	16R	16RD4D1	--	2.47%	--	Turbo Only
D	16R	16RD4D2	--	1.48%	--	Turbo Only
D	16R	16RD4D3	--	2.47%	--	Turbo Only
D	16R	16RD4D4	--	1.48%	--	Turbo Only
D	16R	16RD4E	--	2.43%	--	Turbo Only
D	16R	16RD4E1	--	1.48%	--	Turbo Only
D	16R	16RD4E2	--	1.48%	--	Turbo Only
D	16R	16RD4E3	--	0.99%	--	Turbo Only
D	16R	16RD4E4	--	0.99%	--	Turbo Only
D	16R	16RD4F	--	--	42.86%	Prop Only
D	16R	16RD4F1	--	--	28.57%	Prop Only
D	16R	16RD4F2	--	--	28.57%	Prop Only
D	16R	16RD5A	--	0.47%	--	Turbo Only
D	16R	16RD5A1	--	0.16%	--	Turbo Only
D	16R	16RD5A2	--	0.16%	--	Turbo Only
D	16R	16RD5A3	--	0.10%	--	Turbo Only
D	16R	16RD5A4	--	0.10%	--	Turbo Only
D	16R	16RD5B	--	2.65%	--	Turbo Only
D	16R	16RD5B1	--	1.48%	--	Turbo Only
D	16R	16RD5B2	--	1.48%	--	Turbo Only
D	16R	16RD5B3	--	0.99%	--	Turbo Only
D	16R	16RD5B4	--	0.99%	--	Turbo Only
D	16R	16RD5C	--	1.58%	--	Turbo Only
D	16R	16RD5C1	--	0.79%	--	Turbo Only
D	16R	16RD5C2	--	0.79%	--	Turbo Only
D	16R	16RD5C3	--	0.49%	--	Turbo Only
D	16R	16RD5C4	--	0.49%	--	Turbo Only
D	34C	34CD1	1.42%	0.80%	--	Jet, Turbo
D	34C	34CD11	0.71%	0.60%	--	Jet, Turbo
D	34C	34CD12	0.71%	0.60%	--	Jet, Turbo
D	34C	34CD13	0.37%	7.10%	--	Jet, Turbo
D	34C	34CD14	0.39%	7.10%	--	Jet, Turbo
D	34C	34CD2A	12.21%	--	--	Jet Only
D	34C	34CD2A1	0.50%	--	--	Jet Only

Operation Type	Runway	Track Name	Jet Track %	Turboprop Track %	Prop Track %	Notes
D	34C	34CD2A2	0.50%	--	--	Jet Only
D	34C	34CD2A3	0.50%	--	--	Jet Only
D	34C	34CD2A4	0.50%	--	--	Jet Only
D	34C	34CD2A5	0.50%	--	--	Jet Only
D	34C	34CD2B	15.00%	--	--	Jet Only
D	34C	34CD2B1	0.37%	--	--	Jet Only
D	34C	34CD2B2	0.37%	--	--	Jet Only
D	34C	34CD2B3	0.35%	--	--	Jet Only
D	34C	34CD2B4	0.35%	--	--	Jet Only
D	34C	34CD2C	1.55%	--	--	Jet Only
D	34C	34CD2C1	0.39%	--	--	Jet Only
D	34C	34CD2C2	0.39%	--	--	Jet Only
D	34C	34CD2C3	0.37%	--	--	Jet Only
D	34C	34CD2C4	0.37%	--	--	Jet Only
D	34C	34CD2CC	2.98%	--	--	Jet Only
D	34C	34CD2D	3.52%	--	--	Jet Only
D	34C	34CD2D1	1.08%	--	--	Jet Only
D	34C	34CD2D2	1.08%	--	--	Jet Only
D	34C	34CD2D3	0.73%	--	--	Jet Only
D	34C	34CD2D4	0.71%	--	--	Jet Only
D	34C	34CD3A	2.55%	--	--	Jet Only
D	34C	34CD3A1	1.40%	--	--	Jet Only
D	34C	34CD3A2	2.55%	--	--	Jet Only
D	34C	34CD3A3	1.40%	--	--	Jet Only
D	34C	34CD3A4	0.90%	--	--	Jet Only
D	34C	34CD3B	7.51%	--	--	Jet Only
D	34C	34CD3B1	2.16%	--	--	Jet Only
D	34C	34CD3B2	2.16%	--	--	Jet Only
D	34C	34CD3B3	1.21%	--	--	Jet Only
D	34C	34CD3B4	1.21%	--	--	Jet Only
D	34C	34CD3C	1.42%	--	--	Jet Only
D	34C	34CD3C1	1.08%	--	--	Jet Only
D	34C	34CD3C2	1.08%	--	--	Jet Only
D	34C	34CD3C3	1.08%	--	--	Jet Only
D	34C	34CD3C4	1.42%	--	--	Jet Only
D	34C	34CD3D	1.75%	--	--	Jet Only
D	34C	34CD3D1	1.75%	--	--	Jet Only
D	34C	34CD3D2	1.75%	--	--	Jet Only
D	34C	34CD3D3	1.75%	--	--	Jet Only
D	34C	34CD3D4	1.75%	--	--	Jet Only
D	34C	34CD3E	1.08%	--	--	Jet Only
D	34C	34CD3E1	1.08%	--	--	Jet Only
D	34C	34CD3E2	1.08%	--	--	Jet Only
D	34C	34CD3E3	1.08%	--	--	Jet Only
D	34C	34CD3E4	1.08%	--	--	Jet Only
D	34C	34CD3F	2.55%	--	--	Jet Only
D	34C	34CD3F1	1.40%	--	--	Jet Only
D	34C	34CD3F2	2.55%	--	--	Jet Only
D	34C	34CD3F3	1.40%	--	--	Jet Only
D	34C	34CD3F4	0.90%	--	--	Jet Only
D	34C	34CD4A	--	--	--	Not In Use
D	34C	34CD4A1	--	--	--	Not In Use
D	34C	34CD4A2	--	--	--	Not In Use
D	34C	34CD4A3	--	--	--	Not In Use

Operation Type	Runway	Track Name	Jet Track %	Turboprop Track %	Prop Track %	Notes
D	34C	34CD4A4	--	--	--	Not In Use
D	34C	34CD4AP	--	6.90%	--	Turbo Only
D	34C	34CD4AP1	--	4.50%	--	Turbo Only
D	34C	34CD4AP2	--	6.80%	--	Turbo Only
D	34C	34CD4AP3	--	4.50%	--	Turbo Only
D	34C	34CD4AP4	--	3.30%	--	Turbo Only
D	34C	34CD4AP5	--	3.30%	--	Turbo Only
D	34C	34CD4AP6	--	1.50%	--	Turbo Only
D	34C	34CD4B	--	--	--	Not In Use
D	34C	34CD4B1	--	--	--	Not In Use
D	34C	34CD4B2	--	--	--	Not In Use
D	34C	34CD4B3	--	--	--	Not In Use
D	34C	34CD4B4	--	--	--	Not In Use
D	34C	34CD4BP	--	--	--	Not In Use
D	34C	34CD4BP1	--	--	--	Not In Use
D	34C	34CD4BP2	--	--	--	Not In Use
D	34C	34CD4BP3	--	--	--	Not In Use
D	34C	34CD4BP4	--	--	--	Not In Use
D	34C	34CD4C	--	--	--	Not In Use
D	34C	34CD4C1	--	--	--	Not In Use
D	34C	34CD4C2	--	--	--	Not In Use
D	34C	34CD4C3	--	--	--	Not In Use
D	34C	34CD4C4	--	--	--	Not In Use
D	34C	34CD4CP	--	--	--	Not In Use
D	34C	34CD4CP1	--	--	--	Not In Use
D	34C	34CD4CP2	--	--	--	Not In Use
D	34C	34CD4CP3	--	--	--	Not In Use
D	34C	34CD4CP4	--	--	--	Not In Use
D	34C	34CD5A	--	7.00%	--	Turbo Only
D	34C	34CD5A1	--	5.00%	--	Turbo Only
D	34C	34CD5A2	--	5.00%	--	Turbo Only
D	34C	34CD5A3	--	1.00%	--	Turbo Only
D	34C	34CD5A4	--	1.00%	--	Turbo Only
D	34C	34CD5AP	--	2.20%	--	Turbo Only
D	34C	34CD5AP1	--	1.70%	--	Turbo Only
D	34C	34CD5AP2	--	1.70%	--	Turbo Only
D	34C	34CD5B	--	7.50%	--	Turbo Only
D	34C	34CD5B1	--	4.70%	--	Turbo Only
D	34C	34CD5B2	--	4.70%	--	Turbo Only
D	34C	34CD5B3	--	1.75%	--	Turbo Only
D	34C	34CD5B4	--	1.75%	--	Turbo Only
D	34C	34CD5C	--	3.00%	--	Turbo Only
D	34C	34CD5C1	--	2.00%	--	Turbo Only
D	34C	34CD5C2	--	2.00%	--	Turbo Only
D	34C	34CD5C3	--	0.50%	--	Turbo Only
D	34C	34CD5C4	--	0.50%	--	Turbo Only
D	34C	34CD6P	--	--	34.00%	Prop Only
D	34C	34CD6P1	--	--	33.00%	Prop Only
D	34C	34CD6P2	--	--	33.00%	Prop Only
D	34L	34LD1	1.42%	0.80%	--	Jet, Turbo
D	34L	34LD11	0.71%	0.60%	--	Jet, Turbo
D	34L	34LD12	0.71%	0.60%	--	Jet, Turbo
D	34L	34LD13	0.37%	7.10%	--	Jet, Turbo
D	34L	34LD14	0.39%	7.10%	--	Jet, Turbo

Operation Type	Runway	Track Name	Jet Track %	Turboprop Track %	Prop Track %	Notes
D	34L	34LD2A	12.21%	--	--	Jet Only
D	34L	34LD2A1	0.50%	--	--	Jet Only
D	34L	34LD2A2	0.50%	--	--	Jet Only
D	34L	34LD2A3	0.50%	--	--	Jet Only
D	34L	34LD2A4	0.50%	--	--	Jet Only
D	34L	34LD2A5	0.50%	--	--	Jet Only
D	34L	34LD2B	15.00%	--	--	Jet Only
D	34L	34LD2B1	0.37%	--	--	Jet Only
D	34L	34LD2B2	0.37%	--	--	Jet Only
D	34L	34LD2B3	0.35%	--	--	Jet Only
D	34L	34LD2B4	0.35%	--	--	Jet Only
D	34L	34LD2C	1.55%	--	--	Jet Only
D	34L	34LD2C1	0.39%	--	--	Jet Only
D	34L	34LD2C2	0.39%	--	--	Jet Only
D	34L	34LD2C3	0.37%	--	--	Jet Only
D	34L	34LD2C4	0.37%	--	--	Jet Only
D	34L	34LD2CC	2.98%	--	--	Jet Only
D	34L	34LD2D	3.52%	--	--	Jet Only
D	34L	34LD2D1	1.08%	--	--	Jet Only
D	34L	34LD2D2	1.08%	--	--	Jet Only
D	34L	34LD2D3	0.73%	--	--	Jet Only
D	34L	34LD2D4	0.71%	--	--	Jet Only
D	34L	34LD3A	2.55%	--	--	Jet Only
D	34L	34LD3A1	1.40%	--	--	Jet Only
D	34L	34LD3A2	2.55%	--	--	Jet Only
D	34L	34LD3A3	1.40%	--	--	Jet Only
D	34L	34LD3A4	0.90%	--	--	Jet Only
D	34L	34LD3B	7.51%	--	--	Jet Only
D	34L	34LD3B1	2.16%	--	--	Jet Only
D	34L	34LD3B2	2.16%	--	--	Jet Only
D	34L	34LD3B3	1.21%	--	--	Jet Only
D	34L	34LD3B4	1.21%	--	--	Jet Only
D	34L	34LD3C	1.42%	--	--	Jet Only
D	34L	34LD3C1	1.08%	--	--	Jet Only
D	34L	34LD3C2	1.08%	--	--	Jet Only
D	34L	34LD3C3	1.08%	--	--	Jet Only
D	34L	34LD3C4	1.42%	--	--	Jet Only
D	34L	34LD3D	1.75%	--	--	Jet Only
D	34L	34LD3D1	1.75%	--	--	Jet Only
D	34L	34LD3D2	1.75%	--	--	Jet Only
D	34L	34LD3D3	1.75%	--	--	Jet Only
D	34L	34LD3D4	1.75%	--	--	Jet Only
D	34L	34LD3E	1.08%	--	--	Jet Only
D	34L	34LD3E1	1.08%	--	--	Jet Only
D	34L	34LD3E2	1.08%	--	--	Jet Only
D	34L	34LD3E3	1.08%	--	--	Jet Only
D	34L	34LD3E4	1.08%	--	--	Jet Only
D	34L	34LD3F	2.55%	--	--	Jet Only
D	34L	34LD3F1	1.40%	--	--	Jet Only
D	34L	34LD3F2	2.55%	--	--	Jet Only
D	34L	34LD3F3	1.40%	--	--	Jet Only
D	34L	34LD3F4	0.90%	--	--	Jet Only
D	34L	34LD4A	--	--	--	Not In Use
D	34L	34LD4A1	--	--	--	Not In Use

Operation Type	Runway	Track Name	Jet Track %	Turboprop Track %	Prop Track %	Notes
D	34L	34LD4A2	--	--	--	Not In Use
D	34L	34LD4A3	--	--	--	Not In Use
D	34L	34LD4A4	--	--	--	Not In Use
D	34L	34LD4AP	--	6.90%	--	Turbo Only
D	34L	34LD4AP1	--	4.50%	--	Turbo Only
D	34L	34LD4AP2	--	6.80%	--	Turbo Only
D	34L	34LD4AP3	--	4.50%	--	Turbo Only
D	34L	34LD4AP4	--	3.30%	--	Turbo Only
D	34L	34LD4AP5	--	3.30%	--	Turbo Only
D	34L	34LD4AP6	--	1.50%	--	Turbo Only
D	34L	34LD4B	--	--	--	Not In Use
D	34L	34LD4B1	--	--	--	Not In Use
D	34L	34LD4B2	--	--	--	Not In Use
D	34L	34LD4B3	--	--	--	Not In Use
D	34L	34LD4B4	--	--	--	Not In Use
D	34L	34LD4BP	--	--	--	Not In Use
D	34L	34LD4BP1	--	--	--	Not In Use
D	34L	34LD4BP2	--	--	--	Not In Use
D	34L	34LD4BP3	--	--	--	Not In Use
D	34L	34LD4BP4	--	--	--	Not In Use
D	34L	34LD4C	--	--	--	Not In Use
D	34L	34LD4C1	--	--	--	Not In Use
D	34L	34LD4C2	--	--	--	Not In Use
D	34L	34LD4C3	--	--	--	Not In Use
D	34L	34LD4C4	--	--	--	Not In Use
D	34L	34LD4CP	--	--	--	Not In Use
D	34L	34LD4CP1	--	--	--	Not In Use
D	34L	34LD4CP2	--	--	--	Not In Use
D	34L	34LD4CP3	--	--	--	Not In Use
D	34L	34LD4CP4	--	--	--	Not In Use
D	34L	34LD5A	--	7.00%	--	Turbo Only
D	34L	34LD5A1	--	5.00%	--	Turbo Only
D	34L	34LD5A2	--	5.00%	--	Turbo Only
D	34L	34LD5A3	--	1.00%	--	Turbo Only
D	34L	34LD5A4	--	1.00%	--	Turbo Only
D	34L	34LD5AP	--	2.20%	--	Turbo Only
D	34L	34LD5AP1	--	1.70%	--	Turbo Only
D	34L	34LD5AP2	--	1.70%	--	Turbo Only
D	34L	34LD5B	--	7.50%	--	Turbo Only
D	34L	34LD5B1	--	4.70%	--	Turbo Only
D	34L	34LD5B2	--	4.70%	--	Turbo Only
D	34L	34LD5B3	--	1.75%	--	Turbo Only
D	34L	34LD5B4	--	1.75%	--	Turbo Only
D	34L	34LD5C	--	3.00%	--	Turbo Only
D	34L	34LD5C1	--	2.00%	--	Turbo Only
D	34L	34LD5C2	--	2.00%	--	Turbo Only
D	34L	34LD5C3	--	0.50%	--	Turbo Only
D	34L	34LD5C4	--	0.50%	--	Turbo Only
D	34L	34LD6P	--	--	34.00%	Prop Only
D	34L	34LD6P1	--	--	33.00%	Prop Only
D	34L	34LD6P2	--	--	33.00%	Prop Only
D	34R	34RD1	1.42%	0.80%	--	Jet, Turbo
D	34R	34RD11	0.71%	0.60%	--	Jet, Turbo
D	34R	34RD12	0.71%	0.60%	--	Jet, Turbo

Operation Type	Runway	Track Name	Jet Track %	Turboprop Track %	Prop Track %	Notes
D	34R	34RD13	0.37%	7.10%	--	Jet, Turbo
D	34R	34RD14	0.39%	7.10%	--	Jet, Turbo
D	34R	34RD2A	6.00%	--	--	Jet Only
D	34R	34RD2A1	2.00%	--	--	Jet Only
D	34R	34RD2A2	3.00%	--	--	Jet Only
D	34R	34RD2A3	2.00%	--	--	Jet Only
D	34R	34RD2A4	0.86%	--	--	Jet Only
D	34R	34RD2A5	0.85%	--	--	Jet Only
D	34R	34RD2B	15.00%	--	--	Jet Only
D	34R	34RD2B1	0.37%	--	--	Jet Only
D	34R	34RD2B2	0.37%	--	--	Jet Only
D	34R	34RD2B3	0.35%	--	--	Jet Only
D	34R	34RD2B4	0.35%	--	--	Jet Only
D	34R	34RD2C	1.55%	--	--	Jet Only
D	34R	34RD2C1	0.39%	--	--	Jet Only
D	34R	34RD2C2	0.39%	--	--	Jet Only
D	34R	34RD2C3	0.37%	--	--	Jet Only
D	34R	34RD2C4	0.37%	--	--	Jet Only
D	34R	34RD2CC	2.98%	--	--	Jet Only
D	34R	34RD2D	2.82%	--	--	Jet Only
D	34R	34RD2D1	0.86%	--	--	Jet Only
D	34R	34RD2D2	0.86%	--	--	Jet Only
D	34R	34RD2D3	0.54%	--	--	Jet Only
D	34R	34RD2D4	0.54%	--	--	Jet Only
D	34R	34RD2D5	0.08%	--	--	Jet Only
D	34R	34RD2E	0.28%	--	--	Jet Only
D	34R	34RD2E1	0.04%	--	--	Jet Only
D	34R	34RD2E2	0.04%	--	--	Jet Only
D	34R	34RD2F	0.53%	--	--	Jet Only
D	34R	34RD2F1	0.27%	--	--	Jet Only
D	34R	34RD2F2	0.27%	--	--	Jet Only
D	34R	34RD3A	2.55%	--	--	Jet Only
D	34R	34RD3A1	1.40%	--	--	Jet Only
D	34R	34RD3A2	2.55%	--	--	Jet Only
D	34R	34RD3A3	1.40%	--	--	Jet Only
D	34R	34RD3A4	0.90%	--	--	Jet Only
D	34R	34RD3B	7.51%	--	--	Jet Only
D	34R	34RD3B1	2.16%	--	--	Jet Only
D	34R	34RD3B2	2.16%	--	--	Jet Only
D	34R	34RD3B3	1.21%	--	--	Jet Only
D	34R	34RD3B4	1.21%	--	--	Jet Only
D	34R	34RD3C	1.42%	--	--	Jet Only
D	34R	34RD3C1	1.08%	--	--	Jet Only
D	34R	34RD3C2	1.08%	--	--	Jet Only
D	34R	34RD3C3	1.08%	--	--	Jet Only
D	34R	34RD3C4	1.42%	--	--	Jet Only
D	34R	34RD3D	1.75%	--	--	Jet Only
D	34R	34RD3D1	1.75%	--	--	Jet Only
D	34R	34RD3D2	1.75%	--	--	Jet Only
D	34R	34RD3D3	1.75%	--	--	Jet Only
D	34R	34RD3D4	1.75%	--	--	Jet Only
D	34R	34RD3E	1.08%	--	--	Jet Only
D	34R	34RD3E1	1.08%	--	--	Jet Only
D	34R	34RD3E2	1.08%	--	--	Jet Only

Operation Type	Runway	Track Name	Jet Track %	Turboprop Track %	Prop Track %	Notes
D	34R	34RD3E3	1.08%	--	--	Jet Only
D	34R	34RD3E4	1.08%	--	--	Jet Only
D	34R	34RD3F	2.55%	--	--	Jet Only
D	34R	34RD3F1	1.40%	--	--	Jet Only
D	34R	34RD3F2	2.55%	--	--	Jet Only
D	34R	34RD3F3	1.40%	--	--	Jet Only
D	34R	34RD3F4	0.90%	--	--	Jet Only
D	34R	34RD4A	--	--	--	Not In Use
D	34R	34RD4A1	--	--	--	Not In Use
D	34R	34RD4A2	--	--	--	Not In Use
D	34R	34RD4A3	--	--	--	Not In Use
D	34R	34RD4A4	--	--	--	Not In Use
D	34R	34RD4AP	--	6.90%	--	Turbo Only
D	34R	34RD4AP1	--	4.50%	--	Turbo Only
D	34R	34RD4AP2	--	6.80%	--	Turbo Only
D	34R	34RD4AP3	--	4.50%	--	Turbo Only
D	34R	34RD4AP4	--	3.30%	--	Turbo Only
D	34R	34RD4AP5	--	3.30%	--	Turbo Only
D	34R	34RD4AP6	--	1.50%	--	Turbo Only
D	34R	34RD4B	--	--	--	Not In Use
D	34R	34RD4B1	--	--	--	Not In Use
D	34R	34RD4B2	--	--	--	Not In Use
D	34R	34RD4B3	--	--	--	Not In Use
D	34R	34RD4B4	--	--	--	Not In Use
D	34R	34RD4BP	--	--	--	Not In Use
D	34R	34RD4BP1	--	--	--	Not In Use
D	34R	34RD4BP2	--	--	--	Not In Use
D	34R	34RD4BP3	--	--	--	Not In Use
D	34R	34RD4BP4	--	--	--	Not In Use
D	34R	34RD4C	--	--	--	Not In Use
D	34R	34RD4C1	--	--	--	Not In Use
D	34R	34RD4C2	--	--	--	Not In Use
D	34R	34RD4C3	--	--	--	Not In Use
D	34R	34RD4C4	--	--	--	Not In Use
D	34R	34RD4CP	--	--	--	Not In Use
D	34R	34RD4CP1	--	--	--	Not In Use
D	34R	34RD4CP2	--	--	--	Not In Use
D	34R	34RD4CP3	--	--	--	Not In Use
D	34R	34RD4CP4	--	--	--	Not In Use
D	34R	34RD5A	--	7.00%	--	Turbo Only
D	34R	34RD5A1	--	5.00%	--	Turbo Only
D	34R	34RD5A2	--	5.00%	--	Turbo Only
D	34R	34RD5A3	--	1.00%	--	Turbo Only
D	34R	34RD5A4	--	1.00%	--	Turbo Only
D	34R	34RD5AP	--	2.20%	--	Turbo Only
D	34R	34RD5AP1	--	1.70%	--	Turbo Only
D	34R	34RD5AP2	--	1.70%	--	Turbo Only
D	34R	34RD5B	--	7.50%	--	Turbo Only
D	34R	34RD5B1	--	4.70%	--	Turbo Only
D	34R	34RD5B2	--	4.70%	--	Turbo Only
D	34R	34RD5B3	--	1.75%	--	Turbo Only
D	34R	34RD5B4	--	1.75%	--	Turbo Only
D	34R	34RD5C	--	3.00%	38.00%	Turbo, Prop
D	34R	34RD5C1	--	2.00%	24.00%	Turbo, Prop

Operation Type	Runway	Track Name	Jet Track %	Turboprop Track %	Prop Track %	Notes
D	34R	34RD5C2	--	2.00%	24.00%	Turbo, Prop
D	34R	34RD5C3	--	0.50%	5.50%	Turbo, Prop
D	34R	34RD5C4	--	0.50%	5.50%	Turbo, Prop
D	34R	34RD5C5	--	--	1.50%	Prop Only

Source: SEA EnvironmentalVue 2022, L&B Analysis, 2023.

Appendix B

This appendix provides information on the methodology for modeling missed approach operations in the existing and future conditions. The development of the user-defined profiles and missed approach flight tracks was coordinated with the FAA/AEE. The methodology approved by the FAA/AEE is shown in **Exhibit B-1**. FAA/AEE approval of the user-defined profiles and flight tracks was received on August 2, 2023 as shown in **Exhibit B-2**.

memorandum

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Project: Sustainable Airport Master Plan (SAMP) Near Term Projects (NTP) Environmental Assessment (EA)

To: Kandice Krull, FAA; Steve Rybolt, Port of Seattle

From: Landrum & Brown

Date: August 15, 2023

Subject: Missed Approach Operations

SECTION 1 – INTRODUCTION

Landrum & Brown (L&B) is currently assisting the Port of Seattle (Port) with preparing an Environmental Assessment (EA) for the Airport Sustainable Master Plan (SAMP) Near Term Projects (NTP) at Seattle-Tacoma International Airport (SEA or Airport). The EA is using 2022 as the existing condition year. The Day-Night Average Sound Level (DNL) noise contours will be generated using the latest version of AEDT Version 3e. This memo provides information on the aircraft types, Aircraft Noise and Performance (ANP) IDs, flight paths, operation, time of day and runway distribution, proposed user-defined profiles and AEDT flight tracks for the missed approach operations. Landrum & Brown is seeking FAA concurrence based on the recommendations in this memorandum for modeling missed approaches in the SAMP NTP EA.

SECTION 2 – STATEMENT OF BENEFIT

Currently, AEDT Version 3e does not have missed approach profiles that accurately represent the missed approach traffic at SEA. Due to the unique nature of the ground track geometry and vertical profiles for aircraft performing missed approach procedures at SEA, user-defined profiles are proposed to accurately model the noise exposure from these operations.

SECTION 3 – SUPPORTING DOCUMENTATION

Table 1 provides the 2022 missed approach operations for the selected AEDT representative Airframe, ANP ID and Engine Code from AEDT. A total of 58 airframe and engine combinations were identified in the missed approach log file. Of these 58 combinations, 29 different aircraft types with ANP data in AEDT Version 3e were identified. The ANP data is provided by aircraft manufacturers to calculate aircraft trajectories and noise by utilizing aircraft performance and noise-power-distance (NPD). In total 798 (2.2 average annual day) missed approaches occurred at SEA in 2022 based on the log file.

TABLE 1, 2022 TOTAL MISSED APPROACHES BY AIRFRAME AND ENGINE

AEDT Airframe	AEDT Engine	ANP ID	Total Missed Approaches
Airbus A300F4-600 Series	1GE020	A300-622R	1
Airbus A319-100 Series	3IA007	A319-131	5
Airbus A319-100 Series	3CM028	A319-131	1
Airbus A320-200 Series	01P08CM105	A320-211	22
Airbus A320-200 Series	1IA003	A320-232	3
Airbus A320-200 Series	01P10IA021	A320-232	2
Airbus A320-200 Series	1CM009	A320-211	2
Airbus A320-200 Series	01P10IA022	A320-232	1
Airbus A320-NEO	01P22PW163	A320-271N	3
Airbus A321-200 Series	01P10IA025	A321-232	14
Airbus A321-200 Series	01P08CM104	A321-232	6
Airbus A321-NEO	01P18PW157	A321-232	8
Airbus A321-NEO	01P20CM132	A321-232	5
Airbus A330-200 Series	2RR023	A330-343	2
Airbus A330-300 Series	2RR023	A330-343	2
Airbus A330-300 Series	4GE080	A330-301	1
Airbus A330-300 Series	9PW094	A330-301	1
Airbus A330-300 Series	9PW095	A330-301	1
Airbus A330-900N Series (Neo)	02P23RR141	A330-343	1
Airbus A350-900 series	01P18RR124	A350-941	3

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AEDT Airframe	AEDT Engine	ANP ID	Total Missed Approaches
Boeing 737-300 Series	1CM005	737300	1
Boeing 737-700 Series	8CM063	737700	20
Boeing 737-700 Series	3CM031	737700	10
Boeing 737-700 Series	3CM032	737700	2
Boeing 737-8	01P20CM136	7378MAX	3
Boeing 737-8	01P20CM140	7378MAX	2
Boeing 737-800 Series	**3CM034**	**737800**	**62**
Boeing 737-800 Series	**8CM051**	**737800**	**61**
Boeing 737-800 Series	**01P11CM116**	**737800**	**7**
Boeing 737-9	01P20CM140	7378MAX	36
Boeing 737-9	01P20CM136	7378MAX	2
Boeing 737-900-ER	**01P11CM121**	**737800**	**164**
Boeing 737-900-ER	**01P11CM125**	**737800**	**6**
Boeing 747-400 Series	1GE024	747400	5
Boeing 747-400BCF	1GE024	747400	2
Boeing 747-8F	8GENX1	7478	1
Boeing 757-200 Series	4PW072	757PW	8
Boeing 757-300 Series	XPW204	757300	5
Boeing 767-300 ER	1PW043	7673ER	1
Boeing 767-300 ER	2GE055	7673ER	1
Boeing 767-300 ER Freighter	1GE030	7673ER	10
Boeing 777 Freighter	01P21GE216	777200	2
Boeing 777-300 ER	01P21GE217	7773ER	3
Boeing 787-10 Dreamliner	17GE179	7879	2
Boeing 787-10 Dreamliner	02P23RR134	7879	1
Boeing 787-8 Dreamliner	11GE138	7878R	4
Boeing 787-9 Dreamliner	12RR067	7879	1
Boeing 787-9 Dreamliner	02P23RR131	7879	1
Boeing 787-9 Dreamliner	12RR068	7879	1
Boeing MD-11 Freighter	1GE031	MD11GE	4
Bombardier Challenger 350	01P14HN011	CL600	1
Bombardier CS100	01P20PW183	737700	26
Bombardier CS300	01P20PW184	737700	7
Bombardier de Havilland Dash 8 Q400	PW150A	DHC830	84
Cessna 208 Caravan	PT6A14	CNA208	3
Embraer ERJ175-LR	**01P08GE197**	**EMB175**	**162**
Honda HA-420 Hondajet	PW610F	CNA680	2
Raytheon Beech 99	PT6A36	DHC6	1
Grand Total			**798**

Source: SEA and L&B (2023)

As shown in **Table 2**, the ANP ID 737800 accounted for 300 annual missed approach operations (0.8 average annual day operations) and the EMB175 accounted for 162 annual missed approach operations (0.4 average annual day operations). L&B is proposing the creation of user-defined profiles for the 737800 and EMB175, given they represent the majority of missed approaches compared to other aircraft types and because these ANP IDs represent the most noise-dominant group of operations compared to the remaining missed approaches performed by other aircraft types.

TABLE 2, 2022 MISSED APPROACHES BY ANP ID

ANP ID	Annual Missed Approaches	Average Annual Day Operations
737800	**300**	**0.8**
EMB175	**162**	**0.4**
DHC830	84	0.2
737700	65	0.2
7378MAX	43	0.1
A321-232	33	0.1
A320-211	24	0.1
7673ER	12	0.0

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ANP ID	Annual Missed Approaches	Average Annual Day Operations
757PW	8	0.0
747400	7	0.0
7879	6	0.0
A320-232	6	0.0
A319-131	6	0.0
757300	5	0.0
A330-343	5	0.0
7878R	4	0.0
MD11GE	4	0.0
A320-271N	3	0.0
7773ER	3	0.0
CNA208	3	0.0
A330-301	3	0.0
A350-941	3	0.0
777200	2	0.0
CNA680	2	0.0
A300-622R	1	0.0
7478	1	0.0
737300	1	0.0
CL600	1	0.0
DHC6	1	0.0
Grand Total	**798**	**2.2**

Source: SEA and L&B (2023)

The annual missed approach operations on each runway during the daytime and nighttime hours are provided in **Table 3**. As shown, a majority of the operations occurred on Runways 16R and 34L, therefore L&B is recommending modeling the 2.2 average annual day missed approach operations on these two runways.

TABLE 3, 2022 DAY/NIGHT SPLIT BY RUNWAY

Runway	Daytime	Nighttime	Total
16C	9	4	13
16L	27	6	33
16R	**549**	**40**	**589**
34C	2	1	3
34L	**145**	**4**	**149**
34R	8	3	11
Grand Total	**740**	**58**	**798**

Source: SEA and L&B (2023)

Exhibit 1 shows missed approach radar data from the Port of Seattle EnvironmentalVue Noise Monitoring System and proposed representative AEDT flight tracks on Runway 16R. **Exhibit 2** shows missed approach radar data and proposed representative AEDT flight tracks on Runway 34L. This radar data is a sample set of data for daytime and nighttime operations at SEA in 2022 and was utilized to propose representative AEDT flight tracks and user-defined profiles. **Table 4** lists the percentage utilization per missed approach track.

TABLE 4, AEDT TRACK PERCENTAGE UTILIZATIOIN

Track Name	% Utilization
16R_MA_A	18.9%
16R_MA_B	25.0%
16R_MA_C	19.3%
16R_MA_D	17.5%
16R_MA_E	19.3%
34L_MA_A	32.0%
34L_MA_B	60.0%
34L_MA_C	8.0%

Source: SEA and L&B (2023)

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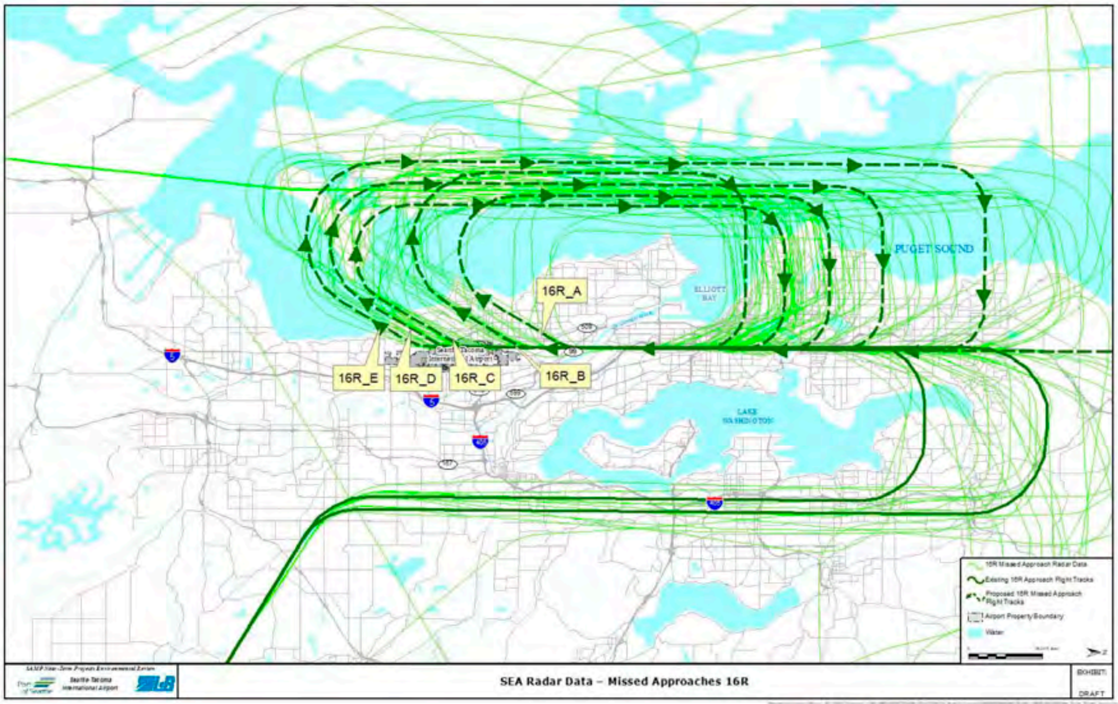
Exhibit 1: SEA 16R Missed Approaches



Source: SEA and L&B (2023)

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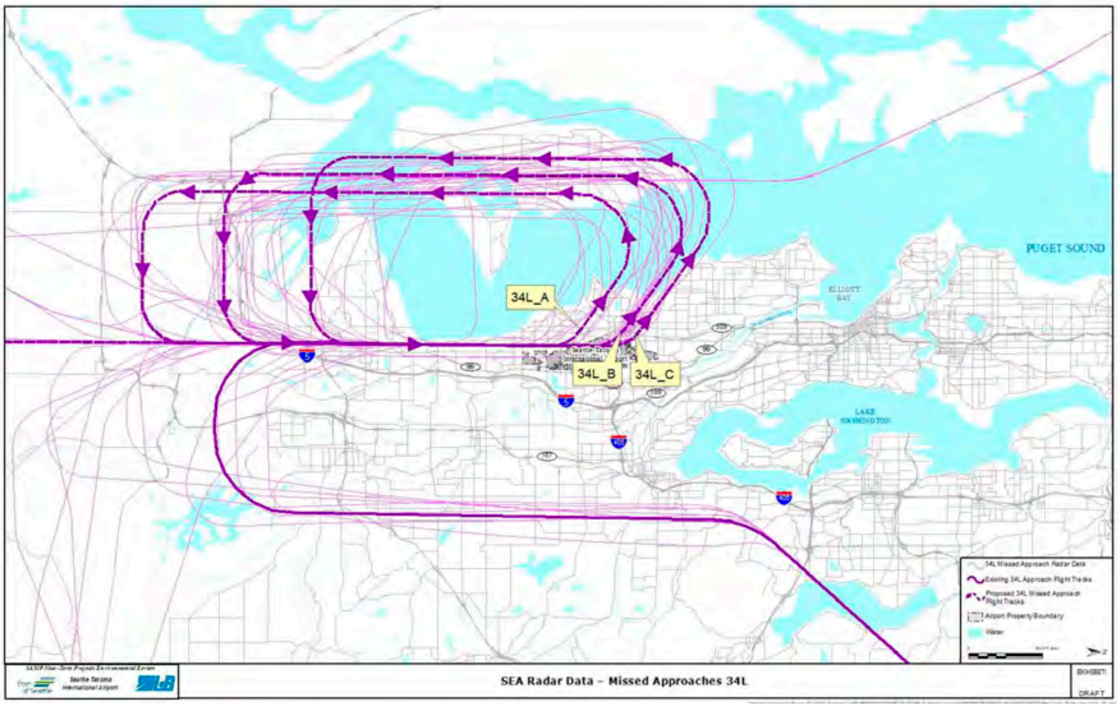
Exhibit 2: SEA 34L Missed Approaches



Source: SEA and L&B (2023)

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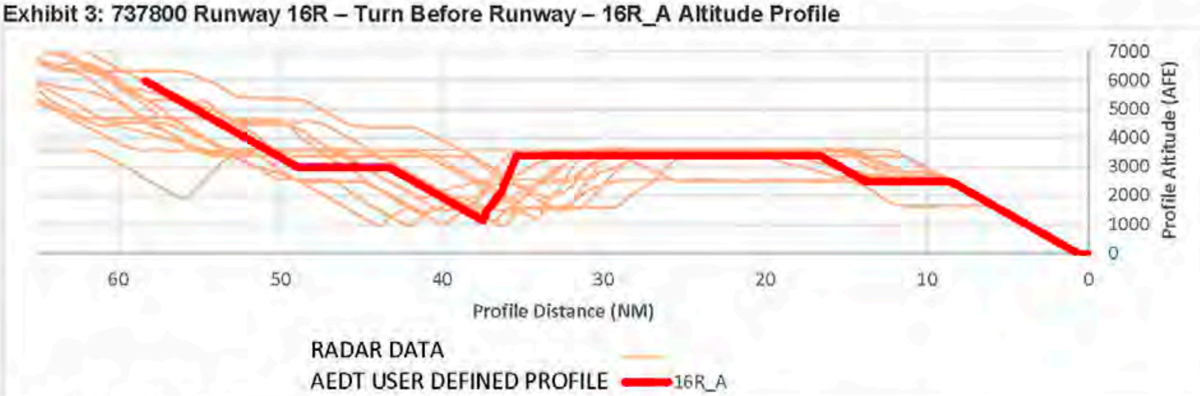
SECTION 3.1 – AIRCRAFT PROFILES

The following information provides L&B's proposed user-defined profiles assigned to the corresponding proposed AEDT flight tracks, shown in Exhibit 1 and Exhibit 2, for each ANP ID (737800 and EMB175). The proposed missed approach profiles are generally based on the STANDARD arrival procedure for the initial arrival portion and the STANDARD Circuit and Touch and Go profiles for the climb and level segments for the 737800 and the EMB175. User-defined profiles are based on altitude, speed and thrust data. Altitudes were obtained using actual missed approach altitudes collected by the Port of Seattle EnvironmentalVue Noise Monitoring System. Speed data and thrust data was obtained from AEDT flight performance calculations because the Port of Seattle EnvironmentalVue Noise Monitoring System does not provide reliable speed and thrust data. Note that the length of the radar tracks downwind segments varied. Therefore, the focus each of the user-defined profiles was to represent the missed approach (decision point) altitude, downwind level segment altitude, and step-down altitude prior to final descent of the radar tracks in the vicinity of the AEDT tracks at the initial turn to the west. The length of the downwind level segment was estimated to cover the wide range of downwind segment lengths and base leg turn locations. Similarly, the focus of the AEDT missed approach backbone track geometry was to cover the location of the initial turns to the west and to cover the wide range of the remaining radar track geometry. Additionally, in order to best represent the wide dispersion of the missed approach radar tracks, multiple backbone AEDT missed approach tracks were developed. Given the radar coverage of the AEDT representative backbone tracks, subtracks were not developed.

<u>**737800 16R Graphs – Turn Before Runway**</u>

This section of graphs shows the vertical profiles of radar missed approaches on Runway 16R starting the missed approach turn before the runway. The following graphs show the 737800 proposed user-defined profile for AEDT flight track 16R_A. **Exhibit 3** compares the radar flight track altitudes and the proposed 16R_A user-defined profile. **Exhibit 4** shows the ground speeds and **Exhibit 5** shows the thrust values calculated by AEDT for the 16R_A user-defined profile based on the parameters in **Table 5**.

Exhibit 3: 737800 Runway 16R – Turn Before Runway – 16R_A Altitude Profile



Source: SEA and L&B (2023)

Exhibit 4: 737800 Runway 16R – Turn Before Runway – 16R_A Ground Speed Profile

Source: AEDT Version 3e and L&B (2023)

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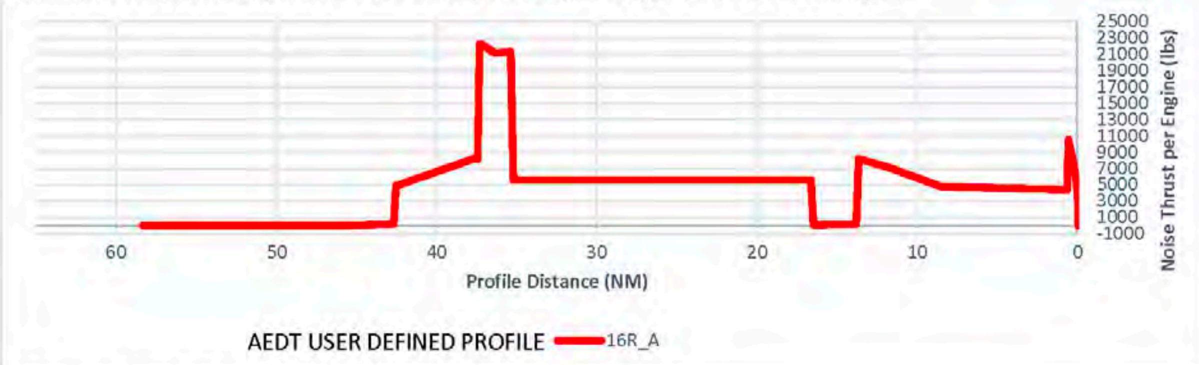
Exhibit 5: 737800 Runway 16R – Turn Before Runway – 16R_A Thrust Values Profile



Source: AEDT Version 3e and L&B (2023)

The following graphs show the 737800 proposed user-defined profile for AEDT flight track 16R_B. **Exhibit 6** compares the radar flight track altitudes and the proposed 16R_B user-defined profile. **Exhibit 7** shows the ground speeds and **Exhibit 8** shows the thrust values calculated by AEDT for the 16R_B user-defined profile based on the parameters in **Table 5**.

Exhibit 6: 737800 Runway 16R – Turn Before Runway – 16R_B Altitude Profile

Source: SEA and L&B (2023)

Exhibit 7: 737800 Runway 16R – Turn Before Runway – 16R_B Ground Speed Profile

Source: AEDT Version 3e and L&B (2023)

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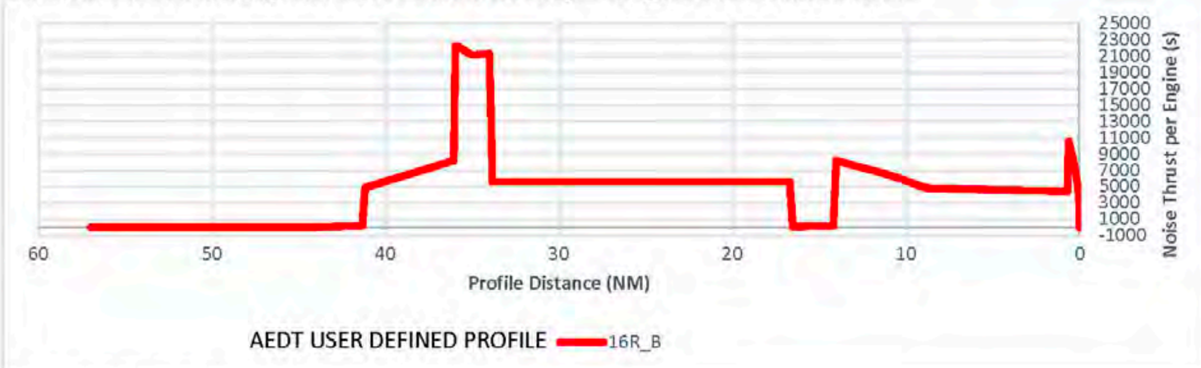
Exhibit 8: 737800 Runway 16R – Turn Before Runway – 16R_B Thrust Values Profile

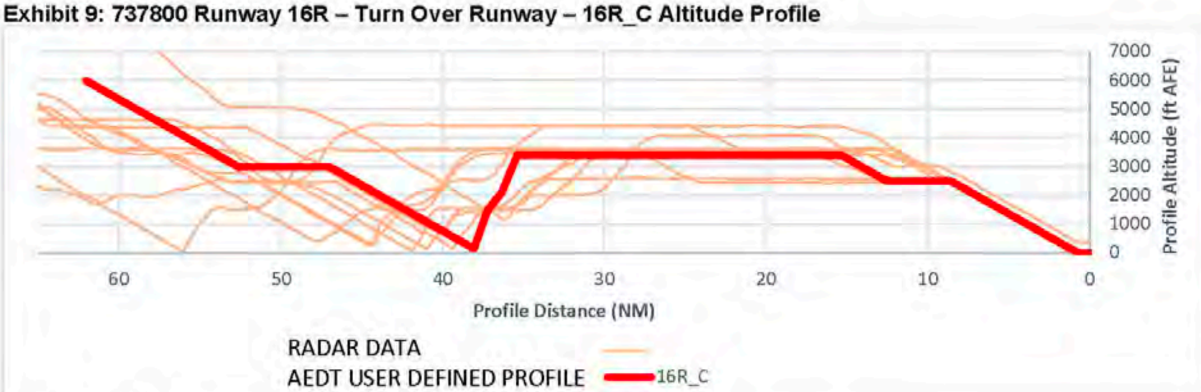


Source: AEDT Version 3e and L&B (2023)

737800 16R Graphs – Turn Over Runway

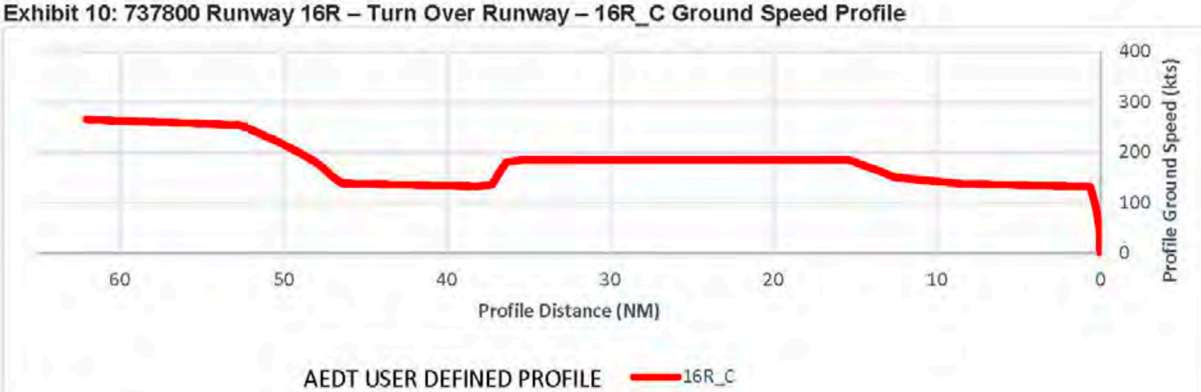
This section of graphs shows the vertical profiles of radar missed approaches on Runway 16R starting the missed approach turn over the runway. The following graphs show the 737800 proposed user-defined profile for AEDT flight track 16R_C. **Exhibit 9** compares the radar flight track altitudes and the proposed 16R_C user-defined profile. **Exhibit 10** shows the ground speeds and **Exhibit 11** shows the thrust values calculated by AEDT for the 16R_C user-defined profile based on the parameters in **Table 5**.

Exhibit 9: 737800 Runway 16R – Turn Over Runway – 16R_C Altitude Profile



Source: SEA and L&B (2023)

Exhibit 10: 737800 Runway 16R – Turn Over Runway – 16R_C Ground Speed Profile



Source: AEDT Version 3e and L&B (2023)

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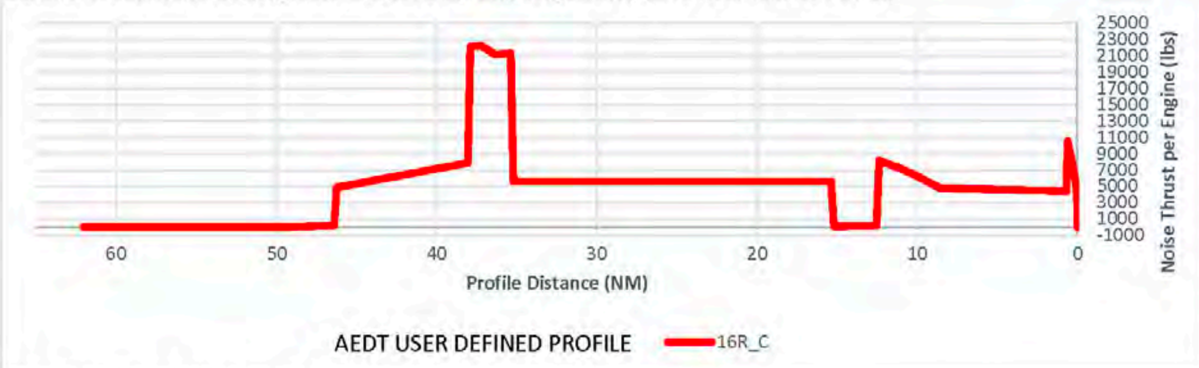
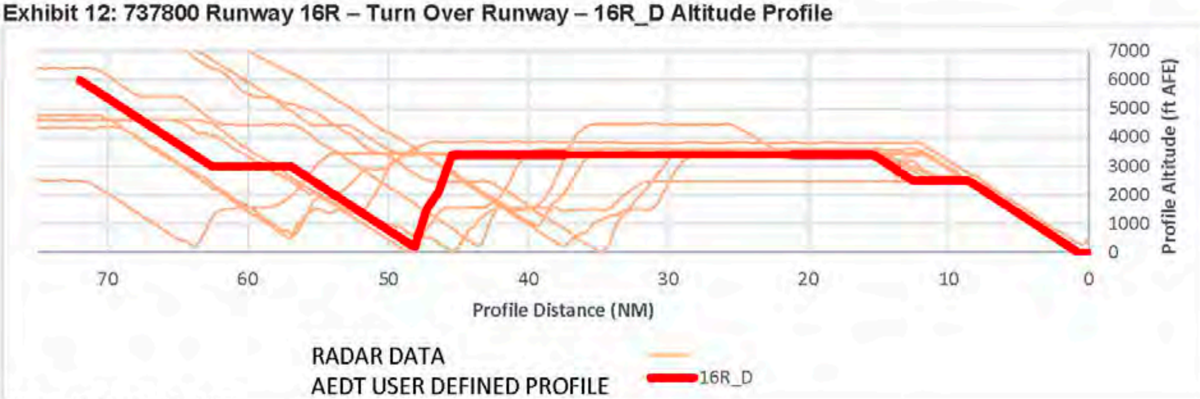
Exhibit 11: 737800 Runway 16R – Turn Over Runway – 16R_C Thrust Values Profile



Source: AEDT Version 3e and L&B (2023)

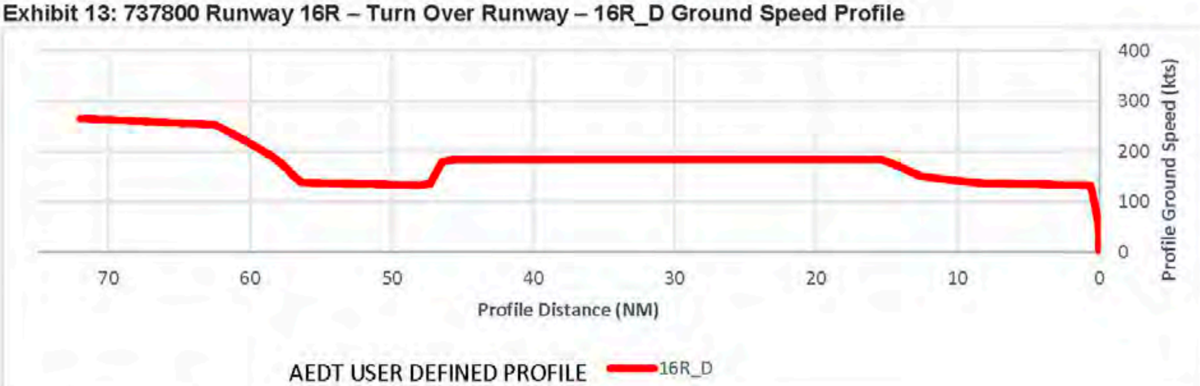
The following graphs show the 737800 proposed user-defined profile for AEDT flight track 16R_D. **Exhibit 12** compares the radar flight track altitudes and the proposed 16R_D user-defined profile. **Exhibit 13** shows the ground speeds and **Exhibit 14** shows the thrust values calculated by AEDT for the 16R_D user-defined profile based on the parameters in **Table 5**.

Exhibit 12: 737800 Runway 16R – Turn Over Runway – 16R_D Altitude Profile



Source: SEA and L&B (2023)

Exhibit 13: 737800 Runway 16R – Turn Over Runway – 16R_D Ground Speed Profile



Source: AEDT Version 3e and L&B (2023)

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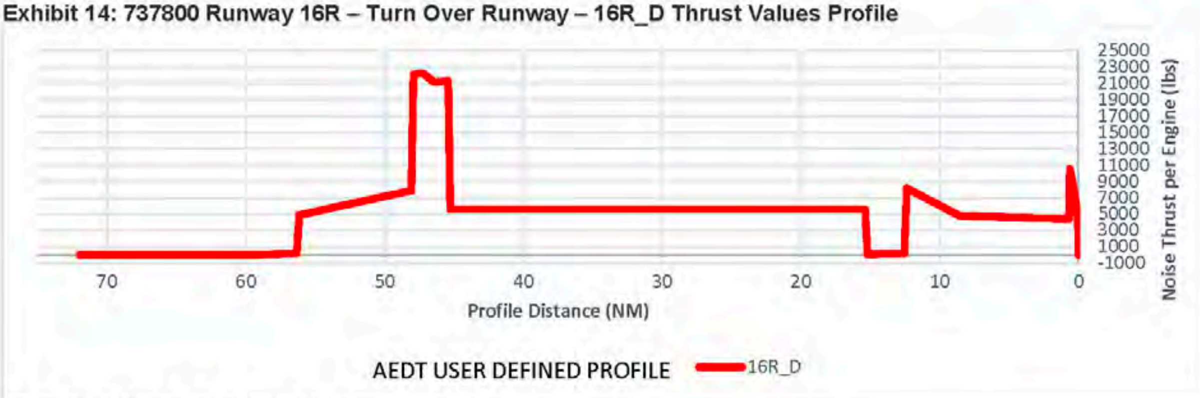
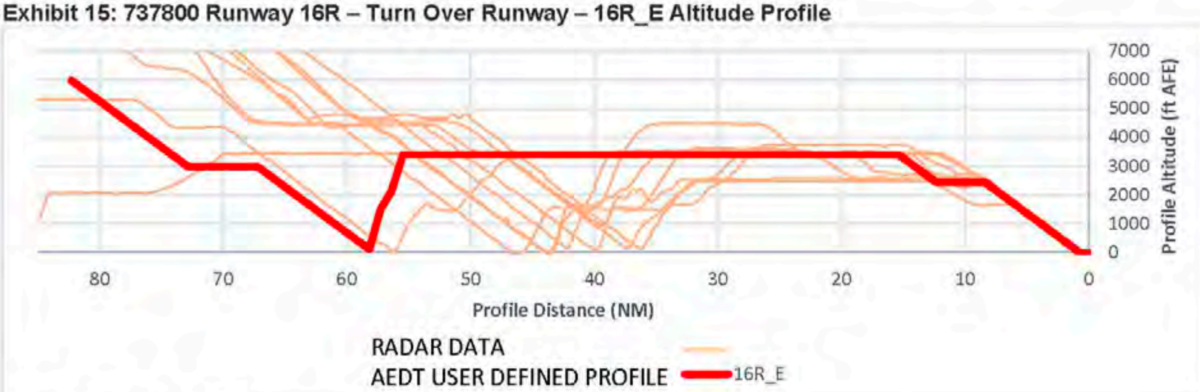
Exhibit 14: 737800 Runway 16R – Turn Over Runway – 16R_D Thrust Values Profile



Source: AEDT Version 3e and L&B (2023)

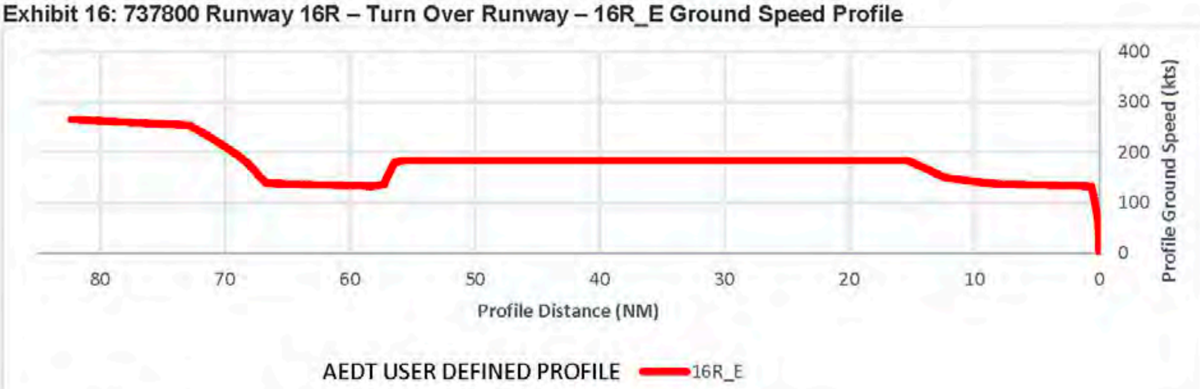
The following graphs show the 737800 proposed user-defined profile for AEDT flight track 16R_E. **Exhibit 15** compares the radar flight track altitudes and the proposed 16R_E user-defined profile. **Exhibit 16** shows the ground speeds and **Exhibit 17** shows the thrust values calculated by AEDT for the 16R_E user-defined profile based on the parameters in **Table 5**.

Exhibit 15: 737800 Runway 16R – Turn Over Runway – 16R_E Altitude Profile



Source: SEA and L&B (2023)

Exhibit 16: 737800 Runway 16R – Turn Over Runway – 16R_E Ground Speed Profile



Source: AEDT Version 3e and L&B (2023)

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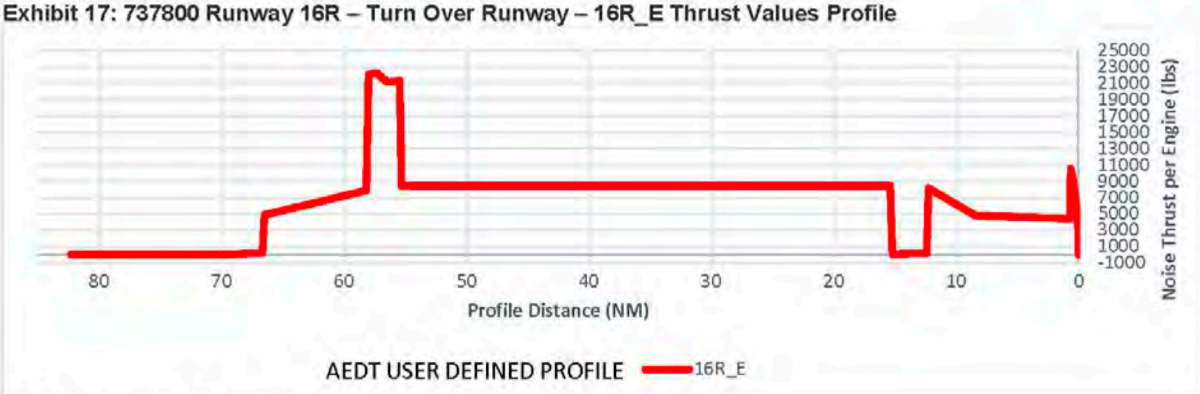
Exhibit 17: 737800 Runway 16R – Turn Over Runway – 16R_E Thrust Values Profile

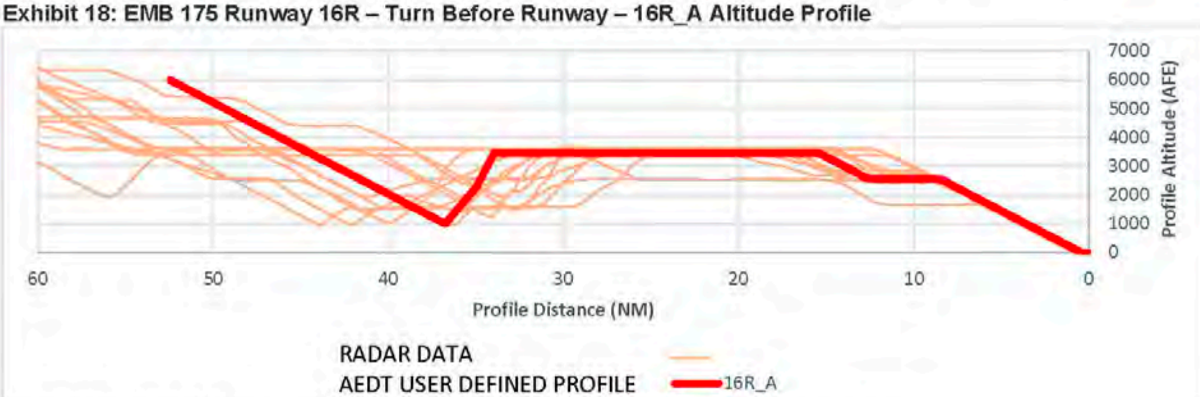


Source: AEDT Version 3e and L&B (2023)

EMB175 16R Graphs Before Runway

This section of graphs shows the vertical profiles of radar missed approaches on Runway 16R starting the missed approach turn before the runway. The following graphs show the EMB175 proposed user-defined profile for AEDT flight track 16R_A. **Exhibit 18** compares the radar flight track altitudes and the proposed 16R_A user-defined profile. **Exhibit 19** shows the ground speeds and **Exhibit 20** shows the thrust values calculated by AEDT for the 16R_A user-defined profile based on the parameters in **Table 5**.

Exhibit 18: EMB 175 Runway 16R – Turn Before Runway – 16R_A Altitude Profile



Source: SEA and L&B (2023)

Exhibit 19: EMB 175 Runway 16R – Turn Before Runway – 16R_A Ground Speed Profile

Source: AEDT Version 3e and L&B (2023)

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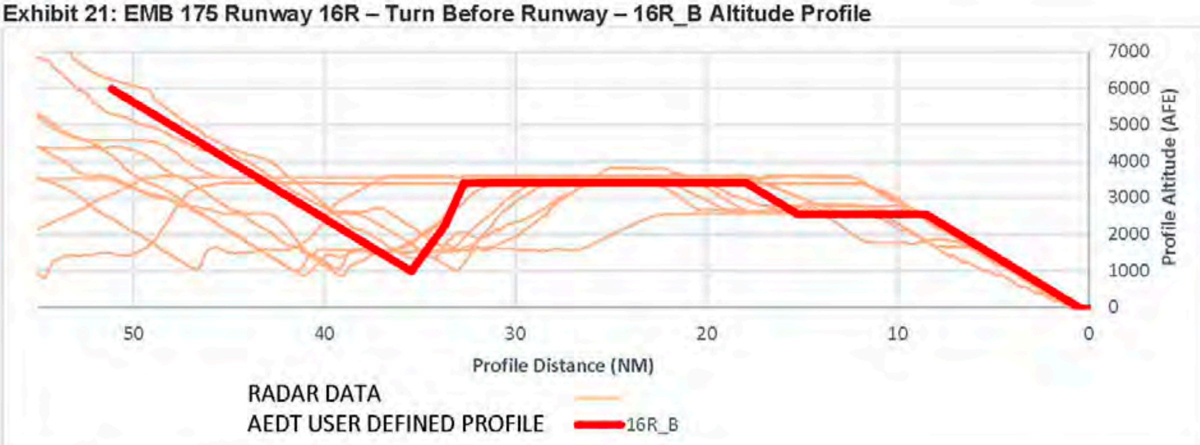
Exhibit 20: EMB 175 Runway 16R – Turn Before Runway – 16R_A Thrust Values Profile

Source: AEDT Version 3e and L&B (2023)

The following graphs show the EMB175 proposed user-defined profile for AEDT flight track 16R_B. **Exhibit 21** compares the radar flight track altitudes and the proposed 16R_B user-defined profile. **Exhibit 22** shows the ground speeds and **Exhibit 23** shows the thrust values calculated by AEDT for the 16R_B user-defined profile based on the parameters in **Table 5**.

Exhibit 21: EMB 175 Runway 16R – Turn Before Runway – 16R_B Altitude Profile



Source: SEA and L&B (2023)

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Exhibit 22: EMB 175 Runway 16R – Turn Before Runway – 16R_B Ground Speed Profile

Source: AEDT Version 3e and L&B (2023)

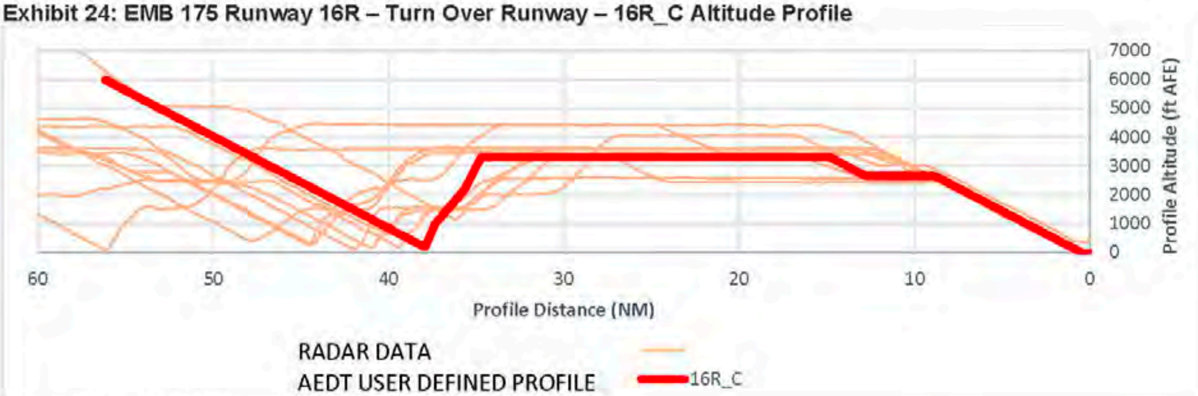
Exhibit 23: EMB 175 Runway 16R – Turn Before Runway – 16R_B Thrust Values Profile

Source: AEDT Version 3e and L&B (2023)

<u>**EMB175 16R Graphs – Turn Over Runway**</u>

This section of graphs shows the vertical profiles of radar missed approaches on Runway 16R starting the missed approach turn over the runway. The following graphs show the EMB175 proposed user-defined profile for AEDT flight track 16R_C. **Exhibit 24** compares the radar flight track altitudes and the proposed 16R_C user-defined profile. **Exhibit 25** shows the ground speeds and **Exhibit 26** shows the thrust values calculated by AEDT for the 16R_C user-defined profile based on the parameters in **Table 5**.

Exhibit 24: EMB 175 Runway 16R – Turn Over Runway – 16R_C Altitude Profile



Source: SEA and L&B (2023)

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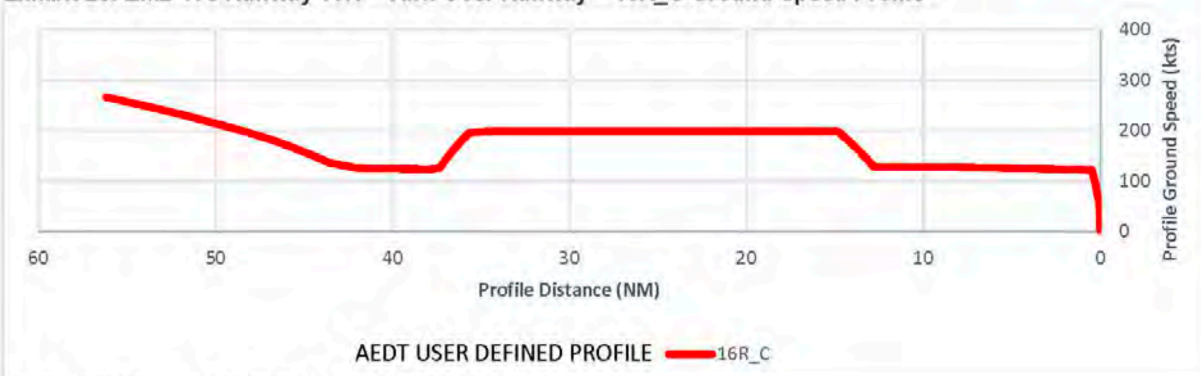
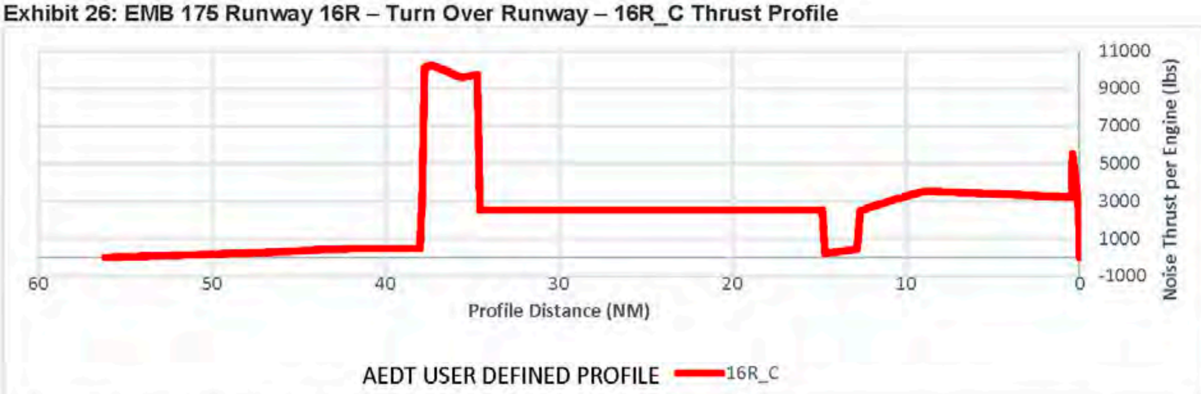
Exhibit 25: EMB 175 Runway 16R – Turn Over Runway – 16R_C Ground Speed Profile



Source: AEDT Version 3e and L&B (2023)

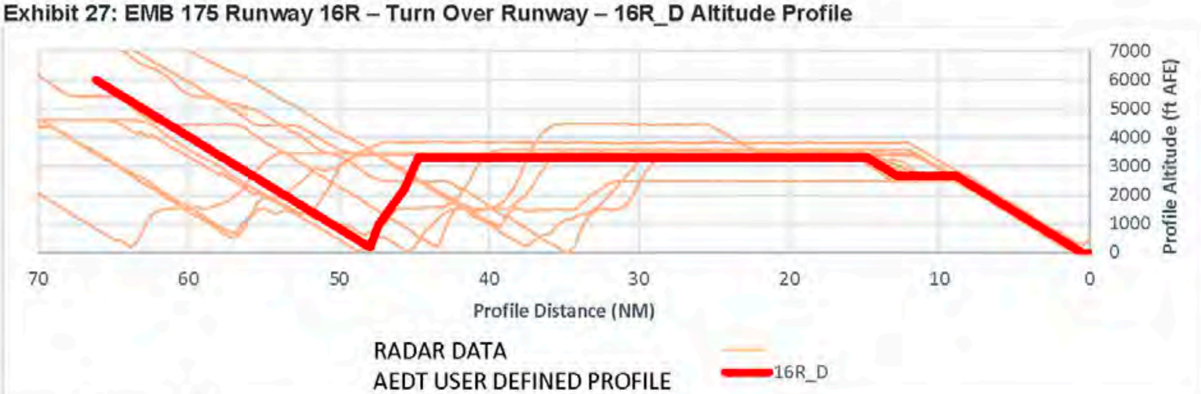
Exhibit 26: EMB 175 Runway 16R – Turn Over Runway – 16R_C Thrust Profile



Source: AEDT Version 3e and L&B (2023)

The following graphs show the EMB175 proposed user-defined profile for AEDT flight track 16R_D. **Exhibit 27** compares the radar flight track altitudes and the proposed 16R_D user-defined profile. **Exhibit 28** shows the ground speeds and **Exhibit 29** shows the thrust values calculated by AEDT for the 16R_D user-defined profile based on the parameters in **Table 5**.

Exhibit 27: EMB 175 Runway 16R – Turn Over Runway – 16R_D Altitude Profile



Source: SEA and L&B (2023)

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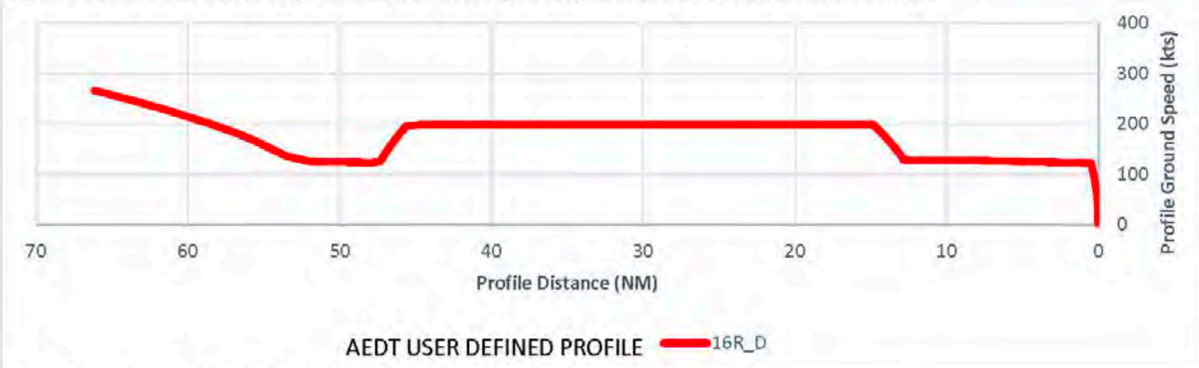
Exhibit 28: EMB 175 Runway 16R – Turn Over Runway – 16R_D Ground Speed Profile



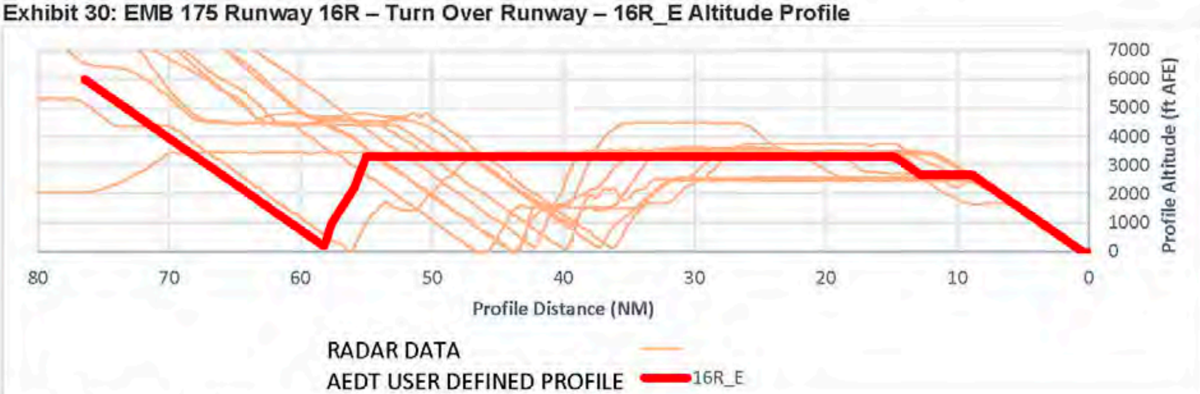
Source: AEDT Version 3e and L&B (2023)

Exhibit 29: EMB 175 Runway 16R – Turn Over Runway – 16R_D Thrust Values Profile

Source: AEDT Version 3e and L&B (2023)

The following graphs show the EMB175 proposed user-defined profile for AEDT flight track 16R_E. **Exhibit 30** compares the radar flight track altitudes and the proposed 16R_E user-defined profile. **Exhibit 31** shows the ground speeds and **Exhibit 32** shows the thrust values calculated by AEDT for the 16R_E user-defined profile based on the parameters in **Table 5**.

Exhibit 30: EMB 175 Runway 16R – Turn Over Runway – 16R_E Altitude Profile



Source: SEA and L&B (2023)

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Exhibit 31: EMB 175 Runway 16R – Turn Over Runway – 16R_E Ground Speed Profile

Source: AEDT Version 3e and L&B (2023)

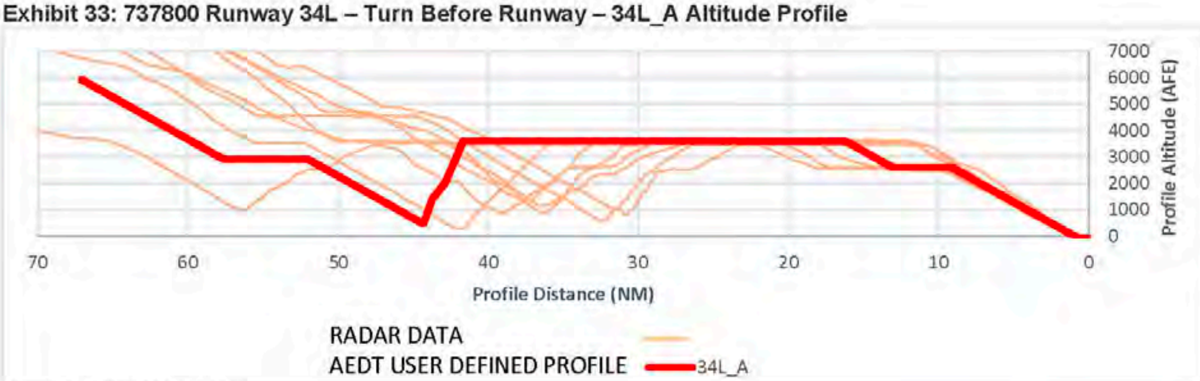
Exhibit 32: EMB 175 Runway 16R – Turn Over Runway – 16R_E Thrust Values Profile

Source: AEDT Version 3e and L&B (2023)

737800 34L Graphs - Turn Before Runway

This section of graphs shows the vertical profiles of radar missed approaches on Runway 34L starting the missed approach turn before the runway The following graphs show the 737800 proposed user-defined profile for AEDT flight track 34L_A. **Exhibit 33** compares the radar flight track altitudes and the proposed 34L_A user-defined profile. **Exhibit 34** shows the ground speeds and **Exhibit 35** shows the thrust values calculated by AEDT for the 34L_A user-defined profile based on the parameters in **Table 5**.

Exhibit 33: 737800 Runway 34L – Turn Before Runway – 34L_A Altitude Profile



Source: SEA and L&B (2023)

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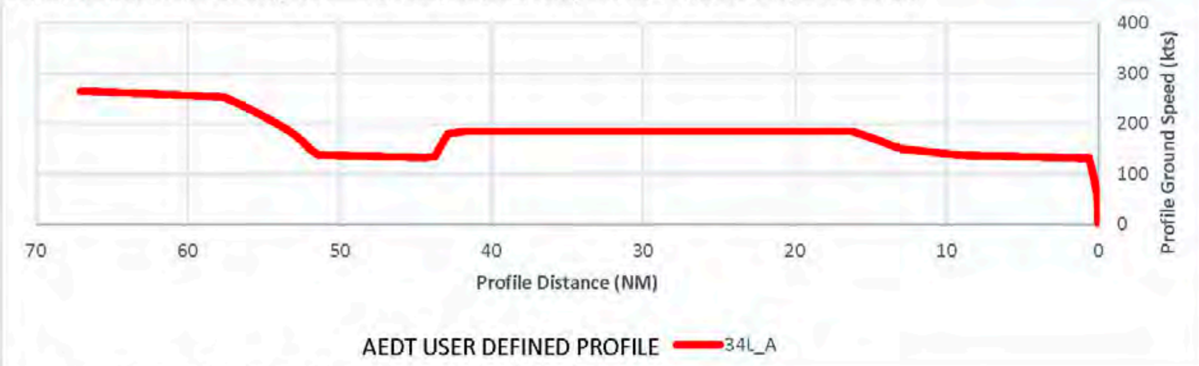
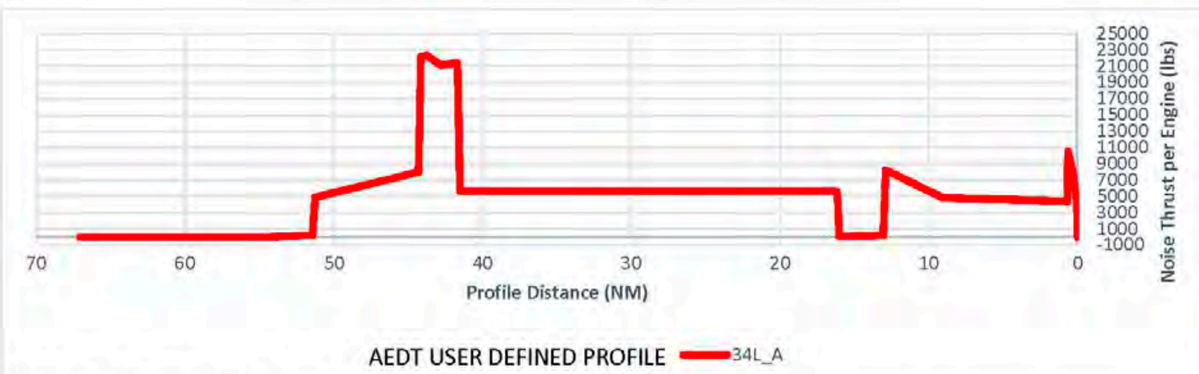
Exhibit 34: 737800 Runway 34L – Turn Before Runway – 34L_A Ground Speed Profile



Source: AEDT Version 3e and L&B (2023)

Exhibit 35: 737800 Runway 34L – Turn Before Runway – 34L_A Thrust Values Profile



Source: AEDT Version 3e and L&B (2023)

<u>**737800 34L Graphs – Turn Over Runway**</u>

This section of graphs shows the vertical profiles of radar missed approaches on Runway 34L starting the missed approach turn over the runway. The following graphs show the 737800 proposed user-defined profile for AEDT flight track 34L_B. **Exhibit 36** compares the radar flight track altitudes and the proposed 34L_B user-defined profile. **Exhibit 37** shows the ground speeds and **Exhibit 38** shows the thrust values calculated by AEDT for the 34L_B user-defined profile based on the parameters in **Table 5**.

Exhibit 36: 737800 Runway 34L – Turn Over Runway – 34L_B Altitude Profile

Source: SEA and L&B (2023)

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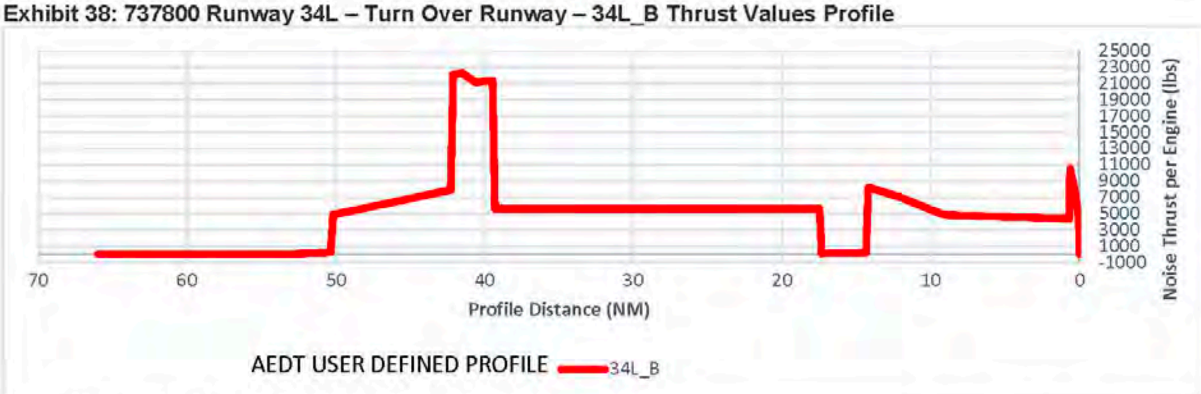
Exhibit 37: 737800 Runway 34L – Turn Over Runway – 34L_B Ground Speed Profile

Source: AEDT Version 3e and L&B (2023)

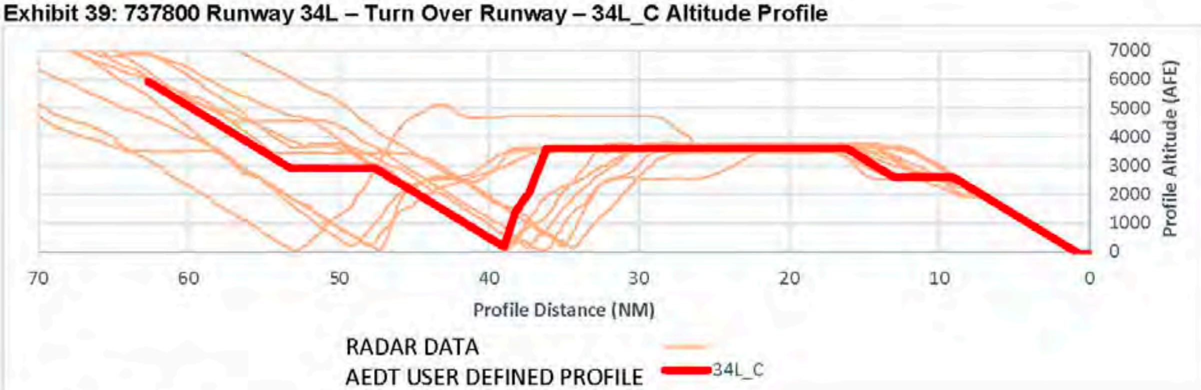
Exhibit 38: 737800 Runway 34L – Turn Over Runway – 34L_B Thrust Values Profile



Source: AEDT Version 3e and L&B (2023)

The following graphs show the 737800 proposed user-defined profile for AEDT flight track 34L_C. **Exhibit 39** compares the radar flight track altitudes and the proposed 34L_C user-defined profile. **Exhibit 40** shows the ground speeds and **Exhibit 41** shows the thrust values calculated by AEDT for the 34L_C user-defined profile based on the parameters in **Table 5**.

Exhibit 39: 737800 Runway 34L – Turn Over Runway – 34L_C Altitude Profile



Source: SEA and L&B (2023)

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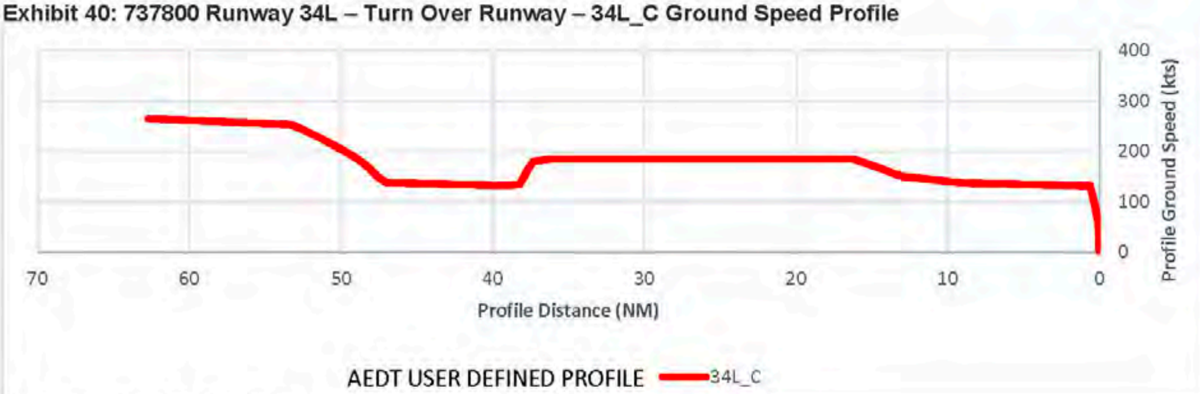
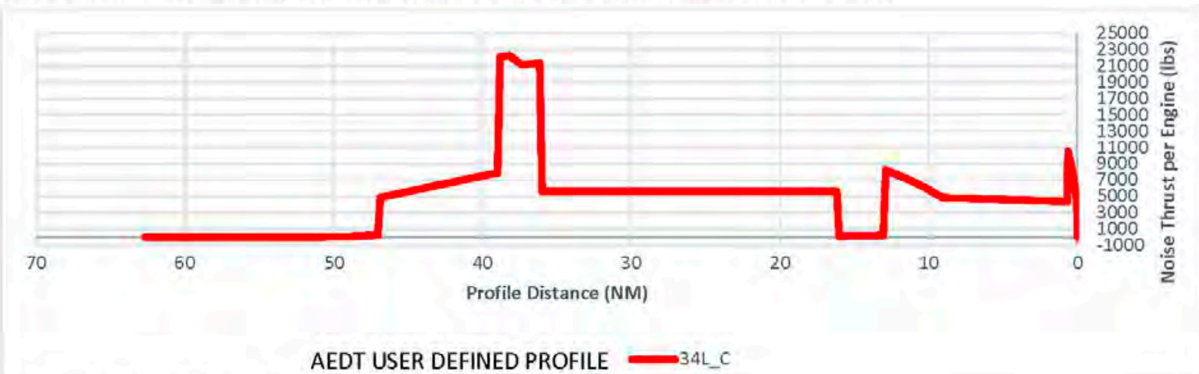
Exhibit 40: 737800 Runway 34L – Turn Over Runway – 34L_C Ground Speed Profile



Source: AEDT Version 3e and L&B (2023)

Exhibit 41: 737800 Runway 34L – Turn Over Runway – 34L_C Thrust Values Profile

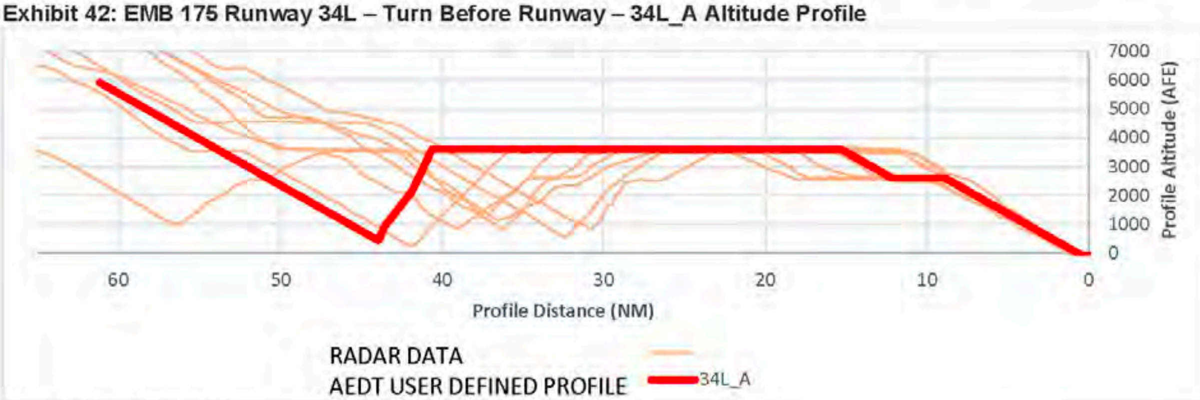


Source: AEDT Version 3e and L&B (2023)

EMB175 34L Graphs – Turn Before Runway

This section of graphs shows the vertical profiles of radar missed approaches on Runway 34L starting the missed approach turn before the runway. The following graphs show the EMB175 proposed user-defined profile for AEDT flight track 34L_A. **Exhibit 42** compares the radar flight track altitudes and the proposed 34L_A user-defined profile. **Exhibit 43** shows the ground speeds and **Exhibit 44** shows the thrust values calculated by AEDT for the 34L_A user-defined profile based on the parameters in **Table 5**.

Exhibit 42: EMB 175 Runway 34L – Turn Before Runway – 34L_A Altitude Profile



Source: SEA and L&B (2023)

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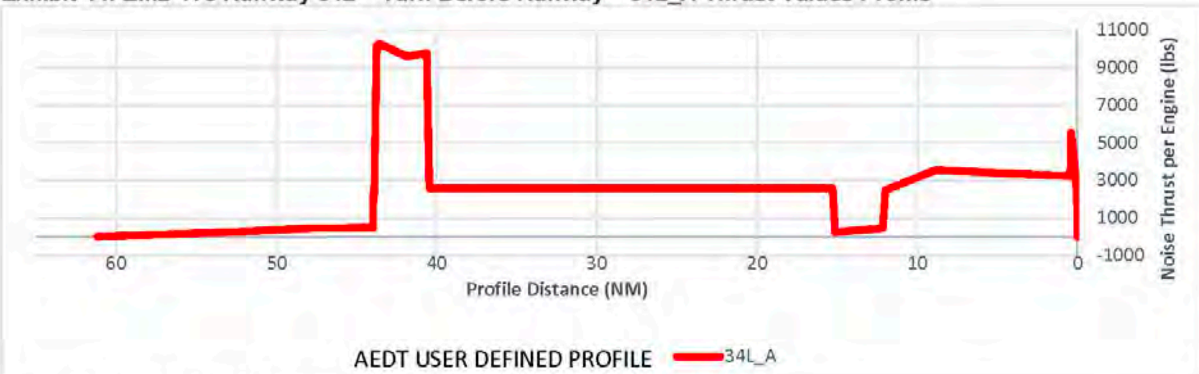
Exhibit 43: EMB 175 Runway 34L – Turn Before Runway – 34L_A Ground Speed Profile

Source: AEDT Version 3e and L&B (2023)

Exhibit 44: EMB 175 Runway 34L – Turn Before Runway – 34L_A Thrust Values Profile



Source: AEDT Version 3e and L&B (2023)

<u>EMB175 34L Graphs – Turn Over Runway</u>

This section of graphs shows the vertical profiles of radar missed approaches on Runway 34L starting the missed approach turn over the runway. The following graphs show the EMB175 proposed user-defined profile for AEDT flight track 34L_B. **Exhibit 45** compares the radar flight track altitudes and the proposed 34L_B user-defined profile. **Exhibit 46** shows the ground speeds and **Exhibit 47** shows the thrust values calculated by AEDT for the 34L_B user-defined profile based on the parameters in **Table 5**.

Exhibit 45: EMB 175 Runway 34L – Turn Over Runway – 34L_B Altitude Profile

Source: SEA and L&B (2023)

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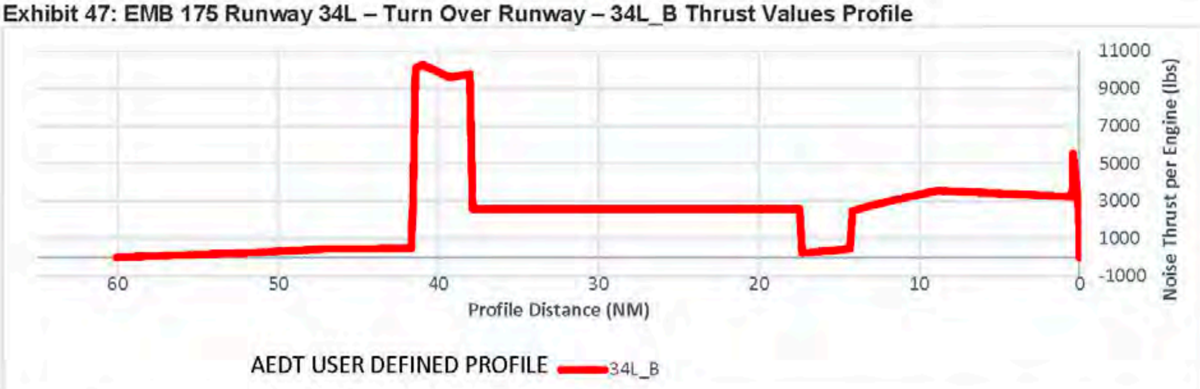
Exhibit 46: EMB 175 Runway 34L – Turn Over Runway – 34L_B Ground Speed Profile

Source: AEDT Version 3e and L&B (2023)

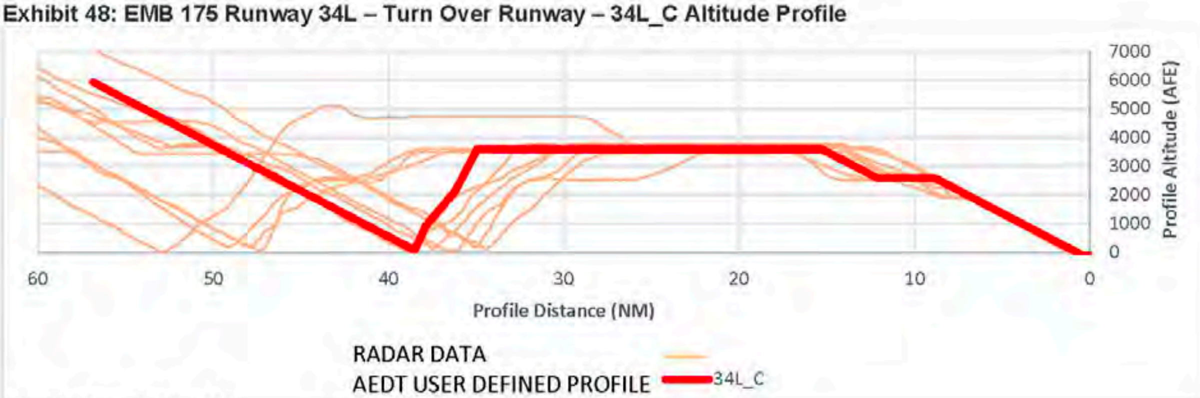
Exhibit 47: EMB 175 Runway 34L – Turn Over Runway – 34L_B Thrust Values Profile



Source: AEDT Version 3e and L&B (2023)

The following graphs show the EMB175 proposed user-defined profile for AEDT flight track 34L_C. **Exhibit 48** compares the radar flight track altitudes and the proposed 34L_C user-defined profile. **Exhibit 49** shows the ground speeds and **Exhibit 50** shows the thrust values calculated by AEDT for the 34L_C user-defined profile based on the parameters in **Table 5**.

Exhibit 48: EMB 175 Runway 34L – Turn Over Runway – 34L_C Altitude Profile



Source: SEA and L&B (2023)

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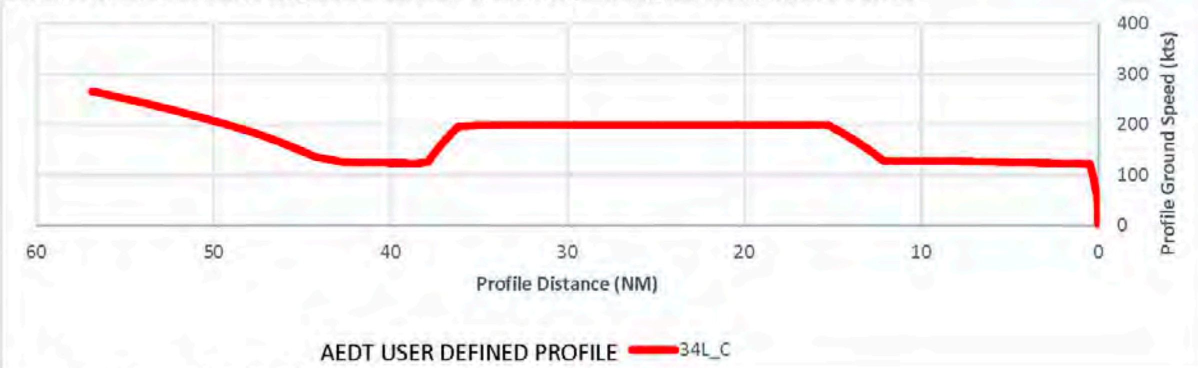
Exhibit 49: EMB 175 Runway 34L – Turn Over Runway – 34L_C Ground Speed Profile



Source: AEDT Version 3e and L&B (2023)

Exhibit 50: EMB 175 Runway 34L – Turn Over Runway – 34L_C Thrust Profile

Source: AEDT Version 3e and L&B (2023)

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AEDT Missed Approach Procedure Profile Segments

Table 5 lists the procedure profile steps used to create the proposed user-defined profiles for the 737800 and the EMB175.

TABLE 5, MISSED APPROACH PROCEDURE SEGMENTS

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	STEP_NUM	FLAP_ID	STEP_TYPE	THR_TYPE	PARAM1	PARAM2	PARAM3
737800MA_A_X2	A	STANDARDMA_16R_A_X2	1	1	A_00	F		6000	248.93	3
737800MA_A_X2	A	STANDARDMA_16R_A_X2	1	2	A_00	W	I	3000	249.5	25437
737800MA_A_X2	A	STANDARDMA_16R_A_X2	1	3	A_01	W	I	3000	187.18	3671
737800MA_A_X2	A	STANDARDMA_16R_A_X2	1	4	A_05	W	I	3000	174.66	5209
737800MA_A_X2	A	STANDARDMA_16R_A_X2	1	5	A_15	F		3000	151.41	3
737800MA_A_X2	A	STANDARDMA_16R_A_X2	1	6	A_30	D		2817	139.11	3
737800MA_A_X2	A	STANDARDMA_16R_A_X2	1	7	A_30	V		1168	139.11	500
737800MA_A_X2	A	STANDARDMA_16R_A_X2	1	8	T_05	C	T	1500	0	0
737800MA_A_X2	A	STANDARDMA_16R_A_X2	1	9	T_05	A	T	1885.7	181.7	0
737800MA_A_X2	A	STANDARDMA_16R_A_X2	1	10	T_05	C	T	3418	0	0
737800MA_A_X2	A	STANDARDMA_16R_A_X2	1	11	T_05	V	NULL	3418	181.7	113840
737800MA_A_X2	A	STANDARDMA_16R_A_X2	1	12	A_15	F		3418	181.7	3
737800MA_A_X2	A	STANDARDMA_16R_A_X2	1	13	A_15	V	NULL	2518	151.41	32000
737800MA_A_X2	A	STANDARDMA_16R_A_X2	1	14	A_30	D		2518	139.11	3
737800MA_A_X2	A	STANDARDMA_16R_A_X2	1	15	A_30	L	I	393.8	0	0
737800MA_A_X2	A	STANDARDMA_16R_A_X2	1	16	NULL	B	V	3837.5	139	40
737800MA_A_X2	A	STANDARDMA_16R_A_X2	1	17	NULL	B	L	0	30	10
737800MA_A_X2	A	STANDARDMA_16R_B_X2	1	1	A_00	F		6000	248.93	3
737800MA_A_X2	A	STANDARDMA_16R_B_X2	1	2	A_00	W	I	3000	249.5	25437
737800MA_A_X2	A	STANDARDMA_16R_B_X2	1	3	A_01	W	I	3000	187.18	3671
737800MA_A_X2	A	STANDARDMA_16R_B_X2	1	4	A_05	W	I	3000	174.66	5209
737800MA_A_X2	A	STANDARDMA_16R_B_X2	1	5	A_15	F		3000	151.41	3
737800MA_A_X2	A	STANDARDMA_16R_B_X2	1	6	A_30	D		2817	139.11	3
737800MA_A_X2	A	STANDARDMA_16R_B_X2	1	7	A_30	V		1168	139.11	500
737800MA_A_X2	A	STANDARDMA_16R_B_X2	1	8	T_05	C	T	1500	0	0
737800MA_A_X2	A	STANDARDMA_16R_B_X2	1	9	T_05	A	T	1885.7	181.7	0
737800MA_A_X2	A	STANDARDMA_16R_B_X2	1	10	T_05	C	T	3418	0	0
737800MA_A_X2	A	STANDARDMA_16R_B_X2	1	11	T_05	V	NULL	3418	181.7	105200
737800MA_A_X2	A	STANDARDMA_16R_B_X2	1	12	A_15	F		3418	181.7	3
737800MA_A_X2	A	STANDARDMA_16R_B_X2	1	13	A_15	V	NULL	2618	151.41	32000
737800MA_A_X2	A	STANDARDMA_16R_B_X2	1	14	A_30	D		2618	139.11	3
737800MA_A_X2	A	STANDARDMA_16R_B_X2	1	15	A_30	L	I	393.8	0	0
737800MA_A_X2	A	STANDARDMA_16R_B_X2	1	16	NULL	B	V	3837.5	139	40
737800MA_A_X2	A	STANDARDMA_16R_B_X2	1	17	NULL	B	L	0	30	10
737800MA_A_X2	A	STANDARDMA_16R_C_X2	1	1	A_00	F		6000	248.93	3
737800MA_A_X2	A	STANDARDMA_16R_C_X2	1	2	A_00	W	I	3000	249.5	25437
737800MA_A_X2	A	STANDARDMA_16R_C_X2	1	3	A_01	W	I	3000	187.18	3671
737800MA_A_X2	A	STANDARDMA_16R_C_X2	1	4	A_05	W	I	3000	174.66	5209
737800MA_A_X2	A	STANDARDMA_16R_C_X2	1	5	A_15	F		3000	151.41	3
737800MA_A_X2	A	STANDARDMA_16R_C_X2	1	6	A_30	D		2817	139.11	3
737800MA_A_X2	A	STANDARDMA_16R_C_X2	1	7	A_30	V		188	139.11	500
737800MA_A_X2	A	STANDARDMA_16R_C_X2	1	8	T_05	C	T	1500	0	0
737800MA_A_X2	A	STANDARDMA_16R_C_X2	1	9	T_05	A	T	1885.7	181.7	0
737800MA_A_X2	A	STANDARDMA_16R_C_X2	1	10	T_05	C	T	3418	0	0
737800MA_A_X2	A	STANDARDMA_16R_C_X2	1	11	T_05	V	NULL	3418	181.7	121550
737800MA_A_X2	A	STANDARDMA_16R_C_X2	1	12	A_15	F		3418	181.7	3
737800MA_A_X2	A	STANDARDMA_16R_C_X2	1	13	A_15	V		2518	151.41	24000
737800MA_A_X2	A	STANDARDMA_16R_C_X2	1	14	A_30	D		2518	139.11	3
737800MA_A_X2	A	STANDARDMA_16R_C_X2	1	15	A_30	L	I	393.8	0	0
737800MA_A_X2	A	STANDARDMA_16R_C_X2	1	16	NULL	B	V	3837.5	139	40
737800MA_A_X2	A	STANDARDMA_16R_C_X2	1	17	NULL	B	L	0	30	10
737800MA_A_X2	A	STANDARDMA_16R_D_X2	1	1	A_00	F		6000	248.93	3
737800MA_A_X2	A	STANDARDMA_16R_D_X2	1	2	A_00	W	I	3000	249.5	25437
737800MA_A_X2	A	STANDARDMA_16R_D_X2	1	3	A_01	W	I	3000	187.18	3671
737800MA_A_X2	A	STANDARDMA_16R_D_X2	1	4	A_05	W	I	3000	174.66	5209
737800MA_A_X2	A	STANDARDMA_16R_D_X2	1	5	A_15	F		3000	151.41	3
737800MA_A_X2	A	STANDARDMA_16R_D_X2	1	6	A_30	D	NULL	2817	139.11	3
737800MA_A_X2	A	STANDARDMA_16R_D_X2	1	7	A_30	V	NULL	218	139.11	500
737800MA_A_X2	A	STANDARDMA_16R_D_X2	1	8	T_05	C	T	1500	0	0
737800MA_A_X2	A	STANDARDMA_16R_D_X2	1	9	T_05	A	T	1885.7	181.7	0
737800MA_A_X2	A	STANDARDMA_16R_D_X2	1	10	T_05	C	T	3418	0	0

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ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	STEP_NUM	FLAP_ID	STEP_TYPE	THR_TYPE	PARAM1	PARAM2	PARAM3
737800MA_A_X2	A	STANDARDMA_16R_D_X2	1	11	T_05	V	NULL	3418	181.7	182600
737800MA_A_X2	A	STANDARDMA_16R_D_X2	1	12	A_15	F		3418	181.7	3
737800MA_A_X2	A	STANDARDMA_16R_D_X2	1	13	A_15	V		2518	151.41	24000
737800MA_A_X2	A	STANDARDMA_16R_D_X2	1	14	A_30	D		2518	139.11	3
737800MA_A_X2	A	STANDARDMA_16R_D_X2	1	15	A_30	L	I	393.8	0	0
737800MA_A_X2	A	STANDARDMA_16R_D_X2	1	16	NULL	B	V	3837.5	139	40
737800MA_A_X2	A	STANDARDMA_16R_D_X2	1	17	NULL	B	L	0	30	10
737800MA_A_X2	A	STANDARDMA_16R_E_X2	1	1	A_00	F		6000	248.93	3
737800MA_A_X2	A	STANDARDMA_16R_E_X2	1	2	A_00	W	I	3000	249.5	25437
737800MA_A_X2	A	STANDARDMA_16R_E_X2	1	3	A_01	W	I	3000	187.18	3671
737800MA_A_X2	A	STANDARDMA_16R_E_X2	1	4	A_05	W	I	3000	174.66	5209
737800MA_A_X2	A	STANDARDMA_16R_E_X2	1	5	A_15	F		3000	151.41	3
737800MA_A_X2	A	STANDARDMA_16R_E_X2	1	6	A_30	D	NULL	2817	139.11	3
737800MA_A_X2	A	STANDARDMA_16R_E_X2	1	7	A_30	V	NULL	141	139.11	500
737800MA_A_X2	A	STANDARDMA_16R_E_X2	1	8	T_05	C	T	1500	0	0
737800MA_A_X2	A	STANDARDMA_16R_E_X2	1	9	T_05	A	T	1885.7	181.7	0
737800MA_A_X2	A	STANDARDMA_16R_E_X2	1	10	T_05	C	T	3418	0	0
737800MA_A_X2	A	STANDARDMA_16R_E_X2	1	11	A_15	V	NULL	3418	181.7	243500
737800MA_A_X2	A	STANDARDMA_16R_E_X2	1	12	A_15	F		3418	181.7	3
737800MA_A_X2	A	STANDARDMA_16R_E_X2	1	13	A_15	V		2473	151.41	24000
737800MA_A_X2	A	STANDARDMA_16R_E_X2	1	14	A_30	D		2473	139.11	3
737800MA_A_X2	A	STANDARDMA_16R_E_X2	1	15	A_30	L	I	393.8	0	0
737800MA_A_X2	A	STANDARDMA_16R_E_X2	1	16	NULL	B	V	3837.5	139	40
737800MA_A_X2	A	STANDARDMA_16R_E_X2	1	17	NULL	B	L	0	30	10
737800MA_A_X2	A	STANDARDMA_34L_A_X2	1	1	A_00	F		6000	248.93	3
737800MA_A_X2	A	STANDARDMA_34L_A_X2	1	2	A_00	W	I	3000	249.5	25437
737800MA_A_X2	A	STANDARDMA_34L_A_X2	1	3	A_01	W	I	3000	187.18	3671
737800MA_A_X2	A	STANDARDMA_34L_A_X2	1	4	A_05	W	I	3000	174.66	5209
737800MA_A_X2	A	STANDARDMA_34L_A_X2	1	5	A_15	F		3000	151.41	3
737800MA_A_X2	A	STANDARDMA_34L_A_X2	1	6	A_30	D		2817	139.11	3
737800MA_A_X2	A	STANDARDMA_34L_A_X2	1	7	A_30	V		577	139.11	500
737800MA_A_X2	A	STANDARDMA_34L_A_X2	1	8	T_05	C	T	1500	0	0
737800MA_A_X2	A	STANDARDMA_34L_A_X2	1	9	T_05	A	T	1885.7	181.7	0
737800MA_A_X2	A	STANDARDMA_34L_A_X2	1	10	T_05	C	T	3677	0	0
737800MA_A_X2	A	STANDARDMA_34L_A_X2	1	11	T_05	V	NULL	3677	181.7	154850
737800MA_A_X2	A	STANDARDMA_34L_A_X2	1	12	A_15	F		3677	181.7	3
737800MA_A_X2	A	STANDARDMA_34L_A_X2	1	13	A_15	V		2677	151.41	24000
737800MA_A_X2	A	STANDARDMA_34L_A_X2	1	14	A_30	D		2677	139.11	3
737800MA_A_X2	A	STANDARDMA_34L_A_X2	1	15	A_30	L	I	393.8	0	0
737800MA_A_X2	A	STANDARDMA_34L_A_X2	1	16	NULL	B	V	3837.5	139	40
737800MA_A_X2	A	STANDARDMA_34L_A_X2	1	17	NULL	B	L	0	30	10
737800MA_A_X2	A	STANDARDMA_34L_B_X2	1	1	A_00	F		6000	248.93	3
737800MA_A_X2	A	STANDARDMA_34L_B_X2	1	2	A_00	W	I	3000	249.5	25437
737800MA_A_X2	A	STANDARDMA_34L_B_X2	1	3	A_01	W	I	3000	187.18	3671
737800MA_A_X2	A	STANDARDMA_34L_B_X2	1	4	A_05	W	I	3000	174.66	5209
737800MA_A_X2	A	STANDARDMA_34L_B_X2	1	5	A_15	F		3000	151.41	3
737800MA_A_X2	A	STANDARDMA_34L_B_X2	1	6	A_30	D		2817	139.11	3
737800MA_A_X2	A	STANDARDMA_34L_B_X2	1	7	A_30	V		277	139.11	500
737800MA_A_X2	A	STANDARDMA_34L_B_X2	1	8	T_05	C	T	1500	0	0
737800MA_A_X2	A	STANDARDMA_34L_B_X2	1	9	T_05	A	T	1885.7	181.7	0
737800MA_A_X2	A	STANDARDMA_34L_B_X2	1	10	T_05	C	T	3677	0	0
737800MA_A_X2	A	STANDARDMA_34L_B_X2	1	11	T_05	V	NULL	3677	181.7	133450
737800MA_A_X2	A	STANDARDMA_34L_B_X2	1	12	A_15	F		3677	181.7	3
737800MA_A_X2	A	STANDARDMA_34L_B_X2	1	13	A_15	V		2677	151.41	31900
737800MA_A_X2	A	STANDARDMA_34L_B_X2	1	14	A_30	D		2677	139.11	3
737800MA_A_X2	A	STANDARDMA_34L_B_X2	1	15	A_30	L	I	393.8	0	0
737800MA_A_X2	A	STANDARDMA_34L_B_X2	1	16	NULL	B	V	3837.5	139	40
737800MA_A_X2	A	STANDARDMA_34L_B_X2	1	17	NULL	B	L	0	30	10
737800MA_A_X2	A	STANDARDMA_34L_C_X2	1	1	A_00	F		6000	248.93	3
737800MA_A_X2	A	STANDARDMA_34L_C_X2	1	2	A_00	W	I	3000	249.5	25437
737800MA_A_X2	A	STANDARDMA_34L_C_X2	1	3	A_01	W	I	3000	187.18	3671
737800MA_A_X2	A	STANDARDMA_34L_C_X2	1	4	A_05	W	I	3000	174.66	5209
737800MA_A_X2	A	STANDARDMA_34L_C_X2	1	5	A_15	F		3000	151.41	3
737800MA_A_X2	A	STANDARDMA_34L_C_X2	1	6	A_30	D		2817	139.11	3
737800MA_A_X2	A	STANDARDMA_34L_C_X2	1	7	A_30	V		277	139.11	500
737800MA_A_X2	A	STANDARDMA_34L_C_X2	1	8	T_05	C	T	1500	0	0

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ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	STEP_NUM	FLAP_ID	STEP_TYPE	THR_TYPE	PARAM1	PARAM2	PARAM3
737800MA_A_X2	A	STANDARDMA_34L_C_X2	1	9	T_05	A	T	1885.7	181.7	0
737800MA_A_X2	A	STANDARDMA_34L_C_X2	1	10	T_05	C	T	3677	0	0
737800MA_A_X2	A	STANDARDMA_34L_C_X2	1	11	T_05	V	NULL	3677	181.7	121350
737800MA_A_X2	A	STANDARDMA_34L_C_X2	1	12	A_15	F		3677	181.7	3
737800MA_A_X2	A	STANDARDMA_34L_C_X2	1	13	A_15	V		2677	151.41	24000
737800MA_A_X2	A	STANDARDMA_34L_C_X2	1	14	A_30	D		2677	139.11	3
737800MA_A_X2	A	STANDARDMA_34L_C_X2	1	15	A_30	L	I	393.8	0	0
737800MA_A_X2	A	STANDARDMA_34L_C_X2	1	16	NULL	B	V	3837.5	139	40
737800MA_A_X2	A	STANDARDMA_34L_C_X2	1	17	NULL	B	L	0	30	10
EMB175_MA_Y2	A	STANDARD_MA_16R_A_Y2	1	1	1	F		6000	250	3
EMB175_MA_Y2	A	STANDARD_MA_16R_A_Y2	1	2	NULL	F	I	3000	180	3
EMB175_MA_Y2	A	STANDARD_MA_16R_A_Y2	1	3	NULL	F	I	2000	140	3
EMB175_MA_Y2	A	STANDARD_MA_16R_A_Y2	1	4	NULL	F	I	1500	130	3
EMB175_MA_Y2	A	STANDARD_MA_16R_A_Y2	1	5	ZERO	V		1019	130	500
EMB175_MA_Y2	A	STANDARD_MA_16R_A_Y2	1	6	ZERO	C	C	1000	0	0
EMB175_MA_Y2	A	STANDARD_MA_16R_A_Y2	1	7	ZERO	A	C	1900	196	0
EMB175_MA_Y2	A	STANDARD_MA_16R_A_Y2	1	8	ZERO	C	C	3469	0	0
EMB175_MA_Y2	A	STANDARD_MA_16R_A_Y2	1	9	ZERO	V	NULL	3469	196	112600
EMB175_MA_Y2	A	STANDARD_MA_16R_A_Y2	1	10	NULL	F	I	3469	196	3
EMB175_MA_Y2	A	STANDARD_MA_16R_A_Y2	1	11	ZERO	V		2577	130	25000
EMB175_MA_Y2	A	STANDARD_MA_16R_A_Y2	1	12	FULL	D	I	2577	130	3
EMB175_MA_Y2	A	STANDARD_MA_16R_A_Y2	1	13	FULL	L		276.3	0	0
EMB175_MA_Y2	A	STANDARD_MA_16R_A_Y2	1	14	FULL	B	L	2487	120	40
EMB175_MA_Y2	A	STANDARD_MA_16R_A_Y2	1	15	NULL	B	L	0	30	10
EMB175_MA_Y2	A	STANDARD_MA_16R_B_Y2	1	1	1	F		6000	250	3
EMB175_MA_Y2	A	STANDARD_MA_16R_B_Y2	1	2	NULL	F	I	3000	180	3
EMB175_MA_Y2	A	STANDARD_MA_16R_B_Y2	1	3	NULL	F	I	2000	140	3
EMB175_MA_Y2	A	STANDARD_MA_16R_B_Y2	1	4	NULL	F	I	1500	130	3
EMB175_MA_Y2	A	STANDARD_MA_16R_B_Y2	1	5	ZERO	V		1019	130	500
EMB175_MA_Y2	A	STANDARD_MA_16R_B_Y2	1	6	ZERO	C	C	1000	0	0
EMB175_MA_Y2	A	STANDARD_MA_16R_B_Y2	1	7	ZERO	A	C	1900	196	0
EMB175_MA_Y2	A	STANDARD_MA_16R_B_Y2	1	8	ZERO	C	C	3419	0	0
EMB175_MA_Y2	A	STANDARD_MA_16R_B_Y2	1	9	ZERO	V	NULL	3419	196	89900
EMB175_MA_Y2	A	STANDARD_MA_16R_B_Y2	1	10	NULL	F	I	3419	196	3
EMB175_MA_Y2	A	STANDARD_MA_16R_B_Y2	1	11	ZERO	V		2577	130	40800
EMB175_MA_Y2	A	STANDARD_MA_16R_B_Y2	1	12	FULL	D	I	2577	130	3
EMB175_MA_Y2	A	STANDARD_MA_16R_B_Y2	1	13	FULL	L		276.3	0	0
EMB175_MA_Y2	A	STANDARD_MA_16R_B_Y2	1	14	FULL	B	L	2487	120	40
EMB175_MA_Y2	A	STANDARD_MA_16R_B_Y2	1	15	NULL	B	L	0	30	10
EMB175_MA_Y2	A	STANDARD_MA_16R_C_Y2	1	1	1	F		6000	250	3
EMB175_MA_Y2	A	STANDARD_MA_16R_C_Y2	1	2	NULL	F	I	3000	180	3
EMB175_MA_Y2	A	STANDARD_MA_16R_C_Y2	1	3	NULL	F	I	2000	140	3
EMB175_MA_Y2	A	STANDARD_MA_16R_C_Y2	1	4	NULL	F	I	1500	130	3
EMB175_MA_Y2	A	STANDARD_MA_16R_C_Y2	1	5	ZERO	V		219	130	500
EMB175_MA_Y2	A	STANDARD_MA_16R_C_Y2	1	6	ZERO	C	C	1000	0	0
EMB175_MA_Y2	A	STANDARD_MA_16R_C_Y2	1	7	ZERO	A	C	1900	196	0
EMB175_MA_Y2	A	STANDARD_MA_16R_C_Y2	1	8	ZERO	C	C	3319	0	0
EMB175_MA_Y2	A	STANDARD_MA_16R_C_Y2	1	9	ZERO	V	NULL	3319	196	120800
EMB175_MA_Y2	A	STANDARD_MA_16R_C_Y2	1	10	NULL	F	I	3319	196	3
EMB175_MA_Y2	A	STANDARD_MA_16R_C_Y2	1	11	ZERO	V		2677	130	24000
EMB175_MA_Y2	A	STANDARD_MA_16R_C_Y2	1	12	FULL	D	I	2677	130	3
EMB175_MA_Y2	A	STANDARD_MA_16R_C_Y2	1	13	FULL	L		276.3	0	0
EMB175_MA_Y2	A	STANDARD_MA_16R_C_Y2	1	14	FULL	B	L	2487	120	40
EMB175_MA_Y2	A	STANDARD_MA_16R_C_Y2	1	15	NULL	B	L	0	30	10
EMB175_MA_Y2	A	STANDARD_MA_16R_D_Y2	1	1	1	F		6000	250	3
EMB175_MA_Y2	A	STANDARD_MA_16R_D_Y2	1	2	NULL	F	I	3000	180	3
EMB175_MA_Y2	A	STANDARD_MA_16R_D_Y2	1	3	NULL	F	I	2000	140	3
EMB175_MA_Y2	A	STANDARD_MA_16R_D_Y2	1	4	NULL	F	I	1500	130	3
EMB175_MA_Y2	A	STANDARD_MA_16R_D_Y2	1	5	ZERO	V		219	130	500

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ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	STEP_NUM	FLAP_ID	STEP_TYPE	THR_TYPE	PARAM1	PARAM2	PARAM3
EMB175_MA_Y2	A	STANDARD_MA_16R_D_Y2	1	6	ZERO	C	C	1000	0	0
EMB175_MA_Y2	A	STANDARD_MA_16R_D_Y2	1	7	ZERO	A	C	1900	196	0
EMB175_MA_Y2	A	STANDARD_MA_16R_D_Y2	1	8	ZERO	C	C	3319	0	0
EMB175_MA_Y2	A	STANDARD_MA_16R_D_Y2	1	9	ZERO	V	NULL	3319	196	181500
EMB175_MA_Y2	A	STANDARD_MA_16R_D_Y2	1	10	NULL	F	I	3319	196	3
EMB175_MA_Y2	A	STANDARD_MA_16R_D_Y2	1	11	ZERO	V		2677	130	24000
EMB175_MA_Y2	A	STANDARD_MA_16R_D_Y2	1	12	FULL	D	I	2677	130	3
EMB175_MA_Y2	A	STANDARD_MA_16R_D_Y2	1	13	FULL	L		276.3	0	0
EMB175_MA_Y2	A	STANDARD_MA_16R_D_Y2	1	14	FULL	B	L	2487	120	40
EMB175_MA_Y2	A	STANDARD_MA_16R_D_Y2	1	15	NULL	B	L	0	30	10
EMB175_MA_Y2	A	STANDARD_MA_16R_E_Y2	1	1	1	F		6000	250	3
EMB175_MA_Y2	A	STANDARD_MA_16R_E_Y2	1	2	NULL	F	I	3000	180	3
EMB175_MA_Y2	A	STANDARD_MA_16R_E_Y2	1	3	NULL	F	I	2000	140	3
EMB175_MA_Y2	A	STANDARD_MA_16R_E_Y2	1	4	NULL	F	I	1500	130	3
EMB175_MA_Y2	A	STANDARD_MA_16R_E_Y2	1	5	ZERO	V		219	130	500
EMB175_MA_Y2	A	STANDARD_MA_16R_E_Y2	1	6	ZERO	C	C	1000	0	0
EMB175_MA_Y2	A	STANDARD_MA_16R_E_Y2	1	7	ZERO	A	C	1900	196	0
EMB175_MA_Y2	A	STANDARD_MA_16R_E_Y2	1	8	ZERO	C	C	3319	0	0
EMB175_MA_Y2	A	STANDARD_MA_16R_E_Y2	1	9	ZERO	V	NULL	3319	196	244000
EMB175_MA_Y2	A	STANDARD_MA_16R_E_Y2	1	10	NULL	F	I	3319	196	3
EMB175_MA_Y2	A	STANDARD_MA_16R_E_Y2	1	11	ZERO	V		2677	130	24000
EMB175_MA_Y2	A	STANDARD_MA_16R_E_Y2	1	12	FULL	D	I	2677	130	3
EMB175_MA_Y2	A	STANDARD_MA_16R_E_Y2	1	13	FULL	L		276.3	0	0
EMB175_MA_Y2	A	STANDARD_MA_16R_E_Y2	1	14	FULL	B	L	2487	120	40
EMB175_MA_Y2	A	STANDARD_MA_16R_E_Y2	1	15	NULL	B	L	0	30	10
EMB175_MA_Y2	A	STANDARD_MA_34L_A_Y2	1	1	1	F		6000	250	3
EMB175_MA_Y2	A	STANDARD_MA_34L_A_Y2	1	2	NULL	F	I	3000	180	3
EMB175_MA_Y2	A	STANDARD_MA_34L_A_Y2	1	3	NULL	F	I	2000	140	3
EMB175_MA_Y2	A	STANDARD_MA_34L_A_Y2	1	4	NULL	F	I	1500	130	3
EMB175_MA_Y2	A	STANDARD_MA_34L_A_Y2	1	5	ZERO	V		527	130	500
EMB175_MA_Y2	A	STANDARD_MA_34L_A_Y2	1	6	ZERO	C	C	1000	0	0
EMB175_MA_Y2	A	STANDARD_MA_34L_A_Y2	1	7	ZERO	A	C	1900	196	0
EMB175_MA_Y2	A	STANDARD_MA_34L_A_Y2	1	8	ZERO	C	C	3677	0	0
EMB175_MA_Y2	A	STANDARD_MA_34L_A_Y2	1	9	ZERO	V	NULL	3677	196	153900
EMB175_MA_Y2	A	STANDARD_MA_34L_A_Y2	1	10	NULL	F	I	3677	196	3
EMB175_MA_Y2	A	STANDARD_MA_34L_A_Y2	1	11	ZERO	V		2677	130	20000
EMB175_MA_Y2	A	STANDARD_MA_34L_A_Y2	1	12	FULL	D	I	2677	130	3
EMB175_MA_Y2	A	STANDARD_MA_34L_A_Y2	1	13	FULL	L		276.3	0	0
EMB175_MA_Y2	A	STANDARD_MA_34L_A_Y2	1	14	FULL	B	L	2487	120	40
EMB175_MA_Y2	A	STANDARD_MA_34L_A_Y2	1	15	NULL	B	L	0	30	10
EMB175_MA_Y2	A	STANDARD_MA_34L_B_Y2	1	1	1	F		6000	250	3
EMB175_MA_Y2	A	STANDARD_MA_34L_B_Y2	1	2	NULL	F	I	3000	180	3
EMB175_MA_Y2	A	STANDARD_MA_34L_B_Y2	1	3	NULL	F	I	2000	140	3
EMB175_MA_Y2	A	STANDARD_MA_34L_B_Y2	1	4	NULL	F	I	1500	130	3
EMB175_MA_Y2	A	STANDARD_MA_34L_B_Y2	1	5	ZERO	V		137	130	500
EMB175_MA_Y2	A	STANDARD_MA_34L_B_Y2	1	6	ZERO	C	C	1000	0	0
EMB175_MA_Y2	A	STANDARD_MA_34L_B_Y2	1	7	ZERO	A	C	1900	196	0
EMB175_MA_Y2	A	STANDARD_MA_34L_B_Y2	1	8	ZERO	C	C	3677	0	0
EMB175_MA_Y2	A	STANDARD_MA_34L_B_Y2	1	9	ZERO	V	NULL	3677	196	125000
EMB175_MA_Y2	A	STANDARD_MA_34L_B_Y2	1	10	NULL	F	I	3677	196	3
EMB175_MA_Y2	A	STANDARD_MA_34L_B_Y2	1	11	ZERO	V		2677	130	33200
EMB175_MA_Y2	A	STANDARD_MA_34L_B_Y2	1	12	FULL	D	I	2677	130	3
EMB175_MA_Y2	A	STANDARD_MA_34L_B_Y2	1	13	FULL	L		276.3	0	0
EMB175_MA_Y2	A	STANDARD_MA_34L_B_Y2	1	14	FULL	B	L	2487	120	40
EMB175_MA_Y2	A	STANDARD_MA_34L_B_Y2	1	15	NULL	B	L	0	30	10
EMB175_MA_Y2	A	STANDARD_MA_34L_C_Y2	1	1	1	F		6000	250	3
EMB175_MA_Y2	A	STANDARD_MA_34L_C_Y2	1	2	NULL	F	I	3000	180	3
EMB175_MA_Y2	A	STANDARD_MA_34L_C_Y2	1	3	NULL	F	I	2000	140	3

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ACFT_ID	OP_ TYPE	PROF_ID1	PROF_ ID2	STEP_ NUM	FLAP_ ID	STEP_ TYPE	THR_ TYPE	PARAM1	PARAM2	PARAM3
EMB175_MA_Y2	A	STANDARD_MA_34L_C_Y2	1	4	NULL	F	I	1500	130	3
EMB175_MA_Y2	A	STANDARD_MA_34L_C_Y2	1	5	ZERO	V		177	130	500
EMB175_MA_Y2	A	STANDARD_MA_34L_C_Y2	1	6	ZERO	C	C	1000	0	0
EMB175_MA_Y2	A	STANDARD_MA_34L_C_Y2	1	7	ZERO	A	C	1900	196	0
EMB175_MA_Y2	A	STANDARD_MA_34L_C_Y2	1	8	ZERO	C	C	3677	0	0
EMB175_MA_Y2	A	STANDARD_MA_34L_C_Y2	1	9	ZERO	V	NULL	3677	196	119400
EMB175_MA_Y2	A	STANDARD_MA_34L_C_Y2	1	10	NULL	F	I	3677	196	3
EMB175_MA_Y2	A	STANDARD_MA_34L_C_Y2	1	11	ZERO	V		2677	130	20000
EMB175_MA_Y2	A	STANDARD_MA_34L_C_Y2	1	12	FULL	D	I	2677	130	3
EMB175_MA_Y2	A	STANDARD_MA_34L_C_Y2	1	13	FULL	L		276.3	0	0
EMB175_MA_Y2	A	STANDARD_MA_34L_C_Y2	1	14	FULL	B	L	2487	120	40
EMB175_MA_Y2	A	STANDARD_MA_34L_C_Y2	1	15	NULL	B	L	0	30	10

Source: L&B (2023)

AEDT Missed Approach Flight Track Segments

Table 6 lists the AEDT flight track segments for the flight tracks associated with the proposed user-defined profiles.

TABLE 6, MISSED APPROACH FLIGHT TRACK SEGMENTS

TRACK_NAME	SEGMENT_NUM	SEGMENT_TYPE	PARAM_1	PARAM_2
16R_MA_A	1	S	607611.5	NULL
16R_MA_A	2	R	9114.173	30
16R_MA_A	3	S	17827.32	NULL
16R_MA_A	4	R	12152.23	150
16R_MA_A	5	S	58938.32	NULL
16R_MA_A	6	R	9114.173	90
16R_MA_A	7	S	14582.68	NULL
16R_MA_A	8	R	9114.173	90
16R_MA_A	9	S	66837.27	NULL
16R_MA_B	1	S	607611.5	NULL
16R_MA_B	2	R	9114.173	30
16R_MA_B	3	S	16211.08	NULL
16R_MA_B	4	R	15190.29	150
16R_MA_B	5	S	47697.51	NULL
16R_MA_B	6	R	9114.173	90
16R_MA_B	7	S	19443.57	NULL
16R_MA_B	8	R	9114.173	90
16R_MA_B	9	S	48608.92	NULL
16R_MA_C	1	S	607611.5	NULL
16R_MA_C	2	R	9114.173	30
16R_MA_C	3	S	18228.35	NULL
16R_MA_C	4	R	10937.01	150
16R_MA_C	5	S	72913.39	NULL
16R_MA_C	6	R	9114.173	90
16R_MA_C	7	S	12510.72	NULL
16R_MA_C	8	R	9114.173	90
16R_MA_C	9	S	57115.49	NULL
16R_MA_D	1	S	607611.5	NULL
16R_MA_D	2	R	9114.173	30
16R_MA_D	3	S	18228.35	NULL
16R_MA_D	4	R	13367.45	150
16R_MA_D	5	S	97217.85	NULL
16R_MA_D	6	R	9114.173	90
16R_MA_D	7	S	17050.92	NULL
16R_MA_D	8	R	9114.173	90
16R_MA_D	9	S	78394.04	NULL
16R_MA_E	1	S	607611.5	NULL

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TRACK_NAME	SEGMENT_NUM	SEGMENT_TYPE	PARAM_1	PARAM_2
16R_MA_E	2	R	13367.45	30
16R_MA_E	3	S	15190.29	NULL
16R_MA_E	4	R	16405.51	150
16R_MA_E	5	S	121522.3	NULL
16R_MA_E	6	R	9114.173	90
16R_MA_E	7	S	21770.72	NULL
16R_MA_E	8	R	9114.173	90
16R_MA_E	9	S	100468.6	NULL
34L_MA_A	1	S	607611.5	NULL
34L_MA_A	2	L	9114.173	55
34L_MA_A	3	S	13975.07	NULL
34L_MA_A	4	L	11240.81	125
34L_MA_A	5	S	85065.62	NULL
34L_MA_A	6	L	9114.173	90
34L_MA_A	7	S	14794.13	NULL
34L_MA_A	8	L	9114.173	90
34L_MA_A	9	S	85065.62	NULL
34L_MA_B	1	S	607611.5	NULL
34L_MA_B	2	L	9114.173	55
34L_MA_B	3	S	17013.12	NULL
34L_MA_B	4	L	12152.23	125
34L_MA_B	5	S	77774.28	NULL
34L_MA_B	6	L	9114.173	90
34L_MA_B	7	S	18716.95	NULL
34L_MA_B	8	L	9114.173	90
34L_MA_B	9	S	67384.12	NULL
34L_MA_C	1	S	607611.5	NULL
34L_MA_C	2	L	9114.173	55
34L_MA_C	3	S	21609.1	NULL
34L_MA_C	4	L	12152.23	125
34L_MA_C	5	S	65014.44	NULL
34L_MA_C	6	L	9114.173	90
34L_MA_C	7	S	22481.63	NULL
34L_MA_C	8	L	9114.173	90
34L_MA_C	9	S	48608.92	NULL

Source: L&B (2023)

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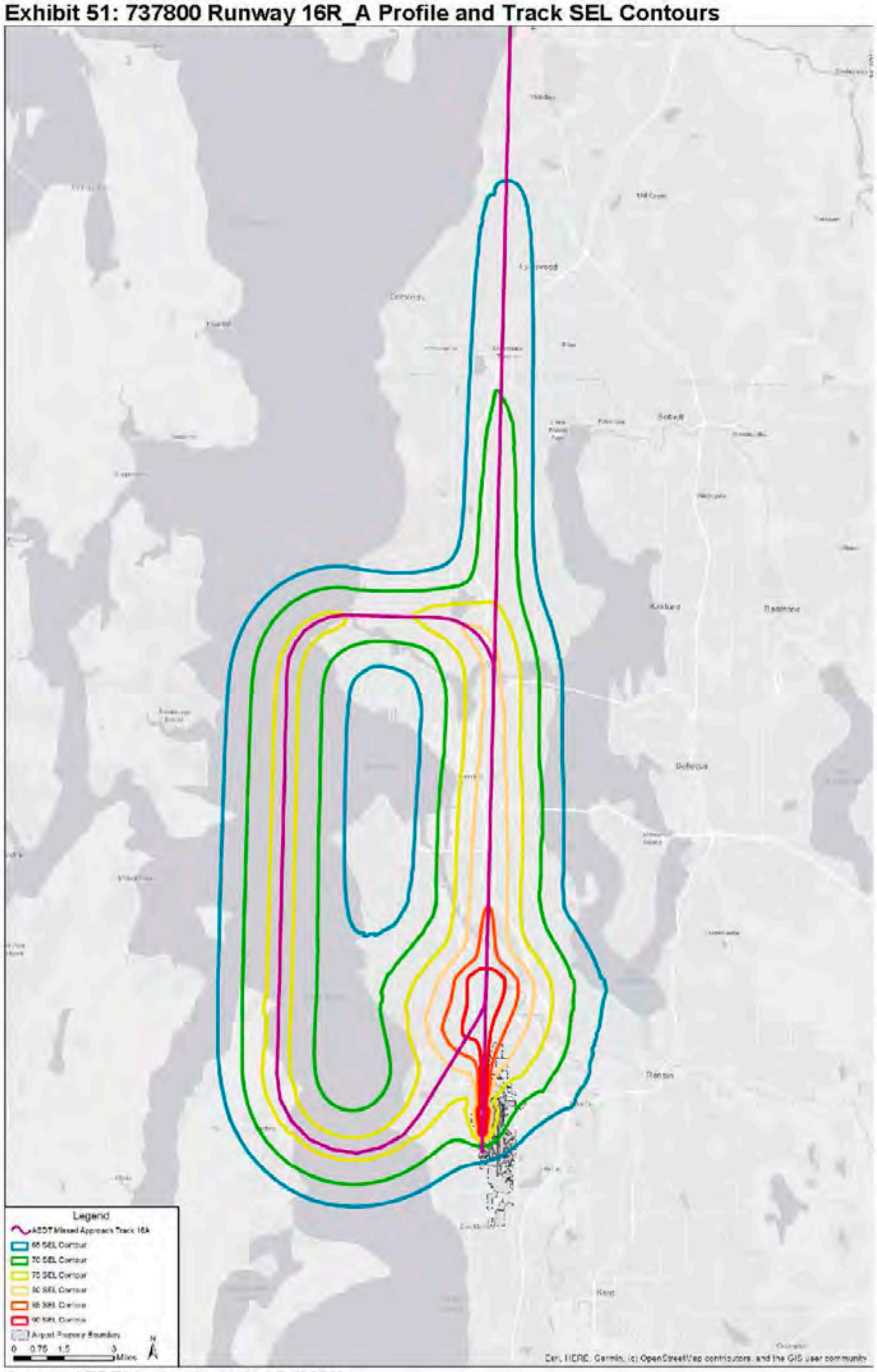
SECTION 3.2 – Sound Exposure Level (SEL) Contours

This section provides maps showing the SEL contours produced by each aircraft, profile, and track described in Section 3.1

Exhibit 51: 737800 Runway 16R_A Profile and Track SEL Contours



Source: AEDT Version 3e and L&B (2023)

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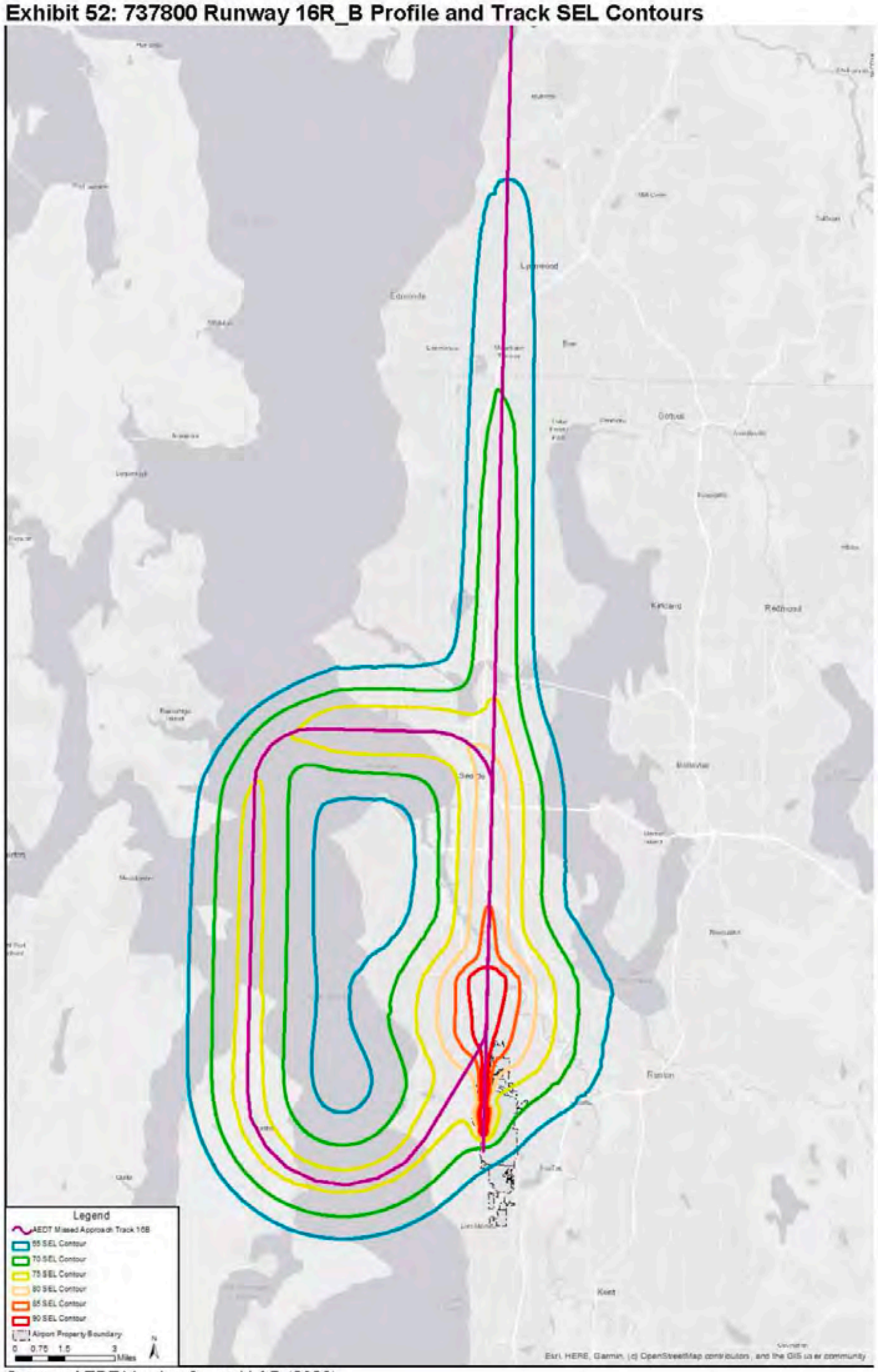
memorandum

Exhibit 52: 737800 Runway 16R_B Profile and Track SEL Contours



Source: AEDT Version 3e and L&B (2023)

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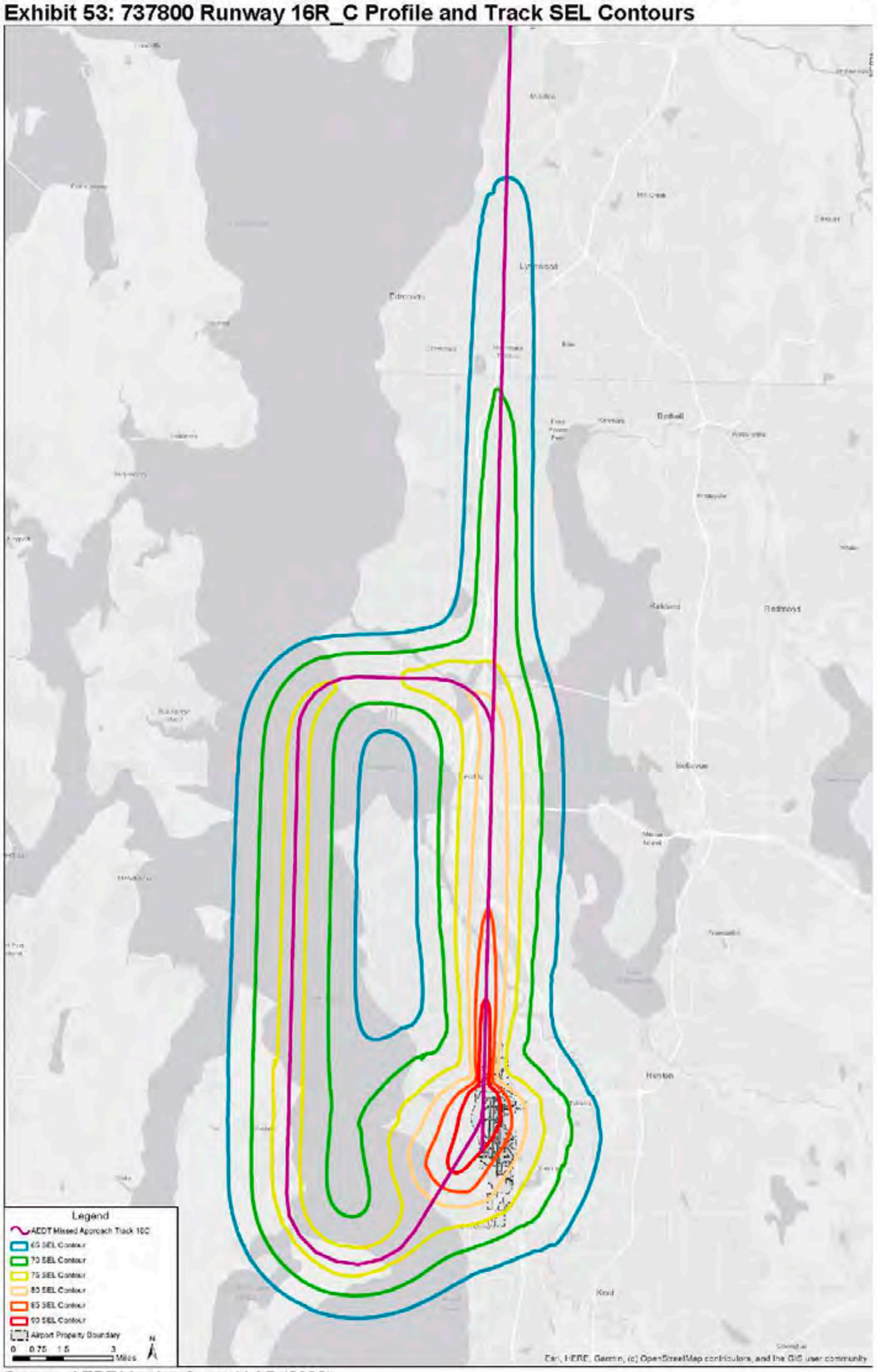
Exhibit 53: 737800 Runway 16R_C Profile and Track SEL Contours



Source: AEDT Version 3e and L&B (2023)

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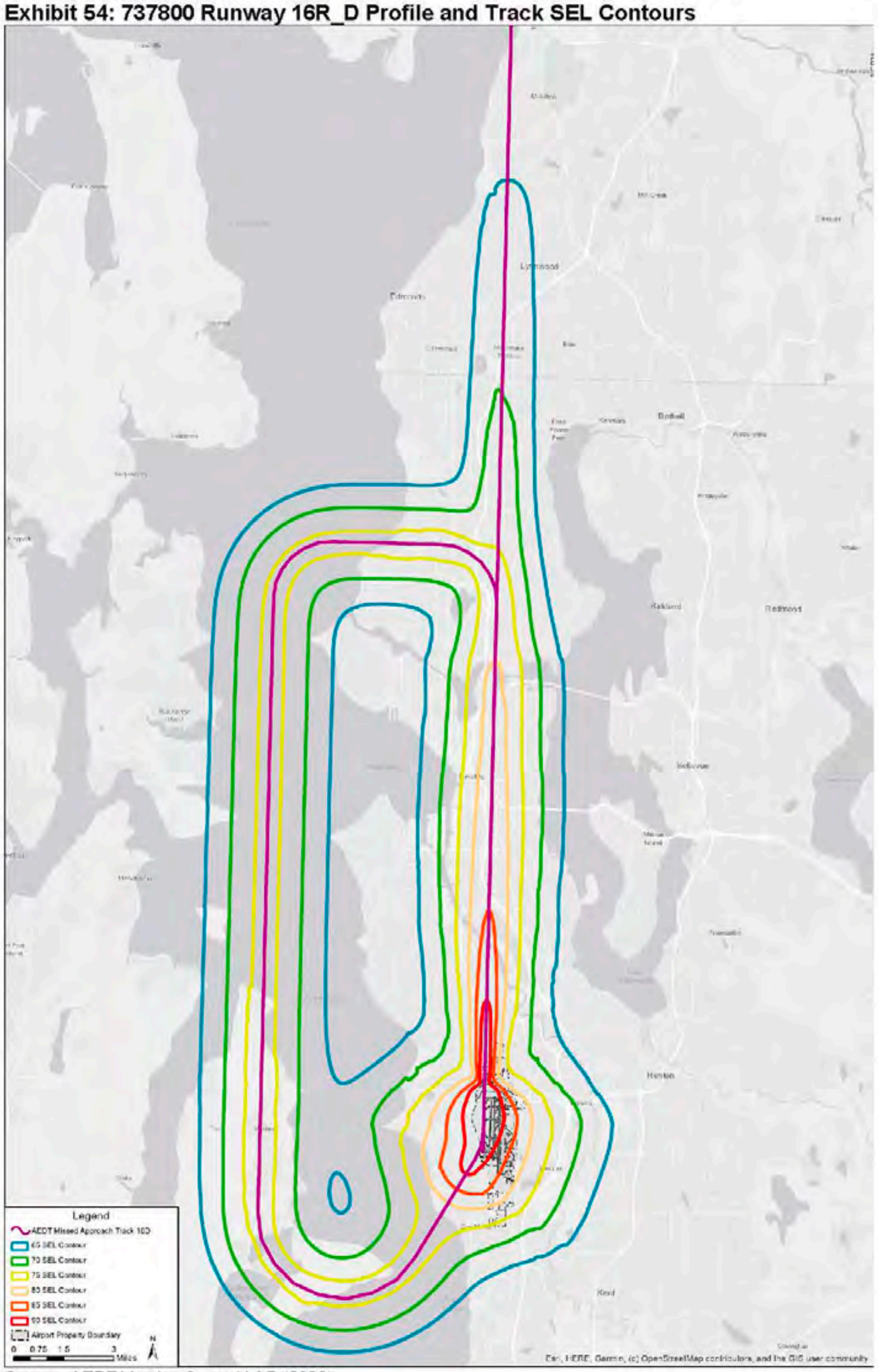
Exhibit 54: 737800 Runway 16R_D Profile and Track SEL Contours



Source: AEDT Version 3e and L&B (2023)

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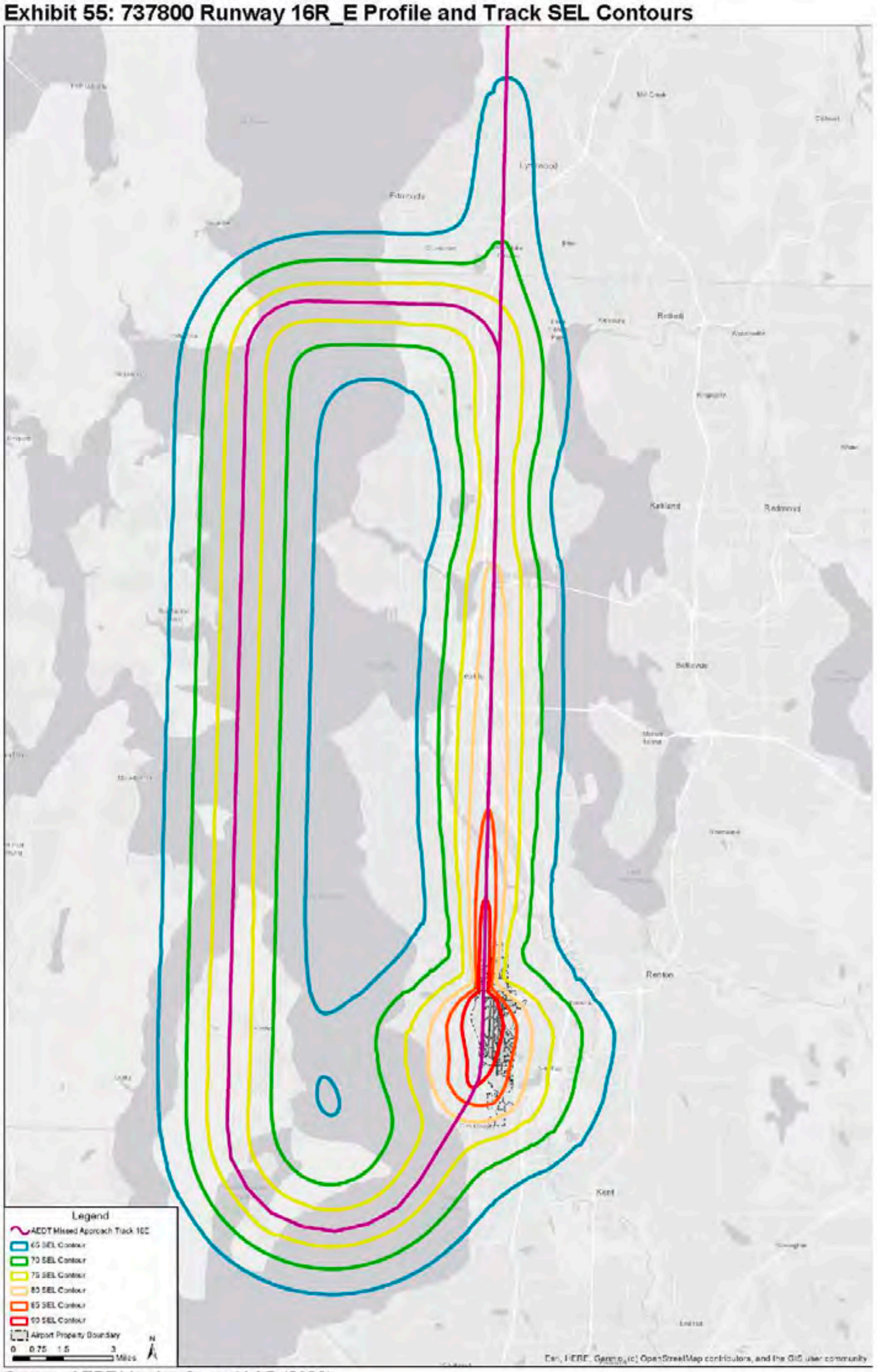
Exhibit 55: 737800 Runway 16R_E Profile and Track SEL Contours



Source: AEDT Version 3e and L&B (2023)

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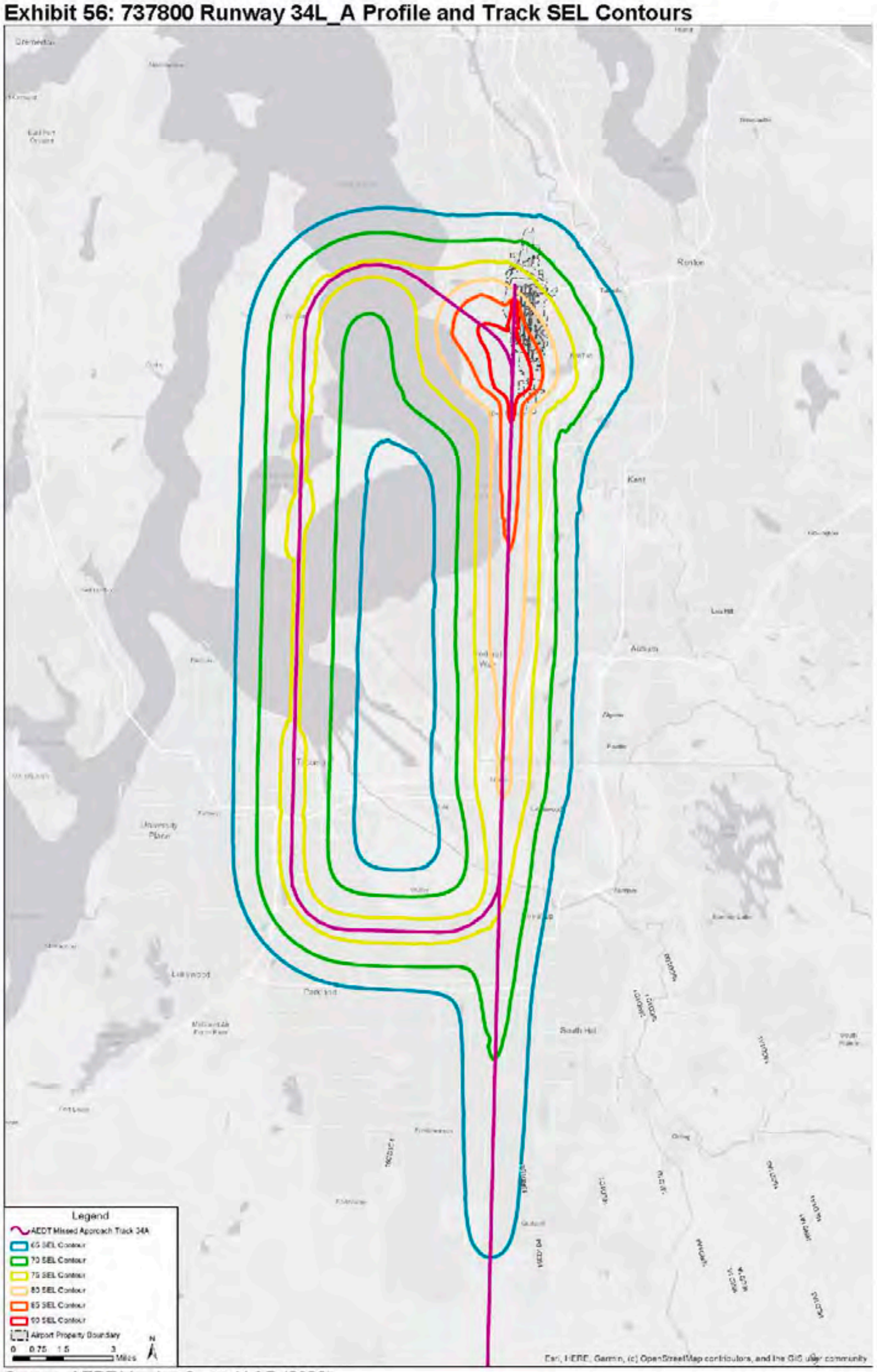
Exhibit 56: 737800 Runway 34L_A Profile and Track SEL Contours



Source: AEDT Version 3e and L&B (2023)

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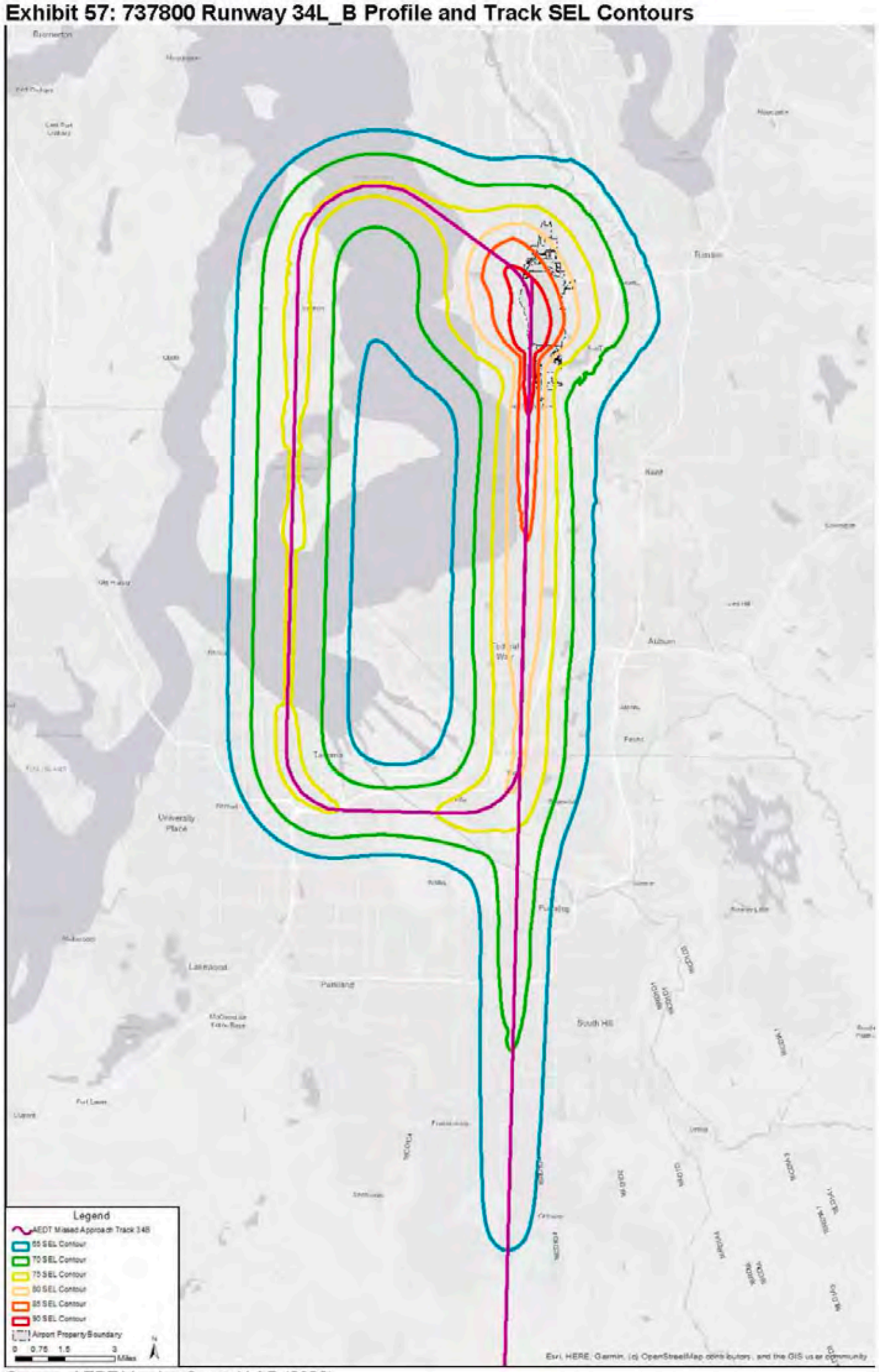
Exhibit 57: 737800 Runway 34L_B Profile and Track SEL Contours



Source: AEDT Version 3e and L&B (2023)

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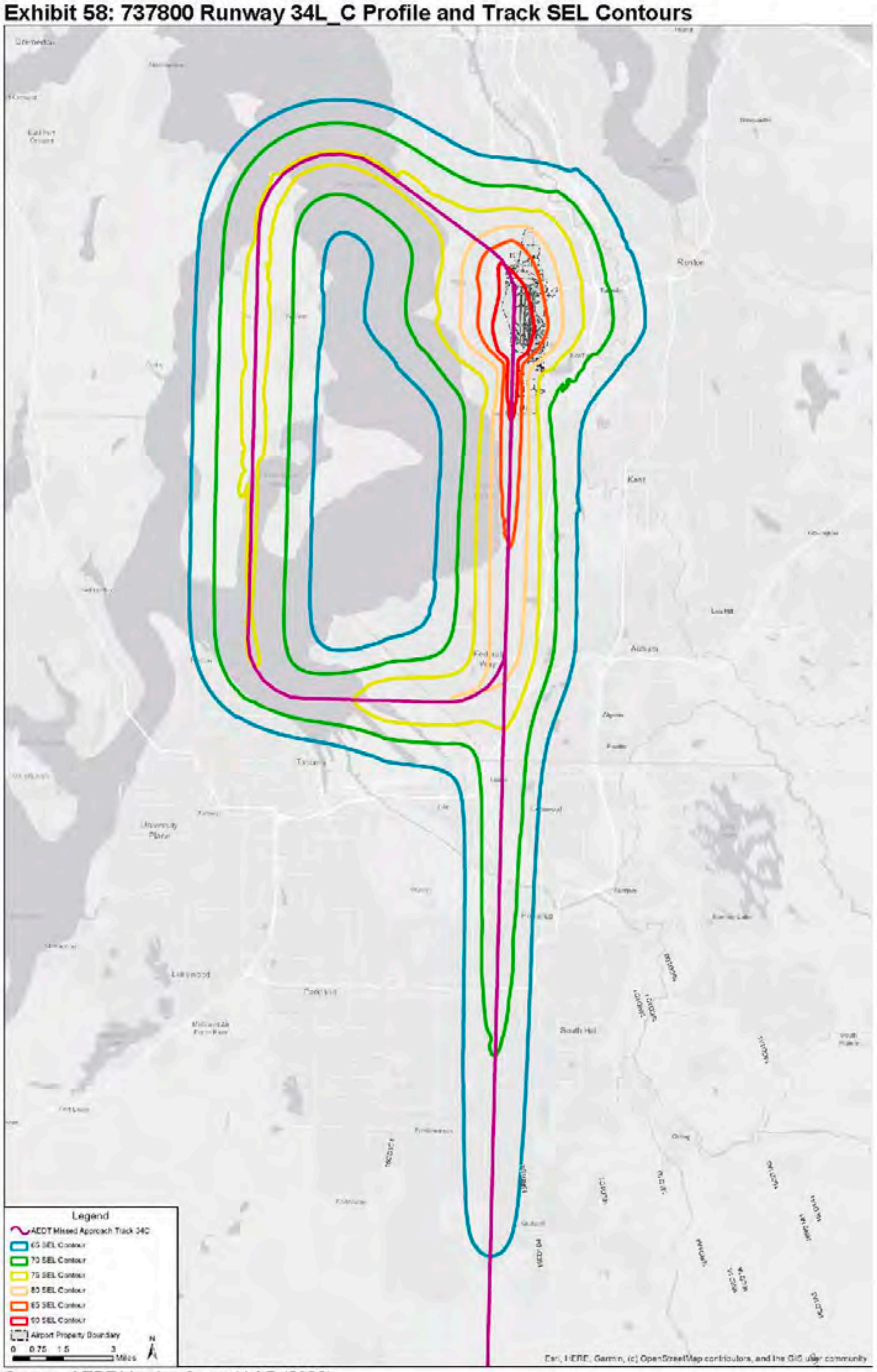
Exhibit 58: 737800 Runway 34L_C Profile and Track SEL Contours



Source: AEDT Version 3e and L&B (2023)

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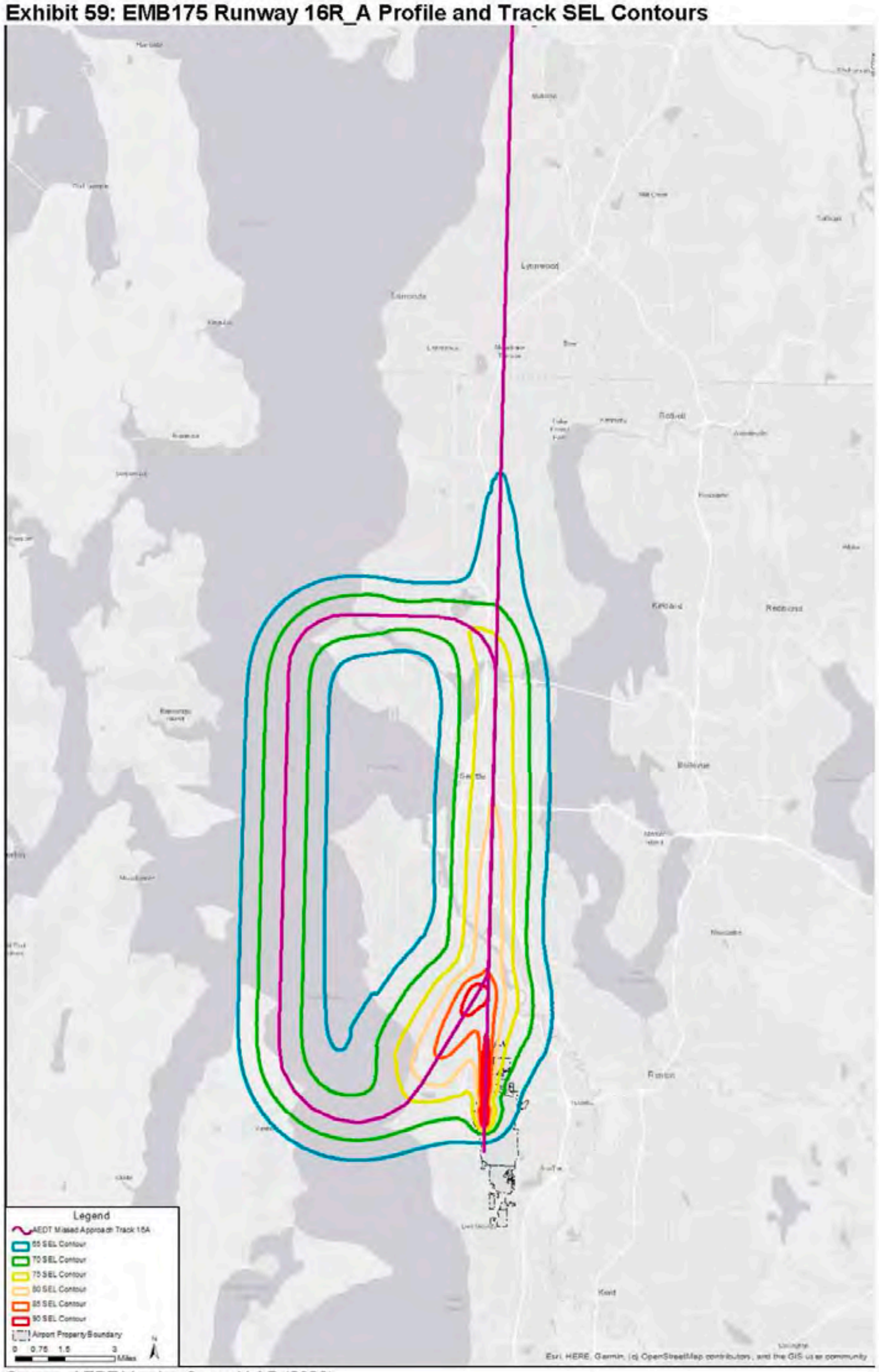
Exhibit 59: EMB175 Runway 16R_A Profile and Track SEL Contours



Source: AEDT Version 3e and L&B (2023)

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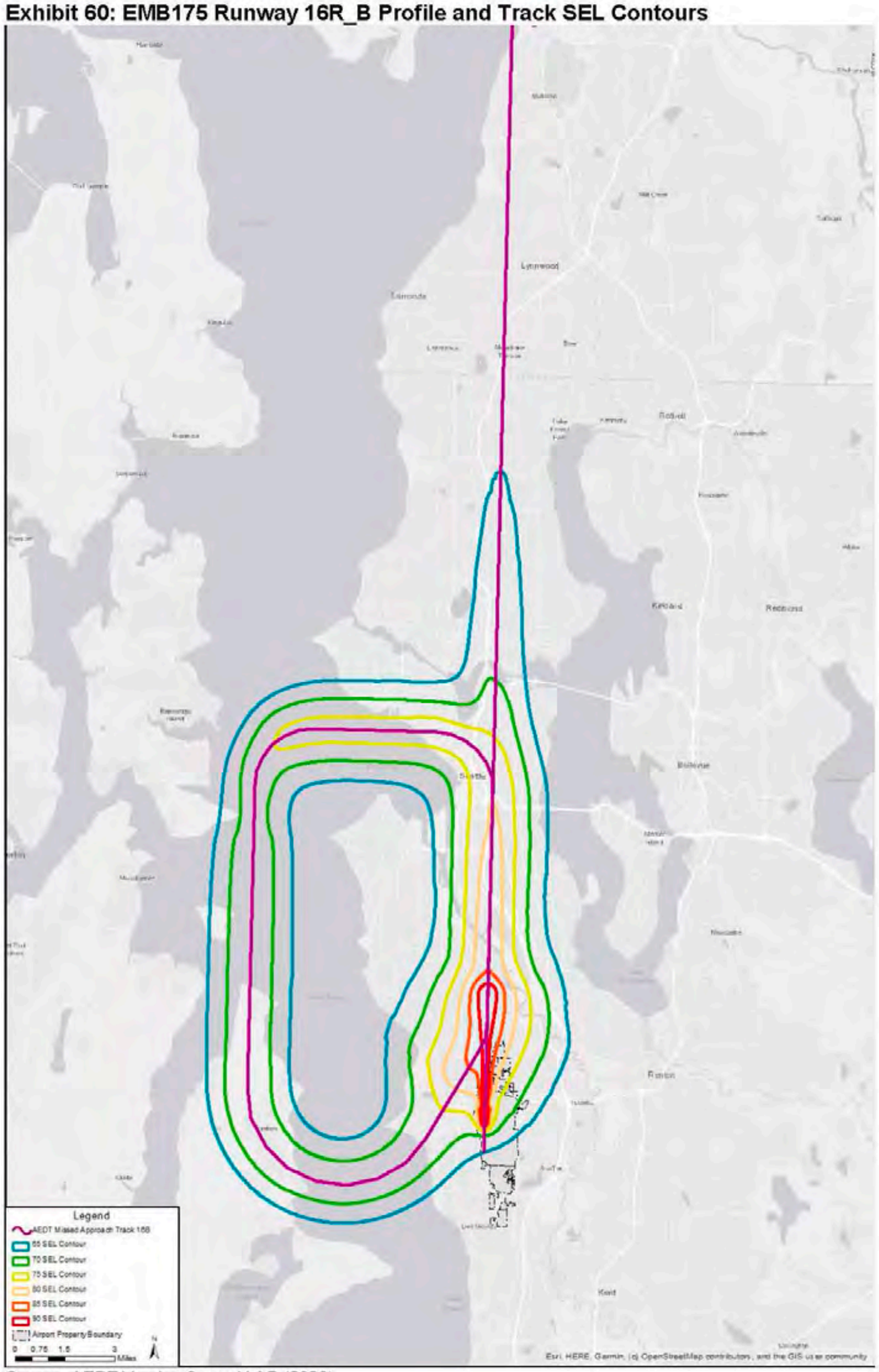
Exhibit 60: EMB175 Runway 16R_B Profile and Track SEL Contours



Source: AEDT Version 3e and L&B (2023)

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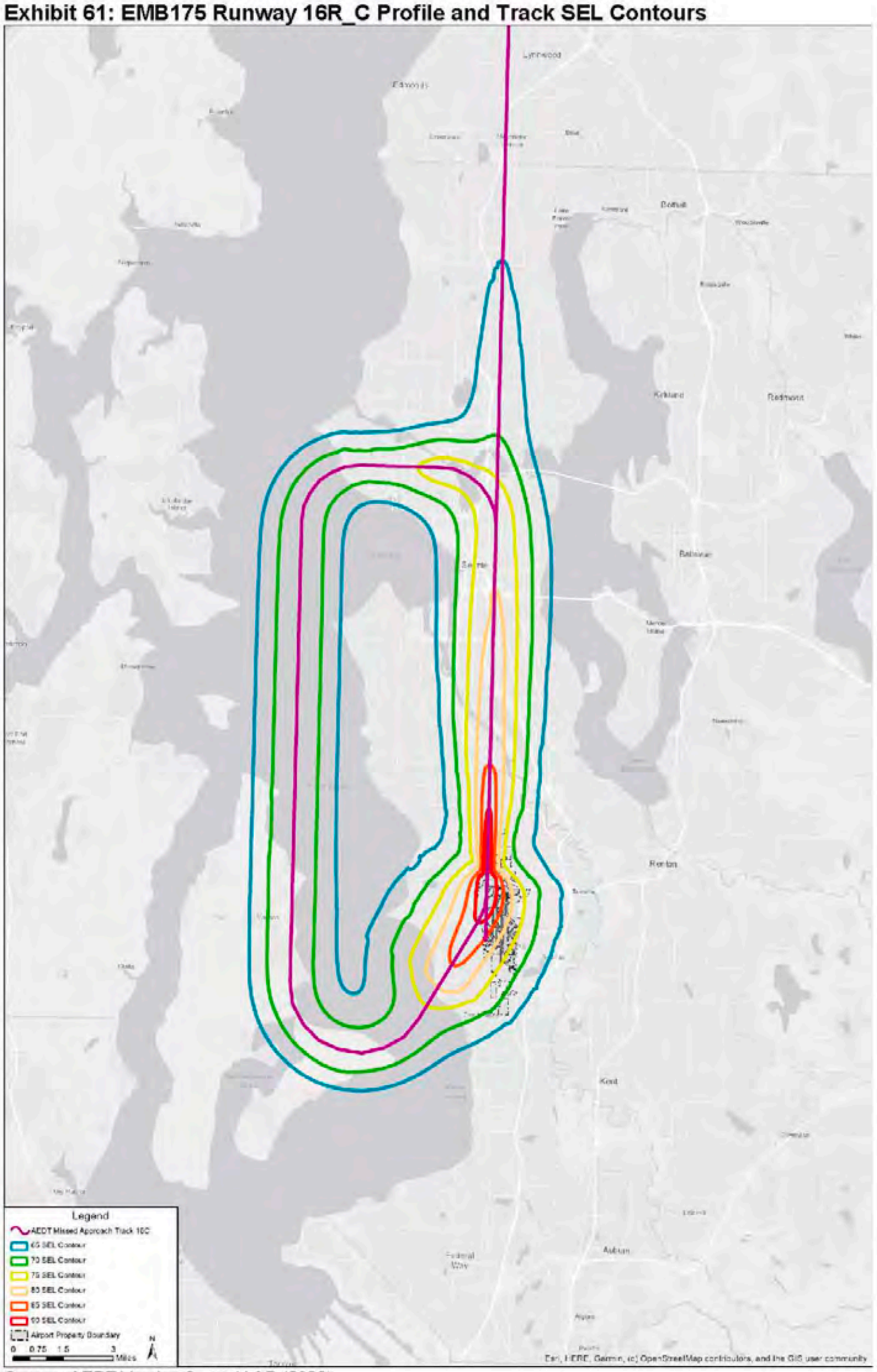
Exhibit 61: EMB175 Runway 16R_C Profile and Track SEL Contours



Source: AEDT Version 3e and L&B (2023)

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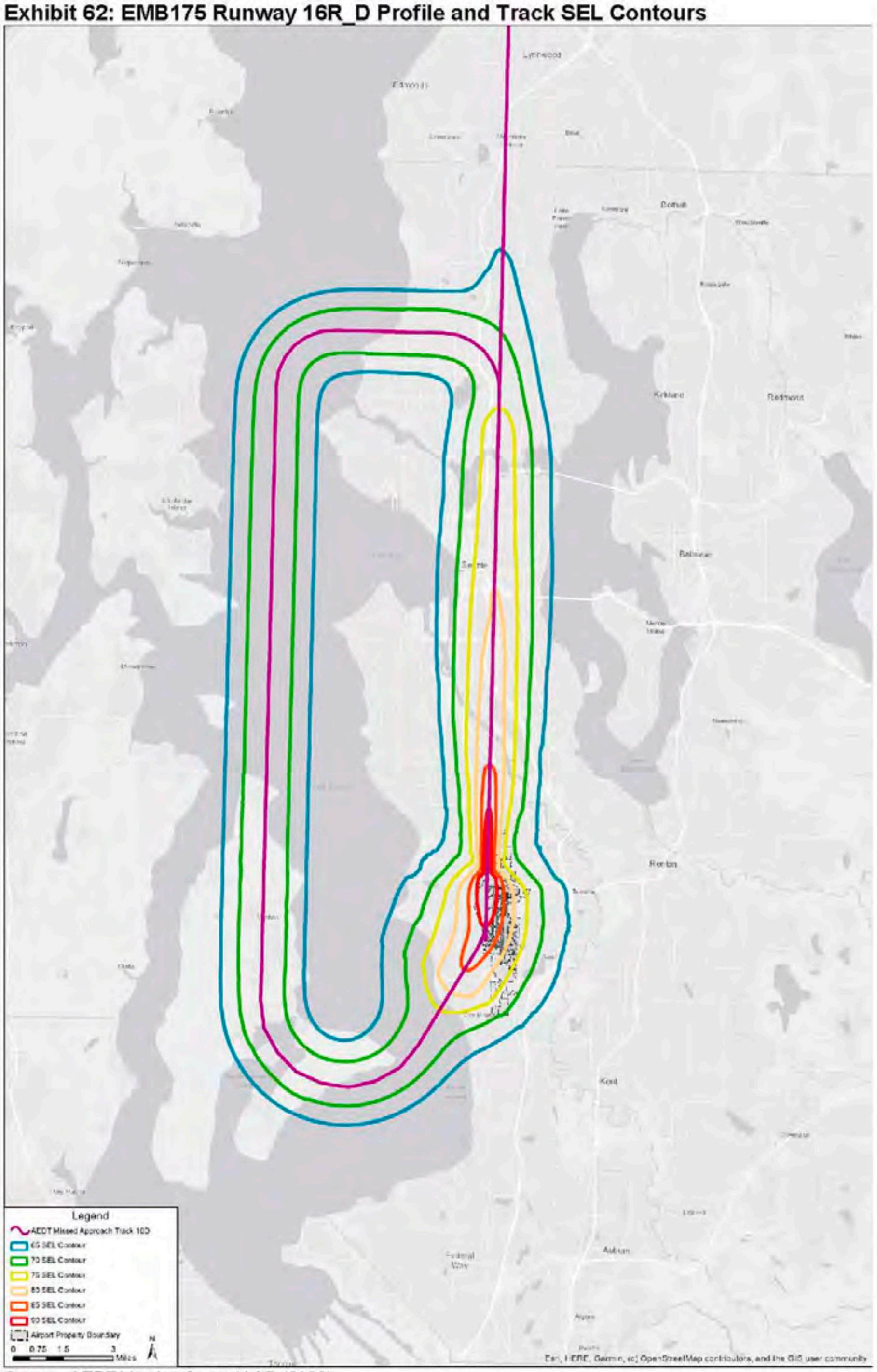
Exhibit 62: EMB175 Runway 16R_D Profile and Track SEL Contours



Source: AEDT Version 3e and L&B (2023)

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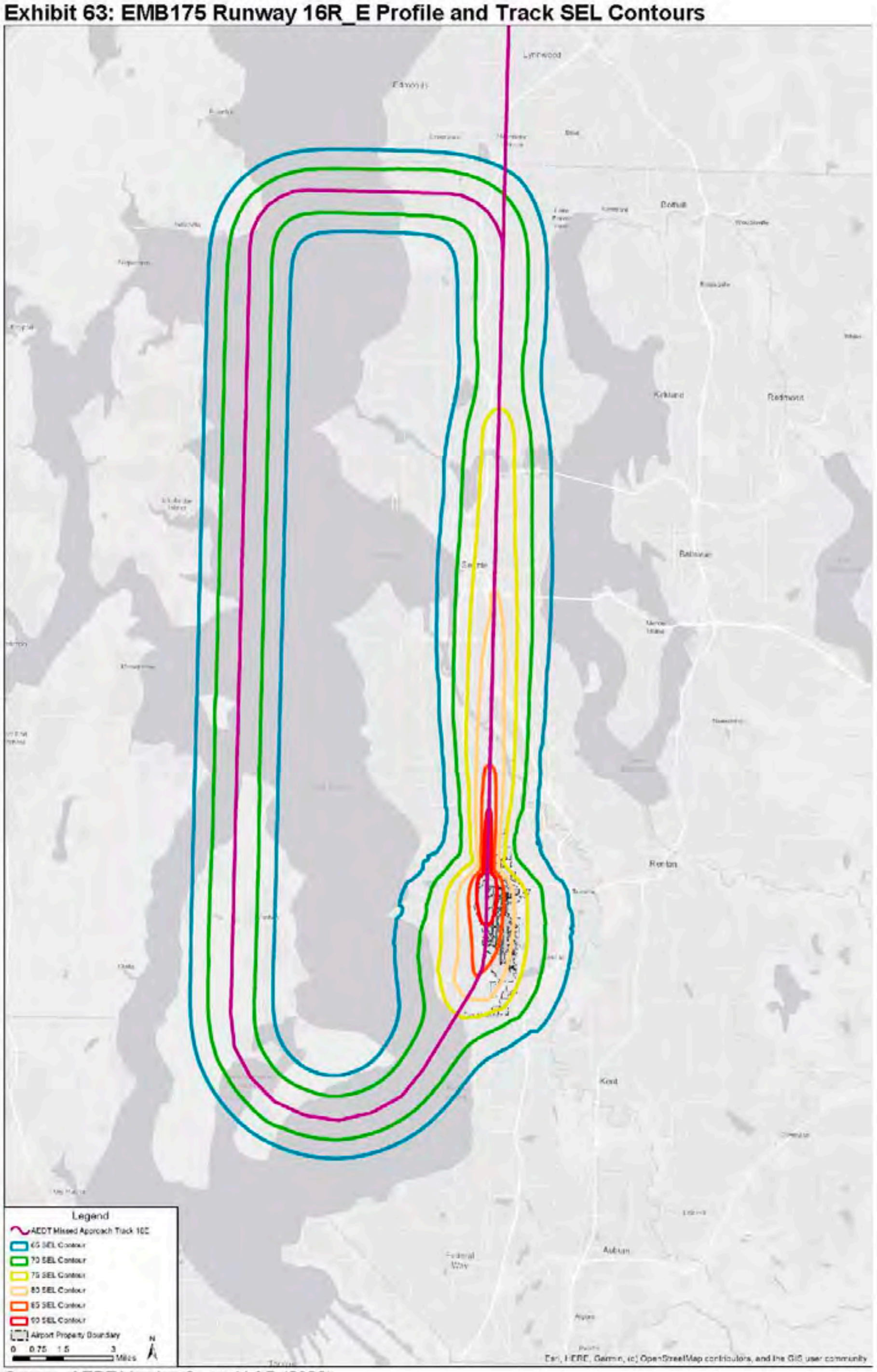
Exhibit 63: EMB175 Runway 16R_E Profile and Track SEL Contours



Source: AEDT Version 3e and L&B (2023)

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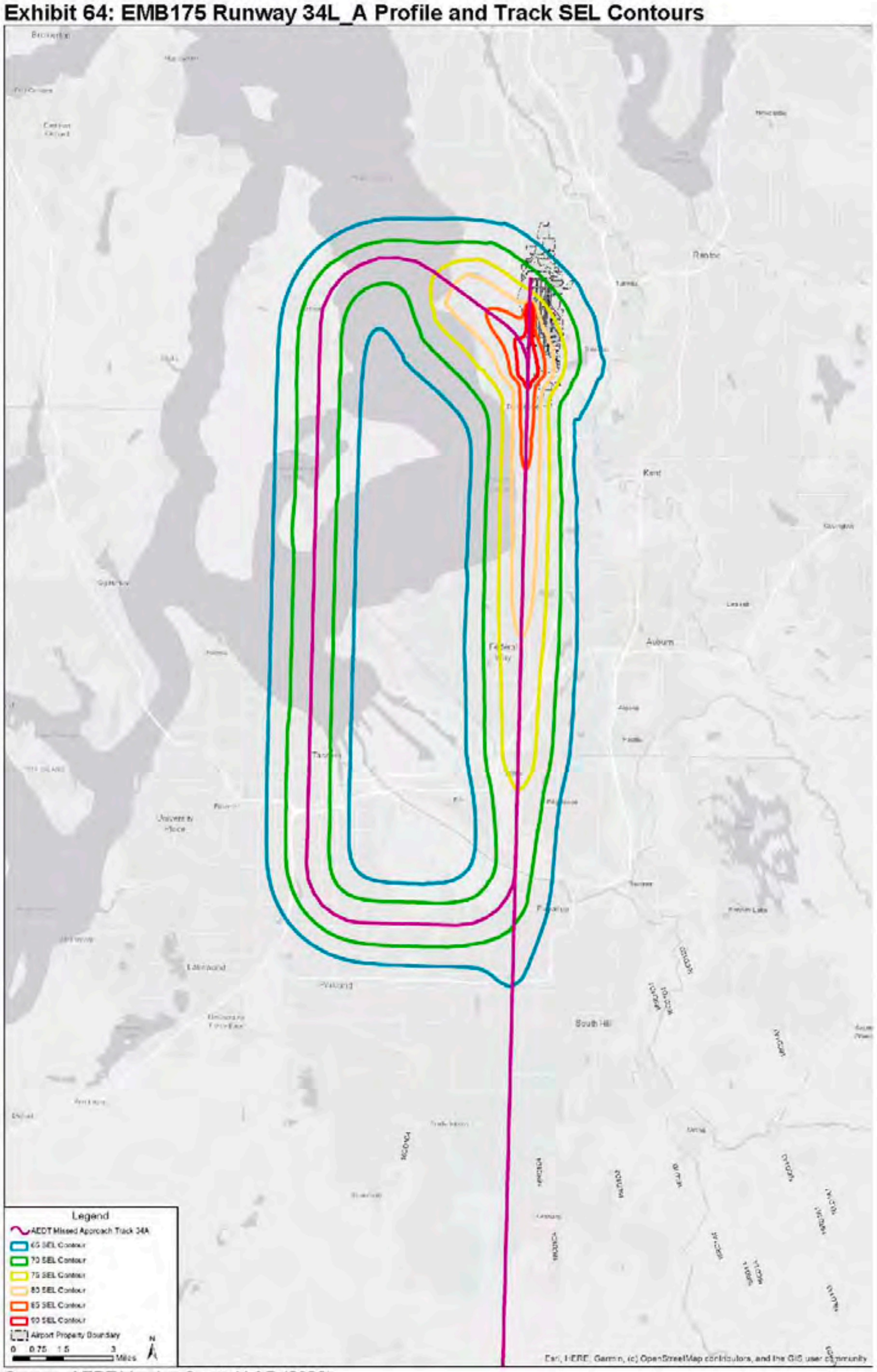
Exhibit 64: EMB175 Runway 34L_A Profile and Track SEL Contours



Source: AEDT Version 3e and L&B (2023)

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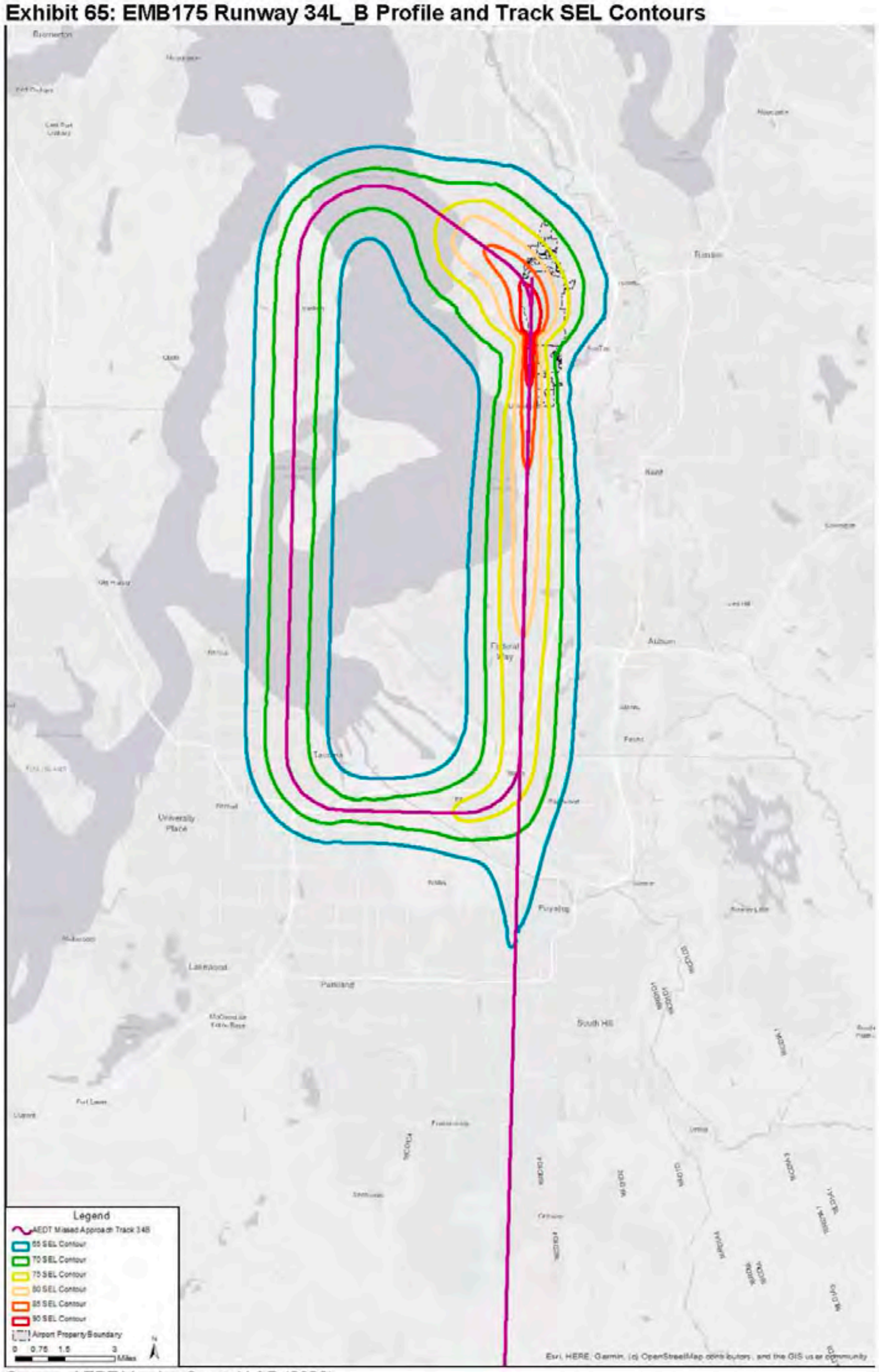
Exhibit 65: EMB175 Runway 34L_B Profile and Track SEL Contours



Source: AEDT Version 3e and L&B (2023)

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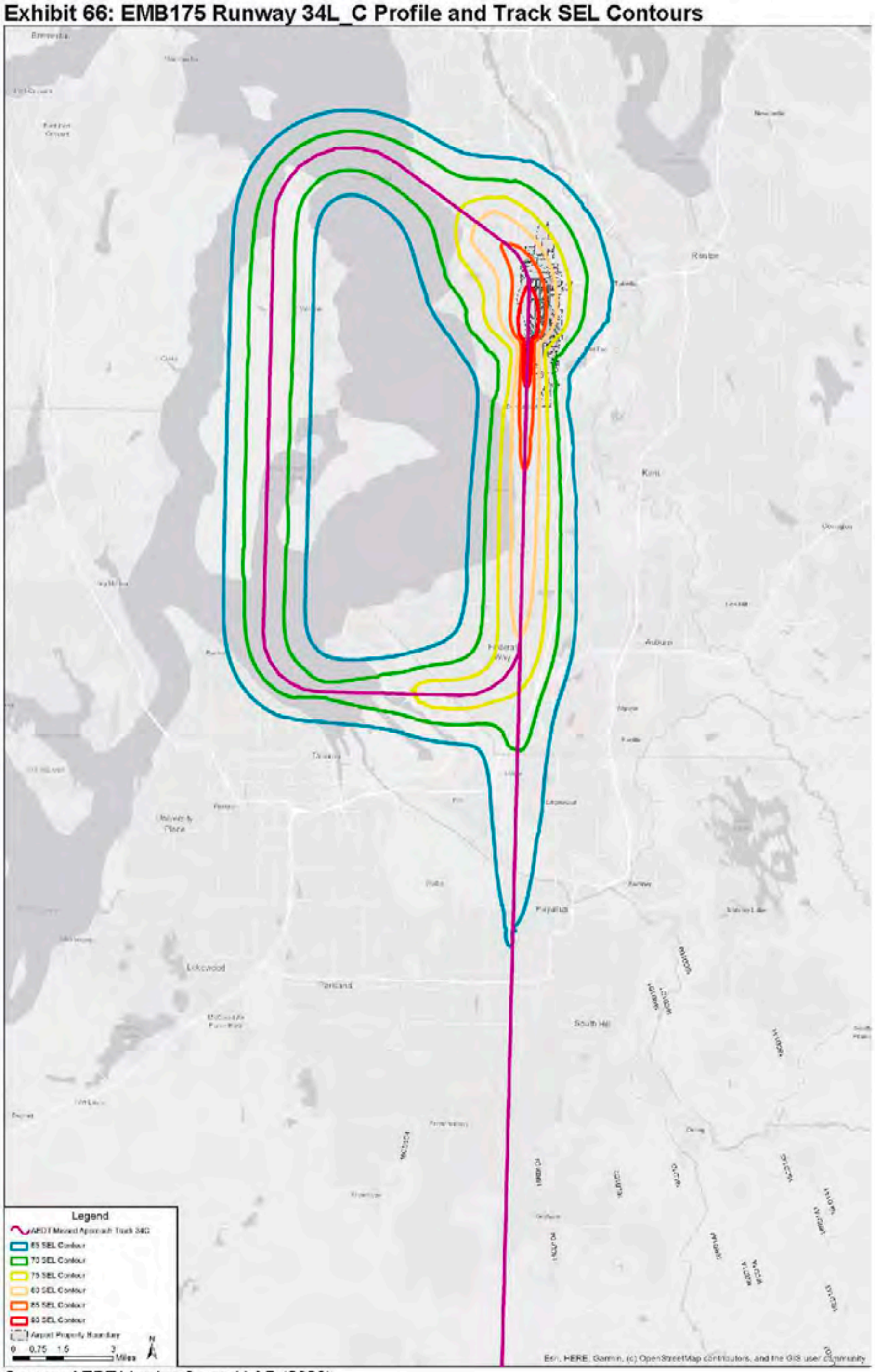
Exhibit 66: EMB175 Runway 34L_C Profile and Track SEL Contours



Source: AEDT Version 3e and L&B (2023)

Exhibit B-2 FAA/AEE Approval Letter

U.S. Department of Transportation
Federal Aviation Administration

Office of Environment and Energy

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

8/22/2023

Kandice Krull
Environmental Protection Specialist
Northwest Mountain Region
Federal Aviation Administration
26805 E 68th Ave, Suite 224
Denver, CO 80249

Dear Kandice Krull,

The Office of Environment and Energy (AEE) has received the memo from Landrum & Brown dated August 15th, 2023, referencing the Environmental Assessment (EA) for the Airport Sustainable Master Plan (SAMP) Near Term Projects (NTP) at Seattle-Tacoma International Airport (SEA). The memo presents a methodology for modeling missed approach operations at SEA in AEDT 3e and requests approval for the use of multiple user-defined profiles for the Boeing 737800 and Embraer EMB175 ANP types to represent missed approached operations.

AEE approves the proposed methodology for modeling missed approaches at SEA and use of the user-defined non-standard AEDT profiles for the Boeing 737800 and Embraer EMB175 ANP types to represent the missed approaches.

Please understand that this approval is limited to this particular Environmental Assessment for the Airport Sustainable Master Plan Near Term Projects at Seattle-Tacoma International Airport and for use with AEDT 3e only. Further non-standard AEDT inputs for additional projects at this or any other site will require separate approval.

Sincerely,

Digitally signed by David Senzig
Date: 2023.08.22 13:19:56 -04'00'

David Senzig
Acting Manager
AEE-100/Noise Division

cc: ARP Contacts (Susan Staehle, APP-400 and Ilon Logan, ANM-610)

APPENDIX J

Noise and Noise-Compatible Land Use

Construction Noise Technical Report

Sustainable Airport Master Plan – Near-Term Projects

Construction Noise Technical Report

DRAFT – June 2024

PREPARED FOR

Federal Aviation Administration and the Port of Seattle

PREPARED BY

Landrum & Brown, Incorporated

Contents Page

List of Tables Page

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1 Introduction

Landrum & Brown prepared this Construction Noise Technical Report to document the potential construction noise levels resulting from the Sustainable Airport Master Plan (SAMP) Near-Term Projects (NTPs) at the Seattle-Tacoma International Airport (SEA or Airport). This document describes the overall approach, methods, and results of the construction noise analysis to demonstrate compliance with the National Environmental Policy Act (NEPA).

This technical report is organized in the following manner:

- Section 1, Introduction
- Section 2, Characteristics of Noise
- Section 3, Regulations/Ordinances
- Section 4, Construction Noise Methodology
- Section 5, Construction Noise Results
- Appendix A, Construction Noise Results Tables
- Appendix B, Construction Schedule
- Appendix C, Construction Equipment
- Appendix D, Construction Noise Protocol

The approach, methods, and models used in the technical report are consistent with the Construction Noise Protocol (Appendix D) approved by the Federal Aviation Administration (FAA).

2 Characteristics of Noise

Sound is created by a vibrating source that induces vibrations in the air. The vibration produces alternating bands of relatively dense and sparse particles of air, spreading outward from the source like ripples on a pond. Sound waves dissipate with increasing distance from the source. Sound waves can also be reflected, diffracted, refracted, or scattered. When the source stops vibrating, the sound waves disappear almost instantly and the sound ceases.

Sound conveys information to listeners. It can be instructional, alarming, pleasant and relaxing, or annoying. Identical sounds can be characterized by different people, or even by the same person at different times, as desirable or unwanted. Unwanted sound is commonly referred to as “noise.”

2.1 Sound Frequency

The pitch (or frequency) of sound can vary greatly from a low-pitched rumble to a shrill whistle. If we consider the analogy of ripples in a pond, high frequency sounds are vibrations with tightly spaced ripples, while low rumbles are vibrations with widely spaced ripples. The rate at which a source vibrates determines the frequency. The rate of vibration is measured in units called “Hertz” -- the number of cycles, or waves, per second. One’s ability to hear a sound depends greatly on the frequency composition. Humans hear sounds best at frequencies between 1,000 and 6,000 Hertz. Sound at frequencies above 10,000 Hertz (high-pitched hissing) and below 100 Hertz (low rumble) are much more difficult to hear.

When attempting to measure sound in a way that approximates what our ears hear, we must give more weight to sounds at the frequencies we hear well and less weight to sounds at frequencies we do not hear well. Acousticians have developed several weighting scales for measuring sound. The A-weighted scale correlates with judgments people make about the loudness of sounds. The A-weighted decibel scale (dBA) is used in studies where audible sound is the focus of inquiry. The U.S. Environmental Protection Agency (USEPA) has recommended the use of the A-weighted decibel scale in studies of environmental noise.[1] Its use is required by the FAA in airport noise studies.[2] For the purposes of this analysis, dBA was used as the noise metric and dB and dBA are used interchangeably.

2.2 Sound Measurements

Sound is measured using the logarithmic decibel (dB) scale. This is because the range of sound pressures detectable by the human ear can vary from 1 to 100 trillion units. A logarithmic scale allows an analysis of noise using more manageable numbers. The range of audible sound ranges from approximately 1 to 140 dB, although everyday sounds rarely rise above about 120 dB.

There are several different metrics used for analyzing noise, including L_{eq} and Day Night Average Sound Level (DNL), which are geared towards evaluating longer term noise exposure (such as aircraft noise), while other metrics such as L_{max} are intended to evaluate shorter term fluctuating noise conditions. L_{max} does not include the number and duration of events, which are important for assessing people's reactions to noise. This construction noise analysis considered noise in terms of L_{eq} levels. L_{eq} is a single decibel value that accounts for total sound energy from all sound levels over a specified time interval (or time period).

2.3 Propagation of Noise

Outdoor sound levels decrease as a function of distance from the source, and as a result of wave divergence, atmospheric absorption, and ground attenuation. If sound is radiated from a source in a homogeneous and undisturbed manner, the sound travels as spherical waves. As the sound wave travels away from the source, the sound energy is distributed over a greater area, dispersing the sound energy of the wave. Spherical spreading of the sound wave reduces the noise level at a rate of 6 dB per doubling of the distance for hard ground and 7.5 dB per doubling of distance for soft ground. Obstacles between the source and the receiver, such as buildings, hills, and trees, will result in additional noise reductions depending upon their size, density, and location.

2.4 Ambient Sound Levels

Background or ambient sound levels can vary greatly depending on site-specific factors. Ambient sound levels can effectively mask construction noise and change the receiver’s perception of how loud construction noise is. Urban areas have the highest background sound levels, with daytime levels approximating 60 to 65 dBA (EPA 1978). Suburban or residential areas have background levels around 45 to 50 dBA (EPA 1978), while rural areas are the quietest with sound levels of 35 to 40 dBA (EPA 1978). In a more recent study, Cavanaugh and Tocci (1998) identify typical urban residential background sound at around 65 dBA, high-density urban areas at 78 dBA, and urban areas adjacent to

---

1 Information on Levels of Environmental Noise Requisite to Protect Health and Welfare with an Adequate Margin of Safety. USEPA, Office of Noise Abatement and Control. 1974, P. A-10.

2 “Airport Noise Compatibility Planning.” 14 CFR Part 150, Sec. A150.3, September 24, 2004.

freeway traffic at 88 dBA. In urban and developed areas, traffic noise and construction noise attenuate (decline) to background in less distance than in undeveloped or rural areas.

3 Regulations/Ordinances

3.1 Federal Regulations

There are no federal regulations concerning construction noise. The FAA has not defined significance thresholds for construction noise.

3.2 State Regulations

Washington Administrative Code (WAC) 173-60-040, Maximum Permissible Environmental Noise Levels, sets the Washington Department of Ecology maximum environmental noise limits as a function of class of noise generator and class of noise receiver. WAC 173-60-030, Identification of Environments, defines the classes of noise receivers. Class A EDNA (Environmental Designation for Noise Abatement) is defined as uses where humans reside or sleep, including residential, multi-family residential, recreational and entertainment uses like camps and resorts, and community services like hospitals or elder care facilities. Class B EDNA is defined as uses requiring protection against noise interference with speech (retail and commercial uses). Class C EDNA are industrial uses.

	EDNA of Receiving Property - Class A	EDNA of Receiving Property - Class B	EDNA of Receiving Property - Class C
EDNA of Noise Source - Class A	55 dBA	57 dBA	60 dBA
EDNA of Noise Source - Class B	57	60	65
EDNA of Noise Source - Class C	60	65	70

These levels are reduced by 10 dBA between the hours of 10 pm and 7 am. WAC 173-60-050, Exemptions, lists the actions that are exempt from the provisions of WAC 173-60-040. Temporary construction noise is exempt from these limits except for noise received by Class A EDNA between 10 pm and 7 am.

3.3 Local Regulations/Ordinances

3.3.1 Port of Seattle

The Port has defined Construction General Requirements, which includes the following in relation to construction noise:

1.21 NOISE CONTROLS

A. At all times keep objectionable noise generation to a minimum by:
   a. Equipping air compressors with silencing packages.
   b. Equipping jackhammers with silencers on the air outlet.
   c. Equipment that can be electrically driven instead of gas or diesel is preferred. If noise levels on equipment cannot reasonably be brought down to criteria, listed as follows, either the equipment will not be allowed on the job or use time will have to be scheduled subject to approval of the Port construction project representative.

d. All construction vehicles and equipment on the project operating between 10:00 p.m. and 7:00 a.m. shall be equipped with an ambient noise sensing variable volume backup alarm system. The system shall be in compliance with Washington Administrative Code (WAC) 296-155-615.

B. Objectionable noise received on neighboring (non-Port owned) properties is defined as any noise exceeding the noise limits of State Regulations (WAC 173- 60-040) or City ordinance, as stated below, or as any noise causing a public nuisance in a residential area, as determined by the Port and community representatives, or by the nuisance provisions of local ordinances.

a. The noise limitations established are as set forth in the following table after any applicable adjustments provided for herein are applied:

RECEIVING PROPERTY

NOISE SOURCE	RESIDENTIAL	COMMERCIAL	INDUSTRIAL
Airport	50 dBA	65 dBA	70 dBA

b. Between the hours of 2200 and 0500 on weekdays and 2200 and 0900 on weekends the noise limitations above may be exceeded for any receiving property by no more than:

i. 5 (five) dBA for a total of 15 minutes in any one hour period; or
ii. 10 (ten) dBA for a total of 5 minutes in any one hour period; or
iii. 15 (fifteen) dBA for a total of 1.5 minutes in any one hour period.

C. In addition to the noise controls specified, demolition and construction activities conducted within 1,000 feet of residential areas may have additional noise controls required.

D. The Contractor’s operation shall at all times comply with all County and City requirements.

E. For work conducted within Airport buildings, noise levels from work activities shall not exceed 80 dBA on the slow scale at the project boundary.

F. The Contractor shall plan all work activities generating noise, such as saw cutting or core drilling, during periods of low airport activity.

3.3.2 City of SeaTac and City of Burien

Local jurisdictions also have the authority to regulate environmental noise generally and construction noise specifically. The City of SeaTac prohibits construction noise between the hours of 10 pm and 7 am on weekdays and 10 pm and 9 am on weekends. SMC 8.05.360.B.8. Burien Municipal Code 9.105.410.2.h prohibits construction noise between the hours of 7 pm and 7 am, unless the City grants a variance.

4 Construction Noise Methodology

This section outlines the procedures for assessing construction noise. Construction activities typically generate noise from the operation of equipment required for construction of various facilities. The construction noise for the NTPs was evaluated by considering the construction activity, calculating the construction-related noise at nearby noise sensitive receivers, and comparing the construction-related noise to existing ambient noise.

4.1 Types of Construction Noise

Construction-related noise is a function of the types of equipment being used, the distance to potential receivers, and the duration of construction activities. Noise increases above ambient from construction may vary greatly depending on the duration and complexity of the project.

Table 1 depicts an estimate of the typical maximum sound level energy from various types of construction equipment that are likely to be used during construction. Calculations of construction noise was be based on these sound levels.

TABLE 1: DEFAULT CONSTRUCTION EQUIPMENT NOISE

Equipment Description	Actual Measured L_{max} @ 50 feet (dBA)	Equipment Description	Actual Measured L_{max} @ 50 feet (dBA)
Auger Drill Rig	84	Man Lift	75
Backhoe	78	Mounted Impact Hammer (hoe ram)	90
Boring Jack Power Unit	83	Pavement Scarifier	90
Chain Saw	84	Paver	77
Clam Shovel (dropping)	87	Pickup Truck	75
Compactor (ground)	83	Pneumatic Tools	85
Compressor (air)	78	Pumps	81
Concrete Mixer Truck	79	Refrigerator Unit	73
Concrete Pump Truck	81	Rivit Buster/Chipping Gun	79
Concrete Saw	90	Rock Drill	81
Crane	81	Roller	80
Dozer	82	Sand Blasting (single nozzle)	96
Drill Rig Truck	79	Scraper	84
Drum Mixer	80	Sheers (on backhoe)	96
Dump Truck	76	Slurry Plant	78
Excavator	81	Slurry Trenching Machine	80

TABLE 1: DEFAULT CONSTRUCTION EQUIPMENT NOISE (CONTINUED)

Equipment Description	Actual Measured L_{max} @ 50 feet (dBA)	Equipment Description	Actual Measured L_{max} @ 50 feet (dBA)
Flat Bed Truck	74	Vacuum Excavator (Vac-Truck)	85
Front End Loader	79	Vacuum Street Sweeper	82
Generator	81	Ventilation Fan	79
Generator (<25KVA, VMS Signs)	73	Vibrating Hopper	87
Gradall	83	Vibratory Concrete Mixer	80
Grapple (on backhoe)	87	Vibratory Pile Driver	101
Horizontal Boring Hydraulic Jack	82	Warning Horn	83
Impact Pile Driver	101	Welder/Torch	74
Jackhammer	89		

Source: Federal Highway Administration, *Construction Noise Handbook, 9.0 Construction Equipment Noise Levels and Ranges, Table 9.1*. Available online at https://www.fhwa.dot.gov/Environment/noise/construction_noise/handbook/handbook09.cfm

4.2 Multiple Sources of Construction Noise

When multiple sources of noise are combined (i.e., situations where multiple pieces of construction equipment are operating at the same time) the sound intensities would be combined. However, since dBA are calculated on a logarithmic scale, the sound levels would not add together. In a case where two 89 dBA jackhammers are operating simultaneously, the combined sound intensity would not produce a 178 dBA sound level. Rather, two jackhammers operating simultaneously (a doubling of sound intensity from just one) would result in an increase of 3 dBA of sound level, or 92 dBA at 50 feet from the source. Likewise, four jackhammers operating simultaneously (a doubling of sound intensity from two jackhammers) would result in a sound level of 95 dBA at 50 feet from the source. This concept is illustrated below in **Table 2** for use of one, two, and four jackhammers, the loudest type of construction equipment anticipated for the Proposed Action.

TABLE 2: EXAMPLE OF NOISE REDUCTION OVER DISTANCE FROM JACKHAMMERS (89 DBA)

Distance from Source (feet)	Point Source Noise (from an 89 dBA source)	Point Source Noise (from two 89 dBA sources)	Point Source Noise (from four 89 dBA sources)
50	89 dBA	92 dBA	95 dBA
100	83 dBA	86 dBA	89 dBA
200	77 dBA	80 dBA	83 dBA
400	71 dBA	74 dBA	77 dBA
800	65 dBA	68 dBA	71 dBA
1,600	59 dBA	62 dBA	65 dBA
3,200	53 dBA	56 dBA	59 dBA

Source: Based on Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

4.3 Construction Noise Screening

A construction noise screening was conducted for each NTP to determine if additional analysis was required. The screening evaluated each NTP, considering the construction activity, calculating the construction-related noise at nearby noise sensitive receivers, and comparing the construction-related noise to existing ambient noise. Appendix D has detailed information on the methodology utilized for the screening analysis.

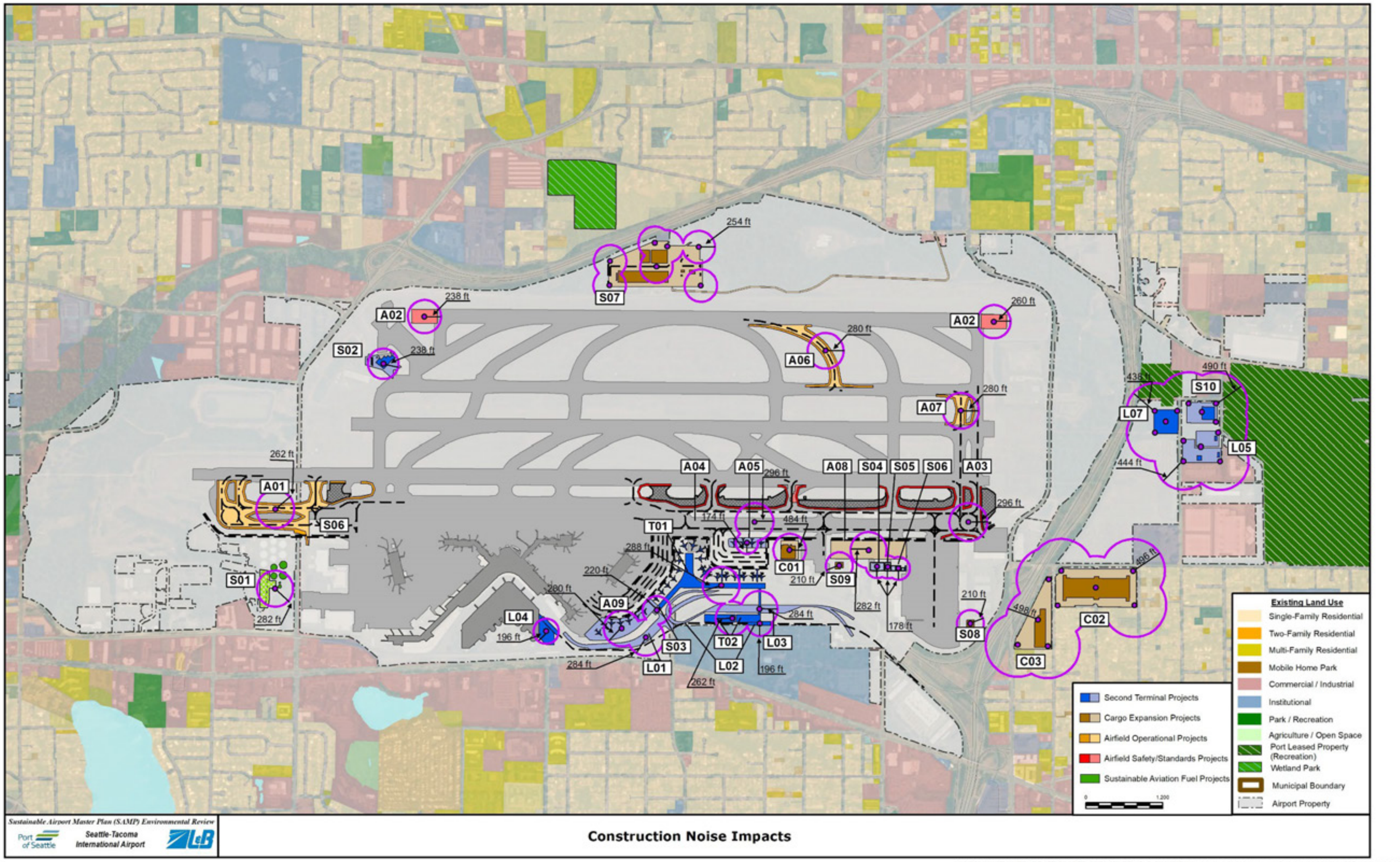
Data from the SEA noise monitoring system was utilized to determine ambient sound level for a 24-hour period (Equivalent Noise Level (LEQ) Community Noise data). Data from monitor SEA01 was used to establish the ambient sound level for each NTP located within the airfield ((Airport property south of 518, west of International Blvd, east of 509, and north of 200th St). Data from monitor SEA14 was used to establish the ambient sound level for the NTPs located north of SR 518. Table 3 provides the ambient level for each NTP.

TABLE 3 AMBIENT NOISE LEVELS FOR EACH NTP

NTP #	Ambient Sound Level
A01; A02; A03; A04; A05; A06; A07; A08; A09; A10; T01; T02; C01; L01; L02; L03; L04; S01; S02; S03; S04; S05; S06; S07; S08; S09	76.5 dB
C02; C03; L05; L07; S10	66 dB

The distance point source construction noise will travel before it attenuates to the ambient sound level was calculated for each NTP to determine the presence of noise sensitive land uses within the area where construction noise may be noticeable. The results were plotted on the land use map (Exhibit 1) to identify if potential noise sensitive receivers have the potential to experience construction noise levels above ambient.

EXHIBIT 1: DISTANCE CONSTRUCTION NOISE TRAVELS BEFORE REACHING AMBIENT LEVELS



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4.3.1 Noise Sensitive Receivers

If noise sensitive receivers were not identified within the area that could experience construction noise levels that exceed ambient conditions, no further analysis was completed. If noise sensitive receivers were identified within the area that could experience construction noise levels that exceed ambient condition, additional analysis was completed. **Table 4** documents the result of the screening process and indicates if additional analysis is required.

TABLE 4: SCREENING ANALYSIS RESULTS

NTP#	Noise Sensitive Receivers Identified	Additional Analysis Required
A01	No	No
A02	No	No
A03	No	No
A04	No	No
A05	No	No
A06	No	No
A07	No	No
A08	No	No
A09	No	No
A10	No	No
T01	No	No
T02	No	No
C01	No	No
C02	**Yes**	**Yes**
C03	**Yes**	**Yes**
L01	No	No
L02	No	No
L03	No	No
L04	No	No
L05	Yes	No
L07	Yes	No
S01	No	No
S02	No	No
S03	No	No
S04	No	No
S05	No	No
S06	No	No
S07	No	No
S08	No	No
S09	No	No
S10	Yes	No

Note: Bold indicates additional analysis is required for the project.

Based on the screening analysis, it was determined a detailed construction noise assessment was required for NTPs C02 and C03 as the projects are directly adjacent to residential properties. L05, L07, and S10 are directly adjacent to Section 4(f) properties, however it was determined that none of the Section 4(f) properties would experience a substantial impairment due to noise increases from construction. No other NTPs show potential construction noise increases over ambient on noise sensitive receivers from the screening analysis.

4.4 Construction Noise Assessment

The following methodology was used to prepare the construction noise analysis.

1. Detailed construction schedules were provided by the Port for NTPs C02 and C03. The schedules included detailed phasing and typical number and type of equipment used during the phase of construction. The construction phasing assumed 10 phases for each site. **Table 5** and **Table 6** present the overall construction phases for C02 and C03 and the activities that would occur in each phase.
2. Calculations of construction noise were conducted using the Federal Highway Administration (FHWA) Roadway Construction Noise Model (TNM) version 3.2.
3. Construction noise was calculated in 2-week increments for C02 and C03 from 7am to 7 pm at adjacent receivers. The 2-week calculations incorporate any overlap in the construction phases. The adjacent receivers are shown in **Exhibit 2**.
4. To determine noise levels associated with each phase of construction of C02 and C03, it was assumed that every piece of construction equipment identified for the phase would be operating at the same time. This is the most conservative approach to identifying construction noise because the use of every piece of construction equipment at the same time would not be typical for most construction projects. The detailed calculation methods for construction are based on the quantities of construction equipment, schedule of construction efforts, and construction equipment noise source levels. See Attachment 2 for equipment number and type.
5. Calculated total noise levels at the receivers were compared to ambient noise levels to determine if the receiver would experience construction noise above ambient levels.

TABLE 5: C02 - CONSTRUCTION ACTIVITY BY CONSTRUCTION PHASE

Phase Description	Duration	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8	Phase 9	Phase 10
Tree Removal	2 weeks	X									
Street Demolition	2 weeks	X									
Site Mobilization	2 weeks		X								
Grading - North Portion of Site	2 weeks		X								
Grading - South Portion of Site	2 weeks		X								
Excavation - North Portion of Site	6 weeks			X							
Excavation - South Portion of Site	6 weeks			X							
Utilities	8 weeks				X						
Utilities - North	3 weeks				X						
Utilities - South	3 weeks				X						
Foundation - North	9 weeks				X						
Foundation - South	9 weeks				X						
North Apron Concrete	3 weeks					X					
South Apron Concrete	3 weeks					X					
Retaining Wall	10 weeks					X					
Building Structure Tilt-Up	10 weeks						X				
Building Roof Trust System	6 weeks							X			
Building Roof System Build-up	28 weeks								X		
Paving Onsite	8 weeks									X	
Building Exterior & Interiors Walls	24 weeks										X
Paving Public ROW/Streets	8 weeks										X

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TABLE 6: C03 - CONSTRUCTION ACTIVITY BY CONSTRUCTION PHASE

Phase Description	Duration	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8	Phase 9	Phase 10
Tree Removal	2 weeks	X									
Site Mobilization	2 weeks		X								
Grading	4 weeks		X								
Excavation	8 weeks			X							
Utilities	4 weeks				X						
Utilities - North	4 weeks				X						
Foundation	14 weeks				X						
Loading Dock	10 Weeks					X					
Retaining Wall	10 weeks					X					
Building Structure Tilt-Up	4 weeks						X				
Building Roof Trust System	4 weeks							X			
Building Roof System Build-up	8 weeks								X		
Paving Onsite	4 weeks									X	
Building Exterior & Interiors Walls	10 weeks										X
Paving Public ROW / Street	4 weeks										X

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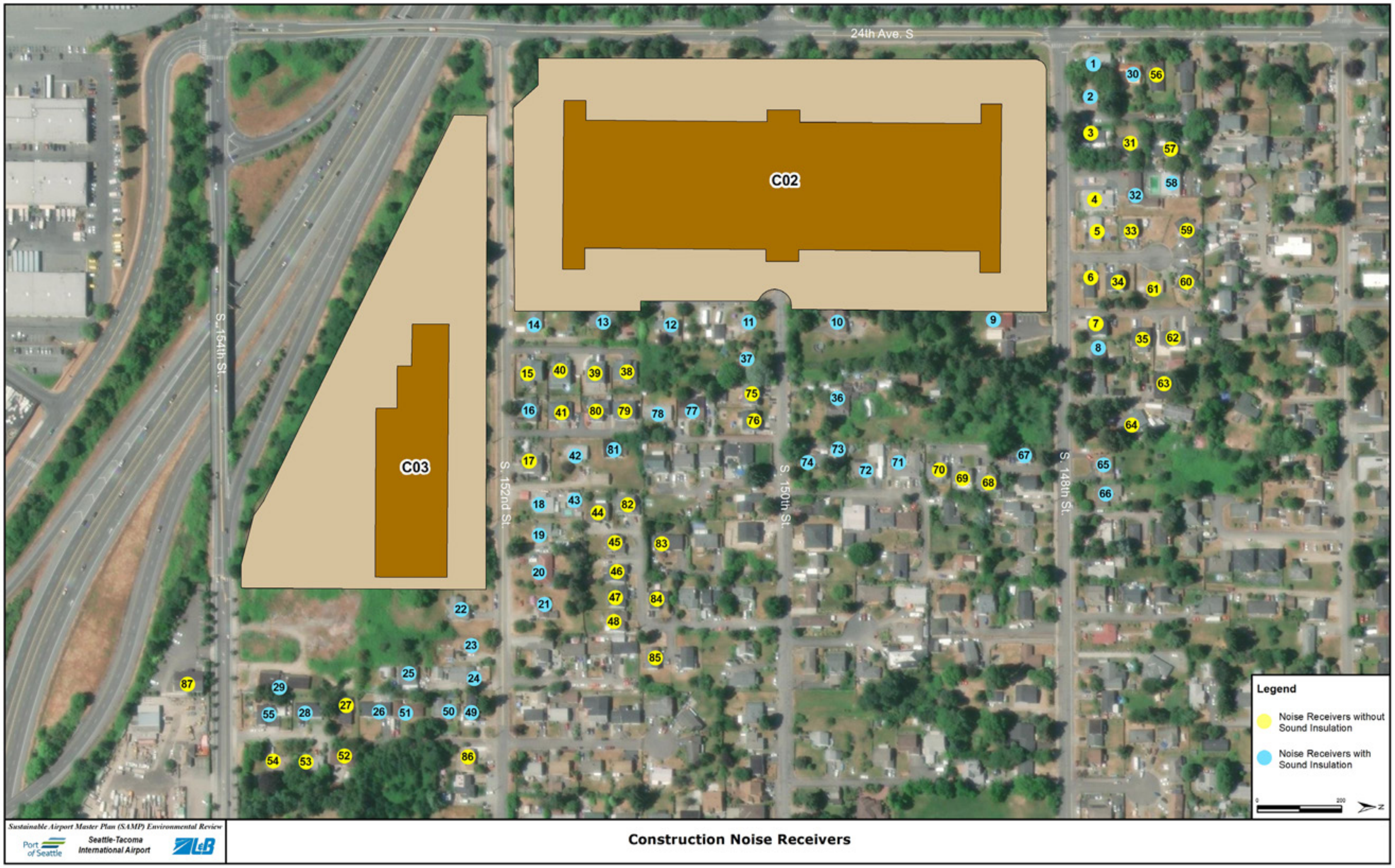
EXHIBIT 2: CONSTRUCTION NOISE RECEIVERS



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5 Construction Noise Results

It is anticipated that construction activity would occur in two different periods starting in 2026 (C02) and 2028 (Project C03) with C02 lasting approximately 18 months and C03 lasting around 16 months. Noise from construction equipment may at times exceed ambient noise levels and be noticeable to nearby receivers. As a result, temporary speech interference outdoors during the construction periods, activity interference (e.g. reading or watching television), or annoyance may occur.

Human perception of changes in sound pressure are less sensitive than a sound level meter. In community settings, most people perceive a 3 dB increase in sound pressure as just noticeable, a 5 dB change is readily noticeable, and a 10 dB change would be perceived as a doubling in sound. **Exhibit 3** and **Exhibit 4** present the results of the construction analysis for each receiver by 2-week increments (see Appendix A for the corresponding tables). The black dashed line on the graphs shows the 3 dB increase (69 dB) above the ambient (66 dB) where the human ear would begin to detect a change in the sound level. As shown, the construction noise level increases above ambient would be temporary and vary throughout the construction period for each site.

For C02, 13 receivers would experience noise levels at or above 69 dB approximately 1-5 times during the 18 months of construction. Each exceedance would last for anywhere from 2 weeks to 18 weeks depending on the phase of construction. Construction noise increases would be less than 10 dB (0.0-9.4 dB). These increases in noise would be short-term, temporary increases only occurring during active construction.

For C03, 8 receivers would experience noise levels above 69 dB approximately 3-6 times during the 16 months of construction. Each exceedance would last for anywhere from 2 weeks to 26 weeks depending on the phase of construction. Construction noise increases would be less than 10 dB (0.0-8.4 dB). These increases in noise would be short-term, temporary increases only occurring during active construction.

Construction-related noise increases would be minimized through strict adherence to the Port’s Construction General Requirements and by meeting State and City of SeaTac requirements. Contractors will also utilize BMPs to reduce noise impacts. In addition, most of the receivers adjacent to the C02 and C03 site that would experience a noticeable temporary noise increase have received sound insulation through the Port’s Sound Insulation Program which reduces the noise that enters the interior of the structure.

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EXHIBIT 3: C02 – NOISE LEVELS BY RECEIVER BY 2-WEEK INCREMENTS

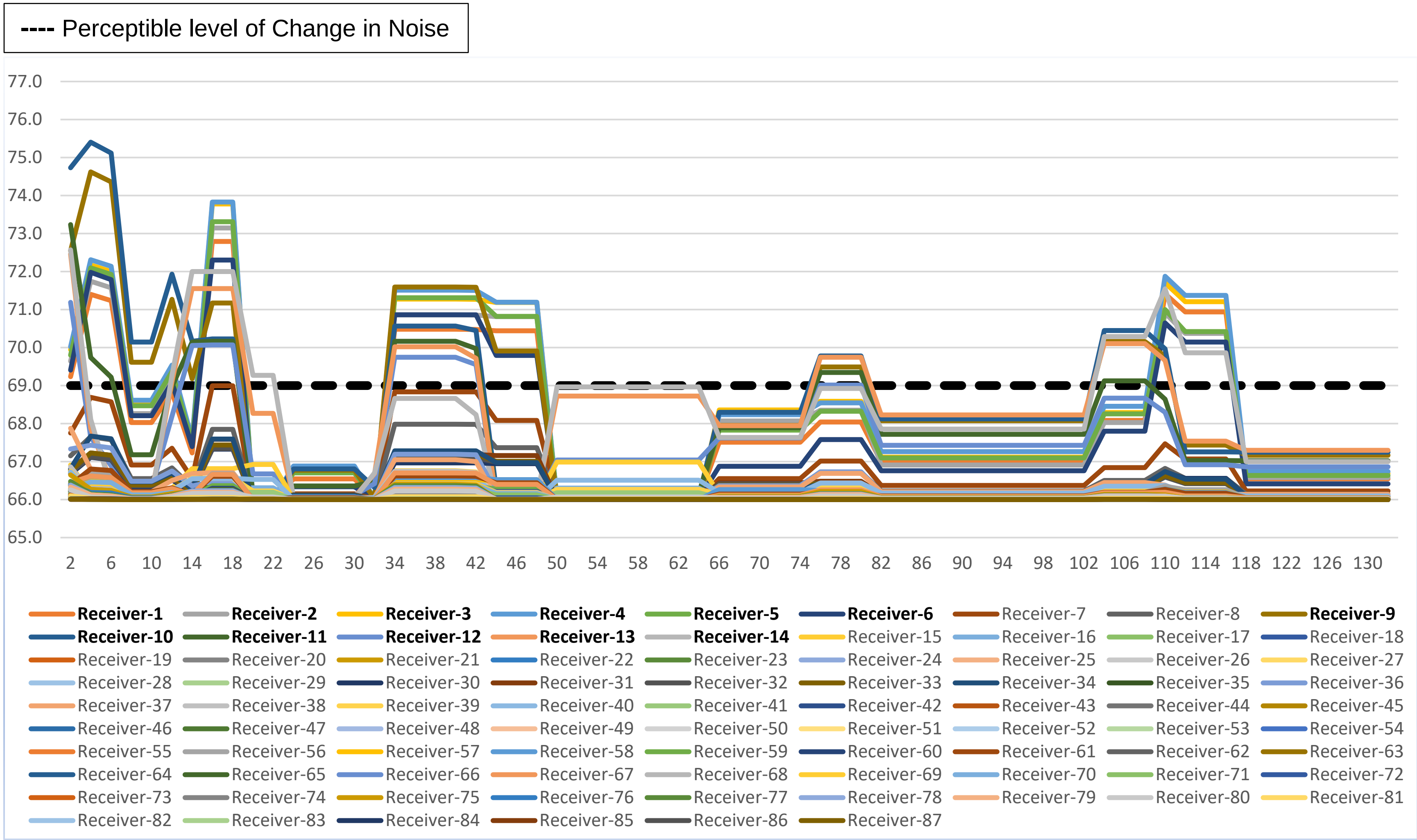

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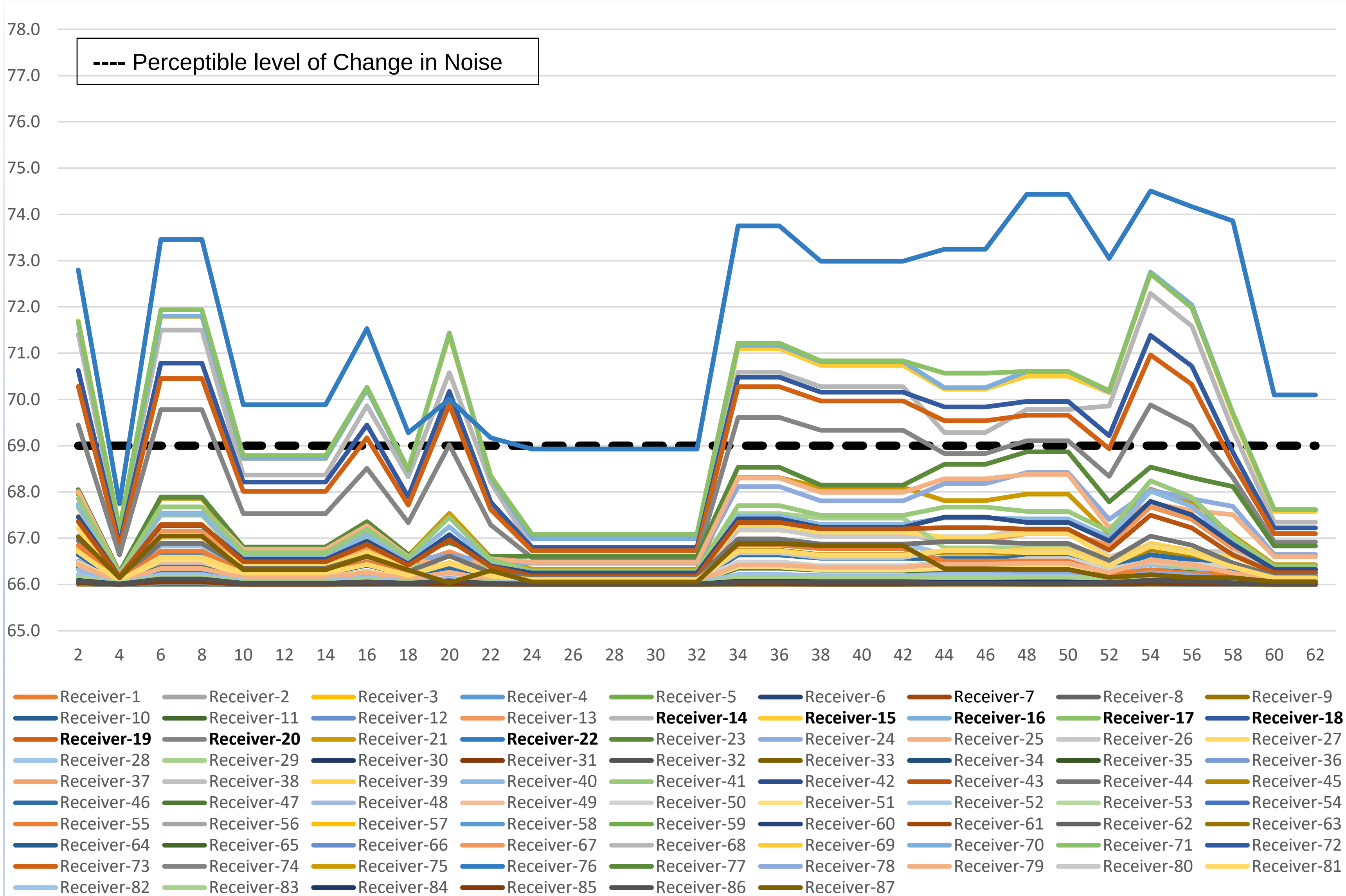
EXHIBIT 4: C03 – NOISE LEVELS BY RECEIVER OVER 2-WEEK INCREMENTS



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Appendix A, Construction Noise Results Tables

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TABLE A- 1: C02 CONSTRUCTION NOISE LEVELS (LEQ) BY RECEIVER PER 2-WEEK INCREMENTS (RECEIVERS 1-30)

	Receiver-1	Receiver-2	Receiver-3	Receiver-4	Receiver-5	Receiver-6	Receiver-7	Receiver-8	Receiver-9	Receiver-10	Receiver-11	Receiver-12	Receiver-13	Receiver-14	Receiver-15	Receiver-16	Receiver-17	Receiver-18	Receiver-19	Receiver-20	Receiver-21	Receiver-22	Receiver-23	Receiver-24	Receiver-25	Receiver-26	Receiver-27	Receiver-28	Receiver-29	Receiver-30
Week	Sound Insulated	Sound Insulated						Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated		Sound Insulated		Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated		Sound Insulated	Sound Insulated	Sound Insulated
2	66.4	67.2	67.7	67.8	67.5	66.8	63.0	60.8	71.5	74.1	72.3	69.6	71.3	71.5	59.7	55.7	51.9	49.1	47.6	45.3	43.4	43.2	41.8	38.7	39.5	40.9	39.3	38.8	40.0	58.2
4	69.9	70.4	71.0	71.2	70.9	70.7	65.3	62.7	74.0	74.9	67.4	62.6	63.3	64.0	51.5	47.7	44.5	44.0	41.7	39.4	39.1	38.2	37.1	35.3	35.7	38.9	37.4	38.1	35.0	60.6
6	69.7	70.2	70.7	70.9	70.6	70.5	65.1	62.4	73.7	74.6	66.4	59.6	56.4	54.5	45.5	42.2	40.5	42.1	39.1	36.8	37.3	35.8	34.0	33.7	33.6	37.8	36.2	37.3	32.4	60.4
8	63.7	64.3	64.9	65.2	64.8	64.2	59.7	57.3	67.1	68.0	61.0	54.5	50.9	48.5	38.3	35.2	33.4	34.8	31.8	29.5	29.8	28.7	26.5	26.3	26.3	30.3	28.6	29.8	25.0	55.0
10	63.7	64.3	64.9	65.2	64.8	64.2	59.7	57.3	67.1	68.0	61.0	54.5	50.9	48.5	38.3	35.2	33.4	34.8	31.8	29.5	29.8	28.7	26.5	26.3	26.3	30.3	28.6	29.8	25.0	55.0
12	65.6	66.2	66.8	67.0	66.7	66.1	61.6	59.2	69.7	70.7	65.9	64.2	66.2	66.5	54.5	50.4	46.5	44.1	42.5	40.3	38.9	38.9	37.8	34.7	35.5	36.5	35.8	35.4	35.6	57.0
14	61.1	61.8	62.3	62.5	62.1	61.8	57.3	54.9	66.3	68.1	68.0	67.9	70.1	70.7	59.1	54.9	51.0	47.8	46.4	44.2	42.4	42.9	40.3	39.2	39.4	39.1	38.2	37.8	39.3	52.8
16	71.8	72.2	73.0	73.0	72.4	71.1	66.0	63.2	69.6	68.2	68.1	67.9	70.1	70.7	59.1	54.9	51.0	47.8	46.4	44.3	42.5	42.9	40.4	39.3	39.5	39.4	38.5	38.7	39.4	61.5
18	71.8	72.2	73.0	73.0	72.4	71.1	66.0	63.2	69.6	68.2	68.1	67.9	70.1	70.7	59.1	54.9	51.0	47.8	46.4	44.3	42.5	42.9	40.4	39.3	39.5	39.4	38.5	38.7	39.4	61.5
20	36.4	35.7	36.6	37.9	36.5	36.2	40.6	38.6	44.1	46.4	50.4	58.2	64.4	66.5	59.8	54.7	51.1	48.4	46.6	45.5	43.5	44.1	40.9	41.1	41.7	40.1	41.0	41.0	41.5	31.4
22	36.4	35.7	36.6	37.9	36.5	36.2	40.6	38.6	44.1	46.4	50.4	58.2	64.4	66.5	59.8	54.7	51.1	48.4	46.6	45.5	43.5	44.1	40.9	41.1	41.7	40.1	41.0	41.0	41.5	31.4
24	57.2	58.5	59.4	59.5	58.5	55.1	51.5	49.2	58.9	59.1	55.4	50.3	47.4	44.1	35.5	31.2	28.6	29.3	26.7	25.4	24.2	24.2	22.3	22.4	22.1	29.4	22.7	23.1	21.1	49.5
26	57.2	58.5	59.4	59.5	58.5	55.1	51.5	49.2	58.9	59.1	55.4	50.3	47.4	44.1	35.5	31.2	28.6	29.3	26.7	25.4	24.2	24.2	22.3	22.4	22.1	29.4	22.7	23.1	21.1	49.5
28	57.2	58.5	59.4	59.5	58.5	55.1	51.5	49.2	58.9	59.1	55.4	50.3	47.4	44.1	35.5	31.2	28.6	29.3	26.7	25.4	24.2	24.2	22.3	22.4	22.1	29.4	22.7	23.1	21.1	49.5
30	57.2	58.5	59.4	59.5	58.5	55.1	51.5	49.2	58.9	59.1	55.4	50.3	47.4	44.1	35.5	31.2	28.6	29.3	26.7	25.4	24.2	24.2	22.3	22.4	22.1	29.4	22.7	23.1	21.1	49.5
32	41.9	42.6	42.9	42.6	41.9	39.6	40.2	35.3	42.7	54.8	56.6	56.1	58.3	58.4	46.2	41.4	38.1	30.7	29.8	27.8	25.8	32.3	27.5	26.8	28.9	29.8	28.5	29.2	31.7	36.2
34	68.6	69.1	69.7	70.1	69.8	69.1	65.6	63.6	70.2	68.7	68.1	67.4	67.8	65.3	58.8	55.1	51.5	48.3	46.2	43.9	41.4	42.6	38.6	38.2	38.7	38.6	37.9	38.0	38.3	60.0
36	68.6	69.1	69.7	70.1	69.8	69.1	65.6	63.6	70.2	68.7	68.1	67.4	67.8	65.3	58.8	55.1	51.5	48.3	46.2	43.9	41.4	42.6	38.6	38.2	38.7	38.6	37.9	38.0	38.3	60.0
38	68.6	69.1	69.7	70.1	69.8	69.1	65.6	63.6	70.2	68.7	68.1	67.4	67.8	65.3	58.8	55.1	51.5	48.3	46.2	43.9	41.4	42.6	38.6	38.2	38.7	38.6	37.9	38.0	38.3	60.0
40	68.6	69.1	69.7	70.1	69.8	69.1	65.6	63.6	70.2	68.7	68.1	67.4	67.8	65.3	58.8	55.1	51.5	48.3	46.2	43.9	41.4	42.6	38.6	38.2	38.7	38.6	37.9	38.0	38.3	60.0
42	68.6	69.1	69.7	70.1	69.8	69.1	65.6	63.6	70.2	68.5	67.7	67.0	67.3	64.3	58.6	54.9	51.3	48.2	46.1	43.8	41.3	42.1	38.3	37.9	38.3	38.0	37.4	37.4	37.2	59.9
44	68.5	69.1	69.6	69.6	69.1	67.4	63.9	61.7	67.6	54.0	48.1	44.4	40.6	38.4	32.5	31.0	29.7	28.3	25.9	26.5	25.1	24.0	22.5	22.6	21.5	26.7	25.8	29.8	24.0	59.9
46	68.5	69.1	69.6	69.6	69.1	67.4	63.9	61.7	67.6	54.0	48.1	44.4	40.6	38.4	32.5	31.0	29.7	28.3	25.9	26.5	25.1	24.0	22.5	22.6	21.5	26.7	25.8	29.8	24.0	59.9
48	68.5	69.1	69.6	69.6	69.1	67.4	63.9	61.7	67.6	54.0	48.1	44.4	40.6	38.4	32.5	31.0	29.7	28.3	25.9	26.5	25.1	24.0	22.5	22.6	21.5	26.7	25.8	29.8	24.0	59.9
50	36.4	35.8	37.1	38.6	37.1	36.7	34.8	37.0	42.1	47.4	51.9	60.3	65.4	65.9	60.1	54.6	51.0	47.2	45.5	43.2	41.5	42.5	38.9	38.6	39.7	38.4	38.7	39.2	39.2	30.4
52	36.4	35.8	37.1	38.6	37.1	36.7	34.8	37.0	42.1	47.4	51.9	60.3	65.4	65.9	60.1	54.6	51.0	47.2	45.5	43.2	41.5	42.5	38.9	38.6	39.7	38.4	38.7	39.2	39.2	30.4
54	36.4	35.8	37.1	38.6	37.1	36.7	34.8	37.0	42.1	47.4	51.9	60.3	65.4	65.9	60.1	54.6	51.0	47.2	45.5	43.2	41.5	42.5	38.9	38.6	39.7	38.4	38.7	39.2	39.2	30.4
56	36.4	35.8	37.1	38.6	37.1	36.7	34.8	37.0	42.1	47.4	51.9	60.3	65.4	65.9	60.1	54.6	51.0	47.2	45.5	43.2	41.5	42.5	38.9	38.6	39.7	38.4	38.7	39.2	39.2	30.4
58	36.4	35.8	37.1	38.6	37.1	36.7	34.8	37.0	42.1	47.4	51.9	60.3	65.4	65.9	60.1	54.6	51.0	47.2	45.5	43.2	41.5	42.5	38.9	38.6	39.7	38.4	38.7	39.2	39.2	30.4
60	36.4	35.8	37.1	38.6	37.1	36.7	34.8	37.0	42.1	47.4	51.9	60.3	65.4	65.9	60.1	54.6	51.0	47.2	45.5	43.2	41.5	42.5	38.9	38.6	39.7	38.4	38.7	39.2	39.2	30.4
62	36.4	35.8	37.1	38.6	37.1	36.7	34.8	37.0	42.1	47.4	51.9	60.3	65.4	65.9	60.1	54.6	51.0	47.2	45.5	43.2	41.5	42.5	38.9	38.6	39.7	38.4	38.7	39.2	39.2	30.4
64	36.4	35.8	37.1	38.6	37.1	36.7	34.8	37.0	42.1	47.4	51.9	60.3	65.4	65.9	60.1	54.6	51.0	47.2	45.5	43.2	41.5	42.5	38.9	38.6	39.7	38.4	38.7	39.2	39.2	30.4
66	62.2	63.9	64.6	64.3	63.2	59.5	57.3	55.4	63.5	64.4	63.4	62.6	63.5	62.6	51.1	43.7	39.3	34.7	35.0	35.4	34.6	35.7	33.5	29.4	32.7	33.1	31.3	31.4	33.4	55.2
68	62.2	63.9	64.6	64.3	63.2	59.5	57.3	55.4	63.5	64.4	63.4	62.6	63.5	62.6	51.1	43.7	39.3	34.7	35.0	35.4	34.6	35.7	33.5	29.4	32.7	33.1	31.3	31.4	33.4	55.2
70	62.2	63.9	64.6	64.3	63.2	59.5	57.3	55.4	63.5	64.4	63.4	62.6	63.5	62.6	51.1	43.7	39.3	34.7	35.0	35.4	34.6	35.7	33.5	29.4	32.7	33.1	31.3	31.4	33.4	55.2
72	62.2	63.9	64.6	64.3	63.2	59.5	57.3	55.4	63.5	64.4	63.4	62.6	63.5	62.6	51.1	43.7	39.3	34.7	35.0	35.4	34.6	35.7	33.5	29.4	32.7	33.1	31.3	31.4	33.4	55.2
74	62.2	63.9	64.6	64.3	63.2	59.5	57.3	55.4	63.5	64.4	63.4	62.6	63.5	62.6	51.1	43.7	39.3	34.7	35.0	35.4	34.6	35.7	33.5	29.4	32.7	33.1	31.3	31.4	33.4	55.2
76	63.8	64.6	65.1	65.0	64.5	62.4	60.2	58.6	66.9	67.4	66.7	66.0	67.4	65.8	55.1	49.8	43.9	37.7	36.4	35.0	31.7	37.4	33.8	32.3	33.9	37.0	32.5	32.3	34.1	56.0
78	63.8	64.6	65.1	65.0	64.5	62.4	60.2	58.6	66.9	67.4	66.7	66.0	67.4	65.8	55.1	49.8	43.9	37.7	36.4	35.0	31.7	37.4	33.8	32.3	33.9	37.0	32.5	32.3	34.1	56.0
80	63.8	64.6	65.1	65.0	64.5	62.4	60.2	58.6	66.9	67.4	66.7	66.0	67.4	65.8	55.1	49.8	43.9	37.7	36.4	35.0	31.7	37.4	33.8	32.3	33.9	37.0	32.5	32.3	34.1	56.0
82	60.1	59.7	60.7	61.3	60.6	58.8	55.5	53.3	63.9	64.0	62.9	61.9	64.3	63.3	50.7	45.9	42.6	36.2	35.2	33.8	31.3	36.4	33.8	31.8	33.1	37.0	32.4	32.4	33.7	51.9
84	60.1	59.7	60.7	61.3	60.6	58.8	55.5	53.3	63.9	64.0	62.9	61.9	64.3	63.3	50.7	45.9	42.6	36.2	35.2	33.8	31.3	36.4	33.8	31.8	33.1	37.0	32.4	32.4	33.7	51.9
86	60.1	59.7	60.7	61.3	60.6	58.8	55.5	53.3	63.9	64.0	62.9	61.9	64.3	63.3	50.7	45.9	42.6	36.2	35.2	33.8	31.3	36.4	33.8	31.8	33.1	37.0	32.4	32.4	33.7	51.9
88	60.1	59.7	60.7	61.3	60.6	58.8	55.5	53.3	63.9	64.0	62.9	61.9	64.3	63.3	50.7	45.9	42.6	36.2	35.2	33.8	31.3	36.4	33.8	31.8	33.1	37.0	32.4	32.4	33.7	51.9
90	60.1	59.7	60.7	61.3	60.6	58.8	55.5	53.3	63.9	64.0	62.9	61.9	64.3	63.3	50.7	45.9	42.6	36.2	35.2	33.8	31.3	36.4	33.8	31.8	33.1	37.0	32.4	32.4	33.7	51.9
92	60.1	59.7	60.7	61.3	60.6	58.8	55.5	53.3	63.9	64.0	62.9	61.9	64.3	63.3	50.7	45.9	42.6	36.2	35.2	33.8	31.3	36.4	33.8	31.8	33.1	37.0	32.4	32.4	33.7	51.9
94	60.1	59.7	60.7	61.3	60.6	58.8	55.5	53.3	63.9	64.0	62.9	61.9	64.3	63.3	50.7	45.9	42.6	36.2	35.2	33.8	31.3	36.4	33.8	31.8	33.1	37.0	32.4	32.4	33.7	51.9
96	60.1	59.7	60.7	61.3	60.6	58.8	55.5	53.3	63.9	64.0	62.9	61.9	64.3	63.3	50.7	45.9	42.6	36.2	35.2	33.8	31.3	36.4	33.8	31.8	33.1	37.0	32.4	32.4	33.7	51.9
98	60.1	59.7	60.7	61.3	60.6	58.8	55.5	53.3	63.9	64.0	62.9	61.9	64.3	63.3	50.7	45.9	42.6	36.2	35.2	33.8	31.3	36.4	33.8	31.8	33.1	37.0	32.4	32.4	33.7	51.9
100	60.1	59.7	60.7	61.3	60.6	58.8	55.5	53.3	63.9	64.0	62.9	61.9	64.3	63.3	50.7	45.9	42.6	36.2	35.2	33.8	31.3	36.4	33.8	31.8	33.1	37.0	32.4	32.4	33.7	51.9
102	60.1	59.7	60.7	61.3	60.6	58.8	55.5	53.3	63.9	64.0	62.9	61.9	64.3	63.3	50.7	45.9	42.6	36.2	35.2	33.8	31.3	36.4	33.8	31.8	33.1	37.0	32.4	32.4	33.7	51.9
104	63.9	63.7	64.4	64.8	64.3	63.1	59.3	56.9	68.1	68.5	66.2	65.3	68.0	68.3	55.3	51.0	47.4	44.0	43.0	41.4	38.3	39.8	36.9	36.1	36.5	38.9	36.5	36.4	36.7	55.2
106	63.9	63.7	64.4	64.8	64.3	63.1	59.3	56.9	68.1	68.5	66.2	65.3	68.0	68.3	55.3	51.0	47.4	44.0	43.0	41.4	38.3	39.8	36.9	36.1	36.5	38.9	36.5	36.4	36.7	55.2
108	63.9	63.7	64.4	64.8	64.3	63.1	59.3	56.9	68.1	68.5	66.2	65.3	68.0	68.3	55.3	51.0	47.4	44.0	43.0	41.4	38.3	39.8	36.9	36.1	36.5	38.9	36.5	36.4	36.7	55.2
110	69.9	69.2	70.3	70.6	69.4	68.8	62.0	59.2	67.4	67.7	65.2	64.4	67.2	70.1	57.9	54.1	49.8	47.3	46.1	44.1	41.7	41.9	39.8	39.1	38.3	38.7	38.1	37.4	37.6	58.6
112	69.3	68.4	69.6	69.9	68.5	68.0	60.5	57.4	61.9	61.3	60.3	59.7	62.3	67.6	56.1	52.3	47.7	45.0	43.8	41.6	39.7	40.1	38.4	37.5	36.4	36.6	35.6	34.6	35.4	57.3
114	69.3	68.4	69.6	69.9	68.5	68.0	60.5	57.4	61.9	61.3	60.3	59.7	62.3	67.6	56.1	52.3	47.7	45.0	43.8	41.6	39.7	40.1	38.4	37.5	36.4	36.6	35.6	34.6	35.4	57.3
116	69.3	68.4	69.6	69.9	68.5	68.0	60.5	57.4	61.9	61.3	60.3	59.7	62.3	67.6	56.1	52.3	47.7	45.0	43.8	41.6	39.7	40.1	38.4	37.5	36.4	36.6	35.6	34.6	35.4	57.3
118	57.3	57.5	58.4	58.7	58.0	56.0	53.2	51.2	60.9	61.2	60.2	59.4	61.4	60.1	48.2	43.2	39.3	33.9	32.9	31.6	29.2	33.4	30.7	29.1	30.1	33.3	29.4	29.5	30.9	49.3
120	57.3	57.5	58.4	58.7	58.0	56.0	53.2	51.2	60.9	61.2	60.2	59.4	61.4	60.1	48.2	43.2	39.3	33.9	32.9	31.6	29.2	33.4	30.7	29.1	30.1	33.3	29.4	29.5	30.9	49.3
122	57.3	57.5	58.4	58.7	58.0	56.0	53.2	51.2	60.9	61.2	60.2	59.4	61.4	60.1	48.2	43.2	39.3	33.9	32.9	31.6	29.2	33.4	30.7	29.1	30.1	33.3	29.4	29.5	30.9	49.3
124	57.3	57.5	58.4	58.7	58.0	56.0	53.2	51.2	60.9	61.2	60.2	59.4	61.4	60.1	48.2	43.2	39.3	33.9	32.9	31.6	29.2	33.4	30.7	29.1	30.1	33.3	29.4	29.5	30.9	49.3
126	57.3	57.5	58.4	58.7	58.0	56.0	53.2	51.2	60.9	61.2	60.2	59.4	61.4	60.1	48.2	43.2	39.3	33.9	32.9	31.6	29.2	33.4	30.7	29.1	30.1	33.3	29.4	29.5	30.9	49.3
128	57.3	57.5	58.4	58.7	58.0	56.0	53.2	51.2	60.9	61.2	60.2	59.4	61.4	60.1	48.2	43.2	39.3	33.9	32.9	31.6	29.2	33.4	30.7	29.1	30.1	33.3	29.4	29.5	30.9	49.3
130	57.3	57.5	58.4	58.7	58.0	56.0	53.2	51.2	60.9	61.2	60.2	59.4	61.4	60.1	48.2	43.2	39.3	33.9	32.9	31.6	29.2	33.4	30.7	29.1	30.1	33.3	29.4	29.5	30.9	49.3
132	57.3	57.5	58.4	58.7	58.0	56.0	53.2	51.2	60.9	61.2	60.2	59.4	61.4	60.1	48.2	43.2	39.3	33.9	32.9	31.6	29.2	33.4	30.7	29.1	30.1	33.3	29.4	29.5	30.9	49.3

TABLE A- 2: C02 CONSTRUCTION NOISE LEVELS (LEQ) BY RECEIVER PER 2-WEEK INCREMENTS (RECEIVERS 31-55)

	Receiver-31	Receiver-32	Receiver-33	Receiver-34	Receiver-35	Receiver-36	Receiver-37	Receiver-38	Receiver-39	Receiver-40	Receiver-41	Receiver-42	Receiver-43	Receiver-44	Receiver-45	Receiver-46	Receiver-47	Receiver-48	Receiver-49	Receiver-50	Receiver-51	Receiver-52	Receiver-53	Receiver-54	Receiver-55
Week		Sound Insulated				Sound Insulated	Sound Insulated					Sound Insulated	Sound Insulated						Sound Insulated	Sound Insulated	Yes				Sound Insulated
2	59.0	58.6	58.8	59.2	55.4	61.5	63.3	59.4	58.7	58.6	54.0	49.2	45.3	43.5	42.8	41.2	39.7	39.6	38.2	38.2	40.2	40.1	40.1	39.7	38.4
4	61.1	60.7	61.2	62.7	58.1	61.9	59.0	52.7	52.2	51.6	47.4	44.6	43.8	40.4	39.9	39.4	38.3	38.7	37.6	35.4	38.8	36.1	37.2	38.9	37.1
6	60.9	60.4	60.9	62.5	57.8	61.7	58.4	50.7	50.1	48.7	45.3	43.6	43.4	39.7	39.3	39.0	37.9	38.1	37.2	34.1	37.7	33.6	35.8	38.1	36.2
8	55.7	55.4	55.7	56.6	52.1	56.7	52.9	44.5	43.3	41.6	38.3	36.8	36.2	32.3	32.2	32.0	30.5	30.6	29.6	26.4	30.0	25.7	28.1	30.4	28.8
10	55.7	55.4	55.7	56.6	52.1	56.7	52.9	44.5	43.3	41.6	38.3	36.8	36.2	32.3	32.2	32.0	30.5	30.6	29.6	26.4	30.0	25.7	28.1	30.4	28.8
12	57.6	57.3	57.6	58.4	54.1	58.8	56.9	53.6	53.2	53.2	48.4	43.7	40.8	38.8	37.9	37.0	35.8	36.0	34.1	34.3	36.8	36.2	36.1	35.9	34.9
14	53.2	53.0	53.3	54.2	50.2	55.3	58.3	57.3	57.4	57.3	52.4	46.9	43.0	41.0	39.7	38.4	36.5	36.2	36.1	38.7	40.0	38.4	38.1	37.1	38.0
16	62.4	61.6	61.9	62.5	57.4	56.6	58.5	57.3	57.5	57.4	52.4	47.2	43.2	41.2	40.4	38.9	37.4	37.1	36.5	38.9	40.1	38.5	38.3	37.3	38.6
18	62.4	61.6	61.9	62.5	57.4	56.6	58.5	57.3	57.5	57.4	52.4	47.2	43.2	41.2	40.4	38.9	37.4	37.1	36.5	38.9	40.1	38.5	38.3	37.3	38.6
20	30.7	31.7	30.7	37.1	39.5	38.5	46.3	51.2	53.3	57.2	52.6	46.1	40.0	37.4	35.8	34.8	31.3	30.8	33.9	40.6	43.6	38.1	38.8	41.5	41.4
22	30.7	31.7	30.7	37.1	39.5	38.5	46.3	51.2	53.3	57.2	52.6	46.1	40.0	37.4	35.8	34.8	31.3	30.8	33.9	40.6	43.6	38.1	38.8	41.5	41.4
24	50.7	50.5	50.2	49.8	45.7	48.1	46.6	40.7	40.6	38.9	34.3	31.7	30.5	27.7	28.0	25.8	25.0	26.5	24.9	23.3	28.5	24.1	25.4	26.4	20.8
26	50.7	50.5	50.2	49.8	45.7	48.1	46.6	40.7	40.6	38.9	34.3	31.7	30.5	27.7	28.0	25.8	25.0	26.5	24.9	23.3	28.5	24.1	25.4	26.4	20.8
28	50.7	50.5	50.2	49.8	45.7	48.1	46.6	40.7	40.6	38.9	34.3	31.7	30.5	27.7	28.0	25.8	25.0	26.5	24.9	23.3	28.5	24.1	25.4	26.4	20.8
30	50.7	50.5	50.2	49.8	45.7	48.1	46.6	40.7	40.6	38.9	34.3	31.7	30.5	27.7	28.0	25.8	25.0	26.5	24.9	23.3	28.5	24.1	25.4	26.4	20.8
32	36.6	36.7	35.7	36.5	37.3	41.1	47.2	45.6	45.9	47.2	43.1	34.6	32.0	30.3	28.8	27.4	26.2	25.8	25.8	27.0	28.5	27.9	28.4	30.0	29.8
34	61.0	60.6	61.0	61.4	57.6	61.0	60.4	58.7	58.2	58.3	54.0	48.6	44.1	41.5	40.0	39.0	37.0	36.7	35.4	34.7	35.8	34.4	34.1	37.0	37.4
36	61.0	60.6	61.0	61.4	57.6	61.0	60.4	58.7	58.2	58.3	54.0	48.6	44.1	41.5	40.0	39.0	37.0	36.7	35.4	34.7	35.8	34.4	34.1	37.0	37.4
38	61.0	60.6	61.0	61.4	57.6	61.0	60.4	58.7	58.2	58.3	54.0	48.6	44.1	41.5	40.0	39.0	37.0	36.7	35.4	34.7	35.8	34.4	34.1	37.0	37.4
40	61.0	60.6	61.0	61.4	57.6	61.0	60.4	58.7	58.2	58.3	54.0	48.6	44.1	41.5	40.0	39.0	37.0	36.7	35.4	34.7	35.8	34.4	34.1	37.0	37.4
42	61.0	60.6	61.0	61.3	57.6	61.0	60.1	58.5	57.9	57.9	53.6	48.4	43.8	41.2	39.7	38.7	36.6	36.3	34.9	33.9	34.9	33.3	32.7	36.0	36.6
44	60.9	60.1	60.2	60.0	55.8	52.6	44.9	39.0	35.1	37.1	34.0	33.0	30.6	28.1	30.6	30.0	31.4	31.1	27.1	22.8	23.7	19.0	21.8	22.5	28.0
46	60.9	60.1	60.2	60.0	55.8	52.6	44.9	39.0	35.1	37.1	34.0	33.0	30.6	28.1	30.6	30.0	31.4	31.1	27.1	22.8	23.7	19.0	21.8	22.5	28.0
48	60.9	60.1	60.2	60.0	55.8	52.6	44.9	39.0	35.1	37.1	34.0	33.0	30.6	28.1	30.6	30.0	31.4	31.1	27.1	22.8	23.7	19.0	21.8	22.5	28.0
50	30.7	31.9	30.7	34.1	36.0	37.4	42.4	51.8	54.0	57.0	52.2	46.2	40.3	37.9	34.2	35.3	30.8	29.6	31.5	38.4	39.3	37.2	35.7	38.3	39.4
52	30.7	31.9	30.7	34.1	36.0	37.4	42.4	51.8	54.0	57.0	52.2	46.2	40.3	37.9	34.2	35.3	30.8	29.6	31.5	38.4	39.3	37.2	35.7	38.3	39.4
54	30.7	31.9	30.7	34.1	36.0	37.4	42.4	51.8	54.0	57.0	52.2	46.2	40.3	37.9	34.2	35.3	30.8	29.6	31.5	38.4	39.3	37.2	35.7	38.3	39.4
56	30.7	31.9	30.7	34.1	36.0	37.4	42.4	51.8	54.0	57.0	52.2	46.2	40.3	37.9	34.2	35.3	30.8	29.6	31.5	38.4	39.3	37.2	35.7	38.3	39.4
58	30.7	31.9	30.7	34.1	36.0	37.4	42.4	51.8	54.0	57.0	52.2	46.2	40.3	37.9	34.2	35.3	30.8	29.6	31.5	38.4	39.3	37.2	35.7	38.3	39.4
60	30.7	31.9	30.7	34.1	36.0	37.4	42.4	51.8	54.0	57.0	52.2	46.2	40.3	37.9	34.2	35.3	30.8	29.6	31.5	38.4	39.3	37.2	35.7	38.3	39.4
62	30.7	31.9	30.7	34.1	36.0	37.4	42.4	51.8	54.0	57.0	52.2	46.2	40.3	37.9	34.2	35.3	30.8	29.6	31.5	38.4	39.3	37.2	35.7	38.3	39.4
64	30.7	31.9	30.7	34.1	36.0	37.4	42.4	51.8	54.0	57.0	52.2	46.2	40.3	37.9	34.2	35.3	30.8	29.6	31.5	38.4	39.3	37.2	35.7	38.3	39.4
66	56.3	56.0	55.6	53.9	50.3	55.5	55.0	52.3	51.3	52.3	45.8	41.2	36.8	35.5	37.1	37.6	31.1	32.1	31.1	30.1	33.5	30.0	31.4	31.4	32.0
68	56.3	56.0	55.6	53.9	50.3	55.5	55.0	52.3	51.3	52.3	45.8	41.2	36.8	35.5	37.1	37.6	31.1	32.1	31.1	30.1	33.5	30.0	31.4	31.4	32.0
70	56.3	56.0	55.6	53.9	50.3	55.5	55.0	52.3	51.3	52.3	45.8	41.2	36.8	35.5	37.1	37.6	31.1	32.1	31.1	30.1	33.5	30.0	31.4	31.4	32.0
72	56.3	56.0	55.6	53.9	50.3	55.5	55.0	52.3	51.3	52.3	45.8	41.2	36.8	35.5	37.1	37.6	31.1	32.1	31.1	30.1	33.5	30.0	31.4	31.4	32.0
74	56.3	56.0	55.6	53.9	50.3	55.5	55.0	52.3	51.3	52.3	45.8	41.2	36.8	35.5	37.1	37.6	31.1	32.1	31.1	30.1	33.5	30.0	31.4	31.4	32.0
76	56.7	56.2	56.1	56.1	52.9	58.6	58.4	56.2	55.3	56.2	50.4	45.2	39.9	37.5	36.3	35.8	33.0	32.2	32.6	32.6	36.0	33.8	34.1	35.7	32.5
78	56.7	56.2	56.1	56.1	52.9	58.6	58.4	56.2	55.3	56.2	50.4	45.2	39.9	37.5	36.3	35.8	33.0	32.2	32.6	32.6	36.0	33.8	34.1	35.7	32.5
80	56.7	56.2	56.1	56.1	52.9	58.6	58.4	56.2	55.3	56.2	50.4	45.2	39.9	37.5	36.3	35.8	33.0	32.2	32.6	32.6	36.0	33.8	34.1	35.7	32.5
82	50.9	51.1	51.2	52.4	48.8	52.6	52.9	50.8	50.7	52.1	46.0	41.7	37.2	35.5	34.0	33.4	32.0	32.1	32.6	32.3	36.4	34.1	34.5	36.0	32.5
84	50.9	51.1	51.2	52.4	48.8	52.6	52.9	50.8	50.7	52.1	46.0	41.7	37.2	35.5	34.0	33.4	32.0	32.1	32.6	32.3	36.4	34.1	34.5	36.0	32.5
86	50.9	51.1	51.2	52.4	48.8	52.6	52.9	50.8	50.7	52.1	46.0	41.7	37.2	35.5	34.0	33.4	32.0	32.1	32.6	32.3	36.4	34.1	34.5	36.0	32.5
88	50.9	51.1	51.2	52.4	48.8	52.6	52.9	50.8	50.7	52.1	46.0	41.7	37.2	35.5	34.0	33.4	32.0	32.1	32.6	32.3	36.4	34.1	34.5	36.0	32.5
90	50.9	51.1	51.2	52.4	48.8	52.6	52.9	50.8	50.7	52.1	46.0	41.7	37.2	35.5	34.0	33.4	32.0	32.1	32.6	32.3	36.4	34.1	34.5	36.0	32.5
92	50.9	51.1	51.2	52.4	48.8	52.6	52.9	50.8	50.7	52.1	46.0	41.7	37.2	35.5	34.0	33.4	32.0	32.1	32.6	32.3	36.4	34.1	34.5	36.0	32.5
94	50.9	51.1	51.2	52.4	48.8	52.6	52.9	50.8	50.7	52.1	46.0	41.7	37.2	35.5	34.0	33.4	32.0	32.1	32.6	32.3	36.4	34.1	34.5	36.0	32.5
96	50.9	51.1	51.2	52.4	48.8	52.6	52.9	50.8	50.7	52.1	46.0	41.7	37.2	35.5	34.0	33.4	32.0	32.1	32.6	32.3	36.4	34.1	34.5	36.0	32.5
98	50.9	51.1	51.2	52.4	48.8	52.6	52.9	50.8	50.7	52.1	46.0	41.7	37.2	35.5	34.0	33.4	32.0	32.1	32.6	32.3	36.4	34.1	34.5	36.0	32.5
100	50.9	51.1	51.2	52.4	48.8	52.6	52.9	50.8	50.7	52.1	46.0	41.7	37.2	35.5	34.0	33.4	32.0	32.1	32.6	32.3	36.4	34.1	34.5	36.0	32.5
102	50.9	51.1	51.2	52.4	48.8	52.6	52.9	50.8	50.7	52.1	46.0	41.7	37.2	35.5	34.0	33.4	32.0	32.1	32.6	32.3	36.4	34.1	34.5	36.0	32.5
104	55.0	54.8	55.1	55.9	52.1	56.2	56.3	54.5	54.3	55.2	49.8	44.9	40.5	39.8	38.1	36.9	35.0	35.6	35.5	35.7	38.3	36.4	36.3	38.4	36.9
106	55.0	54.8	55.1	55.9	52.1	56.2	56.3	54.5	54.3	55.2	49.8	44.9	40.5	39.8	38.1	36.9	35.0	35.6	35.5	35.7	38.3	36.4	36.3	38.4	36.9
108	55.0	54.8	55.1	55.9	52.1	56.2	56.3	54.5	54.3	55.2	49.8	44.9	40.5	39.8	38.1	36.9	35.0	35.6	35.5	35.7	38.3	36.4	36.3	38.4	36.9
110	58.5	57.6	58.0	58.7	53.6	55.6	55.6	54.0	54.1	55.5	50.7	45.0	40.9	40.2	38.7	37.1	35.0	35.4	35.1	36.5	37.7	36.0	36.0	37.6	37.7
112	57.2	56.1	56.4	57.2	51.5	51.2	51.1	49.7	50.1	52.7	48.0	41.9	38.0	36.3	35.3	33.9	32.0	31.5	31.8	33.9	35.4	33.5	34.1	34.4	34.4
114	57.2	56.1	56.4	57.2	51.5	51.2	51.1	49.7	50.1	52.7	48.0	41.9	38.0	36.3	35.3	33.9	32.0	31.5	31.8	33.9	35.4	33.5	34.1	34.4	34.4
116	57.2	56.1	56.4	57.2	51.5	51.2	51.1	49.7	50.1	52.7	48.0	41.9	38.0	36.3	35.3	33.9	32.0	31.5	31.8	33.9	35.4	33.5	34.1	34.4	34.4
118	49.1	49.0	49.0	49.6	46.3	50.8	51.0	48.8	48.3	49.6	43.6	39.3	35.0	33.5	32.1	31.6	30.0	29.8	29.7	29.4	32.7	30.6	31.0	32.4	29.6
120	49.1	49.0	49.0	49.6	46.3	50.8	51.0	48.8	48.3	49.6	43.6	39.3	35.0	33.5	32.1	31.6	30.0	29.8	29.7	29.4	32.7	30.6	31.0	32.4	29.6
122	49.1	49.0	49.0	49.6	46.3	50.8	51.0	48.8	48.3	49.6	43.6	39.3	35.0	33.5	32.1	31.6	30.0	29.8	29.7	29.4	32.7	30.6	31.0	32.4	29.6
124	49.1	49.0	49.0	49.6	46.3	50.8	51.0	48.8	48.3	49.6	43.6	39.3	35.0	33.5	32.1	31.6	30.0	29.8	29.7	29.4	32.7	30.6	31.0	32.4	29.6
126	49.1	49.0	49.0	49.6	46.3	50.8	51.0	48.8	48.3	49.6	43.6	39.3	35.0	33.5	32.1	31.6	30.0	29.8	29.7	29.4	32.7	30.6	31.0	32.4	29.6
128	49.1	49.0	49.0	49.6	46.3	50.8	51.0	48.8	48.3	49.6	43.6	39.3	35.0	33.5	32.1	31.6	30.0	29.8	29.7	29.4	32.7	30.6	31.0	32.4	29.6
130	49.1	49.0	49.0	49.6	46.3	50.8	51.0	48.8	48.3	49.6	43.6	39.3	35.0	33.5	32.1	31.6	30.0	29.8	29.7	29.4	32.7	30.6	31.0	32.4	29.6
132	49.1	49.0	49.0	49.6	46.3	50.8	51.0	48.8	48.3	49.6	43.6	39.3	35.0	33.5	32.1	31.6	30.0	29.8	29.7	29.4	32.7	30.6	31.0	32.4	29.6

TABLE A- 3: C02 CONSTRUCTION NOISE LEVELS (LEQ) BY RECEIVER PER 2-WEEK INCREMENTS (RECEIVERS 56-87)

	Receiver-56	Receiver-57	Receiver-58	Receiver-59	Receiver-60	Receiver-61	Receiver-62	Receiver-63	Receiver-64	Receiver-65	Receiver-66	Receiver-67	Receiver-68	Receiver-69	Receiver-70	Receiver-71	Receiver-72	Receiver-73	Receiver-74	Receiver-75	Receiver-76	Receiver-77	Receiver-78	Receiver-79	Receiver-80	Receiver-81	Receiver-82	Receiver-83	Receiver-84	Receiver-85	Receiver-86	Receiver-87
Week			Sound Insulated							Sound Insulated	Sound Insulated	Sound Insulated				Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated			Sound Insulated	Sound Insulated			Sound Insulated						
2	56.0	55.6	56.0	53.7	53.0	55.7	52.9	50.4	51.7	53.3	51.4	56.3	54.3	54.4	54.1	52.2	50.5	50.5	53.6	58.1	55.8	56.7	55.6	54.9	53.8	49.6	44.0	44.1	41.8	40.2	37.3	40.2
4	58.4	57.4	57.8	55.7	56.0	59.1	55.3	51.9	53.4	54.8	53.3	57.8	55.7	56.1	56.5	52.8	50.2	50.9	52.8	54.0	52.4	51.3	50.6	50.6	48.1	45.2	41.6	43.0	43.3	41.7	37.7	35.8
6	58.1	57.1	57.5	55.4	55.7	58.9	55.0	51.5	53.1	54.5	53.0	57.5	55.5	55.9	56.3	52.5	49.8	50.6	52.6	53.5	52.0	50.5	49.6	49.6	46.6	44.4	41.1	42.6	43.0	41.4	37.2	33.5
8	52.6	51.9	52.5	49.9	49.7	52.9	49.3	45.9	47.3	49.1	47.2	52.2	50.2	50.5	50.5	47.1	43.9	44.2	46.4	47.8	46.3	44.8	43.4	43.0	39.9	37.8	34.0	36.0	35.9	34.2	29.5	25.9
10	52.6	51.9	52.5	49.9	49.7	52.9	49.3	45.9	47.3	49.1	47.2	52.2	50.2	50.5	50.5	47.1	43.9	44.2	46.4	47.8	46.3	44.8	43.4	43.0	39.9	37.8	34.0	36.0	35.9	34.2	29.5	25.9
12	54.6	54.0	54.5	52.1	51.8	54.7	51.3	48.3	49.6	51.3	49.5	54.4	52.3	52.5	52.4	49.6	47.3	47.0	48.6	51.6	49.6	50.3	49.6	49.4	48.2	44.0	39.4	40.0	39.3	37.7	34.3	36.0
14	50.6	50.0	50.4	49.2	48.3	50.7	47.8	45.1	46.5	47.7	46.1	50.7	48.4	48.2	48.0	46.4	45.2	45.2	48.1	53.0	50.2	53.1	53.3	52.5	51.7	46.9	40.5	40.2	39.1	36.0	35.3	39.3
16	58.3	58.0	58.1	55.4	54.4	57.8	54.0	50.8	52.2	53.9	52.0	58.2	53.2	52.8	52.6	51.0	48.4	46.4	49.2	53.1	50.5	53.2	53.5	52.6	51.8	47.0	40.8	41.5	40.4	37.4	35.8	39.4
18	58.3	58.0	58.1	55.4	54.4	57.8	54.0	50.8	52.2	53.9	52.0	58.2	53.2	52.8	52.6	51.0	48.4	46.4	49.2	53.1	50.5	53.2	53.5	52.6	51.8	47.0	40.8	41.5	40.4	37.4	35.8	39.4
20	38.9	29.6	30.7	40.4	36.9	39.8	36.3	34.5	31.4	28.1	26.3	26.8	24.9	25.6	26.0	26.8	31.1	31.7	31.8	36.9	35.5	39.2	43.0	45.6	47.9	42.4	36.9	34.7	32.8	22.0	33.2	39.9
22	38.9	29.6	30.7	40.4	36.9	39.8	36.3	34.5	31.4	28.1	26.3	26.8	24.9	25.6	26.0	26.8	31.1	31.7	31.8	36.9	35.5	39.2	43.0	45.6	47.9	42.4	36.9	34.7	32.8	22.0	33.2	39.9
24	47.2	47.5	48.2	45.7	44.3	46.7	43.0	42.0	39.6	41.3	39.4	44.5	42.3	42.5	41.7	40.1	37.4	37.5	39.2	42.2	40.1	41.0	39.2	38.5	35.6	33.1	28.9	30.1	30.8	28.6	27.0	18.9
26	47.2	47.5	48.2	45.7	44.3	46.7	43.0	42.0	39.6	41.3	39.4	44.5	42.3	42.5	41.7	40.1	37.4	37.5	39.2	42.2	40.1	41.0	39.2	38.5	35.6	33.1	28.9	30.1	30.8	28.6	27.0	18.9
28	47.2	47.5	48.2	45.7	44.3	46.7	43.0	42.0	39.6	41.3	39.4	44.5	42.3	42.5	41.7	40.1	37.4	37.5	39.2	42.2	40.1	41.0	39.2	38.5	35.6	33.1	28.9	30.1	30.8	28.6	27.0	18.9
30	47.2	47.5	48.2	45.7	44.3	46.7	43.0	42.0	39.6	41.3	39.4	44.5	42.3	42.5	41.7	40.1	37.4	37.5	39.2	42.2	40.1	41.0	39.2	38.5	35.6	33.1	28.9	30.1	30.8	28.6	27.0	18.9
32	40.1	35.4	36.0	38.7	34.6	36.7	35.1	32.4	32.1	32.0	30.8	33.1	26.1	25.9	26.8	28.5	31.6	33.1	38.0	42.1	39.8	40.2	41.2	40.5	39.7	34.4	29.8	28.2	27.2	20.7	24.6	31.5
34	57.3	57.1	57.6	55.4	54.7	57.8	54.8	52.2	52.6	55.2	52.8	58.4	56.0	55.9	55.5	53.8	50.2	48.8	50.8	55.8	53.5	55.4	54.8	54.1	53.3	48.5	40.7	42.0	39.5	35.9	32.8	37.2
36	57.3	57.1	57.6	55.4	54.7	57.8	54.8	52.2	52.6	55.2	52.8	58.4	56.0	55.9	55.5	53.8	50.2	48.8	50.8	55.8	53.5	55.4	54.8	54.1	53.3	48.5	40.7	42.0	39.5	35.9	32.8	37.2
38	57.3	57.1	57.6	55.4	54.7	57.8	54.8	52.2	52.6	55.2	52.8	58.4	56.0	55.9	55.5	53.8	50.2	48.8	50.8	55.8	53.5	55.4	54.8	54.1	53.3	48.5	40.7	42.0	39.5	35.9	32.8	37.2
40	57.3	57.1	57.6	55.4	54.7	57.8	54.8	52.2	52.6	55.2	52.8	58.4	56.0	55.9	55.5	53.8	50.2	48.8	50.8	55.8	53.5	55.4	54.8	54.1	53.3	48.5	40.7	42.0	39.5	35.9	32.8	37.2
42	57.2	57.0	57.5	55.3	54.7	57.8	54.8	52.1	52.5	55.2	52.8	58.4	56.0	55.9	55.5	53.8	50.1	48.7	50.5	55.6	53.3	55.3	54.6	54.0	53.2	48.3	40.3	41.8	39.2	35.8	32.1	35.9
44	57.1	56.9	57.1	54.1	53.0	56.3	52.8	49.7	49.5	52.5	50.0	55.8	52.6	52.0	51.6	50.7	46.6	41.0	41.4	39.7	40.3	39.1	38.5	39.3	35.9	32.7	29.5	34.4	33.4	29.5	25.8	24.6
46	57.1	56.9	57.1	54.1	53.0	56.3	52.8	49.7	49.5	52.5	50.0	55.8	52.6	52.0	51.6	50.7	46.6	41.0	41.4	39.7	40.3	39.1	38.5	39.3	35.9	32.7	29.5	34.4	33.4	29.5	25.8	24.6
48	57.1	56.9	57.1	54.1	53.0	56.3	52.8	49.7	49.5	52.5	50.0	55.8	52.6	52.0	51.6	50.7	46.6	41.0	41.4	39.7	40.3	39.1	38.5	39.3	35.9	32.7	29.5	34.4	33.4	29.5	25.8	24.6
50	36.6	28.8	30.3	36.5	31.4	33.1	34.5	32.6	32.5	27.4	26.3	28.7	24.9	25.5	26.8	26.7	27.4	29.2	30.1	34.8	35.8	40.9	43.9	47.0	48.2	42.0	35.5	32.3	33.3	21.7	31.9	37.0
52	36.6	28.8	30.3	36.5	31.4	33.1	34.5	32.6	32.5	27.4	26.3	28.7	24.9	25.5	26.8	26.7	27.4	29.2	30.1	34.8	35.8	40.9	43.9	47.0	48.2	42.0	35.5	32.3	33.3	21.7	31.9	37.0
54	36.6	28.8	30.3	36.5	31.4	33.1	34.5	32.6	32.5	27.4	26.3	28.7	24.9	25.5	26.8	26.7	27.4	29.2	30.1	34.8	35.8	40.9	43.9	47.0	48.2	42.0	35.5	32.3	33.3	21.7	31.9	37.0
56	36.6	28.8	30.3	36.5	31.4	33.1	34.5	32.6	32.5	27.4	26.3	28.7	24.9	25.5	26.8	26.7	27.4	29.2	30.1	34.8	35.8	40.9	43.9	47.0	48.2	42.0	35.5	32.3	33.3	21.7	31.9	37.0
58	36.6	28.8	30.3	36.5	31.4	33.1	34.5	32.6	32.5	27.4	26.3	28.7	24.9	25.5	26.8	26.7	27.4	29.2	30.1	34.8	35.8	40.9	43.9	47.0	48.2	42.0	35.5	32.3	33.3	21.7	31.9	37.0
60	36.6	28.8	30.3	36.5	31.4	33.1	34.5	32.6	32.5	27.4	26.3	28.7	24.9	25.5	26.8	26.7	27.4	29.2	30.1	34.8	35.8	40.9	43.9	47.0	48.2	42.0	35.5	32.3	33.3	21.7	31.9	37.0
62	36.6	28.8	30.3	36.5	31.4	33.1	34.5	32.6	32.5	27.4	26.3	28.7	24.9	25.5	26.8	26.7	27.4	29.2	30.1	34.8	35.8	40.9	43.9	47.0	48.2	42.0	35.5	32.3	33.3	21.7	31.9	37.0
64	36.6	28.8	30.3	36.5	31.4	33.1	34.5	32.6	32.5	27.4	26.3	28.7	24.9	25.5	26.8	26.7	27.4	29.2	30.1	34.8	35.8	40.9	43.9	47.0	48.2	42.0	35.5	32.3	33.3	21.7	31.9	37.0
66	53.0	52.7	53.9	50.4	48.6	51.3	47.8	44.2	44.4	47.3	45.0	50.4	49.1	49.3	48.9	45.9	40.6	43.7	44.8	49.3	46.7	47.9	47.5	47.5	45.2	41.4	37.4	38.2	35.6	32.4	28.6	33.5
68	53.0	52.7	53.9	50.4	48.6	51.3	47.8	44.2	44.4	47.3	45.0	50.4	49.1	49.3	48.9	45.9	40.6	43.7	44.8	49.3	46.7	47.9	47.5	47.5	45.2	41.4	37.4	38.2	35.6	32.4	28.6	33.5
70	53.0	52.7	53.9	50.4	48.6	51.3	47.8	44.2	44.4	47.3	45.0	50.4	49.1	49.3	48.9	45.9	40.6	43.7	44.8	49.3	46.7	47.9	47.5	47.5	45.2	41.4	37.4	38.2	35.6	32.4	28.6	33.5
72	53.0	52.7	53.9	50.4	48.6	51.3	47.8	44.2	44.4	47.3	45.0	50.4	49.1	49.3	48.9	45.9	40.6	43.7	44.8	49.3	46.7	47.9	47.5	47.5	45.2	41.4	37.4	38.2	35.6	32.4	28.6	33.5
74	53.0	52.7	53.9	50.4	48.6	51.3	47.8	44.2	44.4	47.3	45.0	50.4	49.1	49.3	48.9	45.9	40.6	43.7	44.8	49.3	46.7	47.9	47.5	47.5	45.2	41.4	37.4	38.2	35.6	32.4	28.6	33.5
76	53.1	52.8	53.5	50.0	49.6	52.7	50.4	47.0	47.4	50.8	48.4	53.9	52.4	52.6	52.2	49.2	44.3	44.9	47.5	53.0	50.4	51.8	51.3	50.9	49.7	44.8	37.1	38.5	35.6	33.0	32.2	32.6
78	53.1	52.8	53.5	50.0	49.6	52.7	50.4	47.0	47.4	50.8	48.4	53.9	52.4	52.6	52.2	49.2	44.3	44.9	47.5	53.0	50.4	51.8	51.3	50.9	49.7	44.8	37.1	38.5	35.6	33.0	32.2	32.6
80	53.1	52.8	53.5	50.0	49.6	52.7	50.4	47.0	47.4	50.8	48.4	53.9	52.4	52.6	52.2	49.2	44.3	44.9	47.5	53.0	50.4	51.8	51.3	50.9	49.7	44.8	37.1	38.5	35.6	33.0	32.2	32.6
82	49.1	47.3	48.0	44.8	46.0	49.4	46.4	42.6	43.0	45.5	43.5	49.0	47.1	47.2	46.5	44.6	42.3	41.1	42.3	47.0	44.6	46.2	46.1	45.6	44.9	39.8	35.1	35.2	34.1	32.6	32.9	31.6
84	49.1	47.3	48.0	44.8	46.0	49.4	46.4	42.6	43.0	45.5	43.5	49.0	47.1	47.2	46.5	44.6	42.3	41.1	42.3	47.0	44.6	46.2	46.1	45.6	44.9	39.8	35.1	35.2	34.1	32.6	32.9	31.6
86	49.1	47.3	48.0	44.8	46.0	49.4	46.4	42.6	43.0	45.5	43.5	49.0	47.1	47.2	46.5	44.6	42.3	41.1	42.3	47.0	44.6	46.2	46.1	45.6	44.9	39.8	35.1	35.2	34.1	32.6	32.9	31.6
88	49.1	47.3	48.0	44.8	46.0	49.4	46.4	42.6	43.0	45.5	43.5	49.0	47.1	47.2	46.5	44.6	42.3	41.1	42.3	47.0	44.6	46.2	46.1	45.6	44.9	39.8	35.1	35.2	34.1	32.6	32.9	31.6
90	49.1	47.3	48.0	44.8	46.0	49.4	46.4	42.6	43.0	45.5	43.5	49.0	47.1	47.2	46.5	44.6	42.3	41.1	42.3	47.0	44.6	46.2	46.1	45.6	44.9	39.8	35.1	35.2	34.1	32.6	32.9	31.6
92	49.1	47.3	48.0	44.8	46.0	49.4	46.4	42.6	43.0	45.5	43.5	49.0	47.1	47.2	46.5	44.6	42.3	41.1	42.3	47.0	44.6	46.2	46.1	45.6	44.9	39.8	35.1	35.2	34.1	32.6	32.9	31.6
94	49.1	47.3	48.0	44.8	46.0	49.4	46.4	42.6	43.0	45.5	43.5	49.0	47.1	47.2	46.5	44.6	42.3	41.1	42.3	47.0	44.6	46.2	46.1	45.6	44.9	39.8	35.1	35.2	34.1	32.6	32.9	31.6
96	49.1	47.3	48.0	44.8	46.0	49.4	46.4	42.6	43.0	45.5	43.5	49.0	47.1	47.2	46.5	44.6	42.3	41.1	42.3	47.0	44.6	46.2	46.1	45.6	44.9	39.8	35.1	35.2	34.1	32.6	32.9	31.6
98	49.1	47.3	48.0	44.8	46.0	49.4	46.4	42.6	43.0	45.5	43.5	49.0	47.1	47.2	46.5	44.6	42.3	41.1	42.3	47.0	44.6	46.2	46.1	45.6	44.9	39.8	35.1	35.2	34.1	32.6	32.9	31.6
100	49.1	47.3	48.0	44.8	46.0	49.4	46.4	42.6	43.0	45.5	43.5	49.0	47.1	47.2	46.5	44.6	42.3	41.1	42.3	47.0	44.6	46.2	46.1	45.6	44.9	39.8	35.1	35.2	34.1	32.6	32.9	31.6
102	49.1	47.3	48.0	44.8	46.0	49.4	46.4	42.6	43.0	45.5	43.5	49.0	47.1	47.2	46.5	44.6	42.3	41.1	42.3	47.0	44.6	46.2	46.1	45.6	44.9	39.8	35.1	35.2	34.1	32.6	32.9	31.6
104	52.4	51.3	51.8	49.4	49.9	52.6	49.7	46.5	46.9	48.9	46.9	52.3	50.1	50.3	49.7	47.9	45.3	44.5	45.8	51.1	48.4	50.1	49.9	49.6	48.8	44.7	38.8	38.8	37.8	35.3	34.8	35.5
106	52.4	51.3	51.8	49.4	49.9	52.6	49.7	46.5	46.9	48.9	46.9	52.3	50.1	50.3	49.7	47.9	45.3	44.5	45.8	51.1	48.4	50.1	49.9	49.6	48.8	44.7	38.8	38.8	37.8	35.3	34.8	35.5
108	52.4	51.3	51.8	49.4	49.9	52.6	49.7	46.5	46.9	48.9	46.9	52.3	50.1	50.3	49.7	47.9	45.3	44.5	45.8	51.1	48.4	50.1	49.9	49.6	48.8	44.7	38.8	38.8	37.8	35.3	34.8	35.5
110	55.3	54.3	54.2	51.4	50.9	54.1	50.5	47.3	47.6	50.6	48.7	52.6	50.1	50.2	49.7	47.8	44.8	44.1	45.4	50.5	48.0	49.5	49.3	49.3	48.8	44.8	38.9	38.7	37.4	34.4	33.9	36.7
112	53.9	52.7	52.4	49.1	48.2	51.9	48.0	44.4	44.7	48.6	46.7	49.5	47.0	47.2	46.4	44.4	41.3	40.1	41.4	45.5	43.4	44.6	44.5	44.9	45.0	40.1	35.2	35.2	33.2	30.5	31.3	34.1
114	53.9	52.7	52.4	49.1	48.2	51.9	48.0	44.4	44.7	48.6	46.7	49.5	47.0	47.2	46.4	44.4	41.3	40.1	41.4	45.5	43.4	44.6	44.5	44.9	45.0	40.1	35.2	35.2	33.2	30.5	31.3	34.1
116	53.9	52.7	52.4	49.1	48.2	51.9	48.0	44.4	44.7	48.6	46.7	49.5	47.0	47.2	46.4	44.4	41.3	40.1	41.4	45.5	43.4	44.6	44.5	44.9	45.0	40.1	35.2	35.2	33.2	30.5	31.3	34.1
118	46.4	45.3	46.1	42.8	43.2	46.4	43.9	40.3	40.9	43.6	41.5	46.7	45.0	45.2	44.6	42.3	39.2	38.9	40.4	45.2	42.9	44.2	44.0	43.6	42.7	38.1	33.3	33.4	31.9	29.7	29.3	29.4
120	46.4	45.3	46.1	42.8	43.2	46.4	43.9	40.3	40.9	43.6	41.5	46.7	45.0	45.2	44.6	42.3	39.2	38.9	40.4	45.2	42.9	44.2	44.0	43.6	42.7	38.1	33.3	33.4	31.9	29.7	29.3	29.4
122	46.4	45.3	46.1	42.8	43.2	46.4	43.9	40.3	40.9	43.6	41.5	46.7	45.0	45.2	44.6	42.3	39.2	38.9	40.4	45.2	42.9	44.2	44.0	43.6	42.7	38.1	33.3	33.4	31.9	29.7	29.3	29.4
124	46.4	45.3	46.1	42.8	43.2	46.4	43.9	40.3	40.9	43.6	41.5	46.7	45.0	45.2	44.6	42.3	39.2	38.9	40.4	45.2	42.9	44.2	44.0	43.6	42.7	38.1	33.3	33.4	31.9	29.7	29.3	29.4
126	46.4	45.3	46.1	42.8	43.2	46.4	43.9	40.3	40.9	43.6	41.5	46.7	45.0	45.2	44.6	42.3	39.2	38.9	40.4	45.2	42.9	44.2	44.0	43.6	42.7	38.1	33.3	33.4	31.9	29.7	29.3	29.4
128	46.4	45.3	46.1	42.8	43.2	46.4	43.9	40.3	40.9	43.6	41.5	46.7	45.0	45.2	44.6	42.3	39.2	38.9	40.4	45.2	42.9	44.2	44.0	43.6	42.7	38.1	33.3	33.4	31.9	29.7	29.3	29.4
130	46.4	45.3	46.1	42.8	43.2	46.4	43.9	40.3	40.9	43.6	41.5	46.7	45.0	45.2	44.6	42.3	39.2	38.9	40.4	45.2	42.9	44.2	44.0	43.6	42.7	38.1	33.3	33.4	31.9	29.7	29.3	29.4
132	46.4	45.3	46.1	42.8	43.2	46.4	43.9	40.3	40.9	43.6	41.5	46.7	45.0	45.2	44.6	42.3	39.2	38.9	40.4	45.2	42.9	44.2	44.0	43.6	42.7	38.1	33.3	33.4	31.9	29.7	29.3	29.4

TABLE A-4: C02 - LOGARITHMIC COMBINATION OF AMBIENT NOISE AND CONSTRUCTION NOISE (LEQ) BY RECEIVER PER 2-WEEK INCREMENTS (RECEIVERS 1-30)

	Receiver-1	Receiver-2	Receiver-3	Receiver-4	Receiver-5	Receiver-6	Receiver-7	Receiver-8	Receiver-9	Receiver-10	Receiver-11	Receiver-12	Receiver-13	Receiver-14	Receiver-15
Week	Sound Insulated	Sound Insulated						Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	
2	66.4	67.2	67.7	67.8	67.5	66.8	63.0	60.8	71.5	74.1	72.3	69.6	71.3	71.5	59.7
4	69.9	70.4	71.0	71.2	70.9	70.7	65.3	62.7	74.0	74.9	67.4	62.6	63.3	64.0	51.5
6	69.7	70.2	70.7	70.9	70.6	70.5	65.1	62.4	73.7	74.6	66.4	59.6	56.4	54.5	45.5
8	63.7	64.3	64.9	65.2	64.8	64.2	59.7	57.3	67.1	68.0	61.0	54.5	50.9	48.5	38.3
10	63.7	64.3	64.9	65.2	64.8	64.2	59.7	57.3	67.1	68.0	61.0	54.5	50.9	48.5	38.3
12	65.6	66.2	66.8	67.0	66.7	66.1	61.6	59.2	69.7	70.7	65.9	64.2	66.2	66.5	54.5
14	61.1	61.8	62.3	62.5	62.1	61.8	57.3	54.9	66.3	68.1	68.0	67.9	70.1	70.7	59.1
16	71.8	72.2	73.0	73.0	72.4	71.1	66.0	63.2	69.6	68.2	68.1	67.9	70.1	70.7	59.1
18	71.8	72.2	73.0	73.0	72.4	71.1	66.0	63.2	69.6	68.2	68.1	67.9	70.1	70.7	59.1
20	36.4	35.7	36.6	37.9	36.5	36.2	40.6	38.6	44.1	46.4	50.4	58.2	64.4	66.5	59.8
22	36.4	35.7	36.6	37.9	36.5	36.2	40.6	38.6	44.1	46.4	50.4	58.2	64.4	66.5	59.8
24	57.2	58.5	59.4	59.5	58.5	55.1	51.5	49.2	58.9	59.1	55.4	50.3	47.4	44.1	35.5
26	57.2	58.5	59.4	59.5	58.5	55.1	51.5	49.2	58.9	59.1	55.4	50.3	47.4	44.1	35.5
28	57.2	58.5	59.4	59.5	58.5	55.1	51.5	49.2	58.9	59.1	55.4	50.3	47.4	44.1	35.5
30	57.2	58.5	59.4	59.5	58.5	55.1	51.5	49.2	58.9	59.1	55.4	50.3	47.4	44.1	35.5
32	41.9	42.6	42.9	42.6	41.9	39.6	40.2	35.3	42.7	54.8	56.6	56.1	58.3	58.4	46.2
34	68.6	69.1	69.7	70.1	69.8	69.1	65.6	63.6	70.2	68.7	68.1	67.4	67.8	65.3	58.8
36	68.6	69.1	69.7	70.1	69.8	69.1	65.6	63.6	70.2	68.7	68.1	67.4	67.8	65.3	58.8
38	68.6	69.1	69.7	70.1	69.8	69.1	65.6	63.6	70.2	68.7	68.1	67.4	67.8	65.3	58.8
40	68.6	69.1	69.7	70.1	69.8	69.1	65.6	63.6	70.2	68.7	68.1	67.4	67.8	65.3	58.8
42	68.6	69.1	69.7	70.1	69.8	69.1	65.6	63.6	70.2	68.5	67.7	67.0	67.3	64.3	58.6
44	68.5	69.1	69.6	69.6	69.1	67.4	63.9	61.7	67.6	54.0	48.1	44.4	40.6	38.4	32.5
46	68.5	69.1	69.6	69.6	69.1	67.4	63.9	61.7	67.6	54.0	48.1	44.4	40.6	38.4	32.5
48	68.5	69.1	69.6	69.6	69.1	67.4	63.9	61.7	67.6	54.0	48.1	44.4	40.6	38.4	32.5
50	36.4	35.8	37.1	38.6	37.1	36.7	34.8	37.0	42.1	47.4	51.9	60.3	65.4	65.9	60.1
52	36.4	35.8	37.1	38.6	37.1	36.7	34.8	37.0	42.1	47.4	51.9	60.3	65.4	65.9	60.1
54	36.4	35.8	37.1	38.6	37.1	36.7	34.8	37.0	42.1	47.4	51.9	60.3	65.4	65.9	60.1
56	36.4	35.8	37.1	38.6	37.1	36.7	34.8	37.0	42.1	47.4	51.9	60.3	65.4	65.9	60.1
58	36.4	35.8	37.1	38.6	37.1	36.7	34.8	37.0	42.1	47.4	51.9	60.3	65.4	65.9	60.1
60	36.4	35.8	37.1	38.6	37.1	36.7	34.8	37.0	42.1	47.4	51.9	60.3	65.4	65.9	60.1
62	36.4	35.8	37.1	38.6	37.1	36.7	34.8	37.0	42.1	47.4	51.9	60.3	65.4	65.9	60.1
64	36.4	35.8	37.1	38.6	37.1	36.7	34.8	37.0	42.1	47.4	51.9	60.3	65.4	65.9	60.1
66	62.2	63.9	64.6	64.3	63.2	59.5	57.3	55.4	63.5	64.4	63.4	62.6	63.5	62.6	51.1
68	62.2	63.9	64.6	64.3	63.2	59.5	57.3	55.4	63.5	64.4	63.4	62.6	63.5	62.6	51.1
70	62.2	63.9	64.6	64.3	63.2	59.5	57.3	55.4	63.5	64.4	63.4	62.6	63.5	62.6	51.1
72	62.2	63.9	64.6	64.3	63.2	59.5	57.3	55.4	63.5	64.4	63.4	62.6	63.5	62.6	51.1
74	62.2	63.9	64.6	64.3	63.2	59.5	57.3	55.4	63.5	64.4	63.4	62.6	63.5	62.6	51.1
76	63.8	64.6	65.1	65.0	64.5	62.4	60.2	58.6	66.9	67.4	66.7	66.0	67.4	65.8	55.1
78	63.8	64.6	65.1	65.0	64.5	62.4	60.2	58.6	66.9	67.4	66.7	66.0	67.4	65.8	55.1
80	63.8	64.6	65.1	65.0	64.5	62.4	60.2	58.6	66.9	67.4	66.7	66.0	67.4	65.8	55.1
82	60.1	59.7	60.7	61.3	60.6	58.8	55.5	53.3	63.9	64.0	62.9	61.9	64.3	63.3	50.7
84	60.1	59.7	60.7	61.3	60.6	58.8	55.5	53.3	63.9	64.0	62.9	61.9	64.3	63.3	50.7
86	60.1	59.7	60.7	61.3	60.6	58.8	55.5	53.3	63.9	64.0	62.9	61.9	64.3	63.3	50.7
88	60.1	59.7	60.7	61.3	60.6	58.8	55.5	53.3	63.9	64.0	62.9	61.9	64.3	63.3	50.7
90	60.1	59.7	60.7	61.3	60.6	58.8	55.5	53.3	63.9	64.0	62.9	61.9	64.3	63.3	50.7
92	60.1	59.7	60.7	61.3	60.6	58.8	55.5	53.3	63.9	64.0	62.9	61.9	64.3	63.3	50.7
94	60.1	59.7	60.7	61.3	60.6	58.8	55.5	53.3	63.9	64.0	62.9	61.9	64.3	63.3	50.7
96	60.1	59.7	60.7	61.3	60.6	58.8	55.5	53.3	63.9	64.0	62.9	61.9	64.3	63.3	50.7
98	60.1	59.7	60.7	61.3	60.6	58.8	55.5	53.3	63.9	64.0	62.9	61.9	64.3	63.3	50.7
100	60.1	59.7	60.7	61.3	60.6	58.8	55.5	53.3	63.9	64.0	62.9	61.9	64.3	63.3	50.7
102	60.1	59.7	60.7	61.3	60.6	58.8	55.5	53.3	63.9	64.0	62.9	61.9	64.3	63.3	50.7
104	63.9	63.7	64.4	64.8	64.3	63.1	59.3	56.9	68.1	68.5	66.2	65.3	68.0	68.3	55.3
106	63.9	63.7	64.4	64.8	64.3	63.1	59.3	56.9	68.1	68.5	66.2	65.3	68.0	68.3	55.3
108	63.9	63.7	64.4	64.8	64.3	63.1	59.3	56.9	68.1	68.5	66.2	65.3	68.0	68.3	55.3
110	69.9	69.2	70.3	70.6	69.4	68.8	62.0	59.2	67.4	67.7	65.2	64.4	67.2	70.1	57.9
112	69.3	68.4	69.6	69.9	68.5	68.0	60.5	57.4	61.9	61.3	60.3	59.7	62.3	67.6	56.1
114	69.3	68.4	69.6	69.9	68.5	68.0	60.5	57.4	61.9	61.3	60.3	59.7	62.3	67.6	56.1
116	69.3	68.4	69.6	69.9	68.5	68.0	60.5	57.4	61.9	61.3	60.3	59.7	62.3	67.6	56.1
118	57.3	57.5	58.4	58.7	58.0	56.0	53.2	51.2	60.9	61.2	60.2	59.4	61.4	60.1	48.2
120	57.3	57.5	58.4	58.7	58.0	56.0	53.2	51.2	60.9	61.2	60.2	59.4	61.4	60.1	48.2
122	57.3	57.5	58.4	58.7	58.0	56.0	53.2	51.2	60.9	61.2	60.2	59.4	61.4	60.1	48.2
124	57.3	57.5	58.4	58.7	58.0	56.0	53.2	51.2	60.9	61.2	60.2	59.4	61.4	60.1	48.2
126	57.3	57.5	58.4	58.7	58.0	56.0	53.2	51.2	60.9	61.2	60.2	59.4	61.4	60.1	48.2
128	57.3	57.5	58.4	58.7	58.0	56.0	53.2	51.2	60.9	61.2	60.2	59.4	61.4	60.1	48.2
130	57.3	57.5	58.4	58.7	58.0	56.0	53.2	51.2	60.9	61.2	60.2	59.4	61.4	60.1	48.2
132	57.3	57.5	58.4	58.7	58.0	56.0	53.2	51.2	60.9	61.2	60.2	59.4	61.4	60.1	48.2

	Receiver-16	Receiver-17	Receiver-18	Receiver-19	Receiver-20	Receiver-21	Receiver-22	Receiver-23	Receiver-24	Receiver-25	Receiver-26	Receiver-27	Receiver-28	Receiver-29	Receiver-30
Week	Sound Insulated		Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated		Sound Insulated	Sound Insulated	Sound Insulated
2	55.7	51.9	49.1	47.6	45.3	43.4	43.2	41.8	38.7	39.5	40.9	39.3	38.8	40.0	58.2
4	47.7	44.5	44.0	41.7	39.4	39.1	38.2	37.1	35.3	35.7	38.9	37.4	38.1	35.0	60.6
6	42.2	40.5	42.1	39.1	36.8	37.3	35.8	34.0	33.7	33.6	37.8	36.2	37.3	32.4	60.4
8	35.2	33.4	34.8	31.8	29.5	29.8	28.7	26.5	26.3	26.3	30.3	28.6	29.8	25.0	55.0
10	35.2	33.4	34.8	31.8	29.5	29.8	28.7	26.5	26.3	26.3	30.3	28.6	29.8	25.0	55.0
12	50.4	46.5	44.1	42.5	40.3	38.9	38.9	37.8	34.7	35.5	36.5	35.8	35.4	35.6	57.0
14	54.9	51.0	47.8	46.4	44.2	42.4	42.9	40.3	39.2	39.4	39.1	38.2	37.8	39.3	52.8
16	54.9	51.0	47.8	46.4	44.3	42.5	42.9	40.4	39.3	39.5	39.4	38.5	38.7	39.4	61.5
18	54.9	51.0	47.8	46.4	44.3	42.5	42.9	40.4	39.3	39.5	39.4	38.5	38.7	39.4	61.5
20	54.7	51.1	48.4	46.6	45.5	43.5	44.1	40.9	41.1	41.7	40.1	41.0	41.0	41.5	31.4
22	54.7	51.1	48.4	46.6	45.5	43.5	44.1	40.9	41.1	41.7	40.1	41.0	41.0	41.5	31.4
24	31.2	28.6	29.3	26.7	25.4	24.2	24.2	22.3	22.4	22.1	29.4	22.7	23.1	21.1	49.5
26	31.2	28.6	29.3	26.7	25.4	24.2	24.2	22.3	22.4	22.1	29.4	22.7	23.1	21.1	49.5
28	31.2	28.6	29.3	26.7	25.4	24.2	24.2	22.3	22.4	22.1	29.4	22.7	23.1	21.1	49.5
30	31.2	28.6	29.3	26.7	25.4	24.2	24.2	22.3	22.4	22.1	29.4	22.7	23.1	21.1	49.5
32	41.4	38.1	30.7	29.8	27.8	25.8	32.3	27.5	26.8	28.9	29.8	28.5	29.2	31.7	36.2
34	55.1	51.5	48.3	46.2	43.9	41.4	42.6	38.6	38.2	38.7	38.6	37.9	38.0	38.3	60.0
36	55.1	51.5	48.3	46.2	43.9	41.4	42.6	38.6	38.2	38.7	38.6	37.9	38.0	38.3	60.0
38	55.1	51.5	48.3	46.2	43.9	41.4	42.6	38.6	38.2	38.7	38.6	37.9	38.0	38.3	60.0
40	55.1	51.5	48.3	46.2	43.9	41.4	42.6	38.6	38.2	38.7	38.6	37.9	38.0	38.3	60.0
42	54.9	51.3	48.2	46.1	43.8	41.3	42.1	38.3	37.9	38.3	38.0	37.4	37.4	37.2	59.9
44	31.0	29.7	28.3	25.9	26.5	25.1	24.0	22.5	22.6	21.5	26.7	25.8	29.8	24.0	59.9
46	31.0	29.7	28.3	25.9	26.5	25.1	24.0	22.5	22.6	21.5	26.7	25.8	29.8	24.0	59.9
48	31.0	29.7	28.3	25.9	26.5	25.1	24.0	22.5	22.6	21.5	26.7	25.8	29.8	24.0	59.9
50	54.6	51.0	47.2	45.5	43.2	41.5	42.5	38.9	38.6	39.7	38.4	38.7	39.2	39.2	30.4
52	54.6	51.0	47.2	45.5	43.2	41.5	42.5	38.9	38.6	39.7	38.4	38.7	39.2	39.2	30.4
54	54.6	51.0	47.2	45.5	43.2	41.5	42.5	38.9	38.6	39.7	38.4	38.7	39.2	39.2	30.4
56	54.6	51.0	47.2	45.5	43.2	41.5	42.5	38.9	38.6	39.7	38.4	38.7	39.2	39.2	30.4
58	54.6	51.0	47.2	45.5	43.2	41.5	42.5	38.9	38.6	39.7	38.4	38.7	39.2	39.2	30.4
60	54.6	51.0	47.2	45.5	43.2	41.5	42.5	38.9	38.6	39.7	38.4	38.7	39.2	39.2	30.4
62	54.6	51.0	47.2	45.5	43.2	41.5	42.5	38.9	38.6	39.7	38.4	38.7	39.2	39.2	30.4
64	54.6	51.0	47.2	45.5	43.2	41.5	42.5	38.9	38.6	39.7	38.4	38.7	39.2	39.2	30.4
66	43.7	39.3	34.7	35.0	35.4	34.6	35.7	33.5	29.4	32.7	33.1	31.3	31.4	33.4	55.2
68	43.7	39.3	34.7	35.0	35.4	34.6	35.7	33.5	29.4	32.7	33.1	31.3	31.4	33.4	55.2
70	43.7	39.3	34.7	35.0	35.4	34.6	35.7	33.5	29.4	32.7	33.1	31.3	31.4	33.4	55.2
72	43.7	39.3	34.7	35.0	35.4	34.6	35.7	33.5	29.4	32.7	33.1	31.3	31.4	33.4	55.2
74	43.7	39.3	34.7	35.0	35.4	34.6	35.7	33.5	29.4	32.7	33.1	31.3	31.4	33.4	55.2
76	49.8	43.9	37.7	36.4	35.0	31.7	37.4	33.8	32.3	33.9	37.0	32.5	32.3	34.1	56.0
78	49.8	43.9	37.7	36.4	35.0	31.7	37.4	33.8	32.3	33.9	37.0	32.5	32.3	34.1	56.0
80	49.8	43.9	37.7	36.4	35.0	31.7	37.4	33.8	32.3	33.9	37.0	32.5	32.3	34.1	56.0
82	45.9	42.6	36.2	35.2	33.8	31.3	36.4	33.8	31.8	33.1	37.0	32.4	32.4	33.7	51.9
84	45.9	42.6	36.2	35.2	33.8	31.3	36.4	33.8	31.8	33.1	37.0	32.4	32.4	33.7	51.9
86	45.9	42.6	36.2	35.2	33.8	31.3	36.4	33.8	31.8	33.1	37.0	32.4	32.4	33.7	51.9
88	45.9	42.6	36.2	35.2	33.8	31.3	36.4	33.8	31.8	33.1	37.0	32.4	32.4	33.7	51.9
90	45.9	42.6	36.2	35.2	33.8	31.3	36.4	33.8	31.8	33.1	37.0	32.4	32.4	33.7	51.9
92	45.9	42.6	36.2	35.2	33.8	31.3	36.4	33.8	31.8	33.1	37.0	32.4	32.4	33.7	51.9
94	45.9	42.6	36.2	35.2	33.8	31.3	36.4	33.8	31.8	33.1	37.0	32.4	32.4	33.7	51.9
96	45.9	42.6	36.2	35.2	33.8	31.3	36.4	33.8	31.8	33.1	37.0	32.4	32.4	33.7	51.9
98	45.9	42.6	36.2	35.2	33.8	31.3	36.4	33.8	31.8	33.1	37.0	32.4	32.4	33.7	51.9
100	45.9	42.6	36.2	35.2	33.8	31.3	36.4	33.8	31.8	33.1	37.0	32.4	32.4	33.7	51.9
102	45.9	42.6	36.2	35.2	33.8	31.3	36.4	33.8	31.8	33.1	37.0	32.4	32.4	33.7	51.9
104	51.0	47.4	44.0	43.0	41.4	38.3	39.8	36.9	36.1	36.5	38.9	36.5	36.4	36.7	55.2
106	51.0	47.4	44.0	43.0	41.4	38.3	39.8	36.9	36.1	36.5	38.9	36.5	36.4	36.7	55.2
108	51.0	47.4	44.0	43.0	41.4	38.3	39.8	36.9	36.1	36.5	38.9	36.5	36.4	36.7	55.2
110	54.1	49.8	47.3	46.1	44.1	41.7	41.9	39.8	39.1	38.3	38.7	38.1	37.4	37.6	58.6
112	52.3	47.7	45.0	43.8	41.6	39.7	40.1	38.4	37.5	36.4	36.6	35.6	34.6	35.4	57.3
114	52.3	47.7	45.0	43.8	41.6	39.7	40.1	38.4	37.5	36.4	36.6	35.6	34.6	35.4	57.3
116	52.3	47.7	45.0	43.8	41.6	39.7	40.1	38.4	37.5	36.4	36.6	35.6	34.6	35.4	57.3
118	43.2	39.3	33.9	32.9	31.6	29.2	33.4	30.7	29.1	30.1	33.3	29.4	29.5	30.9	49.3
120	43.2	39.3	33.9	32.9	31.6	29.2	33.4	30.7	29.1	30.1	33.3	29.4	29.5	30.9	49.3
122	43.2	39.3	33.9	32.9	31.6	29.2	33.4	30.7	29.1	30.1	33.3	29.4	29.5	30.9	49.3
124	43.2	39.3	33.9	32.9	31.6	29.2	33.4	30.7	29.1	30.1	33.3	29.4	29.5	30.9	49.3
126	43.2	39.3	33.9	32.9	31.6	29.2	33.4	30.7	29.1	30.1	33.3	29.4	29.5	30.9	49.3
128	43.2	39.3	33.9	32.9	31.6	29.2	33.4	30.7	29.1	30.1	33.3	29.4	29.5	30.9	49.3
130	43.2	39.3	33.9	32.9	31.6	29.2	33.4	30.7	29.1	30.1	33.3	29.4	29.5	30.9	49.3
132	43.2	39.3	33.9	32.9	31.6	29.2	33.4	30.7	29.1	30.1	33.3	29.4	29.5	30.9	49.3

TABLE A-5: C02 - LOGARITHMIC COMBINATION OF AMBIENT NOISE AND CONSTRUCTION NOISE (LEQ) BY RECEIVER PER 2-WEEK INCREMENTS (RECEIVERS 31-55)

	Receiver-31	Receiver-32	Receiver-33	Receiver-34	Receiver-35	Receiver-36	Receiver-37	Receiver-38	Receiver-39	Receiver-40	Receiver-41	Receiver-42	Receiver-43	Receiver-44	Receiver-45	Receiver-46	Receiver-47	Receiver-48	Receiver-49	Receiver-50	Receiver-51	Receiver-52	Receiver-53	Receiver-54	Receiver-55
Week		Sound Insulated				Sound Insulated	Sound Insulated					Sound Insulated	Sound Insulated						Sound Insulated	Sound Insulated	Yes				Sound Insulated
2	59.0	58.6	58.8	59.2	55.4	61.5	63.3	59.4	58.7	58.6	54.0	49.2	45.3	43.5	42.8	41.2	39.7	39.6	38.2	38.2	40.2	40.1	40.1	39.7	38.4
4	61.1	60.7	61.2	62.7	58.1	61.9	59.0	52.7	52.2	51.6	47.4	44.6	43.8	40.4	39.9	39.4	38.3	38.7	37.6	35.4	38.8	36.1	37.2	38.9	37.1
6	60.9	60.4	60.9	62.5	57.8	61.7	58.4	50.7	50.1	48.7	45.3	43.6	43.4	39.7	39.3	39.0	37.9	38.1	37.2	34.1	37.7	33.6	35.8	38.1	36.2
8	55.7	55.4	55.7	56.6	52.1	56.7	52.9	44.5	43.3	41.6	38.3	36.8	36.2	32.3	32.2	32.0	30.5	30.6	29.6	26.4	30.0	25.7	28.1	30.4	28.8
10	55.7	55.4	55.7	56.6	52.1	56.7	52.9	44.5	43.3	41.6	38.3	36.8	36.2	32.3	32.2	32.0	30.5	30.6	29.6	26.4	30.0	25.7	28.1	30.4	28.8
12	57.6	57.3	57.6	58.4	54.1	58.8	56.9	53.6	53.2	53.2	48.4	43.7	40.8	38.8	37.9	37.0	35.8	36.0	34.1	34.3	36.8	36.2	36.1	35.9	34.9
14	53.2	53.0	53.3	54.2	50.2	55.3	58.3	57.3	57.4	57.3	52.4	46.9	43.0	41.0	39.7	38.4	36.5	36.2	36.1	38.7	40.0	38.4	38.1	37.1	38.0
16	62.4	61.6	61.9	62.5	57.4	56.6	58.5	57.3	57.5	57.4	52.4	47.2	43.2	41.2	40.4	38.9	37.4	37.1	36.5	38.9	40.1	38.5	38.3	37.3	38.6
18	62.4	61.6	61.9	62.5	57.4	56.6	58.5	57.3	57.5	57.4	52.4	47.2	43.2	41.2	40.4	38.9	37.4	37.1	36.5	38.9	40.1	38.5	38.3	37.3	38.6
20	30.7	31.7	30.7	37.1	39.5	38.5	46.3	51.2	53.3	57.2	52.6	46.1	40.0	37.4	35.8	34.8	31.3	30.8	33.9	40.6	43.6	38.1	38.8	41.5	41.4
22	30.7	31.7	30.7	37.1	39.5	38.5	46.3	51.2	53.3	57.2	52.6	46.1	40.0	37.4	35.8	34.8	31.3	30.8	33.9	40.6	43.6	38.1	38.8	41.5	41.4
24	50.7	50.5	50.2	49.8	45.7	48.1	46.6	40.7	40.6	38.9	34.3	31.7	30.5	27.7	28.0	25.8	25.0	26.5	24.9	23.3	28.5	24.1	25.4	26.4	20.8
26	50.7	50.5	50.2	49.8	45.7	48.1	46.6	40.7	40.6	38.9	34.3	31.7	30.5	27.7	28.0	25.8	25.0	26.5	24.9	23.3	28.5	24.1	25.4	26.4	20.8
28	50.7	50.5	50.2	49.8	45.7	48.1	46.6	40.7	40.6	38.9	34.3	31.7	30.5	27.7	28.0	25.8	25.0	26.5	24.9	23.3	28.5	24.1	25.4	26.4	20.8
30	50.7	50.5	50.2	49.8	45.7	48.1	46.6	40.7	40.6	38.9	34.3	31.7	30.5	27.7	28.0	25.8	25.0	26.5	24.9	23.3	28.5	24.1	25.4	26.4	20.8
32	36.6	36.7	35.7	36.5	37.3	41.1	47.2	45.6	45.9	47.2	43.1	34.6	32.0	30.3	28.8	27.4	26.2	25.8	25.8	27.0	28.5	27.9	28.4	30.0	29.8
34	61.0	60.6	61.0	61.4	57.6	61.0	60.4	58.7	58.2	58.3	54.0	48.6	44.1	41.5	40.0	39.0	37.0	36.7	35.4	34.7	35.8	34.4	34.1	37.0	37.4
36	61.0	60.6	61.0	61.4	57.6	61.0	60.4	58.7	58.2	58.3	54.0	48.6	44.1	41.5	40.0	39.0	37.0	36.7	35.4	34.7	35.8	34.4	34.1	37.0	37.4
38	61.0	60.6	61.0	61.4	57.6	61.0	60.4	58.7	58.2	58.3	54.0	48.6	44.1	41.5	40.0	39.0	37.0	36.7	35.4	34.7	35.8	34.4	34.1	37.0	37.4
40	61.0	60.6	61.0	61.4	57.6	61.0	60.4	58.7	58.2	58.3	54.0	48.6	44.1	41.5	40.0	39.0	37.0	36.7	35.4	34.7	35.8	34.4	34.1	37.0	37.4
42	61.0	60.6	61.0	61.3	57.6	61.0	60.1	58.5	57.9	57.9	53.6	48.4	43.8	41.2	39.7	38.7	36.6	36.3	34.9	33.9	34.9	33.3	32.7	36.0	36.6
44	60.9	60.1	60.2	60.0	55.8	52.6	44.9	39.0	35.1	37.1	34.0	33.0	30.6	28.1	30.6	30.0	31.4	31.1	27.1	22.8	23.7	19.0	21.8	22.5	28.0
46	60.9	60.1	60.2	60.0	55.8	52.6	44.9	39.0	35.1	37.1	34.0	33.0	30.6	28.1	30.6	30.0	31.4	31.1	27.1	22.8	23.7	19.0	21.8	22.5	28.0
48	60.9	60.1	60.2	60.0	55.8	52.6	44.9	39.0	35.1	37.1	34.0	33.0	30.6	28.1	30.6	30.0	31.4	31.1	27.1	22.8	23.7	19.0	21.8	22.5	28.0
50	30.7	31.9	30.7	34.1	36.0	37.4	42.4	51.8	54.0	57.0	52.2	46.2	40.3	37.9	34.2	35.3	30.8	29.6	31.5	38.4	39.3	37.2	35.7	38.3	39.4
52	30.7	31.9	30.7	34.1	36.0	37.4	42.4	51.8	54.0	57.0	52.2	46.2	40.3	37.9	34.2	35.3	30.8	29.6	31.5	38.4	39.3	37.2	35.7	38.3	39.4
54	30.7	31.9	30.7	34.1	36.0	37.4	42.4	51.8	54.0	57.0	52.2	46.2	40.3	37.9	34.2	35.3	30.8	29.6	31.5	38.4	39.3	37.2	35.7	38.3	39.4
56	30.7	31.9	30.7	34.1	36.0	37.4	42.4	51.8	54.0	57.0	52.2	46.2	40.3	37.9	34.2	35.3	30.8	29.6	31.5	38.4	39.3	37.2	35.7	38.3	39.4
58	30.7	31.9	30.7	34.1	36.0	37.4	42.4	51.8	54.0	57.0	52.2	46.2	40.3	37.9	34.2	35.3	30.8	29.6	31.5	38.4	39.3	37.2	35.7	38.3	39.4
60	30.7	31.9	30.7	34.1	36.0	37.4	42.4	51.8	54.0	57.0	52.2	46.2	40.3	37.9	34.2	35.3	30.8	29.6	31.5	38.4	39.3	37.2	35.7	38.3	39.4
62	30.7	31.9	30.7	34.1	36.0	37.4	42.4	51.8	54.0	57.0	52.2	46.2	40.3	37.9	34.2	35.3	30.8	29.6	31.5	38.4	39.3	37.2	35.7	38.3	39.4
64	30.7	31.9	30.7	34.1	36.0	37.4	42.4	51.8	54.0	57.0	52.2	46.2	40.3	37.9	34.2	35.3	30.8	29.6	31.5	38.4	39.3	37.2	35.7	38.3	39.4
66	56.3	56.0	55.6	53.9	50.3	55.5	55.0	52.3	51.3	52.3	45.8	41.2	36.8	35.5	37.1	37.6	31.1	32.1	31.1	30.1	33.5	30.0	31.4	31.4	32.0
68	56.3	56.0	55.6	53.9	50.3	55.5	55.0	52.3	51.3	52.3	45.8	41.2	36.8	35.5	37.1	37.6	31.1	32.1	31.1	30.1	33.5	30.0	31.4	31.4	32.0
70	56.3	56.0	55.6	53.9	50.3	55.5	55.0	52.3	51.3	52.3	45.8	41.2	36.8	35.5	37.1	37.6	31.1	32.1	31.1	30.1	33.5	30.0	31.4	31.4	32.0
72	56.3	56.0	55.6	53.9	50.3	55.5	55.0	52.3	51.3	52.3	45.8	41.2	36.8	35.5	37.1	37.6	31.1	32.1	31.1	30.1	33.5	30.0	31.4	31.4	32.0
74	56.3	56.0	55.6	53.9	50.3	55.5	55.0	52.3	51.3	52.3	45.8	41.2	36.8	35.5	37.1	37.6	31.1	32.1	31.1	30.1	33.5	30.0	31.4	31.4	32.0
76	56.7	56.2	56.1	56.1	52.9	58.6	58.4	56.2	55.3	56.2	50.4	45.2	39.9	37.5	36.3	35.8	33.0	32.2	32.6	32.6	36.0	33.8	34.1	35.7	32.5
78	56.7	56.2	56.1	56.1	52.9	58.6	58.4	56.2	55.3	56.2	50.4	45.2	39.9	37.5	36.3	35.8	33.0	32.2	32.6	32.6	36.0	33.8	34.1	35.7	32.5
80	56.7	56.2	56.1	56.1	52.9	58.6	58.4	56.2	55.3	56.2	50.4	45.2	39.9	37.5	36.3	35.8	33.0	32.2	32.6	32.6	36.0	33.8	34.1	35.7	32.5
82	50.9	51.1	51.2	52.4	48.8	52.6	52.9	50.8	50.7	52.1	46.0	41.7	37.2	35.5	34.0	33.4	32.0	32.1	32.6	32.3	36.4	34.1	34.5	36.0	32.5
84	50.9	51.1	51.2	52.4	48.8	52.6	52.9	50.8	50.7	52.1	46.0	41.7	37.2	35.5	34.0	33.4	32.0	32.1	32.6	32.3	36.4	34.1	34.5	36.0	32.5
86	50.9	51.1	51.2	52.4	48.8	52.6	52.9	50.8	50.7	52.1	46.0	41.7	37.2	35.5	34.0	33.4	32.0	32.1	32.6	32.3	36.4	34.1	34.5	36.0	32.5
88	50.9	51.1	51.2	52.4	48.8	52.6	52.9	50.8	50.7	52.1	46.0	41.7	37.2	35.5	34.0	33.4	32.0	32.1	32.6	32.3	36.4	34.1	34.5	36.0	32.5
90	50.9	51.1	51.2	52.4	48.8	52.6	52.9	50.8	50.7	52.1	46.0	41.7	37.2	35.5	34.0	33.4	32.0	32.1	32.6	32.3	36.4	34.1	34.5	36.0	32.5
92	50.9	51.1	51.2	52.4	48.8	52.6	52.9	50.8	50.7	52.1	46.0	41.7	37.2	35.5	34.0	33.4	32.0	32.1	32.6	32.3	36.4	34.1	34.5	36.0	32.5
94	50.9	51.1	51.2	52.4	48.8	52.6	52.9	50.8	50.7	52.1	46.0	41.7	37.2	35.5	34.0	33.4	32.0	32.1	32.6	32.3	36.4	34.1	34.5	36.0	32.5
96	50.9	51.1	51.2	52.4	48.8	52.6	52.9	50.8	50.7	52.1	46.0	41.7	37.2	35.5	34.0	33.4	32.0	32.1	32.6	32.3	36.4	34.1	34.5	36.0	32.5
98	50.9	51.1	51.2	52.4	48.8	52.6	52.9	50.8	50.7	52.1	46.0	41.7	37.2	35.5	34.0	33.4	32.0	32.1	32.6	32.3	36.4	34.1	34.5	36.0	32.5
100	50.9	51.1	51.2	52.4	48.8	52.6	52.9	50.8	50.7	52.1	46.0	41.7	37.2	35.5	34.0	33.4	32.0	32.1	32.6	32.3	36.4	34.1	34.5	36.0	32.5
102	50.9	51.1	51.2	52.4	48.8	52.6	52.9	50.8	50.7	52.1	46.0	41.7	37.2	35.5	34.0	33.4	32.0	32.1	32.6	32.3	36.4	34.1	34.5	36.0	32.5
104	55.0	54.8	55.1	55.9	52.1	56.2	56.3	54.5	54.3	55.2	49.8	44.9	40.5	39.8	38.1	36.9	35.0	35.6	35.5	35.7	38.3	36.4	36.3	38.4	36.9
106	55.0	54.8	55.1	55.9	52.1	56.2	56.3	54.5	54.3	55.2	49.8	44.9	40.5	39.8	38.1	36.9	35.0	35.6	35.5	35.7	38.3	36.4	36.3	38.4	36.9
108	55.0	54.8	55.1	55.9	52.1	56.2	56.3	54.5	54.3	55.2	49.8	44.9	40.5	39.8	38.1	36.9	35.0	35.6	35.5	35.7	38.3	36.4	36.3	38.4	36.9
110	58.5	57.6	58.0	58.7	53.6	55.6	55.6	54.0	54.1	55.5	50.7	45.0	40.9	40.2	38.7	37.1	35.0	35.4	35.1	36.5	37.7	36.0	36.0	37.6	37.7
112	57.2	56.1	56.4	57.2	51.5	51.2	51.1	49.7	50.1	52.7	48.0	41.9	38.0	36.3	35.3	33.9	32.0	31.5	31.8	33.9	35.4	33.5	34.1	34.4	34.4
114	57.2	56.1	56.4	57.2	51.5	51.2	51.1	49.7	50.1	52.7	48.0	41.9	38.0	36.3	35.3	33.9	32.0	31.5	31.8	33.9	35.4	33.5	34.1	34.4	34.4
116	57.2	56.1	56.4	57.2	51.5	51.2	51.1	49.7	50.1	52.7	48.0	41.9	38.0	36.3	35.3	33.9	32.0	31.5	31.8	33.9	35.4	33.5	34.1	34.4	34.4
118	49.1	49.0	49.0	49.6	46.3	50.8	51.0	48.8	48.3	49.6	43.6	39.3	35.0	33.5	32.1	31.6	30.0	29.8	29.7	29.4	32.7	30.6	31.0	32.4	29.6
120	49.1	49.0	49.0	49.6	46.3	50.8	51.0	48.8	48.3	49.6	43.6	39.3	35.0	33.5	32.1	31.6	30.0	29.8	29.7	29.4	32.7	30.6	31.0	32.4	29.6
122	49.1	49.0	49.0	49.6	46.3	50.8	51.0	48.8	48.3	49.6	43.6	39.3	35.0	33.5	32.1	31.6	30.0	29.8	29.7	29.4	32.7	30.6	31.0	32.4	29.6
124	49.1	49.0	49.0	49.6	46.3	50.8	51.0	48.8	48.3	49.6	43.6	39.3	35.0	33.5	32.1	31.6	30.0	29.8	29.7	29.4	32.7	30.6	31.0	32.4	29.6
126	49.1	49.0	49.0	49.6	46.3	50.8	51.0	48.8	48.3	49.6	43.6	39.3	35.0	33.5	32.1	31.6	30.0	29.8	29.7	29.4	32.7	30.6	31.0	32.4	29.6
128	49.1	49.0	49.0	49.6	46.3	50.8	51.0	48.8	48.3	49.6	43.6	39.3	35.0	33.5	32.1	31.6	30.0	29.8	29.7	29.4	32.7	30.6	31.0	32.4	29.6
130	49.1	49.0	49.0	49.6	46.3	50.8	51.0	48.8	48.3	49.6	43.6	39.3	35.0	33.5	32.1	31.6	30.0	29.8	29.7	29.4	32.7	30.6	31.0	32.4	29.6
132	49.1	49.0	49.0	49.6	46.3	50.8	51.0	48.8	48.3	49.6	43.6	39.3	35.0	33.5	32.1	31.6	30.0	29.8	29.7	29.4	32.7	30.6	31.0	32.4	29.6

TABLE A-6: C02 - LOGARITHMIC COMBINATION OF AMBIENT NOISE AND CONSTRUCTION NOISE (LEQ) BY RECEIVER PER 2-WEEK INCREMENTS (RECEIVERS 56-87)

	Receiver-56	Receiver-57	Receiver-58	Receiver-59	Receiver-60	Receiver-61	Receiver-62	Receiver-63	Receiver-64	Receiver-65	Receiver-66	Receiver-67	Receiver-68	Receiver-69	Receiver-70	Receiver-71
Week			Sound Insulated							Sound Insulated	Sound Insulated	Sound Insulated				Sound Insulated
2	56.0	55.6	56.0	53.7	53.0	55.7	52.9	50.4	51.7	53.3	51.4	56.3	54.3	54.4	54.1	52.2
4	58.4	57.4	57.8	55.7	56.0	59.1	55.3	51.9	53.4	54.8	53.3	57.8	55.7	56.1	56.5	52.8
6	58.1	57.1	57.5	55.4	55.7	58.9	55.0	51.5	53.1	54.5	53.0	57.5	55.5	55.9	56.3	52.5
8	52.6	51.9	52.5	49.9	49.7	52.9	49.3	45.9	47.3	49.1	47.2	52.2	50.2	50.5	50.5	47.1
10	52.6	51.9	52.5	49.9	49.7	52.9	49.3	45.9	47.3	49.1	47.2	52.2	50.2	50.5	50.5	47.1
12	54.6	54.0	54.5	52.1	51.8	54.7	51.3	48.3	49.6	51.3	49.5	54.4	52.3	52.5	52.4	49.6
14	50.6	50.0	50.4	49.2	48.3	50.7	47.8	45.1	46.5	47.7	46.1	50.7	48.4	48.2	48.0	46.4
16	58.3	58.0	58.1	55.4	54.4	57.8	54.0	50.8	52.2	53.9	52.0	58.2	53.2	52.8	52.6	51.0
18	58.3	58.0	58.1	55.4	54.4	57.8	54.0	50.8	52.2	53.9	52.0	58.2	53.2	52.8	52.6	51.0
20	38.9	29.6	30.7	40.4	36.9	39.8	36.3	34.5	31.4	28.1	26.3	26.8	24.9	25.6	26.0	26.8
22	38.9	29.6	30.7	40.4	36.9	39.8	36.3	34.5	31.4	28.1	26.3	26.8	24.9	25.6	26.0	26.8
24	47.2	47.5	48.2	45.7	44.3	46.7	43.0	42.0	39.6	41.3	39.4	44.5	42.3	42.5	41.7	40.1
26	47.2	47.5	48.2	45.7	44.3	46.7	43.0	42.0	39.6	41.3	39.4	44.5	42.3	42.5	41.7	40.1
28	47.2	47.5	48.2	45.7	44.3	46.7	43.0	42.0	39.6	41.3	39.4	44.5	42.3	42.5	41.7	40.1
30	47.2	47.5	48.2	45.7	44.3	46.7	43.0	42.0	39.6	41.3	39.4	44.5	42.3	42.5	41.7	40.1
32	40.1	35.4	36.0	38.7	34.6	36.7	35.1	32.4	32.1	32.0	30.8	33.1	26.1	25.9	26.8	28.5
34	57.3	57.1	57.6	55.4	54.7	57.8	54.8	52.2	52.6	55.2	52.8	58.4	56.0	55.9	55.5	53.8
36	57.3	57.1	57.6	55.4	54.7	57.8	54.8	52.2	52.6	55.2	52.8	58.4	56.0	55.9	55.5	53.8
38	57.3	57.1	57.6	55.4	54.7	57.8	54.8	52.2	52.6	55.2	52.8	58.4	56.0	55.9	55.5	53.8
40	57.3	57.1	57.6	55.4	54.7	57.8	54.8	52.2	52.6	55.2	52.8	58.4	56.0	55.9	55.5	53.8
42	57.2	57.0	57.5	55.3	54.7	57.8	54.8	52.1	52.5	55.2	52.8	58.4	56.0	55.9	55.5	53.8
44	57.1	56.9	57.1	54.1	53.0	56.3	52.8	49.7	49.5	52.5	50.0	55.8	52.6	52.0	51.6	50.7
46	57.1	56.9	57.1	54.1	53.0	56.3	52.8	49.7	49.5	52.5	50.0	55.8	52.6	52.0	51.6	50.7
48	57.1	56.9	57.1	54.1	53.0	56.3	52.8	49.7	49.5	52.5	50.0	55.8	52.6	52.0	51.6	50.7
50	36.6	28.8	30.3	36.5	31.4	33.1	34.5	32.6	32.5	27.4	26.3	28.7	24.9	25.5	26.8	26.7
52	36.6	28.8	30.3	36.5	31.4	33.1	34.5	32.6	32.5	27.4	26.3	28.7	24.9	25.5	26.8	26.7
54	36.6	28.8	30.3	36.5	31.4	33.1	34.5	32.6	32.5	27.4	26.3	28.7	24.9	25.5	26.8	26.7
56	36.6	28.8	30.3	36.5	31.4	33.1	34.5	32.6	32.5	27.4	26.3	28.7	24.9	25.5	26.8	26.7
58	36.6	28.8	30.3	36.5	31.4	33.1	34.5	32.6	32.5	27.4	26.3	28.7	24.9	25.5	26.8	26.7
60	36.6	28.8	30.3	36.5	31.4	33.1	34.5	32.6	32.5	27.4	26.3	28.7	24.9	25.5	26.8	26.7
62	36.6	28.8	30.3	36.5	31.4	33.1	34.5	32.6	32.5	27.4	26.3	28.7	24.9	25.5	26.8	26.7
64	36.6	28.8	30.3	36.5	31.4	33.1	34.5	32.6	32.5	27.4	26.3	28.7	24.9	25.5	26.8	26.7
66	53.0	52.7	53.9	50.4	48.6	51.3	47.8	44.2	44.4	47.3	45.0	50.4	49.1	49.3	48.9	45.9
68	53.0	52.7	53.9	50.4	48.6	51.3	47.8	44.2	44.4	47.3	45.0	50.4	49.1	49.3	48.9	45.9
70	53.0	52.7	53.9	50.4	48.6	51.3	47.8	44.2	44.4	47.3	45.0	50.4	49.1	49.3	48.9	45.9
72	53.0	52.7	53.9	50.4	48.6	51.3	47.8	44.2	44.4	47.3	45.0	50.4	49.1	49.3	48.9	45.9
74	53.0	52.7	53.9	50.4	48.6	51.3	47.8	44.2	44.4	47.3	45.0	50.4	49.1	49.3	48.9	45.9
76	53.1	52.8	53.5	50.0	49.6	52.7	50.4	47.0	47.4	50.8	48.4	53.9	52.4	52.6	52.2	49.2
78	53.1	52.8	53.5	50.0	49.6	52.7	50.4	47.0	47.4	50.8	48.4	53.9	52.4	52.6	52.2	49.2
80	53.1	52.8	53.5	50.0	49.6	52.7	50.4	47.0	47.4	50.8	48.4	53.9	52.4	52.6	52.2	49.2
82	49.1	47.3	48.0	44.8	46.0	49.4	46.4	42.6	43.0	45.5	43.5	49.0	47.1	47.2	46.5	44.6
84	49.1	47.3	48.0	44.8	46.0	49.4	46.4	42.6	43.0	45.5	43.5	49.0	47.1	47.2	46.5	44.6
86	49.1	47.3	48.0	44.8	46.0	49.4	46.4	42.6	43.0	45.5	43.5	49.0	47.1	47.2	46.5	44.6
88	49.1	47.3	48.0	44.8	46.0	49.4	46.4	42.6	43.0	45.5	43.5	49.0	47.1	47.2	46.5	44.6
90	49.1	47.3	48.0	44.8	46.0	49.4	46.4	42.6	43.0	45.5	43.5	49.0	47.1	47.2	46.5	44.6
92	49.1	47.3	48.0	44.8	46.0	49.4	46.4	42.6	43.0	45.5	43.5	49.0	47.1	47.2	46.5	44.6
94	49.1	47.3	48.0	44.8	46.0	49.4	46.4	42.6	43.0	45.5	43.5	49.0	47.1	47.2	46.5	44.6
96	49.1	47.3	48.0	44.8	46.0	49.4	46.4	42.6	43.0	45.5	43.5	49.0	47.1	47.2	46.5	44.6
98	49.1	47.3	48.0	44.8	46.0	49.4	46.4	42.6	43.0	45.5	43.5	49.0	47.1	47.2	46.5	44.6
100	49.1	47.3	48.0	44.8	46.0	49.4	46.4	42.6	43.0	45.5	43.5	49.0	47.1	47.2	46.5	44.6
102	49.1	47.3	48.0	44.8	46.0	49.4	46.4	42.6	43.0	45.5	43.5	49.0	47.1	47.2	46.5	44.6
104	52.4	51.3	51.8	49.4	49.9	52.6	49.7	46.5	46.9	48.9	46.9	52.3	50.1	50.3	49.7	47.9
106	52.4	51.3	51.8	49.4	49.9	52.6	49.7	46.5	46.9	48.9	46.9	52.3	50.1	50.3	49.7	47.9
108	52.4	51.3	51.8	49.4	49.9	52.6	49.7	46.5	46.9	48.9	46.9	52.3	50.1	50.3	49.7	47.9
110	55.3	54.3	54.2	51.4	50.9	54.1	50.5	47.3	47.6	50.6	48.7	52.6	50.1	50.2	49.7	47.8
112	53.9	52.7	52.4	49.1	48.2	51.9	48.0	44.4	44.7	48.6	46.7	49.5	47.0	47.2	46.4	44.4
114	53.9	52.7	52.4	49.1	48.2	51.9	48.0	44.4	44.7	48.6	46.7	49.5	47.0	47.2	46.4	44.4
116	53.9	52.7	52.4	49.1	48.2	51.9	48.0	44.4	44.7	48.6	46.7	49.5	47.0	47.2	46.4	44.4
118	46.4	45.3	46.1	42.8	43.2	46.4	43.9	40.3	40.9	43.6	41.5	46.7	45.0	45.2	44.6	42.3
120	46.4	45.3	46.1	42.8	43.2	46.4	43.9	40.3	40.9	43.6	41.5	46.7	45.0	45.2	44.6	42.3
122	46.4	45.3	46.1	42.8	43.2	46.4	43.9	40.3	40.9	43.6	41.5	46.7	45.0	45.2	44.6	42.3
124	46.4	45.3	46.1	42.8	43.2	46.4	43.9	40.3	40.9	43.6	41.5	46.7	45.0	45.2	44.6	42.3
126	46.4	45.3	46.1	42.8	43.2	46.4	43.9	40.3	40.9	43.6	41.5	46.7	45.0	45.2	44.6	42.3
128	46.4	45.3	46.1	42.8	43.2	46.4	43.9	40.3	40.9	43.6	41.5	46.7	45.0	45.2	44.6	42.3
130	46.4	45.3	46.1	42.8	43.2	46.4	43.9	40.3	40.9	43.6	41.5	46.7	45.0	45.2	44.6	42.3
132	46.4	45.3	46.1	42.8	43.2	46.4	43.9	40.3	40.9	43.6	41.5	46.7	45.0	45.2	44.6	42.3

	Receiver-72	Receiver-73	Receiver-74	Receiver-75	Receiver-76	Receiver-77	Receiver-78	Receiver-79	Receiver-80	Receiver-81	Receiver-82	Receiver-83	Receiver-84	Receiver-85	Receiver-86	Receiver-87
Week	Sound Insulated	Sound Insulated	Sound Insulated			Sound Insulated	Sound Insulated			Sound Insulated						
2	50.5	50.5	53.6	58.1	55.8	56.7	55.6	54.9	53.8	49.6	44.0	44.1	41.8	40.2	37.3	40.2
4	50.2	50.9	52.8	54.0	52.4	51.3	50.6	50.6	48.1	45.2	41.6	43.0	43.3	41.7	37.7	35.8
6	49.8	50.6	52.6	53.5	52.0	50.5	49.6	49.6	46.6	44.4	41.1	42.6	43.0	41.4	37.2	33.5
8	43.9	44.2	46.4	47.8	46.3	44.8	43.4	43.0	39.9	37.8	34.0	36.0	35.9	34.2	29.5	25.9
10	43.9	44.2	46.4	47.8	46.3	44.8	43.4	43.0	39.9	37.8	34.0	36.0	35.9	34.2	29.5	25.9
12	47.3	47.0	48.6	51.6	49.6	50.3	49.6	49.4	48.2	44.0	39.4	40.0	39.3	37.7	34.3	36.0
14	45.2	45.2	48.1	53.0	50.2	53.1	53.3	52.5	51.7	46.9	40.5	40.2	39.1	36.0	35.3	39.3
16	48.4	46.4	49.2	53.1	50.5	53.2	53.5	52.6	51.8	47.0	40.8	41.5	40.4	37.4	35.8	39.4
18	48.4	46.4	49.2	53.1	50.5	53.2	53.5	52.6	51.8	47.0	40.8	41.5	40.4	37.4	35.8	39.4
20	31.1	31.7	31.8	36.9	35.5	39.2	43.0	45.6	47.9	42.4	36.9	34.7	32.8	22.0	33.2	39.9
22	31.1	31.7	31.8	36.9	35.5	39.2	43.0	45.6	47.9	42.4	36.9	34.7	32.8	22.0	33.2	39.9
24	37.4	37.5	39.2	42.2	40.1	41.0	39.2	38.5	35.6	33.1	28.9	30.1	30.8	28.6	27.0	18.9
26	37.4	37.5	39.2	42.2	40.1	41.0	39.2	38.5	35.6	33.1	28.9	30.1	30.8	28.6	27.0	18.9
28	37.4	37.5	39.2	42.2	40.1	41.0	39.2	38.5	35.6	33.1	28.9	30.1	30.8	28.6	27.0	18.9
30	37.4	37.5	39.2	42.2	40.1	41.0	39.2	38.5	35.6	33.1	28.9	30.1	30.8	28.6	27.0	18.9
32	31.6	33.1	38.0	42.1	39.8	40.2	41.2	40.5	39.7	34.4	29.8	28.2	27.2	20.7	24.6	31.5
34	50.2	48.8	50.8	55.8	53.5	55.4	54.8	54.1	53.3	48.5	40.7	42.0	39.5	35.9	32.8	37.2
36	50.2	48.8	50.8	55.8	53.5	55.4	54.8	54.1	53.3	48.5	40.7	42.0	39.5	35.9	32.8	37.2
38	50.2	48.8	50.8	55.8	53.5	55.4	54.8	54.1	53.3	48.5	40.7	42.0	39.5	35.9	32.8	37.2
40	50.2	48.8	50.8	55.8	53.5	55.4	54.8	54.1	53.3	48.5	40.7	42.0	39.5	35.9	32.8	37.2
42	50.1	48.7	50.5	55.6	53.3	55.3	54.6	54.0	53.2	48.3	40.3	41.8	39.2	35.8	32.1	35.9
44	46.6	41.0	41.4	39.7	40.3	39.1	38.5	39.3	35.9	32.7	29.5	34.4	33.4	29.5	25.8	24.6
46	46.6	41.0	41.4	39.7	40.3	39.1	38.5	39.3	35.9	32.7	29.5	34.4	33.4	29.5	25.8	24.6
48	46.6	41.0	41.4	39.7	40.3	39.1	38.5	39.3	35.9	32.7	29.5	34.4	33.4	29.5	25.8	24.6
50	27.4	29.2	30.1	34.8	35.8	40.9	43.9	47.0	48.2	42.0	35.5	32.3	33.3	21.7	31.9	37.0
52	27.4	29.2	30.1	34.8	35.8	40.9	43.9	47.0	48.2	42.0	35.5	32.3	33.3	21.7	31.9	37.0
54	27.4	29.2	30.1	34.8	35.8	40.9	43.9	47.0	48.2	42.0	35.5	32.3	33.3	21.7	31.9	37.0
56	27.4	29.2	30.1	34.8	35.8	40.9	43.9	47.0	48.2	42.0	35.5	32.3	33.3	21.7	31.9	37.0
58	27.4	29.2	30.1	34.8	35.8	40.9	43.9	47.0	48.2	42.0	35.5	32.3	33.3	21.7	31.9	37.0
60	27.4	29.2	30.1	34.8	35.8	40.9	43.9	47.0	48.2	42.0	35.5	32.3	33.3	21.7	31.9	37.0
62	27.4	29.2	30.1	34.8	35.8	40.9	43.9	47.0	48.2	42.0	35.5	32.3	33.3	21.7	31.9	37.0
64	27.4	29.2	30.1	34.8	35.8	40.9	43.9	47.0	48.2	42.0	35.5	32.3	33.3	21.7	31.9	37.0
66	40.6	43.7	44.8	49.3	46.7	47.9	47.5	47.5	45.2	41.4	37.4	38.2	35.6	32.4	28.6	33.5
68	40.6	43.7	44.8	49.3	46.7	47.9	47.5	47.5	45.2	41.4	37.4	38.2	35.6	32.4	28.6	33.5
70	40.6	43.7	44.8	49.3	46.7	47.9	47.5	47.5	45.2	41.4	37.4	38.2	35.6	32.4	28.6	33.5
72	40.6	43.7	44.8	49.3	46.7	47.9	47.5	47.5	45.2	41.4	37.4	38.2	35.6	32.4	28.6	33.5
74	40.6	43.7	44.8	49.3	46.7	47.9	47.5	47.5	45.2	41.4	37.4	38.2	35.6	32.4	28.6	33.5
76	44.3	44.9	47.5	53.0	50.4	51.8	51.3	50.9	49.7	44.8	37.1	38.5	35.6	33.0	32.2	32.6
78	44.3	44.9	47.5	53.0	50.4	51.8	51.3	50.9	49.7	44.8	37.1	38.5	35.6	33.0	32.2	32.6
80	44.3	44.9	47.5	53.0	50.4	51.8	51.3	50.9	49.7	44.8	37.1	38.5	35.6	33.0	32.2	32.6
82	42.3	41.1	42.3	47.0	44.6	46.2	46.1	45.6	44.9	39.8	35.1	35.2	34.1	32.6	32.9	31.6
84	42.3	41.1	42.3	47.0	44.6	46.2	46.1	45.6	44.9	39.8	35.1	35.2	34.1	32.6	32.9	31.6
86	42.3	41.1	42.3	47.0	44.6	46.2	46.1	45.6	44.9	39.8	35.1	35.2	34.1	32.6	32.9	31.6
88	42.3	41.1	42.3	47.0	44.6	46.2	46.1	45.6	44.9	39.8	35.1	35.2	34.1	32.6	32.9	31.6
90	42.3	41.1	42.3	47.0	44.6	46.2	46.1	45.6	44.9	39.8	35.1	35.2	34.1	32.6	32.9	31.6
92	42.3	41.1	42.3	47.0	44.6	46.2	46.1	45.6	44.9	39.8	35.1	35.2	34.1	32.6	32.9	31.6
94	42.3	41.1	42.3	47.0	44.6	46.2	46.1	45.6	44.9	39.8	35.1	35.2	34.1	32.6	32.9	31.6
96	42.3	41.1	42.3	47.0	44.6	46.2	46.1	45.6	44.9	39.8	35.1	35.2	34.1	32.6	32.9	31.6
98	42.3	41.1	42.3	47.0	44.6	46.2	46.1	45.6	44.9	39.8	35.1	35.2	34.1	32.6	32.9	31.6
100	42.3	41.1	42.3	47.0	44.6	46.2	46.1	45.6	44.9	39.8	35.1	35.2	34.1	32.6	32.9	31.6
102	42.3	41.1	42.3	47.0	44.6	46.2	46.1	45.6	44.9	39.8	35.1	35.2	34.1	32.6	32.9	31.6
104	45.3	44.5	45.8	51.1	48.4	50.1	49.9	49.6	48.8	44.7	38.8	38.8	37.8	35.3	34.8	35.5
106	45.3	44.5	45.8	51.1	48.4	50.1	49.9	49.6	48.8	44.7	38.8	38.8	37.8	35.3	34.8	35.5
108	45.3	44.5	45.8	51.1	48.4	50.1	49.9	49.6	48.8	44.7	38.8	38.8	37.8	35.3	34.8	35.5
110	44.8	44.1	45.4	50.5	48.0	49.5	49.3	49.3	48.8	44.8	38.9	38.7	37.4	34.4	33.9	36.7
112	41.3	40.1	41.4	45.5	43.4	44.6	44.5	44.9	45.0	40.1	35.2	35.2	33.2	30.5	31.3	34.1
114	41.3	40.1	41.4	45.5	43.4	44.6	44.5	44.9	45.0	40.1	35.2	35.2	33.2	30.5	31.3	34.1
116	41.3	40.1	41.4	45.5	43.4	44.6	44.5	44.9	45.0	40.1	35.2	35.2	33.2	30.5	31.3	34.1
118	39.2	38.9	40.4	45.2	42.9	44.2	44.0	43.6	42.7	38.1	33.3	33.4	31.9	29.7	29.3	29.4
120	39.2	38.9	40.4	45.2	42.9	44.2	44.0	43.6	42.7	38.1	33.3	33.4	31.9	29.7	29.3	29.4
122	39.2	38.9	40.4	45.2	42.9	44.2	44.0	43.6	42.7	38.1	33.3	33.4	31.9	29.7	29.3	29.4
124	39.2	38.9	40.4	45.2	42.9	44.2	44.0	43.6	42.7	38.1	33.3	33.4	31.9	29.7	29.3	29.4
126	39.2	38.9	40.4	45.2	42.9	44.2	44.0	43.6	42.7	38.1	33.3	33.4	31.9	29.7	29.3	29.4
128	39.2	38.9	40.4	45.2	42.9	44.2	44.0	43.6	42.7	38.1	33.3	33.4	31.9	29.7	29.3	29.4
130	39.2	38.9	40.4	45.2	42.9	44.2	44.0	43.6	42.7	38.1	33.3	33.4	31.9	29.7	29.3	29.4
132	39.2	38.9	40.4	45.2	42.9	44.2	44.0	43.6	42.7	38.1	33.3	33.4	31.9	29.7	29.3	29.4

TABLE A-7: C02 - PROJECTED INCREASE OF COMBINED AMBIENT AND CONSTRUCTION NOISE LEVEL (LEQ) COMPARED TO AMBIENT NOISE LEVEL BY RECEIVER PER 2-WEEK INCREMENTS (RECEIVERS 1-30)

	Receiver-1	Receiver-2	Receiver-3	Receiver-4	Receiver-5	Receiver-6	Receiver-7	Receiver-8	Receiver-9	Receiver-10	Receiver-11	Receiver-12	Receiver-13	Receiver-14	Receiver-15
Week	Sound Insulated	Sound Insulated						Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	
2	3.2	3.6	3.9	4.0	3.8	3.4	1.8	1.1	6.5	8.7	7.2	5.2	6.5	6.6	0.9
4	5.4	5.7	6.2	6.3	6.1	6.0	2.7	1.7	8.6	9.4	3.7	1.6	1.9	2.1	0.2
6	5.2	5.6	6.0	6.1	5.9	5.8	2.6	1.6	8.4	9.1	3.2	0.9	0.5	0.3	0.0
8	2.0	2.3	2.5	2.6	2.5	2.2	0.9	0.6	3.6	4.1	1.2	0.3	0.1	0.1	0.0
10	2.0	2.3	2.5	2.6	2.5	2.2	0.9	0.6	3.6	4.1	1.2	0.3	0.1	0.1	0.0
12	2.8	3.1	3.4	3.5	3.4	3.1	1.4	0.8	5.3	5.9	3.0	2.2	3.1	3.3	0.3
14	1.2	1.4	1.5	1.6	1.5	1.4	0.6	0.3	3.2	4.2	4.1	4.1	5.5	6.0	0.8
16	6.8	7.1	7.8	7.8	7.3	6.3	3.0	1.8	5.2	4.2	4.2	4.1	5.6	6.0	0.8
18	6.8	7.1	7.8	7.8	7.3	6.3	3.0	1.8	5.2	4.2	4.2	4.1	5.6	6.0	0.8
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7	2.3	3.3	0.9
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7	2.3	3.3	0.9
24	0.5	0.7	0.9	0.9	0.7	0.3	0.2	0.1	0.8	0.8	0.4	0.1	0.1	0.0	0.0
26	0.5	0.7	0.9	0.9	0.7	0.3	0.2	0.1	0.8	0.8	0.4	0.1	0.1	0.0	0.0
28	0.5	0.7	0.9	0.9	0.7	0.3	0.2	0.1	0.8	0.8	0.4	0.1	0.1	0.0	0.0
30	0.5	0.7	0.9	0.9	0.7	0.3	0.2	0.1	0.8	0.8	0.4	0.1	0.1	0.0	0.0
32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.4	0.7	0.7	0.0
34	4.5	4.9	5.3	5.5	5.3	4.9	2.8	2.0	5.6	4.6	4.2	3.7	4.0	2.7	0.8
36	4.5	4.9	5.3	5.5	5.3	4.9	2.8	2.0	5.6	4.6	4.2	3.7	4.0	2.7	0.8
38	4.5	4.9	5.3	5.5	5.3	4.9	2.8	2.0	5.6	4.6	4.2	3.7	4.0	2.7	0.8
40	4.5	4.9	5.3	5.5	5.3	4.9	2.8	2.0	5.6	4.6	4.2	3.7	4.0	2.7	0.8
42	4.5	4.9	5.3	5.5	5.3	4.9	2.8	2.0	5.6	4.4	4.0	3.6	3.7	2.2	0.7
44	4.4	4.8	5.2	5.2	4.8	3.8	2.1	1.4	3.9	0.3	0.1	0.0	0.0	0.0	0.0
46	4.4	4.8	5.2	5.2	4.8	3.8	2.1	1.4	3.9	0.3	0.1	0.0	0.0	0.0	0.0
48	4.4	4.8	5.2	5.2	4.8	3.8	2.1	1.4	3.9	0.3	0.1	0.0	0.0	0.0	0.0
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.0	2.7	3.0	1.0
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.0	2.7	3.0	1.0
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.0	2.7	3.0	1.0
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.0	2.7	3.0	1.0
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.0	2.7	3.0	1.0
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.0	2.7	3.0	1.0
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.0	2.7	3.0	1.0
64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.0	2.7	3.0	1.0
66	1.5	2.1	2.4	2.2	1.8	0.9	0.6	0.4	2.0	2.3	1.9	1.6	1.9	1.6	0.1
68	1.5	2.1	2.4	2.2	1.8	0.9	0.6	0.4	2.0	2.3	1.9	1.6	1.9	1.6	0.1
70	1.5	2.1	2.4	2.2	1.8	0.9	0.6	0.4	2.0	2.3	1.9	1.6	1.9	1.6	0.1
72	1.5	2.1	2.4	2.2	1.8	0.9	0.6	0.4	2.0	2.3	1.9	1.6	1.9	1.6	0.1
74	1.5	2.1	2.4	2.2	1.8	0.9	0.6	0.4	2.0	2.3	1.9	1.6	1.9	1.6	0.1
76	2.0	2.3	2.6	2.5	2.3	1.6	1.0	0.7	3.5	3.8	3.3	3.0	3.7	2.9	0.3
78	2.0	2.3	2.6	2.5	2.3	1.6	1.0	0.7	3.5	3.8	3.3	3.0	3.7	2.9	0.3
80	2.0	2.3	2.6	2.5	2.3	1.6	1.0	0.7	3.5	3.8	3.3	3.0	3.7	2.9	0.3
82	1.0	0.9	1.1	1.3	1.1	0.8	0.4	0.2	2.1	2.1	1.7	1.4	2.2	1.9	0.1
84	1.0	0.9	1.1	1.3	1.1	0.8	0.4	0.2	2.1	2.1	1.7	1.4	2.2	1.9	0.1
86	1.0	0.9	1.1	1.3	1.1	0.8	0.4	0.2	2.1	2.1	1.7	1.4	2.2	1.9	0.1
88	1.0	0.9	1.1	1.3	1.1	0.8	0.4	0.2	2.1	2.1	1.7	1.4	2.2	1.9	0.1
90	1.0	0.9	1.1	1.3	1.1	0.8	0.4	0.2	2.1	2.1	1.7	1.4	2.2	1.9	0.1
92	1.0	0.9	1.1	1.3	1.1	0.8	0.4	0.2	2.1	2.1	1.7	1.4	2.2	1.9	0.1
94	1.0	0.9	1.1	1.3	1.1	0.8	0.4	0.2	2.1	2.1	1.7	1.4	2.2	1.9	0.1
96	1.0	0.9	1.1	1.3	1.1	0.8	0.4	0.2	2.1	2.1	1.7	1.4	2.2	1.9	0.1
98	1.0	0.9	1.1	1.3	1.1	0.8	0.4	0.2	2.1	2.1	1.7	1.4	2.2	1.9	0.1
100	1.0	0.9	1.1	1.3	1.1	0.8	0.4	0.2	2.1	2.1	1.7	1.4	2.2	1.9	0.1
102	1.0	0.9	1.1	1.3	1.1	0.8	0.4	0.2	2.1	2.1	1.7	1.4	2.2	1.9	0.1
104	2.1	2.0	2.3	2.5	2.3	1.8	0.8	0.5	4.2	4.4	3.1	2.7	4.1	4.3	0.4
106	2.1	2.0	2.3	2.5	2.3	1.8	0.8	0.5	4.2	4.4	3.1	2.7	4.1	4.3	0.4
108	2.1	2.0	2.3	2.5	2.3	1.8	0.8	0.5	4.2	4.4	3.1	2.7	4.1	4.3	0.4
110	5.4	4.9	5.7	5.9	5.0	4.7	1.5	0.8	3.8	4.0	2.6	2.3	3.7	5.5	0.6
112	4.9	4.4	5.2	5.4	4.4	4.1	1.1	0.6	1.4	1.3	1.0	0.9	1.5	3.9	0.4
114	4.9	4.4	5.2	5.4	4.4	4.1	1.1	0.6	1.4	1.3	1.0	0.9	1.5	3.9	0.4
116	4.9	4.4	5.2	5.4	4.4	4.1	1.1	0.6	1.4	1.3	1.0	0.9	1.5	3.9	0.4
118	0.5	0.6	0.7	0.7	0.6	0.4	0.2	0.1	1.2	1.2	1.0	0.9	1.3	1.0	0.1
120	0.5	0.6	0.7	0.7	0.6	0.4	0.2	0.1	1.2	1.2	1.0	0.9	1.3	1.0	0.1
122	0.5	0.6	0.7	0.7	0.6	0.4	0.2	0.1	1.2	1.2	1.0	0.9	1.3	1.0	0.1
124	0.5	0.6	0.7	0.7	0.6	0.4	0.2	0.1	1.2	1.2	1.0	0.9	1.3	1.0	0.1
126	0.5	0.6	0.7	0.7	0.6	0.4	0.2	0.1	1.2	1.2	1.0	0.9	1.3	1.0	0.1
128	0.5	0.6	0.7	0.7	0.6	0.4	0.2	0.1	1.2	1.2	1.0	0.9	1.3	1.0	0.1
130	0.5	0.6	0.7	0.7	0.6	0.4	0.2	0.1	1.2	1.2	1.0	0.9	1.3	1.0	0.1
132	0.5	0.6	0.7	0.7	0.6	0.4	0.2	0.1	1.2	1.2	1.0	0.9	1.3	1.0	0.1

	Receiver-16	Receiver-17	Receiver-18	Receiver-19	Receiver-20	Receiver-21	Receiver-22	Receiver-23	Receiver-24	Receiver-25	Receiver-26	Receiver-27	Receiver-28	Receiver-29	Receiver-30
Week	Sound Insulated		Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated		Sound Insulated	Sound Insulated	Sound Insulated
2	0.4	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
12	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
14	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
16	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3
18	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3
20	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
36	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
38	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
40	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
42	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
44	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
46	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
50	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
68	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
70	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
72	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
74	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
76	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
78	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
80	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
82	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
84	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
86	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
88	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
92	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
94	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
96	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
98	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
102	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
104	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
106	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
108	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
110	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
112	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
114	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
116	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
118	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
120	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
122	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
124	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
126	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
128	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
130	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
132	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1

3 – 4.9 dB increase over ambient

5 – 9.9 dB increase over ambient

TABLE A-8: C02 - PROJECTED INCREASE OF COMBINED AMBIENT AND CONSTRUCTION NOISE LEVEL (LEQ) COMPARED TO AMBIENT NOISE LEVEL BY RECEIVER PER 2-WEEK INCREMENTS (RECEIVERS 31-55)

	Receiver-31	Receiver-32	Receiver-33	Receiver-34	Receiver-35	Receiver-36	Receiver-37	Receiver-38	Receiver-39	Receiver-40	Receiver-41	Receiver-42	Receiver-43	Receiver-44	Receiver-45	Receiver-46	Receiver-47	Receiver-48	Receiver-49	Receiver-50	Receiver-51	Receiver-52	Receiver-53	Receiver-54	Receiver-55
Week		Sound Insulated				Sound Insulated	Sound Insulated					Sound Insulated	Sound Insulated						Sound Insulated	Sound Insulated	Yes				Sound Insulated
2	0.8	0.7	0.8	0.8	0.4	1.3	1.9	0.9	0.7	0.7	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	1.2	1.1	1.2	1.7	0.6	1.4	0.8	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	1.2	1.1	1.2	1.6	0.6	1.4	0.7	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.4	0.4	0.4	0.5	0.2	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.4	0.4	0.4	0.5	0.2	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.6	0.6	0.6	0.7	0.3	0.8	0.5	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.2	0.2	0.2	0.3	0.1	0.4	0.7	0.5	0.6	0.6	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	1.6	1.3	1.4	1.6	0.6	0.5	0.7	0.6	0.6	0.6	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	1.6	1.3	1.4	1.6	0.6	0.5	0.7	0.6	0.6	0.6	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	1.2	1.1	1.2	1.3	0.6	1.2	1.0	0.7	0.7	0.7	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	1.2	1.1	1.2	1.3	0.6	1.2	1.0	0.7	0.7	0.7	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38	1.2	1.1	1.2	1.3	0.6	1.2	1.0	0.7	0.7	0.7	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	1.2	1.1	1.2	1.3	0.6	1.2	1.0	0.7	0.7	0.7	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42	1.2	1.1	1.2	1.3	0.6	1.2	1.0	0.7	0.6	0.6	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44	1.2	1.0	1.0	1.0	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46	1.2	1.0	1.0	1.0	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	1.2	1.0	1.0	1.0	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66	0.4	0.4	0.4	0.3	0.1	0.4	0.3	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68	0.4	0.4	0.4	0.3	0.1	0.4	0.3	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70	0.4	0.4	0.4	0.3	0.1	0.4	0.3	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72	0.4	0.4	0.4	0.3	0.1	0.4	0.3	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74	0.4	0.4	0.4	0.3	0.1	0.4	0.3	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76	0.5	0.4	0.4	0.4	0.2	0.7	0.7	0.4	0.4	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78	0.5	0.4	0.4	0.4	0.2	0.7	0.7	0.4	0.4	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80	0.5	0.4	0.4	0.4	0.2	0.7	0.7	0.4	0.4	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
92	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
94	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
96	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
98	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
104	0.3	0.3	0.3	0.4	0.2	0.4	0.4	0.3	0.3	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
106	0.3	0.3	0.3	0.4	0.2	0.4	0.4	0.3	0.3	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
108	0.3	0.3	0.3	0.4	0.2	0.4	0.4	0.3	0.3	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
110	0.7	0.6	0.6	0.7	0.2	0.4	0.4	0.3	0.3	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
112	0.5	0.4	0.4	0.5	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
114	0.5	0.4	0.4	0.5	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
116	0.5	0.4	0.4	0.5	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
118	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
122	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
124	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
126	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
128	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
132	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE A-9: C02 - PROJECTED INCREASE OF COMBINED AMBIENT AND CONSTRUCTION NOISE LEVEL (LEQ) COMPARED TO AMBIENT NOISE LEVEL BY RECEIVER PER 2-WEEK INCREMENTS (RECEIVERS 56-87)

Week	Receiver-56	Receiver-57	Receiver-58 Sound Insulated	Receiver-59	Receiver-60	Receiver-61	Receiver-62	Receiver-63	Receiver-64	Receiver-65 Sound Insulated	Receiver-66 Sound Insulated	Receiver-67 Sound Insulated	Receiver-68	Receiver-69	Receiver-70	Receiver-71 Sound Insulated	Receiver-72 Sound Insulated	Receiver-73 Sound Insulated	Receiver-74 Sound Insulated	Receiver-75	Receiver-76	Receiver-77 Sound Insulated	Receiver-78 Sound Insulated	Receiver-79	Receiver-80	Receiver-81 Sound Insulated	Receiver-82	Receiver-83	Receiver-84	Receiver-85	Receiver-86	Receiver-87
2	0.4	0.4	0.4	0.3	0.2	0.4	0.2	0.1	0.2	0.2	0.1	0.4	0.3	0.3	0.3	0.2	0.1	0.1	0.2	0.6	0.4	0.5	0.4	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0
4	0.7	0.6	0.6	0.4	0.4	0.8	0.4	0.2	0.2	0.3	0.2	0.6	0.4	0.4	0.5	0.2	0.1	0.1	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.6	0.5	0.6	0.4	0.4	0.8	0.3	0.2	0.2	0.3	0.2	0.6	0.4	0.4	0.4	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.3	0.3	0.3	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
16	0.7	0.6	0.7	0.4	0.3	0.6	0.3	0.1	0.2	0.3	0.2	0.7	0.2	0.2	0.2	0.1	0.1	0.0	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
18	0.7	0.6	0.7	0.4	0.3	0.6	0.3	0.1	0.2	0.3	0.2	0.7	0.2	0.2	0.2	0.1	0.1	0.0	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	0.5	0.5	0.6	0.4	0.3	0.6	0.3	0.2	0.2	0.4	0.2	0.7	0.4	0.4	0.4	0.3	0.1	0.1	0.1	0.4	0.2	0.4	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
36	0.5	0.5	0.6	0.4	0.3	0.6	0.3	0.2	0.2	0.4	0.2	0.7	0.4	0.4	0.4	0.3	0.1	0.1	0.1	0.4	0.2	0.4	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
38	0.5	0.5	0.6	0.4	0.3	0.6	0.3	0.2	0.2	0.4	0.2	0.7	0.4	0.4	0.4	0.3	0.1	0.1	0.1	0.4	0.2	0.4	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
40	0.5	0.5	0.6	0.4	0.3	0.6	0.3	0.2	0.2	0.4	0.2	0.7	0.4	0.4	0.4	0.3	0.1	0.1	0.1	0.4	0.2	0.4	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
42	0.5	0.5	0.6	0.4	0.3	0.6	0.3	0.2	0.2	0.3	0.2	0.7	0.4	0.4	0.4	0.3	0.1	0.1	0.1	0.4	0.2	0.4	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
44	0.5	0.5	0.5	0.3	0.2	0.4	0.2	0.1	0.1	0.2	0.1	0.4	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46	0.5	0.5	0.5	0.3	0.2	0.4	0.2	0.1	0.1	0.2	0.1	0.4	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	0.5	0.5	0.5	0.3	0.2	0.4	0.2	0.1	0.1	0.2	0.1	0.4	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.1	0.0	0.0	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.1	0.0	0.0	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.1	0.0	0.0	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
92	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
94	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
96	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
98	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
104	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
106	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
108	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
110	0.4	0.3	0.3	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
112	0.3	0.2	0.2	0.1	0.1	0.2	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
114	0.3	0.2	0.2	0.1	0.1	0.2	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
116	0.3	0.2	0.2	0.1	0.1	0.2	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
118	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
122	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
124	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
126	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
128	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
132	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE A- 10: C03 CONSTRUCTION NOISE LEVELS (LEQ) BY RECEIVER PER 2-WEEK INCREMENTS (RECEIVERS 1-30)

	Receiver-1	Receiver-2	Receiver-3	Receiver-4	Receiver-5	Receiver-6	Receiver-7	Receiver-8	Receiver-9	Receiver-10	Receiver-11	Receiver-12	Receiver-13	Receiver-14	Receiver-15
Week	Sound Insulated	Sound Insulated						Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	
2	30.8	24.1	25.4	25.3	33.4	36.7	35.8	35.8	39.4	44.8	49.4	56.9	62.1	69.9	70.3
4	22.9	15.1	16.1	16.7	25.0	27.7	27.4	27.7	30.7	35.1	39.2	45.8	51.3	60.6	61.1
6	33.3	26.8	27.9	26.3	33.7	37.4	37.0	37.2	40.5	45.4	49.0	55.3	60.8	70.1	70.5
8	33.3	26.8	27.9	26.3	33.7	37.4	37.0	37.2	40.5	45.4	49.0	55.3	60.8	70.1	70.5
10	17.9	16.5	17.6	17.8	27.0	32.1	31.1	30.1	34.4	40.1	43.5	51.3	56.2	64.6	65.4
12	17.9	16.5	17.6	17.8	27.0	32.1	31.1	30.1	34.4	40.1	43.5	51.3	56.2	64.6	65.4
14	17.9	16.5	17.6	17.8	27.0	32.1	31.1	30.1	34.4	40.1	43.5	51.3	56.2	64.6	65.4
16	27.3	21.6	22.8	23.0	31.2	35.1	34.2	33.8	37.6	42.9	46.6	54.0	59.1	67.6	68.2
18	26.8	20.0	21.3	21.4	29.1	32.1	31.3	31.4	34.7	39.7	43.8	50.7	56.0	64.5	64.9
20	23.8	17.9	19.0	19.1	25.7	30.9	31.0	29.4	34.4	40.3	45.0	52.9	58.5	68.7	69.9
22	25.7	18.0	19.3	19.7	28.1	31.0	30.5	30.7	33.7	38.9	43.1	50.2	55.7	64.2	64.6
24	14.0	12.3	13.2	12.4	22.9	27.1	26.3	27.5	30.4	35.2	39.8	46.1	50.8	59.0	60.1
26	14.0	12.3	13.2	12.4	22.9	27.1	26.3	27.5	30.4	35.2	39.8	46.1	50.8	59.0	60.1
28	14.0	12.3	13.2	12.4	22.9	27.1	26.3	27.5	30.4	35.2	39.8	46.1	50.8	59.0	60.1
30	14.0	12.3	13.2	12.4	22.9	27.1	26.3	27.5	30.4	35.2	39.8	46.1	50.8	59.0	60.1
32	14.0	12.3	13.2	12.4	22.9	27.1	26.3	27.5	30.4	35.2	39.8	46.1	50.8	59.0	60.1
34	24.5	20.3	21.2	20.3	28.5	34.9	33.6	33.9	37.3	44.2	49.3	56.1	60.9	68.7	69.5
36	24.5	20.3	21.2	20.3	28.5	34.9	33.6	33.9	37.3	44.2	49.3	56.1	60.9	68.7	69.5
38	24.1	19.5	20.5	19.5	27.2	34.1	32.7	32.7	36.4	43.6	48.8	55.7	60.5	68.2	69.0
40	24.1	19.5	20.5	19.5	27.2	34.1	32.7	32.7	36.4	43.6	48.8	55.7	60.5	68.2	69.0
42	24.1	19.5	20.5	19.5	27.2	34.1	32.7	32.7	36.4	43.6	48.8	55.7	60.5	68.2	69.0
44	18.1	16.7	18.3	17.6	29.6	32.5	32.3	32.0	36.7	43.8	49.5	55.9	59.9	66.5	68.2
46	18.1	16.7	18.3	17.6	29.6	32.5	32.3	32.0	36.7	43.8	49.5	55.9	59.9	66.5	68.2
48	19.6	18.2	19.3	19.8	25.3	32.1	33.4	30.8	37.4	44.3	50.8	56.8	60.6	67.4	68.6
50	19.6	18.2	19.3	19.8	25.3	32.1	33.4	30.8	37.4	44.3	50.8	56.8	60.6	67.4	68.6
52	22.6	21.3	22.2	22.1	27.2	34.2	34.2	33.5	38.7	43.3	47.9	54.5	59.4	67.6	68.0
54	25.2	23.7	24.7	24.7	30.0	36.4	36.3	35.4	40.6	45.5	50.3	57.4	62.7	71.1	71.7
56	24.2	22.6	23.7	23.8	28.8	34.8	34.9	33.6	38.9	43.8	49.1	56.5	61.8	70.2	70.7
58	22.3	21.0	22.1	22.1	27.0	33.1	33.5	32.1	37.6	42.1	47.8	54.3	58.9	66.6	67.2
60	17.5	16.5	17.7	17.6	23.0	28.6	29.2	27.4	33.0	37.9	43.5	49.9	54.2	61.6	62.4
62	17.5	16.5	17.7	17.6	23.0	28.6	29.2	27.4	33.0	37.9	43.5	49.9	54.2	61.6	62.4

	Receiver-16	Receiver-17	Receiver-18	Receiver-19	Receiver-20	Receiver-21	Receiver-22	Receiver-23	Receiver-24	Receiver-25	Receiver-26	Receiver-27	Receiver-28	Receiver-29	Receiver-30
Week	Sound Insulated		Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated		Sound Insulated	Sound Insulated	Sound Insulated
2	70.3	70.3	68.8	68.3	66.8	63.5	71.8	63.8	62.9	63.7	60.4	61.1	60.0	62.7	22.5
4	61.0	61.0	59.5	59.0	58.0	53.9	62.9	54.0	53.0	53.4	50.0	50.7	49.8	52.8	13.6
6	70.5	70.7	69.0	68.5	67.4	63.3	72.6	63.4	62.3	62.7	59.4	60.2	59.3	62.2	24.7
8	70.5	70.7	69.0	68.5	67.4	63.3	72.6	63.4	62.3	62.7	59.4	60.2	59.3	62.2	24.7
10	65.4	65.5	64.2	63.7	62.3	58.7	67.6	59.1	58.2	58.8	55.3	55.8	54.8	57.2	13.5
12	65.4	65.5	64.2	63.7	62.3	58.7	67.6	59.1	58.2	58.8	55.3	55.8	54.8	57.2	13.5
14	65.4	65.5	64.2	63.7	62.3	58.7	67.6	59.1	58.2	58.8	55.3	55.8	54.8	57.2	13.5
16	68.1	68.2	66.8	66.3	64.9	61.3	70.1	61.6	60.7	61.3	57.9	58.5	57.5	60.1	19.6
18	64.8	64.9	63.4	62.9	61.6	57.9	66.5	58.1	57.1	57.7	54.4	55.1	54.1	56.9	18.4
20	70.0	70.0	68.1	67.6	66.0	62.3	67.8	59.6	58.0	55.2	50.4	50.0	47.6	47.8	15.3
22	64.5	64.6	63.1	62.6	61.4	57.6	66.3	57.8	56.8	57.4	53.9	54.7	53.6	56.6	16.5
24	60.1	60.5	59.1	58.6	57.6	55.0	65.8	57.8	56.5	56.7	52.6	52.6	50.6	50.8	9.5
26	60.1	60.5	59.1	58.6	57.6	55.0	65.8	57.8	56.5	56.7	52.6	52.6	50.6	50.8	9.5
28	60.1	60.5	59.1	58.6	57.6	55.0	65.8	57.8	56.5	56.7	52.6	52.6	50.6	50.8	9.5
30	60.1	60.5	59.1	58.6	57.6	55.0	65.8	57.8	56.5	56.7	52.6	52.6	50.6	50.8	9.5
32	60.1	60.5	59.1	58.6	57.6	55.0	65.8	57.8	56.5	56.7	52.6	52.6	50.6	50.8	9.5
34	69.6	69.7	68.6	68.2	67.1	64.5	73.0	65.0	64.0	64.4	61.0	61.4	60.0	62.3	17.9
36	69.6	69.7	68.6	68.2	67.1	64.5	73.0	65.0	64.0	64.4	61.0	61.4	60.0	62.3	17.9
38	69.1	69.1	68.1	67.7	66.6	63.9	72.0	64.1	63.1	63.6	60.3	60.7	59.5	61.9	17.2
40	69.1	69.1	68.1	67.7	66.6	63.9	72.0	64.1	63.1	63.6	60.3	60.7	59.5	61.9	17.2
42	69.1	69.1	68.1	67.7	66.6	63.9	72.0	64.1	63.1	63.6	60.3	60.7	59.5	61.9	17.2
44	68.2	68.7	67.5	67.0	65.6	63.1	72.3	65.1	64.1	64.4	60.3	60.2	58.1	59.0	14.0
46	68.2	68.7	67.5	67.0	65.6	63.1	72.3	65.1	64.1	64.4	60.3	60.2	58.1	59.0	14.0
48	68.8	68.8	67.7	67.2	66.2	63.6	73.8	65.7	64.7	64.6	61.0	60.6	58.4	59.0	14.8
50	68.8	68.8	67.7	67.2	66.2	63.6	73.8	65.7	64.7	64.6	61.0	60.6	58.4	59.0	14.8
52	68.1	68.1	66.4	65.8	64.5	60.5	72.1	63.1	61.8	61.1	57.7	57.5	54.6	55.3	17.9
54	71.7	71.7	69.9	69.3	67.6	63.8	73.8	65.0	63.8	63.0	59.4	59.1	56.2	56.8	20.5
56	70.8	70.7	68.9	68.3	66.8	63.0	73.5	64.5	63.3	62.5	58.6	58.0	54.9	55.5	19.4
58	67.3	67.3	65.7	65.2	64.5	60.4	73.1	64.0	62.8	62.2	58.4	57.8	54.7	55.3	17.6
60	62.5	62.6	61.1	60.6	59.7	56.2	68.0	59.2	58.1	57.7	53.9	53.3	50.6	51.3	13.1
62	62.5	62.6	61.1	60.6	59.7	56.2	68.0	59.2	58.1	57.7	53.9	53.3	50.6	51.3	13.1

Table A- 11: C03 Construction Noise Levels (Leq) by Receiver per 2-Week Increments (Receivers 31-55)

	Receiver-31	Receiver-32	Receiver-33	Receiver-34	Receiver-35	Receiver-36	Receiver-37	Receiver-38	Receiver-39	Receiver-40	Receiver-41	Receiver-42	Receiver-43
Week		Sound Insulated				Sound Insulated	Sound Insulated					Sound Insulated	Sound Insulated
2	26.6	27.1	32.7	35.6	35.1	41.7	48.3	56.8	58.9	62.8	63.3	62.0	61.7
4	17.5	17.8	22.2	25.4	24.4	32.8	39.0	46.6	48.7	52.7	53.3	52.0	51.9
6	28.9	28.7	32.6	36.0	35.4	42.9	48.9	56.0	58.1	62.2	62.7	61.4	61.4
8	28.9	28.7	32.6	36.0	35.4	42.9	48.9	56.0	58.1	62.2	62.7	61.4	61.4
10	19.9	18.2	26.2	30.8	28.4	36.2	44.0	51.6	53.6	57.8	58.3	57.2	56.8
12	19.9	18.2	26.2	30.8	28.4	36.2	44.0	51.6	53.6	57.8	58.3	57.2	56.8
14	19.9	18.2	26.2	30.8	28.4	36.2	44.0	51.6	53.6	57.8	58.3	57.2	56.8
16	24.3	24.1	30.5	34.1	32.9	39.7	46.7	54.3	56.4	60.5	61.0	59.8	59.4
18	22.4	22.8	28.5	31.4	31.0	37.2	43.3	51.0	53.1	57.1	57.6	56.3	56.1
20	20.8	22.3	24.8	28.1	27.9	37.0	44.9	54.6	56.7	61.2	62.0	60.5	59.9
22	20.7	21.1	25.7	28.9	27.9	36.0	42.6	50.5	52.6	56.7	57.2	55.9	55.7
24	15.5	14.1	20.2	25.3	22.1	32.4	39.8	47.4	49.1	53.5	54.5	53.7	52.3
26	15.5	14.1	20.2	25.3	22.1	32.4	39.8	47.4	49.1	53.5	54.5	53.7	52.3
28	15.5	14.1	20.2	25.3	22.1	32.4	39.8	47.4	49.1	53.5	54.5	53.7	52.3
30	15.5	14.1	20.2	25.3	22.1	32.4	39.8	47.4	49.1	53.5	54.5	53.7	52.3
32	15.5	14.1	20.2	25.3	22.1	32.4	39.8	47.4	49.1	53.5	54.5	53.7	52.3
34	22.5	24.7	27.9	32.2	31.1	39.6	47.8	56.3	58.3	62.1	62.8	61.9	61.6
36	22.5	24.7	27.9	32.2	31.1	39.6	47.8	56.3	58.3	62.1	62.8	61.9	61.6
38	21.6	24.3	27.1	31.3	30.5	38.6	47.0	55.7	57.7	61.4	62.1	61.2	61.0
40	21.6	24.3	27.1	31.3	30.5	38.6	47.0	55.7	57.7	61.4	62.1	61.2	61.0
42	21.6	24.3	27.1	31.3	30.5	38.6	47.0	55.7	57.7	61.4	62.1	61.2	61.0
44	20.5	19.4	26.8	31.1	28.9	39.7	48.2	56.7	58.4	61.9	62.7	62.0	61.2
46	20.5	19.4	26.8	31.1	28.9	39.7	48.2	56.7	58.4	61.9	62.7	62.0	61.2
48	20.5	19.8	23.0	30.6	29.1	39.8	48.2	56.9	58.8	61.9	62.4	61.6	61.0
50	20.5	19.8	23.0	30.6	29.1	39.8	48.2	56.9	58.8	61.9	62.4	61.6	61.0
52	23.2	22.0	25.5	32.0	31.1	38.7	45.7	54.3	56.3	60.2	60.8	59.8	58.7
54	25.8	25.7	28.8	34.5	33.6	41.4	48.5	57.4	59.6	63.7	64.3	63.1	62.2
56	24.8	24.9	27.4	33.2	31.8	40.5	47.6	56.5	58.6	62.8	63.4	62.2	61.1
58	23.1	22.0	24.6	31.4	29.5	38.7	45.6	54.2	56.0	59.6	60.2	59.5	58.0
60	18.6	18.0	21.4	27.5	25.8	34.4	41.3	49.8	51.6	55.2	55.7	54.9	53.8
62	18.6	18.0	21.4	27.5	25.8	34.4	41.3	49.8	51.6	55.2	55.7	54.9	53.8

	Receiver-44	Receiver-45	Receiver-46	Receiver-47	Receiver-48	Receiver-49	Receiver-50	Receiver-51	Receiver-52	Receiver-53	Receiver-54	Receiver-55
Week						Sound Insulated	Sound Insulated	Yes				Sound Insulated
2	59.9	58.5	58.0	55.5	54.8	56.1	56.6	56.5	52.0	52.1	51.7	59.4
4	50.1	49.1	48.9	46.3	46.1	47.3	47.6	47.7	44.2	44.4	43.6	49.0
6	59.6	58.5	58.2	55.5	55.1	57.0	57.3	57.2	53.8	54.1	53.5	58.6
8	59.6	58.5	58.2	55.5	55.1	57.0	57.3	57.2	53.8	54.1	53.5	58.6
10	55.3	53.8	53.4	50.4	47.2	51.9	51.0	51.1	47.3	47.9	47.5	54.0
12	55.3	53.8	53.4	50.4	47.2	51.9	51.0	51.1	47.3	47.9	47.5	54.0
14	55.3	53.8	53.4	50.4	47.2	51.9	51.0	51.1	47.3	47.9	47.5	54.0
16	57.8	56.4	56.0	53.3	51.7	54.4	54.2	54.2	50.5	50.8	50.3	56.7
18	54.3	53.0	52.6	50.1	49.8	50.9	51.3	51.3	47.6	47.7	47.1	53.4
20	57.8	55.9	55.2	52.2	50.0	53.8	51.5	47.8	41.6	41.1	40.0	46.4
22	53.9	52.7	52.4	49.6	49.3	50.5	51.0	50.9	47.1	47.3	46.6	52.9
24	51.2	50.2	48.6	46.3	44.4	49.6	49.4	47.7	46.5	43.9	42.8	49.4
26	51.2	50.2	48.6	46.3	44.4	49.6	49.4	47.7	46.5	43.9	42.8	49.4
28	51.2	50.2	48.6	46.3	44.4	49.6	49.4	47.7	46.5	43.9	42.8	49.4
30	51.2	50.2	48.6	46.3	44.4	49.6	49.4	47.7	46.5	43.9	42.8	49.4
32	51.2	50.2	48.6	46.3	44.4	49.6	49.4	47.7	46.5	43.9	42.8	49.4
34	60.1	58.7	58.0	55.3	53.0	56.5	56.8	55.6	50.8	49.7	49.4	59.4
36	60.1	58.7	58.0	55.3	53.0	56.5	56.8	55.6	50.8	49.7	49.4	59.4
38	59.5	58.0	57.5	54.7	52.3	55.5	55.9	54.9	48.8	48.4	48.3	58.9
40	59.5	58.0	57.5	54.7	52.3	55.5	55.9	54.9	48.8	48.4	48.3	58.9
42	59.5	58.0	57.5	54.7	52.3	55.5	55.9	54.9	48.8	48.4	48.3	58.9
44	59.8	58.4	57.4	54.1	51.2	56.2	56.3	55.1	51.0	48.8	48.2	57.0
46	59.8	58.4	57.4	54.1	51.2	56.2	56.3	55.1	51.0	48.8	48.2	57.0
48	59.6	58.3	57.7	54.5	51.7	56.9	57.4	55.6	52.4	46.6	46.4	56.9
50	59.6	58.3	57.7	54.5	51.7	56.9	57.4	55.6	52.4	46.6	46.4	56.9
52	57.1	55.7	55.1	51.8	49.3	55.0	55.0	52.0	53.0	47.6	45.9	53.2
54	60.3	58.8	58.1	54.8	52.3	56.8	57.0	54.1	54.2	48.5	47.1	54.8
56	59.3	57.8	57.1	53.9	51.3	56.1	56.3	53.4	53.4	45.1	44.7	53.5
58	56.6	55.5	55.0	51.7	49.0	55.5	55.6	52.6	53.4	44.7	44.3	53.4
60	52.3	51.1	50.6	47.2	44.6	50.6	50.8	48.1	47.8	40.3	40.0	49.3
62	52.3	51.1	50.6	47.2	44.6	50.6	50.8	48.1	47.8	40.3	40.0	49.3

TABLE A- 12: C03 CONSTRUCTION NOISE LEVELS (LEQ) BY RECEIVER PER 2-WEEK INCREMENTS (RECEIVERS 56-87)

	Receiver-56	Receiver-57	Receiver-58	Receiver-59	Receiver-60	Receiver-61	Receiver-62	Receiver-63	Receiver-64	Receiver-65	Receiver-66	Receiver-67	Receiver-68	Receiver-69	Receiver-70	Receiver-71	Receiver-72	Receiver-73	Receiver-74	Receiver-75	Receiver-76	Receiver-77	Receiver-78	Receiver-79	Receiver-80	Receiver-81	Receiver-82	Receiver-83	Receiver-84	Receiver-85	Receiver-86	Receiver-87
Week			Sound Insulated							Sound Insulated	Sound Insulated	Sound Insulated				Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated			Sound Insulated	Sound Insulated			Sound Insulated						
2	21.6	24.4	28.2	33.7	35.2	34.5	34.4	35.8	35.1	35.9	35.8	37.4	37.8	38.5	39.1	40.3	41.2	43.6	43.6	47.9	47.3	50.3	53.1	56.2	58.4	58.5	53.0	51.5	49.0	45.1	48.2	60.3
4	12.5	15.7	19.4	25.0	27.0	25.6	23.9	28.3	27.0	27.6	27.6	28.6	29.2	29.8	30.3	31.5	32.4	35.3	34.7	38.7	38.0	40.6	43.0	45.9	48.4	48.2	43.2	42.2	40.2	37.6	40.3	51.1
6	23.5	26.8	29.6	34.4	36.8	35.6	34.8	37.8	36.7	37.4	37.3	38.3	38.6	39.2	39.8	41.0	42.0	45.0	44.5	48.6	48.1	50.2	52.3	55.2	57.7	57.5	53.0	51.8	49.7	47.4	50.5	60.4
8	23.5	26.8	29.6	34.4	36.8	35.6	34.8	37.8	36.7	37.4	37.3	38.3	38.6	39.2	39.8	41.0	42.0	45.0	44.5	48.6	48.1	50.2	52.3	55.2	57.7	57.5	53.0	51.8	49.7	47.4	50.5	60.4
10	13.9	16.0	22.6	29.3	32.3	30.9	28.3	33.4	33.1	31.8	34.8	32.1	36.2	35.0	36.2	37.1	38.2	38.9	39.0	43.1	42.5	45.5	48.3	51.4	53.6	53.7	48.6	46.7	44.1	38.2	44.1	54.8
12	13.9	16.0	22.6	29.3	32.3	30.9	28.3	33.4	33.1	31.8	34.8	32.1	36.2	35.0	36.2	37.1	38.2	38.9	39.0	43.1	42.5	45.5	48.3	51.4	53.6	53.7	48.6	46.7	44.1	38.2	44.1	54.8
14	13.9	16.0	22.6	29.3	32.3	30.9	28.3	33.4	33.1	31.8	34.8	32.1	36.2	35.0	36.2	37.1	38.2	38.9	39.0	43.1	42.5	45.5	48.3	51.4	53.6	53.7	48.6	46.7	44.1	38.2	44.1	54.8
16	19.1	21.6	26.3	32.3	34.6	33.6	32.4	35.6	35.1	34.8	36.4	35.6	38.0	37.5	38.5	39.5	40.6	42.1	42.0	46.0	45.5	48.3	50.9	53.9	56.2	56.2	51.1	49.5	47.1	42.9	47.0	57.8
18	17.6	20.2	23.9	29.3	30.9	30.2	30.3	31.7	30.9	31.8	31.5	33.0	33.4	34.0	34.6	35.8	36.8	39.2	39.0	43.0	42.4	45.0	47.5	50.4	52.7	52.7	47.6	46.2	44.2	41.0	43.9	54.8
20	15.6	18.4	24.4	28.3	27.6	27.6	27.0	30.4	29.1	29.4	29.7	31.7	32.5	33.3	34.4	36.0	37.4	39.4	40.0	44.6	44.2	47.7	50.8	54.0	56.4	56.4	50.0	48.3	44.2	40.2	48.7	44.7
22	15.4	18.6	22.6	28.3	30.1	28.8	27.4	31.1	30.0	30.5	30.6	31.5	32.1	32.7	33.3	34.6	35.5	38.4	38.0	42.2	41.6	44.2	46.8	49.8	52.2	52.2	46.8	45.7	43.3	40.5	43.1	54.6
24	10.0	12.1	20.4	27.4	28.4	25.6	23.3	27.4	25.7	28.7	32.3	28.5	32.7	32.6	31.7	33.4	36.1	33.2	34.5	39.2	38.4	41.3	43.9	46.9	50.1	49.9	44.7	43.6	39.6	37.2	39.4	47.0
26	10.0	12.1	20.4	27.4	28.4	25.6	23.3	27.4	25.7	28.7	32.3	28.5	32.7	32.6	31.7	33.4	36.1	33.2	34.5	39.2	38.4	41.3	43.9	46.9	50.1	49.9	44.7	43.6	39.6	37.2	39.4	47.0
28	10.0	12.1	20.4	27.4	28.4	25.6	23.3	27.4	25.7	28.7	32.3	28.5	32.7	32.6	31.7	33.4	36.1	33.2	34.5	39.2	38.4	41.3	43.9	46.9	50.1	49.9	44.7	43.6	39.6	37.2	39.4	47.0
30	10.0	12.1	20.4	27.4	28.4	25.6	23.3	27.4	25.7	28.7	32.3	28.5	32.7	32.6	31.7	33.4	36.1	33.2	34.5	39.2	38.4	41.3	43.9	46.9	50.1	49.9	44.7	43.6	39.6	37.2	39.4	47.0
32	10.0	12.1	20.4	27.4	28.4	25.6	23.3	27.4	25.7	28.7	32.3	28.5	32.7	32.6	31.7	33.4	36.1	33.2	34.5	39.2	38.4	41.3	43.9	46.9	50.1	49.9	44.7	43.6	39.6	37.2	39.4	47.0
34	17.6	19.8	26.5	31.9	33.4	31.8	30.6	32.0	30.5	32.8	34.8	33.9	36.5	36.8	37.0	38.2	40.2	40.4	42.2	47.3	46.8	50.2	53.1	56.1	58.3	58.6	52.9	51.4	48.0	41.7	47.2	59.5
36	17.6	19.8	26.5	31.9	33.4	31.8	30.6	32.0	30.5	32.8	34.8	33.9	36.5	36.8	37.0	38.2	40.2	40.4	42.2	47.3	46.8	50.2	53.1	56.1	58.3	58.6	52.9	51.4	48.0	41.7	47.2	59.5
38	16.8	19.0	25.3	30.1	31.7	30.6	29.8	30.1	28.8	30.7	31.2	32.4	34.1	34.6	35.5	36.5	38.1	39.5	41.4	46.5	46.1	49.6	52.5	55.5	57.6	58.0	52.2	50.6	47.3	39.8	46.4	59.3
40	16.8	19.0	25.3	30.1	31.7	30.6	29.8	30.1	28.8	30.7	31.2	32.4	34.1	34.6	35.5	36.5	38.1	39.5	41.4	46.5	46.1	49.6	52.5	55.5	57.6	58.0	52.2	50.6	47.3	39.8	46.4	59.3
42	16.8	19.0	25.3	30.1	31.7	30.6	29.8	30.1	28.8	30.7	31.2	32.4	34.1	34.6	35.5	36.5	38.1	39.5	41.4	46.5	46.1	49.6	52.5	55.5	57.6	58.0	52.2	50.6	47.3	39.8	46.4	59.3
44	14.5	16.8	25.8	32.6	32.3	30.6	29.2	31.4	30.5	35.5	36.7	33.9	39.2	37.7	37.3	39.1	42.7	40.0	41.8	47.6	47.0	50.2	53.2	56.3	58.6	58.7	52.9	51.5	46.6	41.7	43.9	55.2
46	14.5	16.8	25.8	32.6	32.3	30.6	29.2	31.4	30.5	35.5	36.7	33.9	39.2	37.7	37.3	39.1	42.7	40.0	41.8	47.6	47.0	50.2	53.2	56.3	58.6	58.7	52.9	51.5	46.6	41.7	43.9	55.2
48	15.6	17.2	24.9	28.7	30.2	29.1	27.8	27.7	29.6	30.1	30.9	32.7	34.2	34.8	36.1	37.8	39.3	40.6	42.2	47.8	47.1	50.9	53.6	56.5	58.4	58.4	52.3	51.6	46.8	40.1	43.8	54.9
50	15.6	17.2	24.9	28.7	30.2	29.1	27.8	27.7	29.6	30.1	30.9	32.7	34.2	34.8	36.1	37.8	39.3	40.6	42.2	47.8	47.1	50.9	53.6	56.5	58.4	58.4	52.3	51.6	46.8	40.1	43.8	54.9
52	18.5	19.9	26.2	29.9	32.3	31.2	29.5	30.2	31.4	31.4	32.1	33.7	34.8	35.2	36.2	37.4	38.6	39.8	40.8	45.2	44.5	47.9	50.7	53.9	56.0	55.9	49.6	49.6	45.2	42.1	45.8	51.5
54	21.0	22.8	28.8	32.5	34.3	33.5	32.3	32.4	33.6	34.0	34.4	36.2	37.3	37.8	38.8	40.1	41.3	42.6	43.5	48.2	47.5	50.9	53.8	57.1	59.3	59.2	52.8	52.2	47.9	44.1	49.2	53.0
56	20.0	21.7	28.1	31.6	33.3	32.3	30.9	31.3	32.6	32.9	33.5	35.2	36.4	36.9	37.9	39.2	40.5	41.6	42.5	47.2	46.5	50.0	52.8	56.2	58.3	58.3	51.7	51.5	46.8	42.6	48.5	51.5
58	18.2	19.6	26.4	29.9	32.4	30.8	28.6	30.0	31.4	31.0	32.4	33.5	34.9	35.3	36.3	37.5	38.7	39.6	40.7	45.2	44.3	47.9	50.5	53.7	55.6	55.6	48.8	49.8	44.8	41.0	45.5	51.3
60	13.6	15.1	21.6	25.3	27.5	26.5	24.9	25.3	26.7	26.7	27.7	29.0	30.3	30.8	31.8	33.1	34.2	35.2	36.4	40.9	40.1	43.7	46.2	49.4	51.3	51.2	44.7	45.1	40.4	36.2	40.3	47.3
62	13.6	15.1	21.6	25.3	27.5	26.5	24.9	25.3	26.7	26.7	27.7	29.0	30.3	30.8	31.8	33.1	34.2	35.2	36.4	40.9	40.1	43.7	46.2	49.4	51.3	51.2	44.7	45.1	40.4	36.2	40.3	47.3

TABLE A-13: C03 - LOGARITHMIC COMBINATION OF AMBIENT NOISE AND CONSTRUCTION NOISE (LEQ) BY RECEIVER PER 2-WEEK INCREMENTS (RECEIVERS 1-30)

	Receiver-1	Receiver-2	Receiver-3	Receiver-4	Receiver-5	Receiver-6	Receiver-7	Receiver-8	Receiver-9	Receiver-10	Receiver-11	Receiver-12	Receiver-13	Receiver-14	Receiver-15	Receiver-16	Receiver-17	Receiver-18	Receiver-19	Receiver-20	Receiver-21	Receiver-22	Receiver-23	Receiver-24	Receiver-25	Receiver-26	Receiver-27	Receiver-28	Receiver-29	Receiver-30
Week	Sound Insulated	Sound Insulated						Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated		Sound Insulated		Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated		Sound Insulated	Sound Insulated	Sound Insulated
2	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.5	67.5	71.4	71.7	71.7	71.7	70.6	70.3	69.4	67.9	72.8	68.1	67.7	68.0	67.1	67.2	67.0	67.7	66.0
4	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	67.1	67.2	67.2	67.2	66.9	66.8	66.6	66.3	67.7	66.3	66.2	66.2	66.1	66.1	66.1	66.2	66.0
6	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.4	67.2	71.5	71.8	71.8	71.9	70.8	70.5	69.8	67.9	73.5	67.9	67.5	67.7	66.9	67.0	66.8	67.5	66.0
8	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.4	67.2	71.5	71.8	71.8	71.9	70.8	70.5	69.8	67.9	73.5	67.9	67.5	67.7	66.9	67.0	66.8	67.5	66.0
10	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.4	68.4	68.7	68.7	68.8	68.2	68.0	67.5	66.7	69.9	66.8	66.7	66.8	66.4	66.4	66.3	66.5	66.0
12	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.4	68.4	68.7	68.7	68.8	68.2	68.0	67.5	66.7	69.9	66.8	66.7	66.8	66.4	66.4	66.3	66.5	66.0
14	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.4	68.4	68.7	68.7	68.8	68.2	68.0	67.5	66.7	69.9	66.8	66.7	66.8	66.4	66.4	66.3	66.5	66.0
16	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.3	66.8	69.9	70.2	70.2	70.3	69.4	69.2	68.5	67.3	71.5	67.4	67.1	67.3	66.6	66.7	66.6	67.0	66.0
18	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.4	68.3	68.5	68.5	68.5	67.9	67.7	67.3	66.6	69.3	66.7	66.5	66.6	66.3	66.3	66.3	66.5	66.0
20	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.2	66.7	70.6	71.4	71.4	71.4	70.2	69.9	69.0	67.5	70.0	66.9	66.6	66.3	66.1	66.1	66.1	66.1	66.0
22	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.4	68.2	68.4	68.3	68.3	67.8	67.6	67.3	66.6	69.2	66.6	66.5	66.6	66.3	66.3	66.2	66.5	66.0
24	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.8	67.0	67.0	67.1	66.8	66.7	66.6	66.3	68.9	66.6	66.5	66.5	66.2	66.2	66.1	66.1	66.0
26	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.8	67.0	67.0	67.1	66.8	66.7	66.6	66.3	68.9	66.6	66.5	66.5	66.2	66.2	66.1	66.1	66.0
28	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.8	67.0	67.0	67.1	66.8	66.7	66.6	66.3	68.9	66.6	66.5	66.5	66.2	66.2	66.1	66.1	66.0
30	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.8	67.0	67.0	67.1	66.8	66.7	66.6	66.3	68.9	66.6	66.5	66.5	66.2	66.2	66.1	66.1	66.0
32	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.8	67.0	67.0	67.1	66.8	66.7	66.6	66.3	68.9	66.6	66.5	66.5	66.2	66.2	66.1	66.1	66.0
34	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.4	67.2	70.6	71.1	71.2	71.2	70.5	70.3	69.6	68.3	73.8	68.5	68.1	68.3	67.2	67.3	67.0	67.5	66.0
36	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.4	67.2	70.6	71.1	71.2	71.2	70.5	70.3	69.6	68.3	73.8	68.5	68.1	68.3	67.2	67.3	67.0	67.5	66.0
38	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.4	67.1	70.3	70.7	70.8	70.8	70.2	70.0	69.3	68.1	73.0	68.1	67.8	68.0	67.0	67.1	66.9	67.4	66.0
40	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.4	67.1	70.3	70.7	70.8	70.8	70.2	70.0	69.3	68.1	73.0	68.1	67.8	68.0	67.0	67.1	66.9	67.4	66.0
42	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.4	67.1	70.3	70.7	70.8	70.8	70.2	70.0	69.3	68.1	73.0	68.1	67.8	68.0	67.0	67.1	66.9	67.4	66.0
44	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.4	67.0	69.3	70.2	70.3	70.6	69.8	69.5	68.8	67.8	73.2	68.6	68.2	68.3	67.0	67.0	66.7	66.8	66.0
46	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.4	67.0	69.3	70.2	70.3	70.6	69.8	69.5	68.8	67.8	73.2	68.6	68.2	68.3	67.0	67.0	66.7	66.8	66.0
48	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.5	67.1	69.8	70.5	70.6	70.6	70.0	69.7	69.1	68.0	74.4	68.9	68.4	68.4	67.2	67.1	66.7	66.8	66.0
50	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.5	67.1	69.8	70.5	70.6	70.6	70.0	69.7	69.1	68.0	74.4	68.9	68.4	68.4	67.2	67.1	66.7	66.8	66.0
52	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.3	66.9	69.9	70.1	70.2	70.2	69.2	68.9	68.3	67.1	73.0	67.8	67.4	67.2	66.6	66.6	66.3	66.4	66.0
54	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.6	67.7	72.3	72.7	72.8	72.7	71.4	71.0	69.9	68.1	74.5	68.5	68.0	67.8	66.9	66.8	66.4	66.5	66.0
56	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.5	67.4	71.6	72.0	72.0	72.0	70.7	70.3	69.4	67.8	74.2	68.3	67.9	67.6	66.7	66.6	66.3	66.4	66.0
58	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.3	66.8	69.3	69.6	69.7	69.7	68.9	68.6	68.3	67.1	73.9	68.1	67.7	67.5	66.7	66.6	66.3	66.4	66.0
60	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.3	67.3	67.6	67.6	67.6	67.2	67.1	66.9	66.4	70.1	66.8	66.6	66.6	66.3	66.2	66.1	66.1	66.0
62	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.3	67.3	67.6	67.6	67.6	67.2	67.1	66.9	66.4	70.1	66.8	66.6	66.6	66.3	66.2	66.1	66.1	66.0

TABLE A-14: C03 - LOGARITHMIC COMBINATION OF AMBIENT NOISE AND CONSTRUCTION NOISE (LEQ) BY RECEIVER PER 2-WEEK INCREMENTS (RECEIVERS 31-55)

	Receiver-31	Receiver-32	Receiver-33	Receiver-34	Receiver-35	Receiver-36	Receiver-37	Receiver-38	Receiver-39	Receiver-40	Receiver-41	Receiver-42	Receiver-43	Receiver-44	Receiver-45	Receiver-46	Receiver-47	Receiver-48	Receiver-49	Receiver-50	Receiver-51	Receiver-52	Receiver-53	Receiver-54	Receiver-55
Week		Sound Insulated				Sound Insulated	Sound Insulated					Sound Insulated	Sound Insulated						Sound Insulated	Sound Insulated	Yes				Sound Insulated
2	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.5	66.8	67.7	67.9	67.5	67.4	66.9	66.7	66.6	66.4	66.3	66.4	66.5	66.5	66.2	66.2	66.2	66.9
4	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.2	66.2	66.2	66.2	66.1	66.1	66.1	66.0	66.0	66.1	66.1	66.1	66.0	66.0	66.0	66.1
6	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.4	66.6	67.5	67.7	67.3	67.3	66.9	66.7	66.7	66.4	66.3	66.5	66.6	66.5	66.3	66.3	66.2	66.7
8	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.4	66.6	67.5	67.7	67.3	67.3	66.9	66.7	66.7	66.4	66.3	66.5	66.6	66.5	66.3	66.3	66.2	66.7
10	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.2	66.2	66.6	66.7	66.5	66.5	66.4	66.3	66.2	66.1	66.1	66.2	66.1	66.1	66.1	66.1	66.1	66.3
12	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.2	66.2	66.6	66.7	66.5	66.5	66.4	66.3	66.2	66.1	66.1	66.2	66.1	66.1	66.1	66.1	66.1	66.3
14	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.2	66.2	66.6	66.7	66.5	66.5	66.4	66.3	66.2	66.1	66.1	66.2	66.1	66.1	66.1	66.1	66.1	66.3
16	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.3	66.4	67.1	67.2	66.9	66.9	66.6	66.5	66.4	66.2	66.2	66.3	66.3	66.3	66.1	66.1	66.1	66.5
18	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.2	66.5	66.6	66.4	66.4	66.3	66.2	66.2	66.1	66.1	66.1	66.1	66.1	66.1	66.1	66.1	66.2
20	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.3	66.5	67.2	67.5	67.1	67.0	66.6	66.4	66.3	66.2	66.1	66.3	66.2	66.1	66.0	66.0	66.0	66.0
22	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.2	66.5	66.5	66.4	66.4	66.3	66.2	66.2	66.1	66.1	66.1	66.1	66.1	66.1	66.1	66.0	66.2
24	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.2	66.3	66.2	66.2	66.1	66.1	66.1	66.0	66.0	66.1	66.1	66.1	66.0	66.0	66.0	66.1
26	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.2	66.3	66.2	66.2	66.1	66.1	66.1	66.0	66.0	66.1	66.1	66.1	66.0	66.0	66.0	66.1
28	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.2	66.3	66.2	66.2	66.1	66.1	66.1	66.0	66.0	66.1	66.1	66.1	66.0	66.0	66.0	66.1
30	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.2	66.3	66.2	66.2	66.1	66.1	66.1	66.0	66.0	66.1	66.1	66.1	66.0	66.0	66.0	66.1
32	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.2	66.3	66.2	66.2	66.1	66.1	66.1	66.0	66.0	66.1	66.1	66.1	66.0	66.0	66.0	66.1
34	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.4	66.7	67.5	67.7	67.4	67.3	67.0	66.7	66.6	66.4	66.2	66.5	66.5	66.4	66.1	66.1	66.1	66.9
36	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.4	66.7	67.5	67.7	67.4	67.3	67.0	66.7	66.6	66.4	66.2	66.5	66.5	66.4	66.1	66.1	66.1	66.9
38	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.4	66.6	67.3	67.5	67.2	67.2	66.9	66.6	66.6	66.3	66.2	66.4	66.4	66.3	66.1	66.1	66.1	66.8
40	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.4	66.6	67.3	67.5	67.2	67.2	66.9	66.6	66.6	66.3	66.2	66.4	66.4	66.3	66.1	66.1	66.1	66.8
42	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.4	66.6	67.3	67.5	67.2	67.2	66.9	66.6	66.6	66.3	66.2	66.4	66.4	66.3	66.1	66.1	66.1	66.8
44	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.5	66.7	67.4	67.7	67.5	67.2	66.9	66.7	66.6	66.3	66.1	66.4	66.4	66.3	66.1	66.1	66.1	66.5
46	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.5	66.7	67.4	67.7	67.5	67.2	66.9	66.7	66.6	66.3	66.1	66.4	66.4	66.3	66.1	66.1	66.1	66.5
48	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.5	66.8	67.4	67.6	67.3	67.2	66.9	66.7	66.6	66.3	66.2	66.5	66.6	66.4	66.2	66.1	66.0	66.5
50	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.5	66.8	67.4	67.6	67.3	67.2	66.9	66.7	66.6	66.3	66.2	66.5	66.6	66.4	66.2	66.1	66.0	66.5
52	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.3	66.4	67.0	67.1	66.9	66.7	66.5	66.4	66.3	66.2	66.1	66.3	66.3	66.2	66.2	66.1	66.0	66.2
54	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.6	66.9	68.0	68.2	67.8	67.5	67.0	66.8	66.6	66.3	66.2	66.5	66.5	66.3	66.3	66.1	66.1	66.3
56	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.5	66.7	67.7	67.9	67.5	67.2	66.8	66.6	66.5	66.3	66.1	66.4	66.4	66.2	66.2	66.0	66.0	66.2
58	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.3	66.4	66.9	67.0	66.9	66.6	66.5	66.4	66.3	66.2	66.1	66.4	66.4	66.2	66.2	66.0	66.0	66.2
60	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.2	66.3	66.4	66.3	66.3	66.2	66.1	66.1	66.1	66.0	66.1	66.1	66.1	66.1	66.0	66.0	66.1
62	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.2	66.3	66.4	66.3	66.3	66.2	66.1	66.1	66.1	66.0	66.1	66.1	66.1	66.1	66.0	66.0	66.1

TABLE A-15: C03 - LOGARITHMIC COMBINATION OF AMBIENT NOISE AND CONSTRUCTION NOISE (LEQ) BY RECEIVER PER 2-WEEK INCREMENTS (RECEIVERS 56-87)

	Receiver-56	Receiver-57	Receiver-58	Receiver-59	Receiver-60	Receiver-61	Receiver-62	Receiver-63	Receiver-64	Receiver-65	Receiver-66	Receiver-67	Receiver-68	Receiver-69	Receiver-70	Receiver-71	Receiver-72	Receiver-73	Receiver-74	Receiver-75	Receiver-76	Receiver-77	Receiver-78	Receiver-79	Receiver-80	Receiver-81	Receiver-82	Receiver-83	Receiver-84	Receiver-85	Receiver-86	Receiver-87
Week			Sound Insulated							Sound Insulated	Sound Insulated	Sound Insulated				Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated			Sound Insulated	Sound Insulated			Sound Insulated						
2	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.1	66.2	66.4	66.7	66.7	66.2	66.1	66.1	66.0	66.1	67.0
4	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.0	66.0	66.0	66.0	66.0	66.1
6	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.1	66.2	66.3	66.6	66.6	66.2	66.2	66.1	66.1	66.1	67.0
8	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.1	66.2	66.3	66.6	66.6	66.2	66.2	66.1	66.1	66.1	67.0
10	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.2	66.2	66.1	66.1	66.0	66.0	66.0	66.3
12	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.2	66.2	66.1	66.1	66.0	66.0	66.0	66.3
14	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.2	66.2	66.1	66.1	66.0	66.0	66.0	66.3
16	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.3	66.4	66.4	66.1	66.1	66.1	66.0	66.1	66.6
18	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.2	66.2	66.1	66.0	66.0	66.0	66.0	66.3
20	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.3	66.5	66.5	66.1	66.1	66.0	66.0	66.1	66.0
22	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.2	66.2	66.1	66.0	66.0	66.0	66.0	66.3
24	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.1	66.0	66.0	66.0	66.0	66.0	66.1
26	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.1	66.0	66.0	66.0	66.0	66.0	66.1
28	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.1	66.0	66.0	66.0	66.0	66.0	66.1
30	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.1	66.0	66.0	66.0	66.0	66.0	66.1
32	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.1	66.0	66.0	66.0	66.0	66.0	66.1
34	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.1	66.2	66.4	66.7	66.7	66.2	66.1	66.1	66.0	66.1	66.9
36	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.1	66.2	66.4	66.7	66.7	66.2	66.1	66.1	66.0	66.1	66.9
38	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.2	66.4	66.6	66.6	66.2	66.1	66.1	66.0	66.0	66.8
40	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.2	66.4	66.6	66.6	66.2	66.1	66.1	66.0	66.0	66.8
42	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.2	66.4	66.6	66.6	66.2	66.1	66.1	66.0	66.0	66.8
44	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.1	66.2	66.4	66.7	66.7	66.2	66.2	66.0	66.0	66.0	66.3
46	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.1	66.2	66.4	66.7	66.7	66.2	66.2	66.0	66.0	66.0	66.3
48	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.1	66.2	66.5	66.7	66.7	66.2	66.2	66.1	66.0	66.0	66.3
50	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.1	66.2	66.5	66.7	66.7	66.2	66.2	66.1	66.0	66.0	66.3
52	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.3	66.4	66.4	66.1	66.1	66.0	66.0	66.0	66.2
54	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.1	66.3	66.5	66.8	66.8	66.2	66.2	66.1	66.0	66.1	66.2
56	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.0	66.1	66.2	66.4	66.7	66.7	66.2	66.2	66.1	66.0	66.1	66.2
58	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.2	66.4	66.4	66.1	66.1	66.0	66.0	66.0	66.1
60	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.1	66.0	66.0	66.0	66.0	66.0	66.1
62	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.1	66.1	66.1	66.0	66.0	66.0	66.0	66.0	66.1

TABLE A-16: C03 - PROJECTED INCREASE OF COMBINED AMBIENT AND CONSTRUCTION NOISE LEVEL (LEQ) COMPARED TO AMBIENT NOISE LEVEL BY RECEIVER PER 2-WEEK INCREMENTS (RECEIVERS 1-30)

	Receiver-1	Receiver-2	Receiver-3	Receiver-4	Receiver-5	Receiver-6	Receiver-7	Receiver-8	Receiver-9	Receiver-10	Receiver-11	Receiver-12	Receiver-13	Receiver-14	Receiver-15	Receiver-16	Receiver-17	Receiver-18	Receiver-19	Receiver-20	Receiver-21	Receiver-22	Receiver-23	Receiver-24	Receiver-25	Receiver-26	Receiver-27	Receiver-28	Receiver-29	Receiver-30
Week	Sound Insulated	Sound Insulated						Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated		Sound Insulated		Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated		Sound Insulated	Sound Insulated	Sound Insulated
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	1.5	5.4	5.7	5.7	5.7	4.6	4.3	3.4	1.9	6.8	2.1	1.7	2.0	1.1	1.2	1.0	1.7	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.1	1.2	1.2	1.2	0.9	0.8	0.6	0.3	1.7	0.3	0.2	0.2	0.1	0.1	0.1	0.2	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	1.2	5.5	5.8	5.8	5.9	4.8	4.5	3.8	1.9	7.5	1.9	1.5	1.7	0.9	1.0	0.8	1.5	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	1.2	5.5	5.8	5.8	5.9	4.8	4.5	3.8	1.9	7.5	1.9	1.5	1.7	0.9	1.0	0.8	1.5	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	2.4	2.7	2.7	2.8	2.2	2.0	1.5	0.7	3.9	0.8	0.7	0.8	0.4	0.4	0.3	0.5	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	2.4	2.7	2.7	2.8	2.2	2.0	1.5	0.7	3.9	0.8	0.7	0.8	0.4	0.4	0.3	0.5	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	2.4	2.7	2.7	2.8	2.2	2.0	1.5	0.7	3.9	0.8	0.7	0.8	0.4	0.4	0.3	0.5	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.8	3.9	4.2	4.2	4.3	3.4	3.2	2.5	1.3	5.5	1.4	1.1	1.3	0.6	0.7	0.6	1.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	2.3	2.5	2.5	2.5	1.9	1.7	1.3	0.6	3.3	0.7	0.5	0.6	0.3	0.3	0.3	0.5	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.7	4.6	5.4	5.4	5.4	4.2	3.9	3.0	1.5	4.0	0.9	0.6	0.3	0.1	0.1	0.1	0.1	0.0
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	2.2	2.4	2.3	2.3	1.8	1.6	1.3	0.6	3.2	0.6	0.5	0.6	0.3	0.3	0.2	0.5	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	1.0	1.0	1.1	0.8	0.7	0.6	0.3	2.9	0.6	0.5	0.5	0.2	0.2	0.1	0.1	0.0
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	1.0	1.0	1.1	0.8	0.7	0.6	0.3	2.9	0.6	0.5	0.5	0.2	0.2	0.1	0.1	0.0
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	1.0	1.0	1.1	0.8	0.7	0.6	0.3	2.9	0.6	0.5	0.5	0.2	0.2	0.1	0.1	0.0
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	1.0	1.0	1.1	0.8	0.7	0.6	0.3	2.9	0.6	0.5	0.5	0.2	0.2	0.1	0.1	0.0
32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	1.0	1.0	1.1	0.8	0.7	0.6	0.3	2.9	0.6	0.5	0.5	0.2	0.2	0.1	0.1	0.0
34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	1.2	4.6	5.1	5.2	5.2	4.5	4.3	3.6	2.3	7.8	2.5	2.1	2.3	1.2	1.3	1.0	1.5	0.0
36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	1.2	4.6	5.1	5.2	5.2	4.5	4.3	3.6	2.3	7.8	2.5	2.1	2.3	1.2	1.3	1.0	1.5	0.0
38	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	1.1	4.3	4.7	4.8	4.8	4.2	4.0	3.3	2.1	7.0	2.1	1.8	2.0	1.0	1.1	0.9	1.4	0.0
40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	1.1	4.3	4.7	4.8	4.8	4.2	4.0	3.3	2.1	7.0	2.1	1.8	2.0	1.0	1.1	0.9	1.4	0.0
42	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	1.1	4.3	4.7	4.8	4.8	4.2	4.0	3.3	2.1	7.0	2.1	1.8	2.0	1.0	1.1	0.9	1.4	0.0
44	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	1.0	3.3	4.2	4.3	4.6	3.8	3.5	2.8	1.8	7.2	2.6	2.2	2.3	1.0	1.0	0.7	0.8	0.0
46	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	1.0	3.3	4.2	4.3	4.6	3.8	3.5	2.8	1.8	7.2	2.6	2.2	2.3	1.0	1.0	0.7	0.8	0.0
48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	1.1	3.8	4.5	4.6	4.6	4.0	3.7	3.1	2.0	8.4	2.9	2.4	2.4	1.2	1.1	0.7	0.8	0.0
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	1.1	3.8	4.5	4.6	4.6	4.0	3.7	3.1	2.0	8.4	2.9	2.4	2.4	1.2	1.1	0.7	0.8	0.0
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.9	3.9	4.1	4.2	4.2	3.2	2.9	2.3	1.1	7.0	1.8	1.4	1.2	0.6	0.6	0.3	0.4	0.0
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	1.7	6.3	6.7	6.8	6.7	5.4	5.0	3.9	2.1	8.5	2.5	2.0	1.8	0.9	0.8	0.4	0.5	0.0
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	1.4	5.6	6.0	6.0	6.0	4.7	4.3	3.4	1.8	8.2	2.3	1.9	1.6	0.7	0.6	0.3	0.4	0.0
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.8	3.3	3.6	3.7	3.7	2.9	2.6	2.3	1.1	7.9	2.1	1.7	1.5	0.7	0.6	0.3	0.4	0.0
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	1.3	1.6	1.6	1.6	1.2	1.1	0.9	0.4	4.1	0.8	0.6	0.6	0.3	0.2	0.1	0.1	0.0
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	1.3	1.6	1.6	1.6	1.2	1.1	0.9	0.4	4.1	0.8	0.6	0.6	0.3	0.2	0.1	0.1	0.0

3 – 4.9 dB increase over ambient (yellow)

5 – 9.9 dB increase over ambient (orange)

TABLE A-17: C03 - PROJECTED INCREASE OF COMBINED AMBIENT AND CONSTRUCTION NOISE LEVEL (LEQ) COMPARED TO AMBIENT NOISE LEVEL BY RECEIVER PER 2-WEEK INCREMENTS (RECEIVERS 31-55)

	Receiver-31	Receiver-32	Receiver-33	Receiver-34	Receiver-35	Receiver-36	Receiver-37	Receiver-38	Receiver-39	Receiver-40	Receiver-41	Receiver-42	Receiver-43	Receiver-44	Receiver-45	Receiver-46	Receiver-47	Receiver-48	Receiver-49	Receiver-50	Receiver-51	Receiver-52	Receiver-53	Receiver-54	Receiver-55
Week		Sound Insulated				Sound Insulated	Sound Insulated					Sound Insulated	Sound Insulated						Sound Insulated	Sound Insulated	Yes				Sound Insulated
2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.8	1.7	1.9	1.5	1.4	0.9	0.7	0.6	0.4	0.3	0.4	0.5	0.5	0.2	0.2	0.2	0.9
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.1
6	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.6	1.5	1.7	1.3	1.3	0.9	0.7	0.7	0.4	0.3	0.5	0.6	0.5	0.3	0.3	0.2	0.7
8	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.6	1.5	1.7	1.3	1.3	0.9	0.7	0.7	0.4	0.3	0.5	0.6	0.5	0.3	0.3	0.2	0.7
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.6	0.7	0.5	0.5	0.4	0.3	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.3
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.6	0.7	0.5	0.5	0.4	0.3	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.3
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.6	0.7	0.5	0.5	0.4	0.3	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.3
16	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.4	1.1	1.2	0.9	0.9	0.6	0.5	0.4	0.2	0.2	0.3	0.3	0.3	0.1	0.1	0.1	0.5
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.6	0.4	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	1.2	1.5	1.1	1.0	0.6	0.4	0.3	0.2	0.1	0.3	0.2	0.1	0.0	0.0	0.0	0.0
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.5	0.4	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.2
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.1
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.1
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.1
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.1
32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.1
34	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.7	1.5	1.7	1.4	1.3	1.0	0.7	0.6	0.4	0.2	0.5	0.5	0.4	0.1	0.1	0.1	0.9
36	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.7	1.5	1.7	1.4	1.3	1.0	0.7	0.6	0.4	0.2	0.5	0.5	0.4	0.1	0.1	0.1	0.9
38	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.6	1.3	1.5	1.2	1.2	0.9	0.6	0.6	0.3	0.2	0.4	0.4	0.3	0.1	0.1	0.1	0.8
40	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.6	1.3	1.5	1.2	1.2	0.9	0.6	0.6	0.3	0.2	0.4	0.4	0.3	0.1	0.1	0.1	0.8
42	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.6	1.3	1.5	1.2	1.2	0.9	0.6	0.6	0.3	0.2	0.4	0.4	0.3	0.1	0.1	0.1	0.8
44	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.7	1.4	1.7	1.5	1.2	0.9	0.7	0.6	0.3	0.1	0.4	0.4	0.3	0.1	0.1	0.1	0.5
46	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.7	1.4	1.7	1.5	1.2	0.9	0.7	0.6	0.3	0.1	0.4	0.4	0.3	0.1	0.1	0.1	0.5
48	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.8	1.4	1.6	1.3	1.2	0.9	0.7	0.6	0.3	0.2	0.5	0.6	0.4	0.2	0.1	0.0	0.5
50	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.8	1.4	1.6	1.3	1.2	0.9	0.7	0.6	0.3	0.2	0.5	0.6	0.4	0.2	0.1	0.0	0.5
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	1.0	1.1	0.9	0.7	0.5	0.4	0.3	0.2	0.1	0.3	0.3	0.2	0.2	0.1	0.0	0.2
54	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	0.9	2.0	2.2	1.8	1.5	1.0	0.8	0.6	0.3	0.2	0.5	0.5	0.3	0.3	0.1	0.1	0.3
56	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.7	1.7	1.9	1.5	1.2	0.8	0.6	0.5	0.3	0.1	0.4	0.4	0.2	0.2	0.0	0.0	0.2
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.9	1.0	0.9	0.6	0.5	0.4	0.3	0.2	0.1	0.4	0.4	0.2	0.2	0.0	0.0	0.2
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.3	0.3	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.1
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.3	0.3	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.1

TABLE A-18: C03 - PROJECTED INCREASE OF COMBINED AMBIENT AND CONSTRUCTION NOISE LEVEL (LEQ) COMPARED TO AMBIENT NOISE LEVEL BY RECEIVER PER 2-WEEK INCREMENTS (RECEIVERS 56-87)

	Receiver-56	Receiver-57	Receiver-58	Receiver-59	Receiver-60	Receiver-61	Receiver-62	Receiver-63	Receiver-64	Receiver-65	Receiver-66	Receiver-67	Receiver-68	Receiver-69	Receiver-70	Receiver-71	Receiver-72	Receiver-73	Receiver-74	Receiver-75	Receiver-76	Receiver-77	Receiver-78	Receiver-79	Receiver-80	Receiver-81	Receiver-82	Receiver-83	Receiver-84	Receiver-85	Receiver-86	Receiver-87
Week			Sound Insulated							Sound Insulated	Sound Insulated	Sound Insulated				Sound Insulated	Sound Insulated	Sound Insulated	Sound Insulated			Sound Insulated	Sound Insulated			Sound Insulated						
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.4	0.7	0.7	0.2	0.1	0.1	0.0	0.1	1.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.6	0.6	0.2	0.2	0.1	0.1	0.1	1.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.6	0.6	0.2	0.2	0.1	0.1	0.1	1.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.3
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.3
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.3
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.4	0.1	0.1	0.1	0.0	0.1	0.6
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.3
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.5	0.5	0.1	0.1	0.0	0.0	0.1	0.0
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.3
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1
32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1
34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.4	0.7	0.7	0.2	0.1	0.1	0.0	0.1	0.9
36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.4	0.7	0.7	0.2	0.1	0.1	0.0	0.1	0.9
38	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.6	0.6	0.2	0.1	0.1	0.0	0.0	0.8
40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.6	0.6	0.2	0.1	0.1	0.0	0.0	0.8
42	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.6	0.6	0.2	0.1	0.1	0.0	0.0	0.8
44	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.4	0.7	0.7	0.2	0.2	0.0	0.0	0.0	0.3
46	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.4	0.7	0.7	0.2	0.2	0.0	0.0	0.0	0.3
48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.5	0.7	0.7	0.2	0.2	0.1	0.0	0.0	0.3
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.5	0.7	0.7	0.2	0.2	0.1	0.0	0.0	0.3
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.4	0.1	0.1	0.0	0.0	0.0	0.2
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.5	0.8	0.8	0.2	0.2	0.1	0.0	0.1	0.2
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.4	0.7	0.7	0.2	0.2	0.1	0.0	0.1	0.2
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.4	0.1	0.1	0.0	0.0	0.0	0.1
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1

Appendix B, Construction Schedule

ID	DESCRIPTION	Number of Quarters
AIRSIDE		
A01	Taxiway A/B Extension	11
A02	Runway 16R/34L Blast Pads	3
A03	Taxiway C/D Reconfiguration & RIM	17
A04	Taxiway B 500' Separation	17
A05	North Hold Pad	5
A06	Runway 34L High-Speed Exit	3
A07	Taxiway D Extension	4
A08	North Cargo Hardstand	10
A09	Central Hardstand	9
A10	Taxiway Fillets	11
CARGO		
C01	Cargo 4 South Redevelopment	5
C02	Offsite Cargo Phase 1	6
CO3	Offsite Cargo Phase 2	5
LANDSIDE		
L01	NAE Relocation (southbound lanes)	17
L02	Elevated Busway & Stations	27
L03	Second Terminal Roads & Curbside	8
L04	Northeast GTC	11
L05	North GT Holding Lot	5
L07	Employee Parking Structure	7
TERMINAL		
T01	North Gates	20
T02	Second Terminal & Parking	18
AIRPORT/AIRLINE SUPPORT		
S01	Fuel Farm Expansion	13
S02	Primary ARFF Facility	8
S03	Secondary ARFF Facility	10
S04	Fuel Rack Relocation	11
S05	Triculator	7
S06	De-icing Tanks	7
S07	Westside Maintenance Campus	10
S08	North Airline Support	5
S09	West Airline Support	5
S10	Centralized Rec. & Dist. Center	7

Appendix C, Construction Equipment

C02 Construction Equipment

Construction Phase Number	Equipment Type	Quantity	Usage Factor	Equipment Name TNM
1a	Chain Saw	6	0.2	Power Tools - Chainsaw
	Grappling Claw All Terrain vehicle	1	0.4	Backhoe
	Log Stripper	1	0.4	Front End Loader (Cyclical)
	Logging Haul Trucks	3	0.4	Flatbed Truck
	Heavy Duty Wood Chipper	2	0.2	Concrete Batch Plant
	Excavator (pulling tree root balls)	1	0.4	Excavator
	Dump Trucks	4	0.4	Dump Truck (Passby)
	Front end Loader	1	0.4	Front End Loader (Cyclical)
1b	Walk Behaind Asphalt Cutting Machine	1	0.2	Concrete Saw
	Crawler Excavator	1	0.4	Excavator
	Front end Loader	1	0.4	Front End Loader (Cyclical)
	Dump Truck	2	0.4	Dump Truck (Passby)
2a	Flat Bed & Bobtail Trucks	3	0.4	Flatbed Truck
	Surveyor Equip Trucks	1	0.4	Flatbed Truck
	All Terrain Forklift Telehandler	1	0.2	Telescopic Handler (Forklift)
2b	Crawler Excavator	1	0.4	Excavator
	Scraper	1	0.4	Scraper
	Bull Dozer D-8 w/ ripper bars	1	0.4	Dozer
	Front end Loader	2	0.4	Front End Loader (Cyclical)
	Dump Truck	4	0.4	Dump Truck (Passby)
	Sheeps Foot Roller	1	0.2	Compactor (Roller)
	Vibrator Roller	1	0.2	Compactor (Roller)
	Motor Grader	1	0.4	Grader (passby)
	Water Tanker Truck	1	0.1	Water Spray Truck
	Street Sweeper Truck	1	0.1	Street Sweeper

C02 Construction Equipment

Construction Phase Number	Equipment Type	Quantity	Usage Factor	Equipment Name TNM
2c	Crawler Excavator	1	0.4	Excavator
	Scraper	1	0.4	Scraper
	Bull Dozer D-8 w/ ripper bars	1	0.4	Dozer
	Front end Loader	2	0.4	Front End Loader (Cyclical)
	Dump Truck	4	0.4	Dump Truck (Passby)
	Sheeps Foot Roller	1	0.2	Compactor (Roller)
	Vibrator Roller	1	0.2	Compactor (Roller)
	Motor Grader	1	0.4	Grader (passby)
	Water Tanker Truck	1	0.1	Water Spray Truck
	Street Sweeper Truck	1	0.1	Street Sweeper
3a	Back Hoe-Loader	2	0.4	Backhoe
	Front end Loader	2	0.4	Front End Loader (Cyclical)
	Dump Truck	4	0.4	Dump Truck (Passby)
	Flat Bed & Bobtail Trucks -Delivery	1	0.4	Flatbed Truck
3b	Back Hoe-Loader	2	0.4	Backhoe
	Front end Loader	2	0.4	Front End Loader (Cyclical)
	Dump Truck	4	0.4	Dump Truck (Passby)
	Flat Bed & Bobtail Trucks -Delivery	1	0.4	Flatbed Truck
4a	Back Hoe-Loader	1	0.4	Backhoe
	Crawler Excavator (maybe rubber tires)	1	0.4	Excavator
	Dump Truck	2	0.4	Dump Truck (Passby)
	Asphalt Truck	1	0.4	Flatbed Truck
	Smooth Vibration Roller	1	0.1	Compactor (Roller)
	Hot Tar Kettle Trailer	1	0.5	Generator
4b	Back Hoe-Loader	2	0.4	Backhoe
	Dump Truck	3	0.4	Dump Truck (Passby)
	Transit Cement Truck for CDF	2	0.4	Dump Truck (Passby)
	Air Compressor Trailer	1	0.4	Compressor
	Portable Elec Generator Trailer	1	0.5	Generator
	All Terrain Forklift Telehandler	1	0.2	Telescopic Handler (Forklift)

C02 Construction Equipment

Construction Phase Number	Equipment Type	Quantity	Usage Factor	Equipment Name TNM
4c	Bobtail rebar delivery trucks	1	0.4	Flatbed Truck
	Portable Elec Generator Trailer	1	0.5	Generator
	All Terrain Forklift Telehandler	1	0.2	Telescopic Handler (Forklift)
	Metal Grinders & Metal Cut-Off Saw	4	0.2	Power Tools - Grinder
4d	Back Hoe-Loader	2	0.4	Backhoe
	Dump Truck	3	0.4	Dump Truck (Passby)
	Transit Cement Truck for CDF	2	0.4	Dump Truck (Passby)
	Air Compressor Trailer	1	0.4	Compressor
	Portable Elec Generator Trailer	1	0.5	Generator
	All Terrain Forklift Telehandler	1	0.2	Telescopic Handler (Forklift)
4e	Bobtail rebar delivery trucks	1	0.4	Flatbed Truck
	Portable Elec Generator Trailer	1	0.5	Generator
	All Terrain Forklift Telehandler	1	0.2	Telescopic Handler (Forklift)
	Metal Grinders & Metal Cut-Off Saw	4	0.2	Power Tools - Grinder
5a	Concrete Transit Trucks (coming & going)	6	0.4	Flatbed Truck
	Concrete Pumper Truck	1	0.4	Flatbed Truck
	Bobtail Work Trucks	4	0.4	Flatbed Truck
	Air Compressor Trailer	1	0.4	Compressor
	Concrete Floor Rotary Trowel	2	0.4	Generator
	Walk Behaind Concrete Saw	1	0.2	Concrete Saw
	Rotary Hammer Drills	4	0.2	Power Tools - Hammer Drill
5b	Concrete Transit Trucks (coming & going)	6	0.4	Flatbed Truck
	Concrete Pumper Truck	1	0.4	Flatbed Truck
	Bobtail Work Trucks	4	0.4	Flatbed Truck
	Air Compressor Trailer	1	0.4	Compressor
	Concrete Floor Rotary Trowel	2	0.4	Generator
	Walk Behaind Concrete Saw	1	0.2	Concrete Saw
	Rotary Hammer Drills	4	0.2	Power Tools - Hammer Drill

C02 Construction Equipment

Construction Phase Number	Equipment Type	Quantity	Usage Factor	Equipment Name TNM
5c	Concrete Transit Trucks (coming & going)	6	0.4	Dump Truck (Passby)
	Concrete Pumper Truck	1	0.4	Flatbed Truck
	Bobtail Work Trucks	4	0.4	Flatbed Truck
	Air Compressor Trailer	2	0.4	Compressor
	Rotary Hammer Drills	4	0.2	Power Tools - Hammer Drill
	Hand Held Concrete Saw	2	0.2	Concrete Saw
6	Concrete Transit Trucks (coming & going)	6	0.4	Flatbed Truck
	Telescoping Crane	1	0.16	Crane
	All Terrain Forklift Telehandler	1	0.2	Telescopic Handler (Forklift)
	Bobtail Work Trucks	4	0.4	Flatbed Truck
	Air Compressor Trailer	1	0.4	Compressor
	Rotary Hammer Drills	4	0.2	Power Tools - Hammer Drill
	Hand Held Concrete Saw	4	0.2	Concrete Saw
	Portable Elec Generator Trailer	1	0.5	Generator
7	Telescoping Crane	2	0.16	Crane
	All Terrain Forklift Telehandler	2	0.2	Telescopic Handler (Forklift)
	Bobtail Work Trucks	4	0.4	Flatbed Truck
	Air Compressor Trailer	1	0.4	Compressor
	Rotary Hammer Drills	4	0.2	Power Tools - Hammer Drill
	Hand Held Concrete Saw	4	0.2	Concrete Saw
	Portable Elec Generator Trailer	1	0.5	Generator
	Portable Welding Equip	2	0.4	Welding Machine
8	Telescoping Crane	2	0.16	Crane
	All Terrain Forklift Telehandler	2	0.2	Telescopic Handler (Forklift)
	Bobtail Work Trucks	4	0.4	Flatbed Truck
	Belt Loader	1	0.4	Dozer
	Open Flame Torch for Seams fusion	4	0.2	Welding Machine
9	Back Hoe-Loader	1	0.4	Backhoe
	Asphalt Truck	2	0.4	Flatbed Truck
	Asphalt Paving Machine	1	0.4	Paving - Asphalt (Paver + Dump Truck)
	Smooth Vibration Roller	1	0.2	Compactor (Roller)
	Hot Tar Kettle Trailer	1	0.5	Generator

C02 Construction Equipment

Construction Phase Number	Equipment Type	Quantity	Usage Factor	Equipment Name TNM
10a	Telescoping Crane	1	0.16	Crane
	All Terrain Forklift Telehandler	2	0.2	Telescopic Handler (Forklift)
	Bobtail Work Trucks	6	0.4	Flatbed Truck
	Hand Drills	6	0.2	Power Tools - Hammer Drill
	Handheld Grinders	6	0.2	Power Tools - Grinder
10b	Elec Scissors Lift	4	0.1	Man Lift
	Back Hoe-Loader	1	0.4	Backhoe
	Asphalt Truck	2	0.4	Flatbed Truck
	Asphalt Paving Machine	1	0.4	Paving - Asphalt (Paver + Dump Truck)
	Smooth Vibration Roller	1	0.2	Compactor (Roller)
	Hot Tar Kettle Trailer	1	0.5	Generator

C03 Construction Equipment

Construction Phase Number	Equipment Type	Quantity	Usage Factor	Equipment Name TNM
1	Chain Saw	6	0.2	Power Tools - Chainsaw
	Grappling Claw All Terrain vehicle	1	0.4	Backhoe
	Log Stripper	1	0.4	Front End Loader (Cyclical)
	Logging Haul Trucks	3	0.4	Flatbed Truck
	Heavy Duty Wood Chipper	2	0.2	Concrete Batch Plant
	Excavator (pulling tree root balls)	1	0.4	Excavator
	Dump Trucks	4	0.4	Dump Truck (Passby)
	Front end Loader	1	0.4	Front End Loader (Cyclical)
2a	Flat Bed & Bobtail Trucks	3	0.4	Flatbed Truck
	Surveyor Equip Trucks	1	0.4	Flatbed Truck
	All Terrain Forklift Telehandler	1	0.2	Telescopic Handler (Forklift)
2b	Crawler Excavator	1	0.4	Excavator
	Scraper	1	0.4	Scraper
	Bull Dozer D-8 w/ ripper bars	1	0.4	Dozer
	Front end Loader	2	0.4	Front End Loader (Cyclical)
	Dump Truck	4	0.4	Dump Truck (Passby)
	Sheeps Foot Roller	1	0.2	Compactor (Roller)
	Vibrator Roller	1	0.2	Compactor (Roller)
	Motor Grader	1	0.4	Grader (passby)
	Water Tanker Truck	1	0.1	Water Spray Truck
	Street Sweeper Truck	1	0.1	Street Sweeper
3	Back Hoe-Loader	2	0.4	Backhoe
	Front end Loader	2	0.4	Front End Loader (Cyclical)
	Dump Truck	4	0.4	Dump Truck (Passby)
	Flat Bed & Bobtail Trucks -Delivery	1	0.4	Flatbed Truck
4a	Back Hoe-Loader	1	0.4	Backhoe
	Crawler Excavator (maybe rubber tires)	1	0.4	Excavator
	Dump Truck	2	0.4	Dump Truck (Passby)
	Asphalt Truck	1	0.4	Flatbed Truck
	Smooth Vibration Roller	1	0.1	Compactor (Roller)
	Hot Tar Kettle Trailer	1	0.5	Generator

C03 Construction Equipment

Construction Phase Number	Equipment Type	Quantity	Usage Factor	Equipment Name TNM
4b	Back Hoe-Loader	2	0.4	Backhoe
	Dump Truck	3	0.4	Dump Truck (Passby)
	Transit Cement Truck for CDF	2	0.4	Dump Truck (Passby)
	Air Compressor Trailer	1	0.4	Compressor
	Portable Elec Generator Trailer	1	0.5	Generator
	All Terrain Forklift Telehandler	1	0.2	Telescopic Handler (Forklift)
4c	Bobtail rebar delivery trucks	1	0.4	Flatbed Truck
	Portable Elec Generator Trailer	1	0.5	Generator
	All Terrain Forklift Telehandler	1	0.2	Telescopic Handler (Forklift)
	Metal Grinders & Metal Cut-Off Saw	4	0.2	Power Tools - Grinder
4d	Back Hoe-Loader	2	0.4	Backhoe
	Dump Truck	3	0.4	Dump Truck (Passby)
	Transit Cement Truck for CDF	2	0.4	Dump Truck (Passby)
	Air Compressor Trailer	1	0.4	Compressor
	Portable Elec Generator Trailer	1	0.5	Generator
	All Terrain Forklift Telehandler	1	0.2	Telescopic Handler (Forklift)
5a	Concrete Transit Trucks (coming & going)	6	0.4	Flatbed Truck
	Concrete Pumper Truck	1	0.4	Flatbed Truck
	Bobtail Work Trucks	4	0.4	Flatbed Truck
	Air Compressor Trailer	1	0.4	Compressor
	Concrete Floor Rotary Trowel	2	0.4	Generator
	Walk Behaind Concrete Saw	1	0.2	Concrete Saw
	Rotary Hammer Drills	4	0.2	Power Tools - Hammer Drill
5b	Concrete Transit Trucks (coming & going)	6	0.4	Dump Truck (Passby)
	Concrete Pumper Truck	1	0.4	Flatbed Truck
	Bobtail Work Trucks	4	0.4	Flatbed Truck
	Air Compressor Trailer	2	0.4	Compressor
	Rotary Hammer Drills	4	0.2	Power Tools - Hammer Drill
	Hand Held Concrete Saw	2	0.2	Concrete Saw

C03 Construction Equipment

Construction Phase Number	Equipment Type	Quantity	Usage Factor	Equipment Name TNM
6	Concrete Transit Trucks (coming & going)	6	0.4	Flatbed Truck
	Telescoping Crane	1	0.16	Crane
	All Terrain Forklift Telehandler	1	0.2	Telescopic Handler (Forklift)
	Bobtail Work Trucks	4	0.4	Flatbed Truck
	Air Compressor Trailer	1	0.4	Compressor
	Rotary Hammer Drills	4	0.2	Power Tools - Hammer Drill
	Hand Held Concrete Saw	4	0.2	Concrete Saw
	Portable Elec Generator Trailer	1	0.5	Generator
7	Telescoping Crane	2	0.16	Crane
	All Terrain Forklift Telehandler	2	0.2	Telescopic Handler (Forklift)
	Bobtail Work Trucks	4	0.4	Flatbed Truck
	Air Compressor Trailer	1	0.4	Compressor
	Rotary Hammer Drills	4	0.2	Power Tools - Hammer Drill
	Hand Held Concrete Saw	4	0.2	Concrete Saw
	Portable Elec Generator Trailer	1	0.5	Generator
	Portable Welding Equip	2	0.4	Welding Machine
8	Telescoping Crane	2	0.16	Crane
	All Terrain Forklift Telehandler	2	0.2	Telescopic Handler (Forklift)
	Bobtail Work Trucks	4	0.4	Flatbed Truck
	Belt Loader	1	0.4	Dozer
	Open Flame Torch for Seams fusion	4	0.2	Welding Machine
9	Back Hoe-Loader	1	0.4	Backhoe
	Asphalt Truck	2	0.4	Flatbed Truck
	Asphalt Paving Machine	1	0.4	Paving - Asphalt (Paver + Dump Truck)
	Smooth Vibration Roller	1	0.2	Compactor (Roller)
	Hot Tar Kettle Trailer	1	0.5	Generator
10a	Telescoping Crane	1	0.16	Crane
	All Terrain Forklift Telehandler	2	0.2	Telescopic Handler (Forklift)
	Bobtail Work Trucks	6	0.4	Flatbed Truck
	Hand Drills	6	0.2	Power Tools - Hammer Drill
	Handheld Grinders	6	0.2	Power Tools - Grinder
	Elec Scissors Lift	4	0.1	Man Lift

C03 Construction Equipment

Construction Phase Number	Equipment Type	Quantity	Usage Factor	Equipment Name TNM
10b	Back Hoe-Loader	1	0.4	Backhoe
	Asphalt Truck	2	0.4	Flatbed Truck
	Asphalt Paving Machine	1	0.4	Paving - Asphalt (Paver + Dump Truck)
	Smooth Vibration Roller	1	0.2	Compactor (Roller)
	Hot Tar Kettle Trailer	1	0.5	Generator

Appendix D, Construction Noise Protocol

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Construction Noise Protocol
Seattle-Tacoma International Airport

Final – June 2024

PREPARED FOR
Federal Aviation Administration and
the Port of Seattle

PRESENTED BY
Landrum & Brown, Incorporated

1 Introduction

This document outlines the methodology for determining the potential construction noise increase above ambient in the Seattle Tacoma International Airport (SEA) Sustainable Airport Master Plan Near-Term Projects (Proposed Action) Environmental Assessment (EA). Construction noise would result from construction activities associated with the Near-Term Projects (NTPs). Construction activities associated with the NTPs are set to begin in 2026, with all projects constructed by 2032. A detailed construction phasing schedule is provided as Attachment 1.

2 Characteristics of Noise

Sound is created by a vibrating source that induces vibrations in the air. The vibration produces alternating bands of relatively dense and sparse particles of air, spreading outward from the source like ripples on a pond. Sound waves dissipate with increasing distance from the source. Sound waves can also be reflected, diffracted, refracted, or scattered. When the source stops vibrating, the sound waves disappear almost instantly and the sound ceases.

Sound conveys information to listeners. It can be instructional, alarming, pleasant and relaxing, or annoying. Identical sounds can be characterized by different people, or even by the same person at different times, as desirable or unwanted. Unwanted sound is commonly referred to as “noise.”

2.1 Sound Measurements

Sound is measured using the logarithmic decibel (dB) scale. This is because the range of sound pressures detectable by the human ear can vary from 1 to 100 trillion units. A logarithmic scale allows an analysis of noise using more manageable numbers. The range of audible sound ranges from approximately 1 to 140 dB, although everyday sounds rarely rise above about 120 dB.

There are several different metrics used for analyzing noise, including L_{eq} and DNL, which are geared towards evaluating longer term noise exposure (such as aircraft noise), while other metrics such as L_{max} are intended to evaluate shorter term fluctuating noise conditions. This construction noise analysis will consider noise increases in terms of L_{eq} levels.

2.2 Propagation of Noise

Outdoor sound levels decrease as a function of distance from the source, and as a result of wave divergence, atmospheric absorption, and ground attenuation. If sound is radiated from a source in a homogeneous and undisturbed manner, the sound travels as spherical waves. As the sound wave travels away from the source, the sound energy is distributed over a greater area, dispersing the sound energy of the wave. Spherical spreading of the sound wave reduces the noise level at a rate of 6 dB per doubling of the distance for hard ground and 7.5 dB per doubling of distance for soft ground. Obstacles between the source and the receiver, such as buildings, hills, and trees, will result in additional noise reductions depending upon their size, density, and location.

2.3 Ambient Sound Levels

Background or ambient sound levels can vary greatly depending on site-specific factors. Ambient sound levels can effectively mask construction noise and change the receiver’s perception of how loud construction noise is. Urban areas have the highest background sound levels, with daytime levels approximating 60 to 65 dBA (EPA 1978). Suburban or residential areas have background levels around 45 to 50 dBA (EPA 1978), while rural areas are the quietest with sound levels of 35 to 40 dBA (EPA 1978). In a more recent study, Cavanaugh and Tocci (1998) identify typical urban residential background sound at around 65 dBA, high-density urban areas at 78 dBA, and urban areas adjacent to freeway traffic at 88 dBA. In urban and developed areas, traffic noise and construction noise attenuate (decline) to background in less distance than in undeveloped or rural areas.

3 Regulations/Ordinances

3.1 Federal Regulations

There are no federal regulations concerning construction noise. The FAA has not defined significance thresholds for construction noise.

3.2 State Regulations

WAC 173-60-040 sets the Washington Department of Ecology maximum environmental noise limits as a function of class of noise generator and class of noise receiver. Class A EDNA is defined as uses where humans reside or sleep, including residential, multi-family residential, recreational and entertainment uses like camps and resorts, and community services like hospitals or elder care facilities. Class B EDNA is defined as uses requiring protection against noise interference with speech (retail and commercial uses). Class C EDNA are industrial uses.

EDNA OF NOISE SOURCE		EDNA OF RECEIVING PROPERTY	
	Class A	Class B	Class C
CLASS A	55 dBA	57 dBA	60 dBA
CLASS B	57	60	65
CLASS C	60	65	70

These levels are reduced by 10 dBA between the hours of 10 pm and 7 am. However, all construction noise is exempt from these limits except for noise received by Class A EDNA between 10 pm and 7 am.

3.3 Local Regulations/Ordinances

3.3.1 Port of Seattle

The Port has defined Construction General Requirements, which includes the following in relation to construction noise:

1.21 NOISE CONTROLS

A. At all times keep objectionable noise generation to a minimum by:
    a. Equipping air compressors with silencing packages.
    b. Equipping jackhammers with silencers on the air outlet.

c. Equipment that can be electrically driven instead of gas or diesel is preferred. If noise levels on equipment cannot reasonably be brought down to criteria, listed as follows, either the equipment will not be allowed on the job or use time will have to be scheduled subject to approval of the Port construction project representative.
d. All construction vehicles and equipment on the project operating between 10:00 p.m. and 7:00 a.m. shall be equipped with an ambient noise sensing variable volume backup alarm system. The system shall be in compliance with Washington Administrative Code (WAC) 296-155-615.

B. Objectionable noise received on neighboring (non-Port owned) properties is defined as any noise exceeding the noise limits of State Regulations (WAC 173- 60-040) or City ordinance, as stated below, or as any noise causing a public nuisance in a residential area, as determined by the Port and community representatives, or by the nuisance provisions of local ordinances.
  a. The noise limitations established are as set forth in the following table after any applicable adjustments provided for herein are applied:

RECEIVING PROPERTY

NOISE SOURCE	RESIDENTIAL	COMMERCIAL	INDUSTRIAL
Airport	50 dBA	65 dBA	70 dBA

  b. Between the hours of 2200 and 0500 on weekdays and 2200 and 0900 on weekends the noise limitations above may be exceeded for any receiving property by no more than:
    i. 5 (five) dBA for a total of 15 minutes in any one hour period; or
    ii. 10 (ten) dBA for a total of 5 minutes in any one hour period; or
    iii. 15 (fifteen) dBA for a total of 1.5 minutes in any one hour period.

C. In addition to the noise controls specified, demolition and construction activities conducted within 1,000 feet of residential areas may have additional noise controls required.
D. The Contractor’s operation shall at all times comply with all County and City requirements.
E. For work conducted within Airport buildings, noise levels from work activities shall not exceed 80 dBA on the slow scale at the project boundary.
F. The Contractor shall plan all work activities generating noise, such as saw cutting or core drilling, during periods of low airport activity.

3.3.2 City of SeaTac and City of Burien

Local jurisdictions also have the authority to regulate environmental noise generally and construction noise specifically. The City of SeaTac prohibits construction noise between the hours of 10 pm and 7 am on weekdays and 10 pm and 9 am on weekends. SMC 8.05.360.B.8. Burien Municipal Code 9.105.410.2.h prohibits construction noise between the hours of 7 pm and 7 am, unless the City grants a variance.

4 Construction Noise Methodology

This section outlines the procedures for assessing noise increases above ambient during construction. The type of assessment (qualitative or quantitative) and the level of analysis are determined based on the scale of the project and surrounding land uses.

4.1 Types of Construction Noise

Construction-related noise is a function of the types of equipment being used, the distance to potential receivers, and the duration of construction activities. Noise increases above ambient from construction may vary greatly depending on the duration and complexity of the project.

Table 1 depicts an estimate of the typical maximum sound level energy from various types of construction equipment that are likely to be used during construction of the Proposed Project. Calculations of construction noise will be based on these sound levels.

Table 1: Default Construction Equipment Noise

Equipment Description	Actual Measured L_{max} @ 50 feet (dBA)	Equipment Description	Actual Measured L_{max} @ 50 feet (dBA)
Auger Drill Rig	84	Man Lift	75
Backhoe	78	Mounted Impact Hammer (hoe ram)	90
3bBoring Jack Power Unit	83	Pavement Scarifier	90
Chain Saw	84	Paver	77
Clam Shovel (dropping)	87	Pickup Truck	75
Compactor (ground)	83	Pneumatic Tools	85
Compressor (air)	78	Pumps	81
Concrete Mixer Truck	79	Refrigerator Unit	73
Concrete Pump Truck	81	Rivit Buster/Chipping Gun	79
Concrete Saw	90	Rock Drill	81
Crane	81	Roller	80
Dozer	82	Sand Blasting (single nozzle)	96
Drill Rig Truck	79	Scraper	84
Drum Mixer	80	Sheers (on backhoe)	96
Dump Truck	76	Slurry Plant	78
Excavator	81	Slurry Trenching Machine	80
Flat Bed Truck	74	Vacuum Excavator (Vac-Truck)	85
Front End Loader	79	Vacuum Street Sweeper	82
Generator	81	Ventilation Fan	79
Generator (<25KVA, VMS Signs)	73	Vibrating Hopper	87
Gradall	83	Vibratory Concrete Mixer	80
Grapple (on backhoe)	87	Vibratory Pile Driver	101
Horizontal Boring Hydraulic Jack	82	Warning Horn	83
Impact Pile Driver	101	Welder/Torch	74
Jackhammer	89		

Source: Federal Highway Administration, *Construction Noise Handbook, 9.0 Construction Equipment Noise Levels and Ranges, Table 9.1*. Available online at https://www.fhwa.dot.gov/Environment/noise/construction_noise/handbook/handbook09.cfm

4.2 Multiple Sources of Construction Noise

When multiple sources of noise are combined (i.e., situations where multiple pieces of construction equipment are operating at the same time) the sound intensities would be combined. However, since dBA are calculated on a logarithmic scale, the sound levels would not add together. In a case where two 89 dBA jackhammers are operating simultaneously, the combined sound intensity would not produce a 178 dBA sound level. Rather, two jackhammers operating simultaneously (a doubling of sound intensity from just one) would result in an increase of 3 dBA of sound level, or 92 dBA at 50 feet from the source. Likewise, four jackhammers operating simultaneously (a doubling of sound intensity from two jackhammers) would result in a sound level of 95 dBA at 50 feet from the source.

This concept is illustrated below in **Table 2** for use of one, two, and four jackhammers, the loudest type of construction equipment anticipated for the Proposed Action.

Table 2: Example of Noise Reduction over Distance from Jackhammers (89 dBA)

Distance from Source (feet)	Point Source Noise (from an 89 dBA source)	Point Source Noise (from two 89 dBA sources)	Point Source Noise (from four 89 dBA sources)
50	89 dBA	92 dBA	95 dBA
100	83 dBA	86 dBA	89 dBA
200	77 dBA	80 dBA	83 dBA
400	71 dBA	74 dBA	77 dBA
800	65 dBA	68 dBA	71 dBA
1,600	59 dBA	62 dBA	65 dBA
3,200	53 dBA	56 dBA	59 dBA

Source: Based on Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

4.3 Construction Noise Screening

A construction noise screening was conducted for each NTP to determine if additional analysis was required to conclude construction noise increases over ambient from the NTP. The screening evaluated each NTP, considering the construction activity, calculating the construction-related noise at nearby noise sensitive receivers, and comparing the construction-related noise to existing ambient noise. The following described the methodology used in the screening.

4.3.1.1 Noise Metric

The screening use the Equivalent Sound Level ($L_{eq(t)}$) metric to assess potential construction noise. This unit is appropriate because $L_{eq(t)}$ can be used to describe:

- Noise level from operation of each piece of equipment separately, and levels can be combined to represent the noise level from all equipment operating during a given period.
- Noise level during an entire phase.
- Average noise over all phases of the construction.

4.3.1.2 Detailed Assessment

A detailed assessment was selected over a general assessment given the ability of the detailed assessment to account for the terrain surrounding SEA. The detailed analysis used the Federal Highway Administration's Windows-based screening tool, "Roadway Construction Noise Model (RCNM)," for the analysis.

4.3.1.3 Equipment Type and Duration

Data was obtained from the Port concerning the duration of the construction for each NTP. Construction equipment information from the Airport Construction Emissions Inventory Tool (ACEIT) was utilized for each NTP. It is assumed that every piece of construction equipment identified for that phase would be operating at the same time for the entire construction schedule as part of the screening process to identify locations where noise sensitive receivers could be exposed to construction noise (Attachment 1). This is the most conservative approach to identify construction noise because the use of every piece of construction equipment at the same time would be difficult to achieve and not typical for most construction projects.

4.3.1.4 Calculation of Ambient Noise Level

In determining the existing background noise levels for use in evaluating construction noise levels, it is important to consider the events and activities which will typically occur during the time-period for which construction noise is planned. If construction noise is to be evaluated in the vicinity of a noise-generating source, such as an airport, the consideration of the operational characteristics of that noise source may be appropriate.

Data from the SEA noise monitoring system was utilized to determine ambient sound level for a 24-hour period (Equivalent Noise Level (LEQ) Community Noise data). Data from the monitor SEA01 was used to establish the ambient sound level for each NTP located within the airfield ((Airport property south of 518, west of International Blvd, east of 509, and north of 200th St). Data from the monitor SEA14 was used to establish the ambient sound level for the NTPs located north of SR 518. Table 3 provides the ambient level for each NTP.

Table 3 Ambient Noise Levels for Each NTP

NTP #	Ambient Sound Level
A01; A02; A03; A04; A05; A06; A07; A08; A09; A10; T01; T02; C01; L01; L02; L03; L04; S01; S02; S03; S04; S05; S06; S07; S08; S09	76.5 dB
C02; C03; L05; L07; S10	66 dB

4.3.1.5 Calculation of Distance Above Ambient

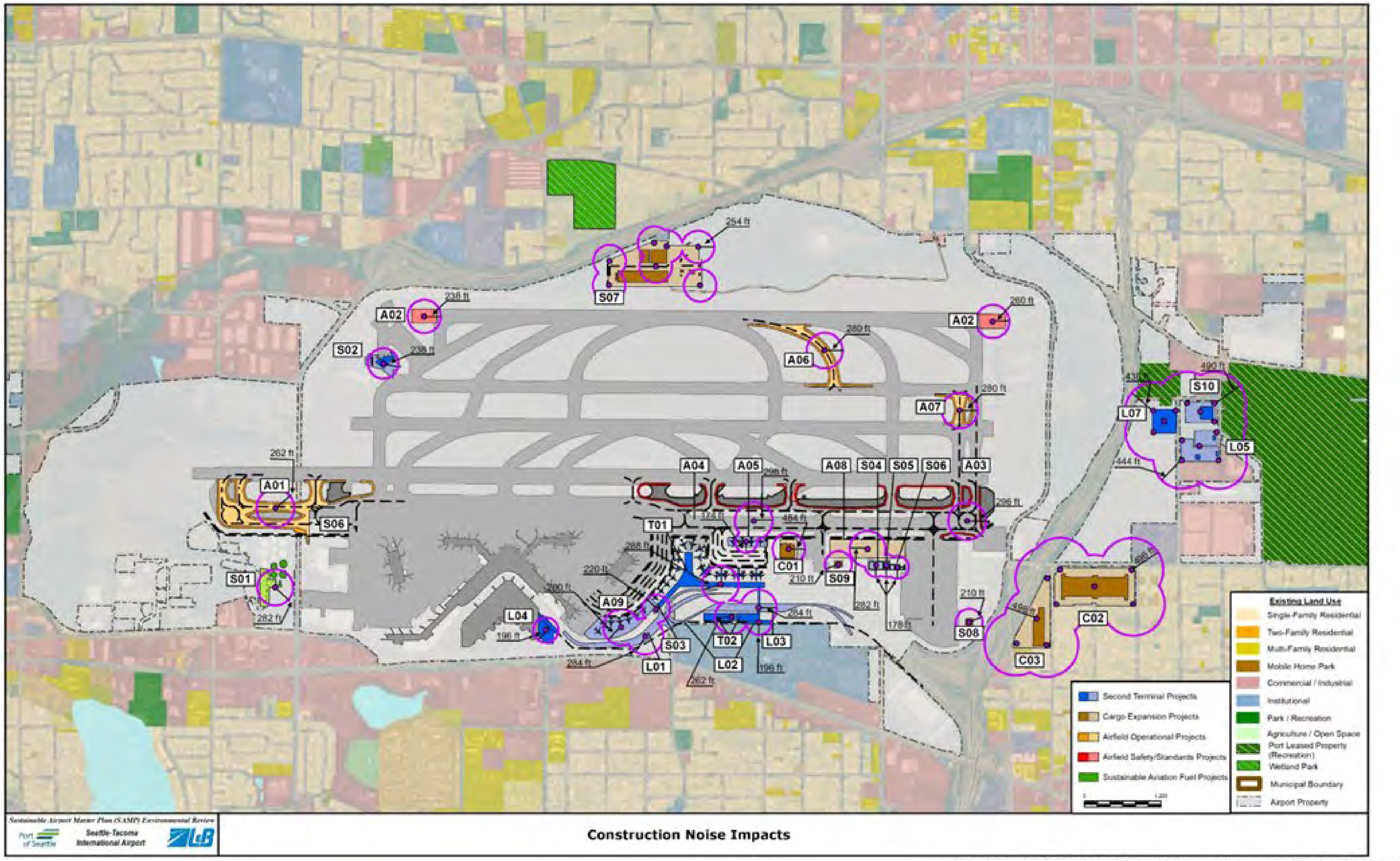
The distance point source construction noise will travel before it attenuates to the ambient sound level was calculated for each NTP to determine the presence of noise sensitive land uses within the area where construction noise may be noticeable. The following equation was used to determine the distance point source construction noise will travel before it attenuates to the ambient sound level:

D = Do * 10((Construction Noise – Ambient Sound Level in dBA)/α)

Where D = the distance from the noise source
Do = the reference measurement distance (50 feet in this case)
Construction Noise = X dBA
α = 25 for soft ground. For point source noise, a spherical spreading loss model is used. These alpha (α) values assume a 7.5 dBA reduction per doubling distance over soft ground.

The results were plotted on the land use map (Figure 1) to identify if potential noise sensitive receivers have the potential to experience construction noise levels above ambient.

Figure 1 Distance Construction Noise Travels Before Reaching Ambient Levels



4.3.1.6 Noise Sensitive Receivers

If noise sensitive receivers were not identified within the area that could experience construction noise levels that exceed ambient conditions, no further analysis was be completed. If noise sensitive receivers were identified within the area that could experience construction noise levels that exceed ambient condition, additional analysis was completed. Table 4 documents the result of the screening process and indicates if additional analysis is required.

Table 4: Screening Analysis Results

NTP#	Noise Sensitive Receivers Identified	Additional Analysis Required
A01	No	No
A02	No	No
A03	No	No
A04	No	No
A05	No	No
A06	No	No
A07	No	No
A08	No	No
A09	No	No
A10	No	No
T01	No	No
T02	No	No
C01	No	No
C02	**Yes**	**Yes**
C03	**Yes**	**Yes**
L01	No	No
L02	No	No
L03	No	No
L04	No	No
L05	Yes	No
L07	Yes	No
S01	No	No
S02	No	No
S03	No	No
S04	No	No
S05	No	No
S06	No	No
S07	No	No
S08	No	No
S09	No	No
S10	Yes	No

Note: Bold indicates additional analysis is required for the project.

Based on the screening analysis, it was determined a detailed construction noise assessment was required for NTPs C02 and C03 as the projects are directly adjacent to residential properties. L05, L07, and S10 are directly adjacent to Section 4(f) properties, however it was determined that none of the Section 4(f) properties would experience a substantial impairment due to noise increases from construction. No other NTPs show potential construction noise increases over ambient on noise sensitive receivers from the screening analysis.

5 Assess Construction Noise Results

The following methodology was used to prepare the construction noise analysis.

1. Detailed construction schedules were provided by the Port for NTPs C02 and C03. The schedules included detailed phasing and typical number and type of equipment used during the phase of construction. The construction phasing assumed 10 phases for each site. Tables 5 and 6 present the overall construction phases for C02 and C03 and the activities that would occur in each phase.

2. Calculations of construction noise will be conducted using the Federal Highway Administration (FHWA) Roadway Construction Noise Model (TNM) version 3.2.

3. Construction noise will be calculated in 2-week increments for C02 and C03 from 7am to 7 pm at adjacent receivers. The 2-week calculations incorporate any overlap in the construction phases. The adjacent receivers are shown in Exhibit 2.

4. To determine noise levels associated with each phase of construction of C02 and C03, it will be assumed that every piece of construction equipment identified for the phase would be operating at the same time. This is the most conservative approach to identifying construction noise because the use of every piece of construction equipment at the same time would not be typical for most construction projects. The detailed calculation methods for construction are based on the quantities of construction equipment, schedule of construction efforts, and construction equipment noise source levels.

5. Calculated total noise levels at the receivers will then compared to ambient noise levels to determine noise levels at the adjacent receivers.

The results of the construction noise assessment will be reviewed by the FAA and the Port to determine the appropriate next steps.

Table 5: C02 - Construction Activity by Construction Phase

		Phase									
Phase Description	***Duration***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***
Tree Removal	2 weeks	X									
Street Demolition	2 weeks	X									
Site Mobilization	2 weeks		X								
Grading - North Portion of Site	2 weeks		X								
Grading - South Portion of Site	2 weeks		X								
Excavation - North Portion of Site	6 weeks			X							
Excavation - South Portion of Site	6 weeks			X							
Utilities	8 weeks				X						
Utilities - North	3 weeks				X						
Utilities - South	3 weeks				X						
Foundation - North	9 weeks				X						
Foundation - South	9 weeks				X						
North Apron Concrete	3 weeks					X					
South Apron Concrete	3 weeks					X					
Retaining Wall	10 weeks					X					
Building Structure Tilt-Up	10 weeks						X				
Building Roof Trust System	6 weeks							X			
Building Roof System Build-up	28 weeks								X		
Paving Onsite	8 weeks									X	
Building Exterior & Interiors Walls	24 weeks										X
Paving Public ROW/Streets	8 weeks										X

Table 6: C03 - Construction Activity by Construction Phase

		Phase									
Phase Description	***Duration***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***
Tree Removal	2 weeks	X									
Site Mobilization	2 weeks		X								
Grading	4 weeks		X								
Excavation	8 weeks			X							
Utilities	4 weeks				X						
Utilities - North	4 weeks				X						
Foundation	14 weeks				X						
Loading Dock	10 Weeks					X					
Retaining Wall	10 weeks					X					
Building Structure Tilt-Up	4 weeks						X				
Building Roof Trust System	4 weeks							X			
Building Roof System Build-up	8 weeks								X		
Paving Onsite	4 weeks									X	
Building Exterior & Interiors Walls	10 weeks										X
Paving Public ROW / Street	4 weeks										X

Exhibit 2: Receivers

Attachment 1: Proposed Construction Schedule

ID	DESCRIPTION	2025				2026				2027				2028				2029				2030				2031				2032				Number of Quarters
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
AIRSIDE																																		
A01	Taxiway A/B Extension							■	■	■	■	■	■	■	■	■	■	■																11
A02	Runway 16R-34L Blast Pads					■	■	■																										3
A04	Taxiway B 500' Separation & RIM Mitigation														■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			17
A05	North Hold Pad																				■	■	■	■	■									5
A06	Runway 34L Highspeed Exit					■	■	■																										3
A07	Taxiway D Extension								■	■	■	■																						4
A08	Hardstand (north)								■	■	■	■	■	■	■	■	■	■																10
A09	Hardstand (central)									■	■	■	■	■	■	■	■	■																9
A10	Taxiway Fillets					■	■	■	■	■	■	■	■	■	■	■																		11
CARGO																																		
C01	Cargo 4 South Redevelopment				■	■	■	■	■																									5
C02	Off-site Cargo PH 1								■	■	■	■	■	■																				6
CO3	Off-site Cargo PH 2																■	■	■	■	■													5
LANDSIDE																																		
L01	NAE Relocation (southbound lanes)				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■													17
L02	Elevated Busway & Stations			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				27
L03	Second Terminal Roads/Curbside																■	■	■	■	■	■	■	■										8
L04	Main Terminal North GT Lot							■	■	■	■	■	■	■	■	■	■	■																11
L05	North GT Holding Lot											■	■	■	■	■																		5
L07	Employee Parking Structure																			■	■	■	■	■	■	■								7
TERMINAL																																		
T01	North Gates									■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■					20
T02	Second Terminal & Parking														■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		18
AIRPORT/AIRLINE SUPPORT																																		
S01	Fuel Farm Expansion																■	■	■	■	■	■	■	■	■	■	■	■	■					13
S02	Primary ARFF						■	■	■	■	■	■	■	■																				8
S03	Secondary ARFF										■	■	■	■	■	■	■	■	■	■														10
S04	Fuel Rack Relocation					■	■	■	■	■	■	■	■	■	■	■																		11
S05	Triculator					■	■	■	■	■	■	■																						7
S06	Consolidated De-Icing Tanks					■	■	■	■	■	■	■																						7
S07	Westside Maintenance Campus		■	■	■	■	■	■	■	■	■	■																						10
S08	Airline Support (north)											■	■	■	■	■																		5
S09	Airline Support (west)											■	■	■	■	■																		5
S10	Centralized Rec. & Dist. Center																	■	■	■	■	■	■	■										7
																																		285