Section 3.12
Noise

3.12.1 Introduction

This section analyzes the proposed project's impacts related to noise, including impacts from both construction and operational activities. The noise analysis evaluates the impacts of the proposed project on noise-sensitive receptors located near the proposed project site. The noise analysis is based on noise modeling completed by the firm HMMH, with the methodology and technical assumptions provided within Appendix R-G of this Recirculated Draft EIR. This section describes the general approach and methodology, regulatory framework, significance criteria, and environmental setting in consideration of potential aviation, surface transportation, and construction noise impacts associated with the proposed project.

Comments received in response to the NOP included certain comments related to noise. Specifically:

- The U.S. Environmental Protection Agency (USEPA), City of San Diego, and members of the public commented that the Draft EIR should address whether any changes to the noise contours would occur, and if so, the Draft EIR should address noise impacts to adjacent communities, including impacts on residents and land use compatibility.
- Comments were received by several members of the public expressing concerns about existing noise levels and potential future noise increases.
- The USEPA recommended describing the status of other ongoing projects, addressing any changes to air traffic and flight patterns, and explaining how those other planning processes are related to the current effort.

All written and oral comments received during the NOP process are provided in Appendix R-A. Comments received specific to noise impacts associated with the proposed project are addressed within this section of the EIR. Cumulative noise-related impacts relative to other ongoing projects at SDIA are presented in Chapter 4, Cumulative Impacts Analysis.

3.12.2 General Characteristics of Noise

In order to understand results from a noise analysis, a foundation in the basics of sound and metrics used to measure it should be established first. This section describes the physics of sound, the methods used to measure sound level and impact, and the effects of noise on humans.

Sound, when transmitted through the air and upon reaching our ears, may be perceived as desirable or unwanted. People normally refer to noise as unwanted sound. Because the response to sound is subjective, individuals have different perceptions, sensitivities, and reactions to noise. Loud sounds may bother some people, while others may be bothered by certain rhythms or frequencies of sound. Sounds that occur during sleeping hours are usually considered to be more objectionable than those that occur during waking hours and hours of activity (typically daytime).

Aircraft noise originates from both the engines and the airframe of an aircraft, but the engines are typically the more significant source of noise. Highway noise, such as that associated with cars and trucks moving along a roadway, originates primarily from a combination of the engine, drivetrain (i.e., transmission, rear and/or front differentials), tires interaction with the road surface, and aerodynamic flow around the vehicle. Construction noise originates from a combination of the engines, drivetrains, and specific activity being undertaken.

Meteorological conditions affect the transmission of sound through the air. Wind speed and direction, and the temperature immediately above ground level, cause diffraction and displacement of sound waves. Humidity and temperature materially affect the transmission of air-to-ground sound through absorption associated with the instability and viscosity of the air.

3.12.2.1 Noise Descriptors

Noise levels are measured using a variety of scientific metrics. As a result of extensive research into the characteristics of noise and human response to that noise, standard noise descriptors have been developed for noise exposure analyses. The descriptors used in this noise analysis are described below.

A-Weighted Sound Pressure Level (dBA): The decibel (dB) is a unit used to describe sound pressure level. When expressed in dBA, the sound has been filtered to reduce the effect of very low and very high frequency sounds, much as the human ear filters sound frequencies. Without this filtering, calculated and measured sound levels would include events that the human ear cannot hear (e.g., dog whistles and low frequency sounds, such as the groaning sounds emanating from large buildings with changes in temperature and wind). With A-weighting, calculations and sound monitoring equipment approximate the sensitivity of the human ear to sounds of different frequencies.

Some common sounds on the dBA scale are listed in Table 3.12-1. As shown in Table 3.12-1, the relative perceived loudness of a sound doubles for each increase of 10 dBA, and a 10 dBA change in the sound level corresponds to a factor of 10 increase or decrease in relative sound energy.

In general, humans find a change in sound level of 3 dB as just noticeable and a change of 5 dB as clearly noticeable, and a change of 10 dB is perceived as a doubling or halving of sound level. Because of the logarithmic scale of the decibel unit, sound levels generally cannot be added or subtracted arithmetically. Two sounds of equal physical intensity will result in the sound level increasing by 3 dB, regardless of the initial sound level. For example, 60 dB plus 60 dB equals 63 dB, and 80 dB plus 80 dB equals 83 dB. However, where ambient noise levels are high in comparison to a new noise source, there will be a small change in noise levels. For example, when 70 dB ambient noise levels are combined with a 60 dB noise source the resulting noise level equals 70.4 dB.

Table 3.12-1: Common Sounds on the A-Weighted Decibel Scale

Sound	Sound level (dBA)	Relative loudness (approximate)	Relative sound energy
Rock music, with amplifier	120	64	1,000,000
Thunder, snowmobile (operator)	110	32	100,000
Boiler shop, power mower	100	16	10,000
Orchestral crescendo at 25 feet, noisy kitchen	90	8	1,000
Busy street	80	4	100
Interior of department store	70	2	10
Ordinary conversation, 3 feet away	60	1	1
Quiet automobiles at low speed	50	½	.1
Average office	40	¼	.01
City residence	30	1/8	.001
Quiet country residence	20	1/16	.0001
Rustle of leaves	10	1/32	.00001
Threshold of hearing	0	1/64	.000001

Source: U.S. Department of Housing and Urban Development. Aircraft Noise Impact--Planning Guidelines for Local Agencies. Figure 2-2. 1972.

Maximum Noise Level (L_{max}): L_{max} is the maximum or peak sound level during a noise event. The metric accounts only for the instantaneous peak intensity of the sound, and not for the duration of the event. As a vehicle or aircraft passes by an observer, the sound level increases to a maximum level and then decreases. Some sound level meters measure and record the maximum or L_{max} level.

Single Event Metrics

Single Event Noise Exposure Level (SENEL) and Sound Exposure Level (SEL): Another metric that is reported for aircraft flyovers is the Single Event Noise Exposure Level (SENEL). This metric is essentially equivalent to the Sound Exposure Level (SEL). SEL, expressed in dBA, is a time integrated measure, expressed in decibels, of the sound energy of a single noise event at a reference duration of one second. The sound level is integrated over the period that the level exceeds a threshold. Therefore, SEL accounts for both the maximum sound level and the duration of the sound. The standardization of discrete noise events into a one-second duration allows calculation of the cumulative noise exposure of a series of noise events that occur over a period of time. Because of this compression of sound energy, the SEL of an aircraft noise event is typically 7 to 12 dBA greater than the L_{max} of the event. SELs for aircraft noise events depend on the location of the aircraft relative to the noise receptor, the type of operation (landing, takeoff, or overflight), and the type of aircraft.

Speech and sleep interference research can be assessed relative to SENEL. This metric is also useful in that airport noise models contain aircraft noise curve data based upon the SENEL metric.

Cumulative Noise Metrics

Cumulative noise metrics assess community response to noise by including the loudness of the noise, the duration of the noise, the total number of noise events, and the time of day these events occur in one single number rating scale.

Equivalent Continuous Noise Level (L_{eq}): L_{eq} is the sound level, expressed in dBA, of a steady sound that has the same A-weighted sound energy as the time-varying sound over the averaging period. Unlike SEL, L_{eq} is the average sound level for a specified time period (e.g., 24 hours, 8 hours, 1 hour, etc.). L_{eq} is calculated by integrating the sound energy from all noise events over a given time period and applying a factor for the number of events. L_{eq} can be expressed for any time interval; for example, the L_{eq} representing an averaged level over an 8-hour period would be expressed as $L_{eq(8)}$. L_{eq} for one hour is used to develop Community Noise Equivalent Level (CNEL) values.

Day-Night Average Sound Level (DNL): DNL, formerly referred to as Ldn, is expressed in dBA and represents the noise level over a 24-hour period. Because environmental noise fluctuates over time, DNL was devised to relate noise exposure over time to human response. DNL is a 24-hour average of the hourly L_{eq}, but with penalties to account for the increased sensitivity to noise events that occur during the more sensitive nighttime periods. Specifically, DNL penalizes noise 10 dB during the nighttime time period (10:00 p.m. to 7:00 a.m.), but it does not include an evening penalty (7:00 p.m. to 10:00 p.m.). Typically, DNL is about 1 dB lower than CNEL, although the difference may be greater if there is an abnormal concentration of noise events in the 7:00 p.m. to 10:00 p.m. time period.

The USEPA introduced the metric in 1976 as a single number measurement of community noise exposure. The Federal Aviation Administration (FAA) adopted DNL as the noise metric for measuring cumulative aircraft noise under Federal Aviation Regulations (FAR) Part 150, Airport Noise Compatibility Planning. The Department of Housing and Urban Development, the Veterans Administration, the Department of Defense, the United States Coast Guard, and the Federal Transit Administration have also adopted DNL for measuring cumulative noise exposure.

DNL is used to describe existing and predicted noise exposure in communities in airport environs based on the average daily operations during the year and the average annual operational conditions at an airport. Therefore, at a specific location near an airport, the noise exposure on a particular day is likely to be higher or lower than the annual average noise exposure, depending on the specific operations at an airport on that day. DNL is widely accepted as the best available method to describe aircraft noise exposure and is the noise descriptor required for aircraft noise exposure analyses and land use compatibility planning under FAR Part 150 and for environmental assessments for airport improvement projects (FAA Order 10501.F). The FAA guidelines allow for the use of CNEL as a substitute to DNL, as further discussed below.

Community Noise Equivalent Level (CNEL): CNEL, expressed in dBA, is the standard metric used in California to represent cumulative noise exposure. The metric provides a single-number description of the sound energy to which a person or community is exposed over a period of 24 hours, similar to DNL. CNEL includes penalties applied to noise events occurring after 7:00 p.m. and before 7:00 a.m., when noise is considered more intrusive; it also accounts for the typically lower ambient noise levels during these hours. The penalized time period is further subdivided into evening (7:00 p.m. through 9:59 p.m.) and nighttime (10:00 p.m. to 6:59 a.m.). When a noise event occurs in the evening, a penalty of 4.77 dBA is added to the nominal sound level (equivalent to a three-fold increase in aircraft operations). A 10 dBA penalty is added to nighttime noise events (equivalent to a ten-fold increase in aircraft operations). Examples of typical outdoor noise levels measured in terms of CNEL decibel levels include wilderness areas at approximately 35 CNEL, rural residential areas at approximately 40 to 50 CNEL, suburban areas at approximately 60 CNEL, highdensity development in downtown areas at approximately 70 CNEL, and development adjacent to a major freeway at approximately 85 CNEL.[1]

The CNEL metric used for this aircraft noise analysis is based on an Average Annual Day (AAD) of aircraft operations, generally derived from data for a calendar year. An AAD activity profile is computed by adding all aircraft operations occurring during the course of a year and dividing the result by 365. As such, AAD does not reflect activities on any one specific day, but represents average conditions as they occur during the course of the year.

The evening weighting is the only difference between CNEL and DNL. For purposes of aircraft noise analysis in the State of California, the FAA recognizes the use of CNEL. CNEL is also specified for use in the California Airport Noise Regulations (discussed in Section 3.12.3.2.2 below) and is used by local planning agencies in their General Plan Noise Element for land use compatibility planning.

Time Above (TA): TA measures the amount of time (in minutes) a source emits a noise that exceeds a designated threshold level. For instance, the threshold could be outdoor speech interference. TA is therefore both a single event and a cumulative noise metric.

3.12.2.2 Effects of Noise on Humans

Noise, often described as unwanted sound, is known to have several adverse effects on humans. These noise effects may include hearing loss (not a factor with typical community noise), communication interference, sleep interference, physiological responses, and annoyance. Many of the impacts described in this section are described in greater detail in the Airport Cooperative Research Program (ACRP) Synthesis 9, *Effects of Aircraft Noise: Research Update on Selected Topics*,[2] published in 2008. Each of these potential noise impacts on people are briefly discussed in the following narrative:

> *Hearing Loss* is generally not a concern in community noise problems, even very near a major airport or a major freeway. Environmental noise does not have an effect on hearing threshold levels, particularly due to the fact that environmental noise does not approximate occupational noise exposures in heavy industry, very noisy work environments with long-term exposure, or certain very loud recreational activities such as target shooting, motorcycle or automobile racing, etc. The Occupational Safety and Health Administration (OSHA) identifies a noise exposure limit of 90 dBA for 8 hours per day to protect from hearing loss (higher limits are allowed for shorter duration exposures). Noise levels in neighborhoods, even in very noisy neighborhoods, are not sufficiently loud to cause hearing loss.

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[1] Extrapolated from U.S. Environmental Protection Agency, Impact Characterization of Noise Including Implications of Identifying and Achieving Levels of Cumulative Noise Exposure, EPA Report NTID 73.4, 1973. Available: https://nepis.epa.gov/Exe/ZyNET.exe/9101DPQN.txt?ZyActionD=ZyDocument&Client=EPA&Index=Prior%20to%201976&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&UseQField=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5CZYFILES%5CINDEX%20DATA%5C70THRU75%5CTXT%5C00000021%5C9101DPQN.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&slide.

[2] Transportation Research Board of the National Academies. Airport Cooperative Research Program (ACRP) Synthesis 9, Effects of Aircraft Noise: Research Update on Selected Topics. 2008.

Communication Interference includes speech interference and interference with activities such as watching television. Normal conversational speech is in the range of 60 to 65 dBA and any noise in this range or louder may interfere with speech. There are specific methods of describing speech interference as a function of distance between speaker and listener and voice level.

Sleep Disturbance is one of the causes of annoyance due to noise. Noise can make it difficult to fall asleep and create momentary disturbances of natural sleep patterns by causing shifts from deep to lighter stages. Noise may even cause awakening, which a person may or may not be able to recall.

The following provides an introductory overview of research and studies that have been completed relative to noise-related sleep disturbance. Additional discussion regarding how such research and studies related to the SDCRAA's determination of a significance threshold for potential sleep disturbance impacts associated with the proposed project is provided in Section 3.12.3.4.2.

Extensive research has been conducted on the effect of noise on sleep disturbance. Some years ago (1981), the National Association of Noise Control Officials published data on the probability of sleep disturbance with various single event noise levels.[3] Based on laboratory experiments conducted in the 1970s, this data indicated noise exposure at 75 dBA interior noise level event could cause noise induced awakening in 30 percent of the cases.

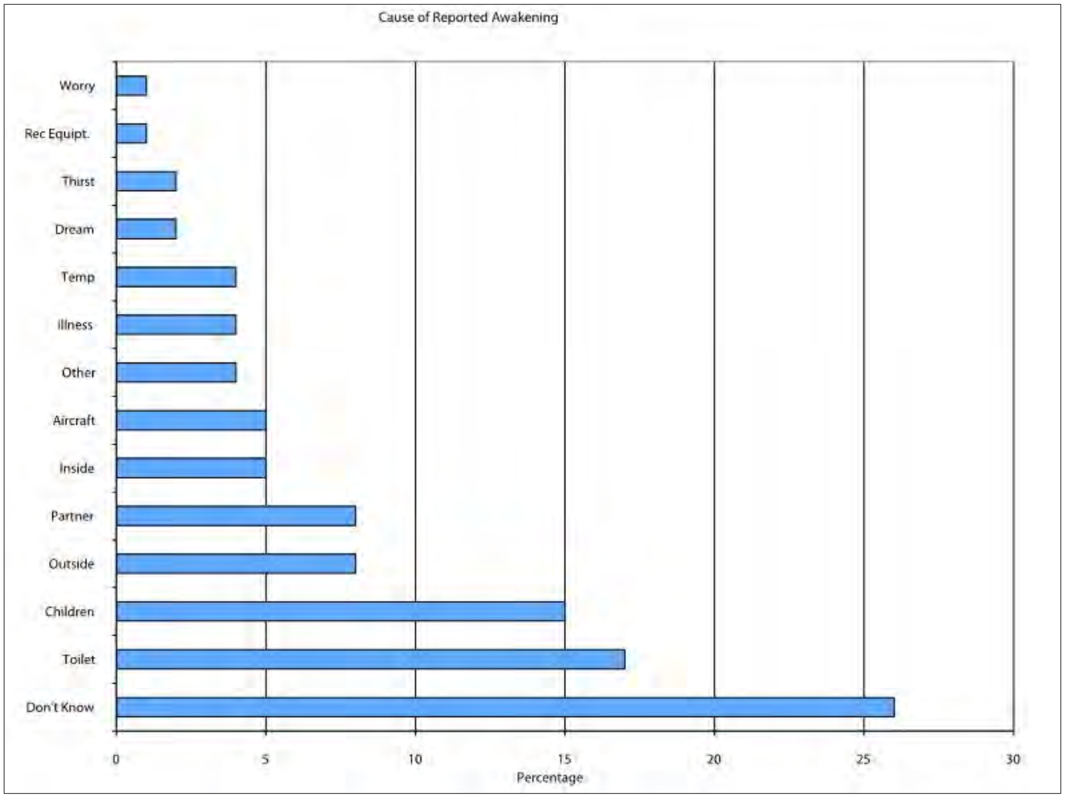
However, more recent research from England[4,5] has shown that the probability for sleep disturbance is less than what had been reported in earlier research. These field studies were conducted during the 1990s and used more sophisticated data collection techniques. These field studies indicate that awakenings can be expected at a much lower rate than had been expected based on earlier laboratory studies. This research showed that once a person was asleep, it is much more unlikely that they will be awakened by a noise. The significant difference in the more recent English study is the use of actual in-home sleep disturbance patterns as opposed to laboratory data that had been the historic basis for predicting sleep disturbance. Some of this research has been criticized, because it was conducted in areas where subjects had become habituated to aircraft noise. On the other hand, some of the earlier laboratory sleep studies were criticized, because of the extremely small sample sizes of most laboratory studies and because the laboratory was not necessarily a representative sleep environment. The 1994 British sleep study compared the various causes of sleep disturbance using in-home sleep studies. This field study assessed the effects of nighttime aircraft noise on sleep in 400 people (211 women and 189

[3] National Association of Noise Control Officials. Noise Effects Handbook. 1981. Available: http://www.nonoise.org/library/handbook/handbook.htm.

[4] Department of Transportation [England], Department of Safety, Environment and Engineering Civil Aviation Authority. Report of a Field Study of Aircraft Noise and Sleep Disturbance. December 1992.

[5] Horne J.A., F.L. Pankhurst, L.A. Reyner, K. Hume, and I.D. Diamond. "A Field Study Of Sleep Disturbance: Effects Of Aircraft Noise And Other Factors On 5,742 Nights Of Actimetrically Monitored Sleep In A Large Subject Sample," Sleep, 1994 Mar; 17(2):146-59.

men; 20-70 years of age; one per household) habitually living at eight sites adjacent to four United Kingdom airports, with different levels of night flying. The main finding was that only a minority of aircraft noise events affected sleep, and, for most subjects, that domestic and other non-aircraft factors have much greater effects. As shown in Figure 3.12-1, aircraft noise was a minor contributor among a host of other factors that lead to awakening response.



Source: Horne J.A., F.L. Pankhurst, L.A. Reyner, K. Hume, and I.D. Diamond. "A Field Study Of Sleep Disturbance: Effects Of Aircraft Noise And Other Factors On 5,742 Nights Of Actimetrically Monitored Sleep In A Large Subject Sample," Sleep, 1994 Mar; 17(2):146-59.

Figure 3.12-1 Causes and Prevalence of All Awakenings

The Federal Interagency Committee on Noise (FICON) in a 1992 document entitled *Federal Interagency Review of Selected Airport Noise Analysis Issues*[6] recommended an interim dose-response curve for sleep disturbance based on laboratory studies of sleep disturbance. In June of 1997, the Federal Interagency Committee on Aviation Noise (FICAN) updated the FICON recommendation with an updated graph/curve (equating SEL to probability of awakening) based on the more recent in-home sleep disturbance studies, which show lower rates of awakening compared to the laboratory studies.[7] The FICAN recommended a curve based on the upper limit of the data presented and, therefore, considers the curve to represent the "maximum percent of the exposed population expected to be behaviorally awakened," or the "maximum awakened." The FICAN recommendation is shown in Figure 3.12-2. This is a very conservative approach. A more common statistical curve for the data points reflected in Figure 3.12-2, for example, would indicate a 10 percent awakening rate at a level of approximately 100 dB SEL, while the "maximum awakened" curve reflected in Figure 3.12-2 shows the 10 percent awakening rate being reached at 80 dB SEL.

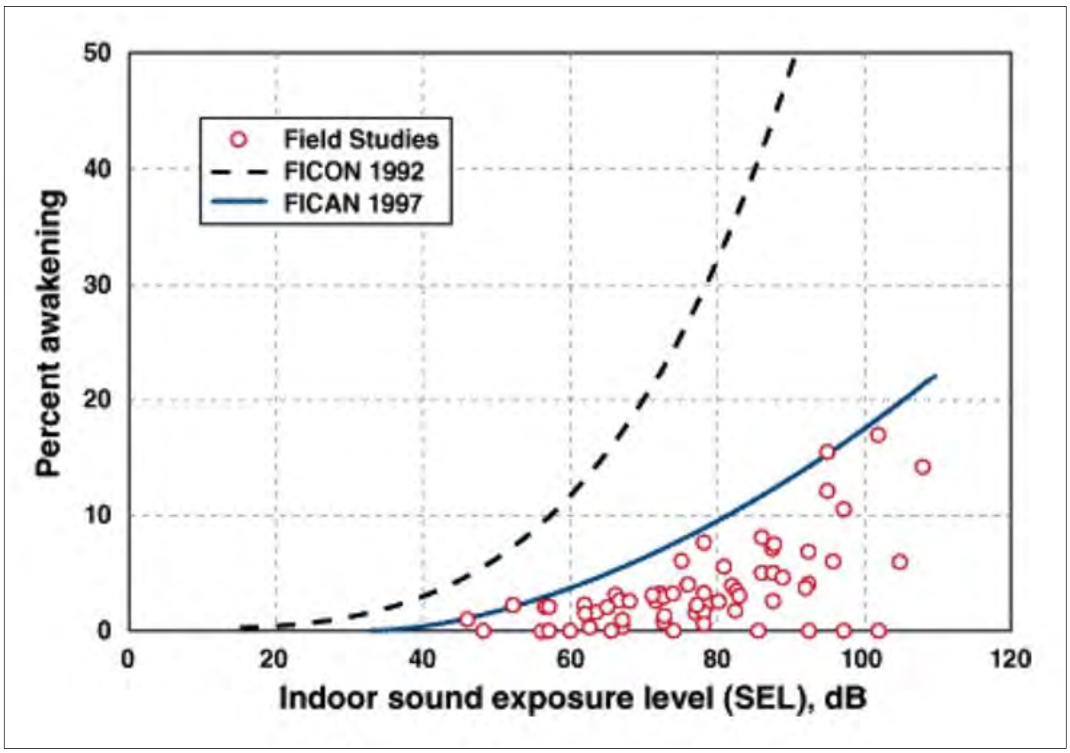


Figure 3.12-2 FICAN Recommended Sleep Disturbance Curve

In 2008, FICAN modified its recommendations to include a more recent procedure developed by the American National Standards Institute (ANSI) for estimating awakenings from nighttime noise, which shows that significantly higher noise levels are required for a

[6] Federal Interagency Committee on Noise (FICON). Federal Agency Review of Selected Airport Noise Analysis Issues. August, 1992. Available: http://gsweventcenter.com/Draft_SEIR_References/1992_08_Federal_Interagency_Committee_on_Noise.pdf.

[7] Federal Interagency Committee on Aircraft Noise (FICAN). Effects of Aviation Noise on Awakenings from Sleep. June 1997. Available: https://fican1.files.wordpress.com/2015/10/findings_awakenings_1997.pdf.

population habituated to nighttime noise.[8] That relationship is shown in Figure 3.12-3 below. However, as described in greater detail in Section 3.12.3.4.2, this curve is still considered conservative in that it does not include the cases in which no awakenings were observed in certain noise exposure intervals. These cases include three in the Denver field studies, in which no awakenings were observed in 3 dB-wide sound exposure level (LAE) intervals centered at 91, 94, and 97 dB. Given exclusion of these data points, the probability of awakening at a specific SEL level may be even less than the values shown in Figure 3.12-3. Please see Section 3.12.3.4.2 for discussion of research between potential physiological/health effects and sleep disturbance.

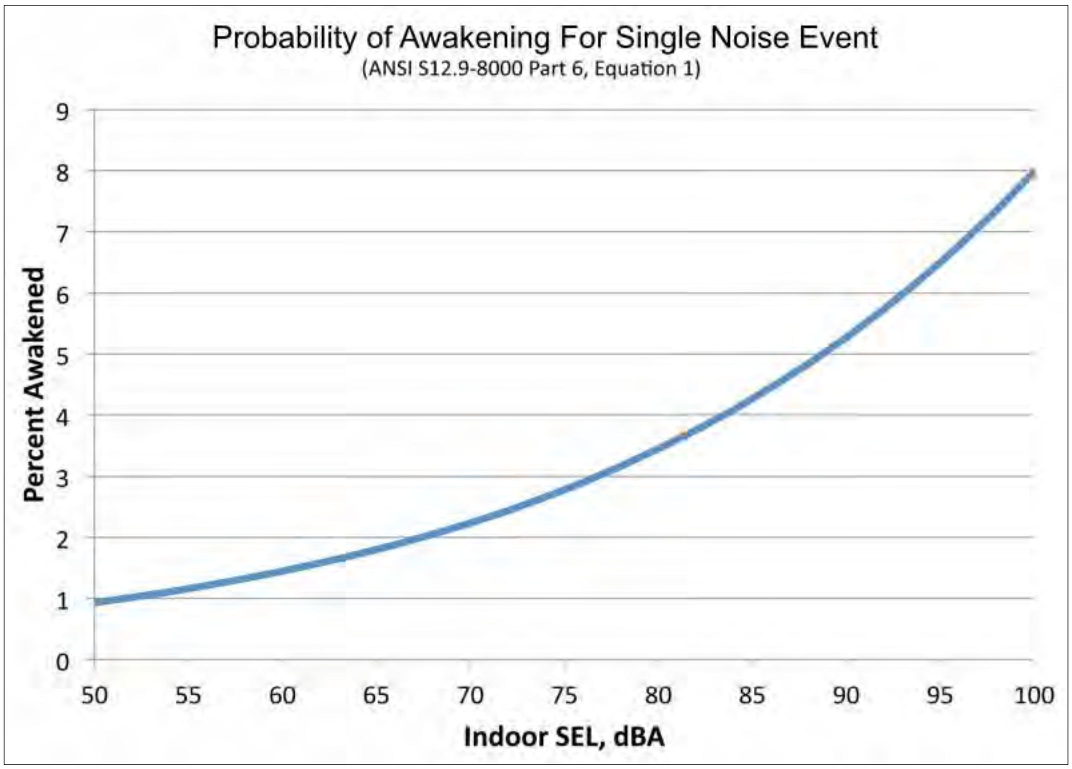


Figure 3.12-3 ANSI Equation 1 Showing Percent of Population Awakened As a Function of Indoor Sound Exposure Level

Physiological Responses are those measurable effects of noise on people that are realized as changes in pulse rate, blood pressure, etc. While such effects can be induced and observed, the extent is not known to which these physiological responses cause harm or are a sign of harm. Generally, physiological responses are a reaction to a loud short-term noise such as a rifle shot or a very loud jet overflight.

Health effects from noise have been studied around the world for over thirty years. Scientists have attempted to determine whether high noise levels can adversely affect human health apart from auditory damage. These research efforts have covered a broad

[8] American National Standards Institute (ANSI). 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. ANSI S12.9-2000/Part 6, 2008.

range of potential impacts from cardiovascular response to fetal weight to mortality. While a relationship between noise and health effects seems plausible, it has yet to be convincingly demonstrated – that is, shown in a manner that can be repeated by other researchers while yielding similar results.

While annoyance and sleep/speech interference have been acknowledged, health effects from noise, if they exist, are associated with a wide variety of other environmental stressors. Isolating the effects of aircraft noise alone as a source of long-term physiological change has proved to be nearly impossible. In a review of 30 studies conducted worldwide between 1993 and 1998,[9] a team of international researchers concluded that, while some findings suggest that noise can affect health, improved research concepts and methods are needed to verify or discredit such a relationship. Until science refines the research process, a direct link between aircraft noise exposure and non-auditory health effects remains to be demonstrated. Studies by Eriksson (2007) and Jarup (2007 HYENA study) have reported higher rates of hypertension with increasing aircraft noise levels. The Hyena study identified the effect only from nighttime aircraft noise. In a 2010 journal article, Fidell, et al.[10] reviewed the current science on predicting sleep disturbance and its effects and concluded:

> "Epidemiological evidence does not yet support either reliable prediction of noise-induced sleep disturbance, or well-informed policy debate, much less a plausible technical rationale for regulatory action. The practical, population level implications of noise-induced sleep disturbance and its consequences remain poorly understood due to design and other limitations of field studies of noise-induced sleep disturbance already undertaken, and to limitations of the statistical analyses performed to date. Published relationships used to assess the probability or prevalence of noise-induced awakening remain highly uncertain and unhelpfully imprecise. Considerable caution must be exercised in extrapolating conclusions about sleep disturbance that have been inferred from the behavior of relatively small and purposive samples of people living near a few airports to wider populations."

In 2008, the ACRP, a part of the National Academies, published a synthesis on the effects of aircraft noise and concluded, "Despite decades of research, including review of old data and new research efforts, health effects of aviation noise continue to be an enigma. Most, if not all, current research concludes that it is yet impossible to determine causal relations between health disorders and noise exposure, despite well-founded hypotheses."[11]

In October 2013, two studies on cardiovascular disease associated with aircraft noise were published in the British Medical Journal. The first was done in the United Kingdom around

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[9] Lercher P., S.A. Stansfeld, S.J. Thompson. Non Auditory Health Effects of Noise; Review of the 1993-1998 Period. Noise Effects-98 Conference Proceedings, p. 213, 1998.

[10] Fidell S., B. Tabachnick, K. Peasons. The State of the Art of Predicting Noise-Induced Sleep Disturbance In Field Settings. Noise and Health, Volume 12, Issue 47, p. 77-87, 2010.

[11] Transportation Research Board of the National Academies. Airport Cooperative Research Program (ACRP) Synthesis 9, Effects of Aircraft Noise: Research Update on Selected Topics. 2008.

Heathrow Airport in London, and the second was done in the United States as part of a multi-airport retrospective study led by researchers from Boston University and the Harvard School of Public Health as part of the Partnership for Air Transportation Noise and Emissions Reduction (PARTNER) program sponsored by the FAA. The U.S. study focused on Medicare patients, and the British study was based on the total population living around Heathrow. Both studies identified a correlation linking noise to cardiovascular disease, but due to limitations in the studies and the potential for alternative explanations of casual associations, both studies recommended that further research be done to better understand and strengthen the causal interpretation of the relationship between aircraft noise and cardiovascular disease. Neither study provided a definitive noise dose and response relationship that defines at what noise level cardiovascular health effects start and what is the rate of increase in response as noise level increases.[12]

World Health Organization (WHO) Guidelines Related to Overall Effects of Noise

In 2018, the WHO Regional Office for Europe issued *Environmental Noise Guidelines for the European Region.*[13] These Guidelines include not only transportation noise sources, but also personal electronic devices, toys, and wind turbines. The main purpose for the Guidelines is to assist European Union member states to implement requirements of *European Union Directive 2002/49/ EC* relating to the assessment and management of environmental noise.[14]

The Guidelines were developed by teams of researchers, who undertook systematic literature review of data that had been published since the WHO's last review of community noise.[15] In total, eight Systematic Review Teams (SRT) conducted assessments of the relationship between environmental noise and the following health outcomes: cardiovascular and metabolic effects; annoyance; effects on sleep; cognitive impairment; hearing impairment and tinnitus; adverse birth outcomes; and quality of life, mental health, and well-being. Once identified and synthesized, each SRT assessed the *quality of the evidence* that had been found through the review. Then, the Guideline Development Group (GDG) formulated recommendations, guided by the SRT's assessment and informed by a number of additional contextual parameters. The GDG defined priority health outcomes and then selected the most relevant health outcome measures for the outcomes. Then, guideline exposure levels were developed based on the exposure–response functions provided by the systematic reviews. WHO then determined whether the strength of the recommendation was "strong" or "conditional," as described below:[16]

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[12] County of Orange. Draft Environmental Impact Report No. 617, John Wayne Airport Settlement Agreement Amendment, SCH No. 2001111135. May 2014. Appendix C Noise Analysis Technical Report.

[13] World Health Organization. Environmental Noise Guidelines for the European Region, ISBN 978 92 890 5356 3. 2018. Available: http://www.euro.who.int/en/health-topics/environment-and-health/noise/publications/2018/environmental-noise-guidelines-for-the-european-region-2018.

[14] Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise, Official Journal L 189, 18/07/2002 P. 0012 – 0026. Available: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32002L0049.

[15] World Health Organization. Guidelines for Community Noise. 1999. Available: https://apps.who.int/iris/handle/10665/66217.

[16] World Health Organization. Environmental Noise Guidelines for the European Region Executive Summary (2018). Page 5. Available: http://www.euro.who.int/en/health-topics/environment-and-health/noise/publications/2018/environmental-noise-guidelines-for-the-european-region-executive-summary-2018.

- A "strong" recommendation can be adopted as policy in most situations. The guideline is based on the confidence that the desirable effects of adherence to the recommendation outweigh the undesirable consequences. The quality of evidence for a net benefit – combined with information about the values, preferences and resources – inform this recommendation, which should be implemented in most circumstances.
- A "conditional" recommendation requires a policy-making process with substantial debate and involvement of various stakeholders. There is less certainty of its efficacy owing to lower quality of evidence of a net benefit, opposing values, and preferences of individuals and populations affected or the high resource implications of the recommendation, meaning there may be circumstances or settings in which it will not apply.

The WHO guidelines for aircraft noise are shown below:

- Recommendation 1 (Strength = Strong)

  For average exterior noise exposure, the GDG strongly recommends reducing noise levels produced by aircraft below 45 dB Day-Evening-Night Average Sound Level (L_{den}) (very similar to CNEL), as aircraft noise above this level is associated with adverse health effects.

- Recommendation 2 (Strength = Strong)

  For night noise exposure, the GDG strongly recommends reducing noise levels produced by aircraft during night time below 40 dB L_{night} (i.e., A-weighted sound energy over the averaging period of 10:00 pm to 7:00 am), as night-time aircraft noise above this level is associated with adverse effects on sleep.

- Recommendation 3 (Strength = Strong)

  To reduce health effects, the GDG strongly recommends that policy-makers implement suitable measures to reduce noise exposure from aircraft in the population exposed to levels above the guideline values for average and night noise exposure. For specific interventions, the GDG recommends implementing suitable changes in infrastructure.

The implication of these guidelines is that daytime aircraft noise should not exceed 45 dB L_{den} (approximately equivalent to Day-Night Average Sound Level, DNL), and nighttime noise should not exceed 40 dB L_{night}. Further, the WHO's guidance that the strength of these recommendations is "strong" suggests that the recommendation could be adopted as policy in EU states without further stakeholder engagement.

Scientific Criticism of WHO Guidelines

Truls Gjestland, Senior Research Scientist at SINTEF DIGITAL (a research institute in Norway) concluded in an article in the peer-reviewed International Journal for Environmental Research and Public Health that some of the referenced studies analyzed had not been conducted according to standardized methods, and that the samples of study respondents analyzed by the WHO team may not have been representative of a general airport population. In particular, Gjestland expressed concern about reliance on non-standardized annoyance questions, limited age-range for the respondents, and potential self-selection biases in some of the data that were used (e.g., the HYENA study). Gjestland, therefore, concluded that WHO's 2018 recommendations for aircraft noise exposure limits were not based on fully reliable information.[17]

Industry Criticism of WHO Guidelines

Airports Council Internation (ACI) Europe undertook a review of the guidelines, which is presented in its publication *Addressing the Future of Aviation Noise.*[18] In that report, ACI identified a number of concerns with the WHO methodology, which are summarized below.

- *Medium quality evidence was used as the basis for Strong WHO recommendation*: The WHO rated the scientific evidence available according to four quality degrees – very low, low, moderate, and high – differentiated based on the level of certainty in the estimates of health effects that a piece of evidence conveys. Moderate quality means that "further research is likely to have an important impact on the certainty of the effect estimate and is likely to change the estimate."[19] However, the overall quality of the evidence used for the three WHO recommendations on aircraft noise was assessed by their own researchers as either very low, low, or moderate. None were determined to be of high quality.

- *Indoor night noise levels were not considered*: The guidelines for night noise exposure are based on outdoor noise levels. At the same time, the WHO acknowledges that the "differences between indoor and outdoor levels are usually estimated at around 10 dB for open, 15 dB for tilted or half-open, and about 25 dB for closed windows."[20] The recommendation to limit night noise exposure to L_{night} 40 dB can thus be translated to indoor levels ranging from 30 dB to 15 dB. To put these noise levels into context, a conversation at home in a quiet suburb on average produces 50 dB, while 30 dB is the noise level usually experienced in quiet rural areas. 20 dB can be produced by whisper and rustling leaves. Further, the primary health effect of concern at night is sleep disturbance; average noise metrics such as L_{night} are not good predictors of awakenings from aircraft noise.

- *Non-acoustic annoyance factors were not considered*: Non-acoustic factors are generally considered to be responsible for up to two thirds of individual annoyance.[21] And while the WHO acknowledged the existence of non-acoustic factors of annoyance, it does not appear to have considered them in its definition of recommendations. This raises questions with regard to their potential effectiveness, i.e., if a recommendation aims to minimize the risk of annoyance, how can this risk be properly defined without addressing all the factors that contribute to annoyance? For example, the WHO notes that "cultural differences around

[17] Gjestland, Truls. "A Systematic Review of the Basis for WHO's New Recommendation for Limiting Aircraft Noise Annoyance." Int. J. Environ. Res. Public Health 2018, 15, 2717. Available: https://www.mdpi.com/1660-4601/15/12/2717/pdf.

[18] Airports Council International (ACI) Europe. Addressing the Future of Aviation Noise. 2018. Available: https://www.aci-europe.org/component/downloads/downloads/5778.html.

[19] World Health Organization. Environmental Noise Guidelines for the European Region, ISBN 978 92 890 5356 3. 2018. Page 25. Available: http://www.euro.who.int/en/health-topics/environment-and-health/noise/publications/2018/environmental-noise-guidelines-for-the-european-region-2018.

[20] World Health Organization. Environmental Noise Guidelines for the European Region, ISBN 978 92 890 5356 3. 2018. Page 9. Available: http://www.euro.who.int/en/health-topics/environment-and-health/noise/publications/2018/environmental-noise-guidelines-for-the-european-region-2018.

[21] Gjestland, Truls. "Reply to Guski, Schreckenberg, Schuemer, Brink and Stansfeld: Comment on Gjestland, T. A Systematic Review of the Basis for WHO's New Recommendation for Limiting Aircraft Noise Annoyance. Int. J. Env. Res. Pub. Health 2018, 15, 2717." Int. J. Environ. Res. Public Health 2019, 16, 1105. Available: https://www.mdpi.com/1660-4601/16/7/1105/pdf.

what is considered annoying are significant, even within Europe. It is therefore not possible to determine the 'exact value' of %HA [highly annoyed population] for each exposure level in any generalized situation."[22] Consequently, the WHO advises to use local dose-response relationships for annoyance, whenever possible. This is not consistent with the WHO's strong recommendation for average noise exposure based on annoyance risks, bearing in mind that a strong recommendation "can be adopted as policy in most situations."

- *Societal mobility would be significantly affected*: At a distance of 3 km from the airport, 10 day-time flight movements of a Boeing B737-800 are likely to result in an average noise exposure of L_{den} 45 dB.[23] Compared to the noise contours in use for noise mitigation at European airports today, L_{night} 40 dB / L_{den} 45 dB contours would significantly increase the areas and populations concerned. For instance, estimations show that at Madrid Barajas Airport such contours could potentially encompass areas as far as 40 km away from the airport, and 70 km in the case of Frankfurt Airport.[24]

In addition to ACI, the UK-based advocacy group Sustainable Aviation issued a statement when the WHO Guidelines were released, which states, that the guidelines should be viewed "within the context of the wider societal and economic benefits including the health impacts of the associated higher levels of employment and prosperity that aviation brings."[25]

The Federal Aviation Administration (FAA) Reauthorization Act of 2018 reauthorizes the FAA and other programs until the end of fiscal year 2023. The Reauthorization Act bill, which was passed and signed in October 2018, includes Subtitle D that pertains to "Airport Noise and Environmental Streamlining." Among the 22 provisions enacted by Subtitle D, 14 deal directly or indirectly with aircraft noise, including requirements for noise studies. Sections 173, 187, and 188 of Subtitle D require the FAA to conduct or complete studies regarding aircraft noise effects and/or resulting policy, including the FAA's noise annoyance survey. Section 189 of Subtitle D requires a health impacts study related to several airports (Boston, Chicago, the District of Columbia, New York, the Northern California Metroplex, Phoenix, the Southern California Metroplex, Seattle, or such other area as may be identified by the FAA). Section 186 of Subtitle D requires the U.S. Government Accountability Office to conduct a study evaluating the potential phase out of Stage 3 aircraft. This provision also requires consultation with airports and community stakeholders. Section 179 requires FAA to conduct a study to review and evaluate the relationship between jet aircraft approach and takeoff speeds and corresponding noise impacts on communities surrounding airports.

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[22] World Health Organization. Environmental Noise Guidelines for the European Region, ISBN 978 92 890 5356 3. 2018. Page 109. Available: http://www.euro.who.int/en/health-topics/environment-and-health/noise/publications/2018/environmental-noise-guidelines-for-the-european-region-2018.

[23] Airports Council International (ACI) Europe. Addressing the Future of Aviation Noise. 2018. Page 23. Available: https://www.aci-europe.org/component/downloads/downloads/5778.html.

[24] Airports Council International (ACI) Europe. Addressing the Future of Aviation Noise. 2018. Page 24. Available: https://www.aci-europe.org/component/downloads/downloads/5778.html.

[25] Sustainable Aviation. WHO Environmental Noise Guidelines for Europe Must Consider Wider Societal and Economic Benefits. October 2018. Available: https://www.sustainableaviation.co.uk/news/who-environmental-noise-guidelines-for-europe-must-consider-wider-societal-and-economic-benefits/.

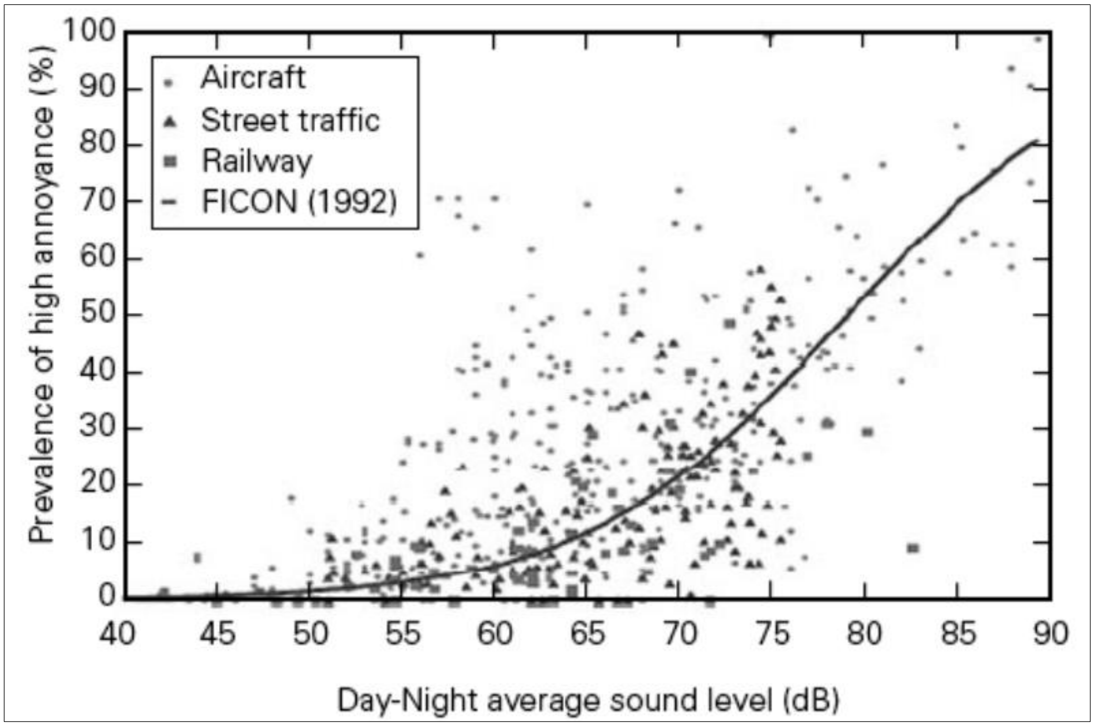
Applicability to CEQA and NEPA Analyses

The aforementioned British and U.S. studies regarding the physiological effects of noise provide more correlation linking noise to cardiovascular disease, but still fall short of providing the definitive noise dose and the response relationship that defines at what noise level these effects start and what is the rate of increase in response as noise level increases. Similarly, the WHO Environmental Noise Guidelines provide recommendations relating to the assessment and management of environmental noise; however, there are substantial questions and debate within the scientific community and aviation industry regarding those guidelines. As such, no applicable regulatory agency has established standards specific to physiological response for the purpose of the California Environmental Quality Act (CEQA), the National Environmental Policy Act (NEPA), or any other environmental compliance/assessment law. The absence of such regulations can be attributed, at least in part, to the uncertainty of the science.

Section 15145 of the State CEQA Guidelines directs Lead Agencies, who find a particular impact too speculative after a thorough investigation, to note this conclusion and terminate discussion of the impact. The discussion above shows that, at this time, the effects of noise on cardiovascular health at noise levels below 65 CNEL are too speculative for further evaluation in this CEQA document.

Annoyance is the most difficult of all noise responses to describe. Annoyance is an individual characteristic and can vary widely from person to person. What one person considers tolerable can be quite unbearable to another of equal hearing capability. The level of annoyance, of course, depends on the characteristics of the noise (i.e., loudness, frequency, time, and duration), and how much activity interference (e.g., speech interference and sleep interference) results from the noise. However, the level of annoyance is also a function of the attitude of the receiver. Personal sensitivity to noise varies widely. It has been estimated that 2 to 10 percent of the population is highly susceptible to annoyance from any noise not of their own making, while approximately 20 percent are unaffected by noise. Attitudes are affected by the relationship between the person and the noise source (e.g., is it our dog barking or the neighbor's dog?). Whether we believe that someone is trying to abate the noise will also affect our level of annoyance.

There is no current research to suggest that there is a better metric than DNL to relate to annoyance. Figure 3.12-4 relates DNL noise levels to community response from two of these surveys. One of the survey curves presented in Figure 3.12-4 is the well-known Schultz Curve. It displays the percent of a populace that can be expected to be annoyed by various DNL values for residential land use with outdoor activity areas. At 65 DNL, the Schultz Curve predicts approximately 14 percent of the exposed population reporting themselves to be "highly annoyed." At 60 DNL, this decreases to approximately 8 percent of the population.



Source: Federal Interagency Committee on Noise (FICON). Federal Agency Review of Selected Airport Noise Analysis Issues. August, 1992. Available: http://gsweventcenter.com/Draft_SEIR_References/1992_08_Federal_Interagency_Committee_on_Noise.pdf.

Figure 3.12-4 Schultz Curve

The Schultz Curve and recent updates include data having a very wide range of scatter with communities near some airports reporting much higher percentages of population highly annoyed at these noise exposure levels. For example, under contract to the FAA, Bolt Beranek & Newman conducted community attitude surveys in the residential areas south of John Wayne Airport in Orange County in 1981 as part of a study of possible "power cutback" departure procedures. The study concluded that the surveyed population had more highly annoyed individuals at various noise levels than would be predicted by the Schultz Curve. When plotted similar to the Schultz Curve, this survey indicated the populations in these areas were approximately 5 dB more sensitive to noise than the average population predicted by the Schultz Curve. While the precise reasons for this increased noise sensitivity were not identified, it is possible that non-acoustic factors, including political or the socio-economic status of the surveyed population, may have played an important role in increasing the sensitivity of this community during the period of the survey. Annoyance levels have never been correlated statistically to single event noise exposure levels in airport-related studies.

School Room Effects. Interference with classroom activities and learning from aircraft noise is an important consideration and the subject of much research. Ongoing research is evaluating impacts to the learning ability of children due to aircraft noise exposure; however, none of the research has resulted in an accepted methodology or threshold of significance.

Studies from around the world indicate that vehicle traffic, railroad, and aircraft noise can have adverse effects on reading ability, concentration, motivation, and long-term learning retention. A complicating factor in this research is the extent of background noise from within the classroom itself. The studies finding the most adverse effects examine cumulative noise levels equivalent to 65 CNEL or higher and single event maximum noise levels ranging from 85 to 95 dBA. In other studies, the level of noise is unstated or ambiguous. According to these studies, a variety of adverse schoolroom effects can be expected from interior noise levels equal to or exceeding 65 CNEL and/or 85 dBA SENEL.

Some interference with classroom activities can be expected with noise events that interfere with speech. High level single events are of concern, because speech interference can disrupt a presentation and other classroom activities and learning. As previously discussed, speech interference typically begins at 65 dBA, which is the level of normal conversation. Standard construction provides approximately 15 dBA of exterior-to-interior noise reduction, assuming the windows are partially open for ventilation. Standard construction with the windows closed provides approximately 20 to 25 dBA of noise reduction in interior spaces.[26] Thus, some interference of classroom activities can be expected at outdoor levels of 80 to 90 dBA.

3.12.3 Aircraft Noise

3.12.3.1 General Approach and Methodology

The evaluation of project-related noise exposure levels due to SDIA aircraft operations utilized the latest version of the FAA Aviation Environmental Design Tool (AEDT), which for this project is Version 2d. AEDT is a software system that models aircraft performance in space and time to estimate fuel consumption, emissions, noise, and air quality consequences.[27] AEDT has an extensive database of civilian and military aircraft noise characteristics and incorporates advanced plotting features.

AEDT requires the input of the physical and operational characteristics of the airport. Physical characteristics include runway coordinates, airport altitude, and temperature, and optionally, topographical data. Operational characteristics include various types of aircraft data. This includes not only the aircraft types and flight tracks, but also departure procedures, arrival procedures, and stage lengths (flight distance) that are specific to the operations at the airport.

Utilizing the FAA's AEDT Version 2d, average annual daily noise contours were developed for all modeling scenarios, based upon the existing facilities at SDIA and the number and type of annual operations that were projected for each year and action plan. The noise modeling conducted within AEDT took the effects of terrain into account. Terrain data was obtained from the United States Geological Survey (USGS) National Map Viewer. This is a user selection within AEDT, and AEDT uses terrain data to adjust the ground level under the flight path. Terrain data affects the vertical distance between aircraft and a "receiver" on the ground. This, in turn, affects noise propagation assumptions about how noise propagates over ground.

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[26] Illingworth & Rodkin, Inc. California Crosspoint Middle/High School Noise and Vibration Assessment. March 23, 2016. Available: https://www.hayward-ca.gov/sites/default/files/documents/DSD-Appendix%20C%20CCHS%20Noise%20Assessment.pdf.

[27] U.S. Department of Transportation, Federal Aviation Administration. Aviation Environmental Design Tool webpage. Available: https://aedt.faa.gov/.

SDIA aircraft operations data were developed for future years using Simmod PRO![28] and provided for the noise analyses. Using the Simmod PRO! results, noise analyses were conducted with AEDT Version 2d for five forecast years (2024, 2026, 2030, 2035, and 2050) to be commensurate with expected construction phasing. For existing baseline condition (calendar year 2018[29]), data from the SDIA Aircraft Noise and Operations Maintenance System (ANOMS) was utilized for the AEDT modeling. For each noise modeling scenario, AEDT produced the following annual average daily aircraft noise exposure results:

(1) Noise exposure contours representing the area in which aircraft noise exposure is at or above 65 dB in terms of CNEL to assess land use compatibility changes associated with the proposed project;

(2) Aircraft noise exposure levels at distinct grid locations within the 65 CNEL contour to determine grid locations experiencing changes in noise exposure (i.e., increases of 1.5 dB CNEL or more) to evaluate the potential for a significant impact due to the proposed project;

(3) Aircraft noise exposure levels at distinct grid locations within the 60 CNEL to less than 65 CNEL contour to determine grid locations experiencing changes in noise exposure (i.e., increases of 3.0 dB CNEL or more) to evaluate the potential for a significant impact due to the proposed project; and

(4) The number of minutes per day of exposure to exterior noise levels of 65 dB and 100 dB for schools located within the aircraft noise study area, and changes in the number of minutes that would occur under future conditions.

Potential noise impacts due to changes in aircraft operations expected by the proposed project were evaluated with respect to thresholds of significance characterized by compatible levels of noise to aircraft operations at an airport and changes in the CNEL, as further described below.

3.12.3.2 Regulatory Framework

3.12.3.2.1 Federal

Federal Aviation Regulations, Part 36

FAR, Part 36, "Noise Standards: Aircraft Type and Airworthiness Certification," sets noise standards for issuance of new aircraft type certificates. Aircraft are certified as Stage 1, Stage 2, or Stage 3 aircraft depending on their noise level, weight, number of engines and, in some cases,

[28] Available: http://www.atac.com/simmod-pro.html. Simmod PRO!® provides the flexibility and power of true rules-based modeling capability through the innovative implementation of a generalized simulation scripting language. This greatly expands the capabilities to simulate the dynamics, variability, site-specific features and situation-specific factors in air traffic operations. Simmod PRO! was developed in 1997 and maintains its state-of-the-art capabilities through continuous application for customers such as FAA and Department of Defense for their most complex airspace and airfield operational modeling and simulation challenges.

[29] The existing baseline condition for the aircraft noise analysis is based on calendar year 2018, which includes an entire year's worth of aircraft operations in 2018. The existing baseline condition for the surface transportation noise analysis is based on traffic counts taken at specific periods in 2017, as validated by noise monitoring conducted at four short-term (15 to 20 minutes in duration) sites on January 31, 2018. As such, the existing baseline conditions in Section 3.12 are identified parenthetically as "(2018)" for aircraft noise and "(2017)" for surface transportation noise; however, both baselines are considered valid and representative of existing conditions relative to the impacts being evaluated.

number of passengers. Stage 1 aircraft, which are the noisiest aircraft, are no longer permitted to operate in the U.S., and Stage 2 aircraft have been phased out of the U.S. fleet (with an exception for Hawaii and Alaska and limited applicability to certain lighter aircrafts, discussed below). Although aircraft meeting Part 36 standards are noticeably quieter than many of the older aircraft, the regulations make no determination that such aircraft are acceptably quiet for operation at any given airport.

Federal Aviation Noise Abatement Policy

This policy establishes the noise abatement authority and responsibilities of the federal government, airport proprietors, state and local governments, air carriers, air travelers and shippers, and airport area residents and prospective residents. It emphasizes that the FAA's role is primarily one of regulating noise at its source (the aircraft), plus supporting local efforts to develop airport noise abatement plans. The FAA gives high priority in the allocation of Airport Development Aid Program (ADAP) funds to projects designed to ensure compatible use of land near airports, but it is the role of state and local governments and airport proprietors to undertake the land use and operational actions necessary to promote compatibility.

Aviation Safety and Noise Abatement Act of 1979

This Act establishes funding for noise compatibility planning and sets the requirements by which airport operators can apply for funding. This is also the law by which Congress mandated that the FAA develop an airport community noise metric to be used by all federal agencies assessing or regulating aircraft noise. The result was DNL. Because California already had a well-established airport community noise metric in CNEL, and because CNEL and DNL are so similar, FAA expressly allows CNEL to be used in lieu of DNL in noise assessments performed for California airports.[30] The Act does not require any airport to develop a noise compatibility program; rather, that is accomplished through Code of Federal Regulations (CFR) Part 150, as described below.

Code of Federal Regulations, Part 150

In recognition of the national aircraft noise issue, the United States Congress passed the Aviation Safety and Noise Abatement Act of 1979 (ASNA), which mandated that the FAA establish a single system for measuring noise around airports and determining noise exposure to individuals. ASNA also required the FAA to identify land uses that are normally compatible with various noise levels. These regulations are codified in Title 14 of CFR Part 150 (14 CFR Part 150 or simply Part 150) "Airport Noise Compatibility Planning."[31]

Part 150 establishes the average annual DNL to determine cumulative noise exposure from airports. In Part 150, the FAA established compatibility guidelines[32] for aircraft noise exposure levels with land uses in the vicinity of an airport. These guidelines consider all land uses to be

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[30] U.S. Department of Transportation, Federal Aviation Administration. Order 1050.1F Desk Reference, page 11-2. July 2015. Available: https://www.faa.gov/about/office_org/headquarters_offices/apl/environ_policy_guidance/policy/faa_nepa_order/desk_ref/media/desk-ref.pdf.

[31] 14 CFR Part 150. Airport Noise Compatibility Planning. Available: https://www.ecfr.gov/cgi-bin/text-idx?SID=f8e6df268e3dad2edb848f61b9a0fb51&mc=true&node=pt14.3.150&rgn=div5.

[32] 14 CFR Part 150. Airport Noise Compatibility Planning Appendix A to Part 150—Noise Exposure Maps, Table 1—Land Use Compatibility with Yearly Day-Night Average Sound Levels. Available: https://www.ecfr.gov/cgi-bin/text-idx?SID=f8e6df268e3dad2edb848f61b9a0fb51&mc=true&node=pt14.3.150&rgn=div5.

compatible with noise levels less than 65 DNL. Some land uses, such as residences, schools, hospitals, and places of worship, are considered to be noise-sensitive and non-compatible with aircraft noise exposure levels at and above 65 DNL. Governmental services, transportation, parking, and some outdoor recreational uses are considered compatible with noise levels up to 70 DNL. However, the FAA guidelines indicate that ultimately "the responsibility for determining the acceptability and permissible land uses remains with the local authorities." Table 3.12-2 presents the Part 150 noise and land use compatibility charts to be used for land use planning with respect to aircraft noise.

Table 3.12-2: Federal Aviation Regulation Part 150 Land Use Guidelines

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

Table 3.12-2: Federal Aviation Regulation Part 150 Land Use Guidelines

Land Use	Yearly Day-Night Average Sound Level (Ldn dBA)					
	<65	65–70	70–75	75–80	80–85	>85

Source: 14 CFR Part 150. Airport Noise Compatibility Planning Appendix A to Part 150—Noise Exposure Maps, Table 1—Land Use Compatibility with Yearly Day-Night Average Sound Levels. Available: https://www.ecfr.gov/cgi-bin/text-idx?SID=f8e6df268e3dad2edb848f61b9a0fb51&mc=true&node=pt14.3.150&rgn=div5.

Abbreviations: Ldn: day night average sound level; dBA: A-weighted noise level

Table Key:

Y (Yes)

N (No)

NLR 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.

Notes:

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.

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

In 1988, the San Diego Unified Port District, the owner/operator of SDIA at that time, conducted an Airport Noise Compatibility Study for SDIA pursuant to the requirements of CFR Part 150. The resultant Noise Exposure Maps (NEMs) were accepted in January 1989, and the Noise Compatibility Program (NCP) was approved by the FAA in June 1991. There were two subsequent revisions in 1995 and 1998 related to the sound attenuation program. In 2007, the SDCRAA, now the owner/operator of SDIA, completed an update to the original 1989 NEMs and 1991 NCP, which was approved by the FAA in June 2011. In light of recent changes in aircraft operations, changes in aircraft fleet mix, and local community concerns, the SDCRAA will be updating the existing Airport Noise Compatibility Study, which will include updates to the NEMs and NCP for SDIA. The SDCRAA started this effort in the Fall of 2018 and it is expected to run through 2020.

Federal Aviation Orders 5050.4 and 1050.1F for Environmental Analysis of Aircraft Noise around Airports

FAA has developed guidelines (Order 5050.4B) for the environmental analysis of airports. To implement NEPA for federal action projects at airports, the FAA implemented Order 1050.1, which provides specific policies and procedures for evaluating environmental impacts.[33] FAA Order 1050.1F identifies the threshold of "significant impact" based on the annual average daily DNL. If a location of incompatible land use is exposed to a project-related increase in the noise level of DNL 1.5 dB or more, and that location lies within the 65 DNL noise contour for the "with action" condition, then the location is considered to be significantly impacted by noise and must be identified as such in environmental evaluations.

In 1992, FICON recommended that in addition to significant impacts, less-than-significant noise level changes be identified for noise-sensitive locations exposed to project-related increases in noise levels.[34] FICON recommended reporting any changes in DNL of 3 dB or more between 60 and 65 DNL, and increases of DNL 5 dB or more between 45 and 60 DNL. The FAA's subsequent Air Traffic Noise Screening (ATNS) procedure[35] further emphasized the importance of these changes in DNL, so that they also are now included in FAA Order 1050.1F. These recommendations 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.

Airport Noise and Capacity Act of 1990

The Airport Noise and Capacity Act of 1990 (ANCA or "the Noise Act") (49 U.S.C. 47521 *et seq*.) sets forth several provisions related to the regulation of aircraft activities at airports. One of the most notable aspects of ANCA is that it precludes the local imposition of noise and access restrictions that are not otherwise in accordance with the national noise policy unless the restrictions are "grandfathered" under ANCA, in which case the restrictions are free from the restrictions that ANCA otherwise would impose. ANCA established two broad directives to the FAA: (1) establish a method to review aircraft noise, airport use, or airport access restrictions proposed by airport proprietors; and (2) institute a program to phase-out Stage 2 aircraft over 75,000 pounds by December 31, 1999. Stage 2 aircraft are older, noisier aircraft (B-737-200, B-727 and DC-9); Stage 3 aircraft are newer, quieter aircraft (B-737-300, B-757, MD80/90). ANCA applies to all new local noise restrictions and amendments to existing restrictions proposed after October 1990.

NextGen Southern California Metroplex

In 2003, Congress directed the development of a "Next Generation Air Transportation System." NextGen, as it is now called, was intended to improve aviation safety and efficiency through the use of ground-based and, increasingly, space-based technology. An important part of the NextGen initiative is the development of new airspace and air traffic procedures.

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[33] U.S. Department of Transportation, Federal Aviation Administration. Order 1050.1F, Environmental Impacts: Policies and Procedures. July 16, 2015. Available: https://www.faa.gov/documentLibrary/media/Order/FAA_Order_1050_1F.pdf.

[34] Federal Interagency Committee on Noise (FICON). Federal Agency Review of Selected Airport Noise Analysis Issues. August 21, 1992. Available: http://gsweventcenter.com/Draft_SEIR_References/1992_08_Federal_Interagency_Committee_on_Noise.pdf.

[35] Air Traffic Noise Screening Model, Version 2.0 User Manual, January 1999.

FAA's approach to the mandate from Congress was to divide the United States into 21 "metroplexes." SDIA, along with a number of other airports, comprise the "Southern California Metroplex." The Southern California Metroplex Project is the FAA's proposal to improve the efficiency and safety of air traffic into and out of the Southern California area. A key feature of the Southern California Metroplex Project is to create more repeatable and predictable flight paths, both vertically and laterally.

The Southern California Metroplex Project is completely separate from the proposed project and is not within the control of the SDCRAA. Flight path procedures are dictated by the FAA, taking into account considerations of operational, safety, and air traffic control procedures. An airport operator, which in this case is the SDCRAA, has no authority to regulate flight paths; therefore, although an airport may advocate for certain noise abatement flight paths to reduce noise, the request must be investigated for its impact on the National Airspace System Plan (NASP). Any new flight path procedures are implemented at the discretion of individual airlines after approval by the FAA. Additionally, the FAA, by law, has the sole authority to manage the Air Traffic Control (ATC) system and the navigable airspace in the United States; therefore, the SDCRAA cannot restrict access to "noisier" aircraft or dictate departure routes. At SDIA and all commercial airports, from the time an aircraft departs the terminal and enters the taxiway and runway system, and throughout its flight to, and arrival at the gate of the destination airport, the aircraft moves only by instruction and permission of the FAA, and pursuant to the direction of FAA (not airport) personnel. Implementation of the proposed project would not alter flight path procedures at SDIA.

In summary, the FAA Southern California Metroplex Project does not affect, nor would it be affected by, implementation of the SDIA ADP. Additional information regarding implementation of the Southern California Metroplex Project as related to SDIA and its impacts to surrounding areas is available at https://www.faa.gov/nextgen/snapshots/metroplexes/?locationId=18.

3.12.3.2.2 State

California Airport Noise Regulations

Title 21 of the California Code of Regulations, Subchapter 6 (also known as the California Airport Noise Standards) defines incompatible noise levels as exposure of nearby communities to noise levels of 65 CNEL or greater. Land use incompatibility is most likely to occur for most types of noise-sensitive uses, when they are within the 65 CNEL noise contour. The 65 CNEL standard is also referenced in the California Department of Transportation (Caltrans) *California Airport Land Use Planning Handbook* (Caltrans Handbook)[36] as the basic limit of acceptable noise levels for residential and other noise-sensitive uses within an urban area.

California Noise Insulation Standards

California Code of Regulations, Title 24 – known as the California Building Code – contains standards for allowable interior noise levels associated with exterior noise sources. These Regulations include the California Noise Insulation Standards, which apply to all multi-family dwellings built in the state. Single-family residences are exempt from these regulations. With respect to community noise sources, the regulations require that all multi-family dwellings with

[36] California Department of Transportation, Division of Aeronautics. California Airport Land Use Planning Handbook. October 2011. Available: http://www.dot.ca.gov/hq/planning/aeronaut/documents/alucp/AirportLandUsePlanningHandbook.pdf.

exterior noise exposures greater than 60 dB CNEL must be sound insulated such that the interior noise level will not exceed 45 dB CNEL. These requirements apply to all roadway, rail, and airport noise sources.

3.12.3.2.3 Local

City of San Diego General Plan

The City of San Diego's General Plan contains ten elements that provide guidance and policies to balance the needs of a growing City and the quality of life for its residents. The Noise Element of the General Plan provides goals and policies to guide compatible land uses and the incorporation of noise control (attenuation) measures for new uses to protect people living and working in the City from excessive noise levels. The primary goal of the Noise Element is to require project proponents, developers, and other stakeholders to consider existing and forecast noise levels, when making land use planning decisions so as to minimize human exposure to excessive noise.[37]

Table 3.12-3 summarizes the land use noise compatibility guidelines contained in the Noise Element. The guidelines identify exterior noise levels in terms of the CNEL for various land use types. A "compatible" land use indicates that standard construction methods will reduce exterior noise to an acceptable indoor level and people can conduct outdoor activities with minimal noise interference. As shown in Table 3.12-3, all land use categories are compatible with an exterior noise levels below 60 dB CNEL. For land uses that fall into a "conditionally compatible" noise environment, structures must be capable of reducing exterior noise to the indoor level shown in Table 3.12-3. For land uses that fall into an "incompatible" noise environment, new construction should generally not be undertaken. Exterior noise levels are unacceptable for outdoor activities in an incompatible environment and extensive construction techniques or mitigation would be required to make indoor levels acceptable.

As cited in the notes in Table 3.12-3, the General Plan Noise Element also includes two noise policies specific to SDIA that limit future residential uses within the airport influence area.

Table 3.12-3: City of San Diego Land Use Noise Capability Guidelines

Land Use Category	Exterior Noise Exposure (dBA CNEL)				
	<60	60	65	70	75
Parks and Recreational					
Parks, Active and Passive Recreation					
Outdoor Spectator Sports; Golf Courses; Water Recreational Facilities; Indoor Recreation Facility					
Agricultural					
Crop Raising & Farming; Community Gardens, Aquaculture, Dairies; Horticulture Nurseries & Greenhouses; Animal Raising, Maintain & Keeping; Commercial Stables					
Residential					

[37] City of San Diego. General Plan Noise Element. Updated June 29, 2015. Available: https://www.sandiego.gov/sites/default/files/ne_2015.pdf.

Table 3.12-3: City of San Diego Land Use Noise Capability Guidelines

Land Use Category	Exterior Noise Exposure (dBA CNEL)				
	<60	60	65	70	75
Single Dwelling Units; Mobile Homes		45			
Multiple Dwelling Units *For uses affected by aircraft noise, refer to Policies NE-D.2 & NE-D.3 (see notes below).		45	45*		
Institutional					
Hospitals; Nursing Facilities; Intermediate Care Facilities; Kindergarten through Grade 12 Educational Facilities; Libraries; Museums; Child Care Facilities		45			
Other Educational Facilities including Vocational/Trade Schools and Colleges and Universities		45	45		
Cemeteries					
Retail Sales					
Building Supplies/Equipment; Food, Beverages & Groceries; Pets & Pet Supplies; Sundries, Pharmaceutical, & Convenience Sales; Wearing Apparel & Accessories			50	50	
Commercial Services					
Building Services; Business Support; Eating & Drinking; Financial Institutions; Maintenance & Repair; Personal Services; Assembly & Entertainment (includes public and religious assembly); Radio & Television Studios; Golf Course Support			50	50	
Visitor Accommodations		45	45	45	
Offices					
Business & Professional; Government; Medical, Dental & Health Practitioner; Regional & Corporate Headquarters			50	50	
Vehicle and Vehicular Equipment Sales and Services Use					
Commercial or Personal Vehicle Repair & Maintenance; Commercial or Personal Vehicle Sales & Rentals; Vehicle Equipment & Supplies Sales & Rentals; Vehicle Parking					
Wholesale, Distribution, Storage Use Category					
Equipment & Materials Storage Yards; Moving & Storage Facilities; Warehouse; Wholesale Distribution					
Industrial					
Heavy Manufacturing; Light Manufacturing; Marine Industry; Trucking & Transportation Terminals; Mining & Extractive Industries					
Research & Development				50	

	Compatible	Indoor Uses	Standard construction methods should attenuate exterior noise to an acceptable indoor noise level. Refer to Section I.
		Outdoor Uses	Activities associated with the land use may be carried out.

Table 3.12-3: City of San Diego Land Use Noise Capability Guidelines

Land Use Category				Exterior Noise Exposure (dBA CNEL)				
				<60	60	65	70	75
45,50	Conditionally Compatible	Indoor Uses	Building structure must attenuate exterior noise to the indoor noise level indicated by the number (45 or 50) for occupied areas. Refer to Section I.					
		Outdoor Uses	Feasible noise mitigation techniques should be analyzed and incorporated to make the outdoor activities acceptable. Refer to Section I.					
	Incompatible	Indoor Uses	New construction should not be undertaken.					
		Outdoor Uses	Severe noise interference makes outdoor activities unacceptable.					

Source: City of San Diego. General Plan Noise Element, Table NE-3. 2015.

Notes:

* NE-D.2. Limit future residential uses within airport influence areas to the 65 dBA CNEL airport noise contour, except for multiple-unit, mixed-use, and live work residential uses within the San Diego International Airport influence area in areas with existing residential uses and where a community plan and the Airport Land Use Compatibility Plan allow future residential uses.

NE-D.3. Ensure that future multiple-unit, mixed-use, and live work residential uses within the San Diego International Airport influence area that are located greater than the 65 dBA CNEL airport noise contour are located in areas with existing residential uses and where a community plan and Airport Land Use Compatibility Plan allow future residential uses. a. Limit the amount of outdoor areas subject to exposure above the 65 dBA CNEL; and; b. Provide noise attenuation to ensure an interior noise level that does not exceed 45 dBA CNEL.

San Diego Airport Land Use Commission and SDIA Airport Land Use Compatibility Plan

San Diego Airport Land Use Commission

The SDCRAA serves as the Airport Land Use Commission (ALUC) for San Diego County. The ALUC is responsible for adopting Airport Land Use Compatibility Plans (ALUCPs) for sixteen public-use and military airports in San Diego County. ALUCPs provide guidance on compatible land uses surrounding airports to protect the health and safety of people and property within the vicinity of an airport, as well as the public in general.

An ALUCP focuses on a defined area around each airport known as the Airport Influence Area (AIA). The AIA is comprised of noise, safety, airspace protection, and overflight factors, in accordance with guidance from the Caltrans Handbook.[38] The ALUCP specific to SDIA is described further below.

The ALUC has no jurisdiction over the operation of airports or over existing land uses, regardless of whether or not such uses are incompatible with airport activities. Once ALUCPs have been adopted by the ALUC, local agencies with land located within the AIA boundary for any of the airports must, by law, amend their planning documents to conform to the applicable ALUCP or make special findings in accordance with state law, to override the ALUCP policies with a two-thirds vote.

By providing land use compatibility direction to local agencies in their land use decisions, ALUCPs help maintain the nation's air transportation infrastructure by protecting airports from encroachment by incompatible land uses that could restrict their operations. Protecting airport

[38] California Department of Transportation, Division of Aeronautics. California Airport Land Use Planning Handbook. October 2011. Available: http://www.dot.ca.gov/hq/planning/aeronaut/documents/alucp/AirportLandUsePlanningHandbook.pdf.

operations is also a benefit to the local economy and will preserve jobs and industry that are supported, directly and indirectly, by airport operations.

SDIA Airport Land Use Compatibility Plan

The SDIA ALUCP[39] is the fundamental tool used to promote land use compatibility in the vicinity of SDIA. The SDIA ALUCP provides airport land use compatibility policies and standards based on four airport-related factors: noise, safety, airspace protection, and overflight, as related to the areas surrounding SDIA that fall within the AIA. In terms of noise, the goal of the SDIA ALUCP is to ensure new development and land uses within the SDIA noise contours are compatible with aircraft noise by: (1) limiting new noise-sensitive development within the noise compatibility boundary; (2) ensuring that any new noise-sensitive development includes sound attenuation; and (3) obtaining aviation easements for new noise-sensitive development. The SDIA ALUCP establishes the 60 dB CNEL contour as the threshold above which noise compatibility standards apply. Table 3.12-4 presents the Noise Compatibility Standards set forth by the SDCRAA in the SDIA ALUCP.

The AIA within the SDIA ALUCP includes the 60 dB CNEL contour and the ALUCP contains policies regarding the attenuation of noise levels within the 60 dB CNEL contour. According to the SDIA ALUCP, interior noise attenuation is required for new residential construction to reduce the interior noise levels of residential structures within the 60 dB CNEL contour of SDIA to 45 dB CNEL. The SDIA ALUCP provides guidance to local agencies, including municipalities with land use regulatory authority, and local property owners regarding compatible land uses surrounding SDIA to protect the health and safety of people and property within the vicinity of SDIA.

State law also requires that the ALUC review updates to airport master plans, airport layout plans, and proposals for airport expansion, and requires that the ALUCP be amended, as needed, to reflect updates and revisions to airport plans to reflect current airport planning. It is anticipated that the existing (2014) SDIA ALUCP would be amended in conjunction with the amendment of the existing SDIA Airport Layout Plan that would occur if the proposed ADP is approved. Consistent with the purpose and intent of the ALUCP, that update of, and amendment to, the SDIA ALUCP will support the assessment of land use compatibility with future airport operations, and provide a basis to avoid or address potential land use compatibility issues, including as related to airport noise.

[39] Airport Land Use Commission San Diego County Regional Airport Authority. San Diego International Airport - Airport Land Use Compatibility Plan. Adopted April 3, 2014, Amended May 1, 2014. Available: http://www.san.org/Portals/0/Documents/Land%20Use%20Compatibility/SDIA/SDIA%20ALUCP%20Ch%201-6%20(May%202014).pdf.

Table 3.12-4: SDIA ALUCP Noise Compatibility Standards

Land Use Category [a]	Noise Contour Range (dB CNEL)			
	60–65	65–70	70–75	75 +
RESIDENTIAL				
Single-Family, Multi-family	45	45[1]	45[1,2]	45[1,2]
Single Room Occupancy (SRO) Facility	45	45[1]	45[1,2]	45[1,2]
Group Quarters [b]	45	45[1]	45[1,2]	45[1,2]
COMMERCIAL, OFFICE, SERVICE, TRANSIENT LODGING				
Hotel, Motel, Resort	45/50	45/50	45/50	45/50
Office - Medical, Financial, Professional Services, Civic			50	50
Retail (e.g., Convenience Market, Drug Store, Pet Store)			50	50
Service - Low Intensity (e.g., Gas Station, Auto Repair, Car Wash)			50	50
Service - Medium Intensity (e.g., Check-cashing, Veterinary Clinics, Kennels, Personal Services)			50	50
Service - High Intensity (e.g., Eating, Drinking Establishment, Funeral Chapel, Mortuary)			50	50
Sport/Fitness Facility			50	50
Theater - Movie/Live Performance/Dinner		45	45	45
EDUCATIONAL, INSTITUTIONAL, PUBLIC SERVICES				
Assembly - Adult (Religious, Fraternal, Other)	45	45[1]	45[1]	45[1]
Assembly - Children (Instructional Studios, Cultural Heritage Schools, Religious, Other) [3]	45			
Cemetery				
Child Day Care Center/Pre-K	45			
Convention Center				
Fire and Police Stations			50	50
Jail, Prison		45/50	45/50	45/50
Library, Museum, Gallery		45	45	45
Medical Care - Congregate Care Facility, Nursing and Convalescent Home [b]	45			
Medical Care - Hospital	45			
Medical Care - Out-Patient Surgery Centers	45			
School for Adults – College, University, Vocational/Trade School	45	45[1]	45[1]	
School – Kindergarten through Grade 12 (Includes Charter Schools)	45			
INDUSTRIAL				
Junkyard, Dump, Recycling Center, Construction Yard				
Manufacturing/Processing - General				
Manufacturing/Processing of Biomedical Agents, Biosafety Levels 3 and 4 Only				
Manufacturing/Processing of Hazardous Materials [4]				
Mining, Extractive Industry				
Research and Development - Scientific, Technical				
Sanitary Landfill				
Self-storage Facility				
Warehousing/Storage - General				
Warehousing/Storage of Biomedical Agents, Biosafety Levels 3 and 4 Only				
Warehousing/Storage of Hazardous Materials [4]				

Table 3.12-4: SDIA ALUCP Noise Compatibility Standards

Land Use Category [a]	Noise Contour Range (dB CNEL)			
	60–65	65–70	70–75	75 +
TRANSPORTATION, COMMUNICATION, UTILITIES				
Auto Parking				
Electrical Power Generation Plant				
Electrical Substation				
Emergency Communications Facilities				
Marine Cargo Terminal				
Marine Passenger Terminal				
Transit Center, Bus/Rail Station				
Transportation, Communication, Utilities - General				
Truck Terminal				
Water, Wastewater Treatment Plant				
RECREATION, PARK, OPEN SPACE				
Arena, Stadium				
Golf Course				
Golf Course Clubhouse				
Marina				
Park, Open Space, Recreation				
AGRICULTURE				
Aquaculture				
Agriculture				

LEGEND	
	Compatible: Use is permitted.
	Conditionally Compatible: Use is permitted subject to stated conditions.
	Incompatible: Use is not permitted under any circumstances.
45	Indoor uses: building must be capable of attenuating exterior noise to 45 dB CNEL.
50	Indoor uses: building must be capable of attenuating exterior noise to 50 dB CNEL.
45/50	Sleeping rooms must be attenuated to 45 dB CNEL and any other indoor areas must be attenuated to 50 dB CNEL.
1	Avigation easement must be dedicated to the Airport owner/operator.
2	New residential use is permitted above the 70 dB CNEL contour only if the current General/Community Plan designation allows for residential use. General/Community Plan amendments from a nonresidential designation to a residential designation are not permitted.
3	Refer to Appendix A for definition of Assembly - Children.
4	Refer to Appendix A for definitions of manufacturing, processing and storage of hazardous materials.
a	Land uses not specifically listed shall be evaluated, as determined by the ALUC, using the criteria for similar uses. Refer to Appendix A.
b	If this land use would occur within a single- or multi-family residence, it must be evaluated using the criteria for single- or multi-family residential.

SDCRAA Aircraft Noise Abatement Measures and Programs at SDIA

The SDCRAA implements numerous measures and programs relative to the management of aircraft noise at SDIA and efforts to reduce noise impacts to the surrounding communities. The following summarizes some of the key measures and programs in that regard.

Airport Noise Mitigation Office

The Airport Noise Mitigation Office (Noise Office) within the SDCRAA has a responsibility to meet the standards that are set forth in California Airport Noise Standards (i.e., Title 21), which are described above in Section 3.12.3.2.2. As noted above, Title 21 defines the basis for the acceptable level of aircraft noise for persons living in the vicinity of an airport, which is using a CNEL of 65 dB. In addition, Title 21 states that no proprietor of a "noise problem" airport shall operate an airport with a Noise Impact Area (N.I.A.) of 65 dB CNEL or more unless the operator has applied for and received a Variance from Caltrans, Division of Aeronautics (Title 21 § 5012).

SDIA is one of ten California airports subject to the "noise problem airport" requirements. These regulations establish 65 dB CNEL as a N.I.A. within which there shall be no incompatible land uses (i.e., residential homes, schools, places of worship, etc.). SDIA has received 12 such variances since the late 1970s. As of June 2019, the SDIA N.I.A. contains approximately 6,790 dwelling units (3,918 have been sound insulated) and 13,316 persons (9,795 persons have been sound insulated). The variance establishes stipulations with which the SDCRAA must comply, including, but not limited to:

- Continued enforcement of the curfew established in the Airport Use Regulations, restricting departures between the hours of 11:30 p.m. and 6:30 a.m. and restricting above-idle engine run-ups between those same hours.
- Implementation of the residential sound attenuation program (Quieter Home Program).
- Continued meetings of the Airport Noise Advisory Committee (ANAC), where Authority staff provides regular updates on noise complaints, early turns, missed approaches, aircraft fleet mix, aircraft operations, and any other as-needed reporting as required.
- Maintenance of a noise monitoring system and remote monitoring sites, as certified by the State of California.
- Provision of quarterly and annual noise reports containing information on changes in the N.I.A., noise levels at remote monitoring sites, aircraft operational information, and updates on Noise Office efforts.
- Maintenance of a website that provides the public with information on airport noise issues, current updates on noise information, posting of meeting agendas and information, quarterly noise report historical information, a method for the public to view their own residence in relation to the noise contours, and other enhancements such as web-based flight tracking.

Airport Noise and Operations Monitoring System

The ANOMS collects and analyzes flight data and correlates that data with noise events collected from the 23 remote monitoring sites located within the noise impacted area surrounding SDIA. The radar data collected by the SDCRAA includes both the FAA local area radar, as well as a third-party source to supplement the flight track information.

In the quarterly noise reports provided to the State of California, the SDCRAA must validate the CNEL contours. This is achieved by collecting aircraft noise data from the 23 remote monitoring sites. Sites used in the validation process must be located where the predominant noise source is generated by SDIA aircraft operations. Any other permanent sites are unadvisable, as SDIA operations would not be the predominant noise source, and the sites would not provide the necessary data to support the quarterly and annual noise contours. Other sites would also make it challenging to separate SDIA aircraft noise events from the local ambient noises (military operations, road noise, etc.). One of the key components of the ANOMS system is that it matches aircraft noise events with FAA radar track information, which can only be done at locations where SDIA aircraft noise is the predominant noise source.

Noise event data is sent to the ANOMS system in real-time. This data is used to respond to community noise complaints, as well as provide detailed analysis for the reporting required by the Noise Office. ANOMS and the Noise Office have been audited on three separate occasions (October of 2000 [State of California] and Authority internal audits in 2009 and 2015) with no major findings.

Online flight tracking is a community engagement tool that allows the public to view local airport area flight tracks with a 5-minute delay. When this tool became available in 2006, SDIA noise complaints were almost immediately reduced because the community had the opportunity to research the aircraft flights that concerned them. Once a resident has found a particular operation, they can file a complaint that is automatically sent to the Noise Office. Within the complaint, the aircraft type, operator/airline, time, and date are automatically provided. This allows Noise Office staff to review the correlation between the complaint and the aircraft operation and noise level event. It also allows Noise Office staff to email a response to the resident, if requested, to provide further information, if the resident has requested it.

Every three to five seconds the radar signal transmits information on the aircraft's precise location. While there are many web-based flight tracking applications, the high update rate of the radar signals used in online flight tracking make the tool reliable.

<u>Airport Noise Advisory Committee</u>

SDCRAA has an obligation, mandated by Title 21, to ensure that it coordinates with local neighborhoods that are impacted by SDIA aircraft noise. One of the primary mechanisms used to achieve this goal is the ANAC, which is advisory to the SDCRAA Board.

In accordance with SDCRAA Board Policy 9.20, ANAC provides a forum for resident and community input and involvement on aircraft noise issues. ANAC is composed of 18 voting members, providing a balanced forum for collaborative discussion and an evaluation of airport noise impacts around SDIA. Committee members consist of individuals from aviation stakeholders, community groups, and professional associations. Membership includes:

> Community Planning Groups (CPG) within the 65 dB CNEL contour, serving a two-year term with a possible two-year reappointment:
>
> 1. Greater Golden Hill Planning Committee
> 2. Downtown Community Planning Council
> 3. Uptown Planners
> 4. Midway/Pacific Highway Community Planning Group
> 5. Ocean Beach Planning Board

6. Peninsula Community Planning Board
7. General Community member within the 65 dB CNEL

CPGs outside the 65 dB CNEL serve a two-year term, and their locations are based on the previous calendar year's highest number of households submitting noise complaints:

8. Mission Beach Precise Planning Board
9. La Jolla Community Planning Association
10. Pacific Beach Community Planning Group
11. East County (currently, Grossmont-Mt. Helix Improvement Association)

Aviation Stakeholders:

12. Military (Marine Corps Recruit Depot)
13. Active Airline Pilot
14. Airline Flight Operations
15. City of San Diego – Airports
16. County of San Diego – Airports
17. National Business Aircraft Association (NBAA)
18. Tourism Industry

Additionally, a number of ex-officio (non-voting) members also sit on the Committee. Ex-officio members may represent the FAA, offices of various elected officials, and an acoustician.

Departure Curfew and Curfew Violation Review Panel

SDIA has had a departure curfew since 1976 and is one of only a handful of U.S. airports with a mandatory curfew. Adopted as Authority Code 9.40 in 2003, it states that Stage 2 aircraft can depart from 7:00 a.m. to 10:00 p.m. (Stage 2 aircraft were phased out at SDIA as of January 1, 1999 for all regularly scheduled commercial, cargo, and commuter operators using aircraft weighing more than 75,000 pounds). Stage 3 aircraft can depart between 6:30 a.m. and 11:30 p.m. Life-flight and mercy flights are exempt from the curfew. Landings are permitted 24-hours a day. Engine run-ups above idle are only permitted between 6:30 a.m. and 11:30 p.m.

When a curfew violation occurs, the Curfew Violation Review Panel (CVRP) evaluates the violation and determines if a penalty is warranted. CVRP meetings are held every other month and are open to the public. The penalty structure is: $2,000 for the 1st violation in the six-month compliance period; $6,000 for the 2nd violation in the six-month compliance period; and, $10,000 for the 3rd violation in the six-month compliance period. Fine amounts are also increased by the operator's multiplier factor, which is the number of penalized violations that occurred by that operator during the previous 6-month compliance period. Collected fines are applied to the SDCRAA's general operating budget to help offset the costs of maintaining the State-mandated Airport Noise Mitigation Office.

The CVRP reports on each curfew violation and includes such information as:

- Flight information, including the operator, scheduled departure time, actual departure time, and aircraft type

- Background information provided by the operator to explain why the curfew was violated
- Transcription of FAA Air Traffic Control communications at the time surrounding the departure, including notification to the pilot that the aircraft is departing after the curfew and is subject to a penalty in accordance with the Airport Use Regulations
- Radar Flight Track
- Aircraft on departure showing noise level event
- Noise Level Summary identifying the noise events logged at remote noise monitoring stations as a result of the curfew violation
- Curfew Log identifying the arrivals and departures during the curfew period
- Emails and related documentation from the air carrier to support curfew violation information

The number of annual curfew violations that have occurred from 2012 through 2018 are as follows:

- 2012 – 36
- 2013 – 60
- 2014 – 47
- 2015 – 55
- 2016 – 84
- 2017 – 72
- 2018 - 59

Collaboration with Industry Stakeholders

In order for noise abatement procedures to be successful, the Noise Office must work collaboratively with industry stakeholders. On a regular basis, SDCRAA staff is in communication and meets one-on-one with the FAA (Air Traffic Control and the Airports District Office), the airlines, and any other operators that use SDIA to collaborate on ways to reduce noise impacts for the communities surrounding SDIA. Many of these stakeholders are also regular members of the ANAC. Recent discussions with industry stakeholders include topics on curfew violations, early turns, and the Fly Quiet Program (discussed below).

Quieter Home Program

The Quieter Home Program is the SDCRAA's Residential Sound Insulation Program. The FAA has determined that residences within the FAA-approved 65 dB CNEL contour around SDIA may be eligible for sound insulation treatments to mitigate aircraft noise. The FAA has set a goal of reducing interior noise levels for eligible residents by at least five (5) dB inside the home, providing a noticeable reduction in noise. The SDCRAA's Quieter Home Program is the means to obtain that goal. For the past 19 years, the Authority has provided residential sound attenuation treatments (also several schools have been insulated starting in 1993) in the noise impacted area. The SDCRAA has spent over $200 million dollars (both Airport Authority and Federal Grant funds) sound insulating over 4,000 homes.

Fly Quiet Program

Approximately three years ago, a new Fly Quiet Program (Fly Quiet) was instituted, which provides quarterly reports on how quiet operators fly in and out of SDIA by scoring adherence to the curfew and noise levels of their fleet. The purpose of Fly Quiet is to encourage individual airlines to operate as quietly as possible at SDIA. The program promotes a participatory approach in complying with noise abatement procedures and objectives by grading an airline's performance and by making the scores available to the public via online publications and public meetings.

Fly Quiet offers a dynamic venue for implementing new noise abatement initiatives by praising and publicizing active participation rather than a system that admonishes violations from essentially voluntary procedures.

Fly Quiet reports communicate results in a clear, understandable format on a scale of 0-10, zero being poor and ten being good. This allows for an easy comparison between airlines over time. Individual airline scores are computed and reports are generated every other month. These quantitative scores allow airline management and flight personnel to measure exactly how they stand compared to other operators and how their proactive involvement can positively reduce noise in the communities surrounding SDIA. The Fly Quiet Program currently includes three elements: (1) the overall noise quality of each airline's fleet operating at SDIA; (2) adherence to the Authority's curfew; and (3) number of noise exceedances at specific noise monitoring locations.

3.12.3.3 Environmental Setting

The aircraft noise impacts analysis study area includes the land uses shown on the base map used throughout Section 3.12, Noise, of this Recirculated Draft EIR (i.e., Figures 3.12-5 through 3.12-27 later in this section). The boundaries of the study area are generally defined on the north and south by the northern and southern limits of the SDIA AIA, shown on page 1-5, of the SDIA Airport Land Use Compatibility Plan,[40] and on the east and west by the geographic extent of the 60 CNEL aircraft noise contour for future conditions. Existing land uses within the 65 CNEL contour include, but are not limited to, residential, commercial/office, park, education, industrial, and military uses, with the predominant land use type being residential.

Utilizing the FAA's AEDT Version 2d, CNEL contours were developed for noise levels associated with existing (2018) aircraft operations at SDIA. Figure 3.12-5 delineates the 60-75 CNEL aircraft noise contours for existing baseline conditions, and also shows the underlying land use types. As shown, the 65 CNEL extends southeast, along the aircraft approach path to Runway 9-27, for approximately four miles from the end of the runway, and extends northwest, for aircraft departure routes, for approximately 2.25 miles.

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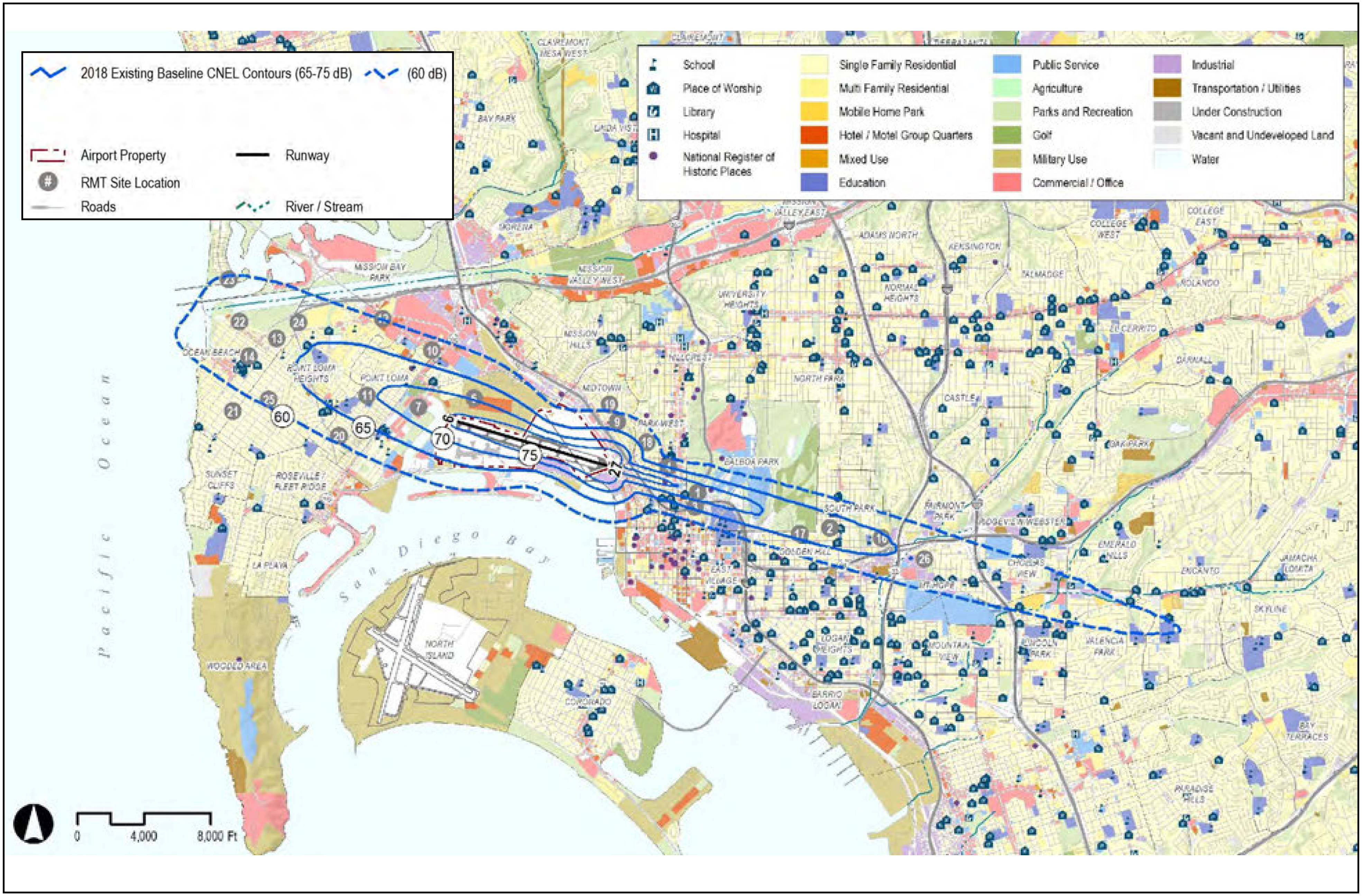
[40] Airport Land Use Commission San Diego County Regional Airport Authority. San Diego International Airport - Airport Land Use Compatibility Plan. Adopted April 3, 2014, Amended May 1, 2014. Available: http://www.san.org/Portals/0/Documents/Land%20Use%20Compatibility/SDIA/SDIA%20ALUCP%20Ch%201-6%20(May%202014).pdf.



Source: HMMH, 2019

Figure 3.12-5

CNEL CONTOURS (60-75 DB) FOR EXISTING (2018) BASELINE CONDITIONS

3.12.3.3.1 Overview of Noise Exposure for Noise-Sensitive Uses

Population, Housing, and Acreage

Table 3.12-5 below shows the estimated population, housing unit counts, and acreages within the 60-65 CNEL, 65-70 CNEL, 70-75 CNEL, and 75+ CNEL contours for existing (2018) conditions.

Table 3.12-5: Estimated Population, Housing Unit Counts, and Acreage within the Aircraft Noise Contours for Existing (2018) Conditions

Population					Housing Units					Acreage				
60-65 CNEL	65-70 CNEL	70-75 CNEL	75+ CNEL	TOTAL	60-65 CNEL	65-70 CNEL	70-75 CNEL	75+ CNEL	TOTAL	60-65 CNEL	65-70 CNEL	70-75 CNEL	75+ CNEL	TOTAL
53,381	25,835	5,532	829	85,577	24,906	11,460	1,456	612	38,434	5,513	2,196	994	477	9,180

Source: HMMH, 2019.

Other Noise-Sensitive Uses

Table 3.12-6 below shows the count of other noise-sensitive uses, such as churches, schools, libraries, hospitals, colleges, and historic uses, within the 60-65 CNEL, 65-70 CNEL, 70-75 CNEL, and 75+ CNEL contours for existing (2018) conditions.

Table 3.12-6: Other Noise-Sensitive Uses Counts for Existing (2018) Conditions

	60-65 CNEL	65-70 CNEL	70-75 CNEL	75+ CNEL
Church	25	14	2	0
School	33	18	2	0
Library	2	1	0	0
Hospital	0	0	0	0
College	1	0	0	0
Historic	2	2	2	1
Total	**63**	**35**	**6**	**1**

Source: HMMH, 2019.

3.12.3.3.2 Schools

Table 3.12-10, presented later in Section 3.12.3.5.5, indicates the existing amount of time that noise levels exceed certain levels at schools in the vicinity of SDIA. Time above (TA) levels (in minutes) are shown for noise levels ranging from 65 to 90 dB.[41] As noted earlier, standard construction provides approximately 15 dBA of exterior-to-interior noise reduction, assuming the windows are partially open for ventilation, and standard construction with the windows closed provides approximately 20 to 25 dBA of noise reduction in interior spaces. As such, the resultant interior noise levels would range between 40 and 75 dB.

As the data includes all daytime flights (between 7:00 a.m. and 7:00 p.m.), the results are conservative as most school days are somewhat shorter. However, that data does provide a

[41] The noise modeling completed for the TA analysis calculated the time exposure for noise levels between 60 dB and 100 dB; however, with one exception, none of the 21 schools within the study area were exposed to noise above 90 dB. As such, those higher noise level increments (i.e., 90-95 dB and 95-100 dB) are not included in the table. The one exception is Loma Portal Elementary School, which is projected to be exposed to an exterior noise level of 90-95 dB for 0.1 minute (i.e., six seconds) during the course of a school day in the future horizon years (2024, 2026, 2030, 2035, and 2050).

comprehensive evaluation of the time period, when many school activities occur, including after-school functions.

The data shows that most schools in the vicinity of SDIA do not experience substantial periods of time with exterior noise levels above 80 dB, which equates to a typical interior noise level of between 55 dB (windows closed) and 65 dB (windows open). As previously discussed, speech interference typically begins at 65 dBA, which is the level of normal conversation, and for the purposes of this EIR, is considered to be the sound level above which learning within a classroom setting could be adversely affected.

3.12.3.3.3 Sleep Disturbance

Figures 3.12-6 and 3.12-7 show contours for the number of aircraft operations above 80 and 90 SEL, respectively, for the existing (2018) baseline conditions. These contours show areas that are affected by an approximate number of aircraft overflights that produce noise levels at or above a specific SEL threshold. The contours are referenced as NA80 and NA90 (i.e., NA is Number Above a specified SEL), representing the number of aircraft events above 80 SEL and 90 SEL, respectively. SEL normalizes the sound energy from an aircraft flight to a duration of one second. Therefore, SEL has a larger magnitude than the maximum A-weighted level for an event that lasts longer than one second. In general, for most aircraft overflights, the SEL is on the order of 7 to 12 dB higher than the maximum sound level.

3.12.3.4 Thresholds of Significance

The proposed project would result in significant impacts related to aircraft noise if it would:

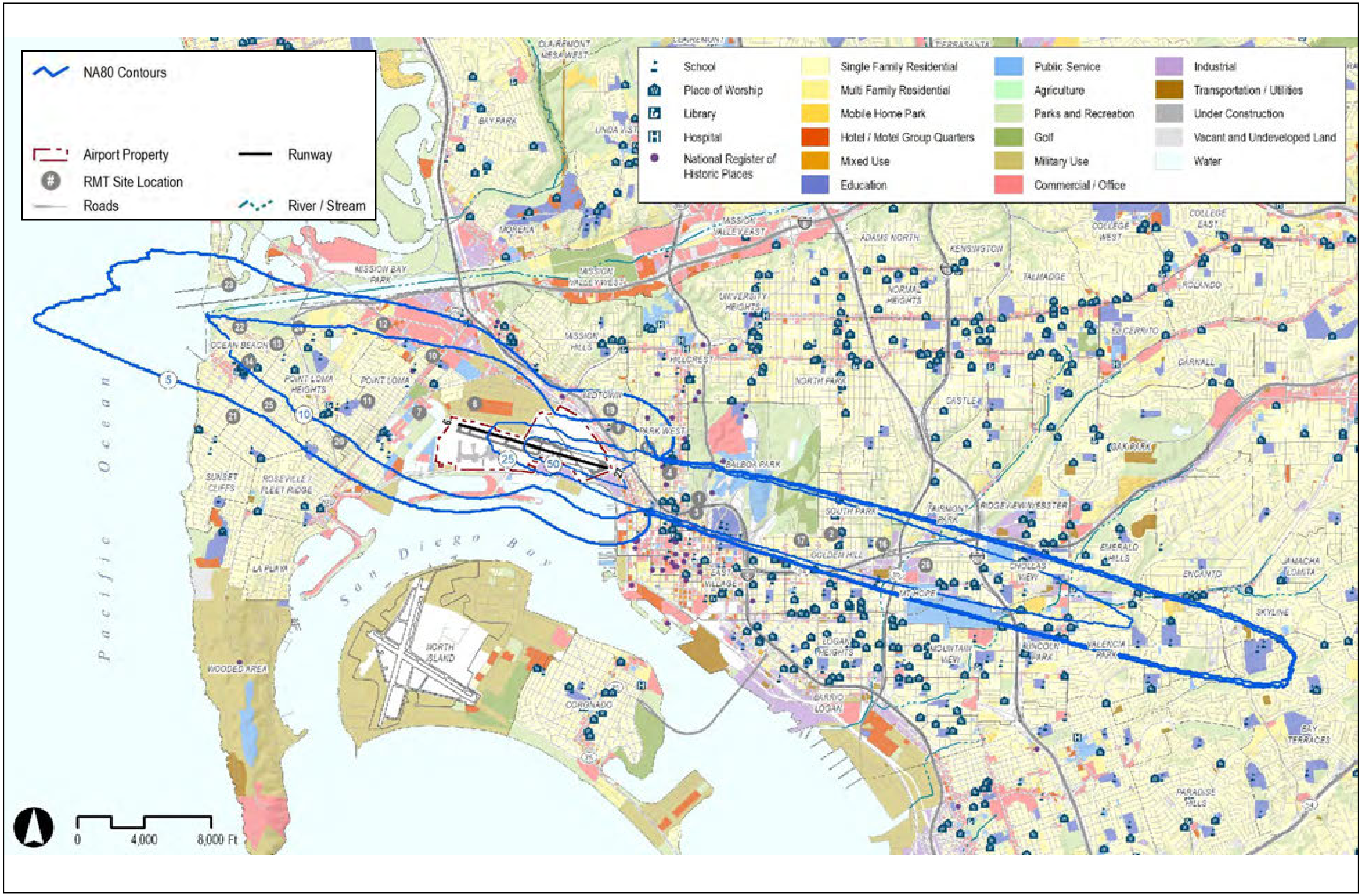
Impact 3.12-1 Generate aircraft noise that would increase noise levels at exterior use areas of residences, schools, or places of worship to noise levels of 65 CNEL or above, as compared to the existing (2018) baseline condition.

Impact 3.12-2 Cause a 1.5 dB or more increase resulting in noise-sensitive areas being exposed to 65 CNEL or greater, as compared to the existing (2018) baseline condition.

Impact 3.12-3 Cause a 3.0 dB or more increase resulting in noise-sensitive areas being exposed to 60 CNEL to less than 65 CNEL, as compared to the existing (2018) baseline condition.

Impact 3.12-4 Cause a substantial increase in the amount of time that aircraft-induced noise would affect classroom learning, as compared to the existing (2018) baseline condition.

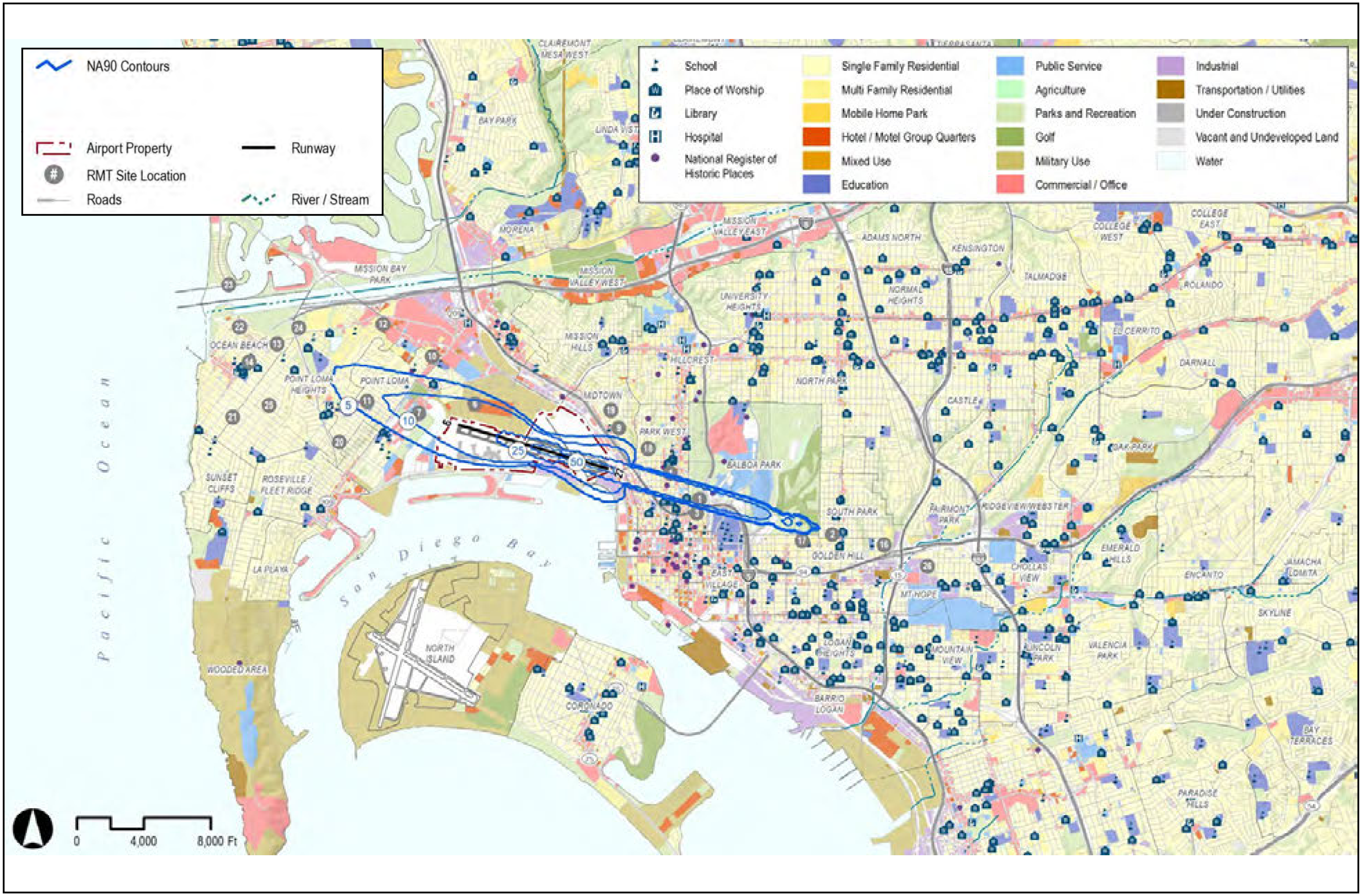
Impact 3.12-5 Cause a substantial increase in the number of nighttime flight operations that produce exterior SELs sufficient to awaken an increasing proportion of the population, as compared to the existing (2018) baseline condition.



Source: HMMH, 2019

Figure 3.12-6

NA80 NIGHTTIME CONTOURS EXISTING (2018) BASELINE CONDITIONS



Source: HMMH, 2019

Figure 3.12-7

NA90 NIGHTTIME CONTOURS EXISTING (2018) BASELINE CONDITIONS

The above thresholds of significance used to evaluate the aircraft noise impacts of the proposed project are derived from Appendix G of the State CEQA Guidelines, based on the following:

- *Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies*. This threshold is addressed in the evaluation of Impacts 3.12-1 and 3.12-3.
- *Expose people residing or working within an airport land use plan area to excessive noise levels*. This threshold is addressed in the evaluation of all five of the Impact statements above.

3.12.3.4.1 Schools

As a means of evaluating and comparing noise levels at schools, the impacts analysis for the proposed project calculates the amount of time during which noise levels exceed a specified range (i.e., TA levels) due to aircraft operations at SDIA, for each year of analysis (i.e., 2024, 2026, 2030, 2035, and 2050). Then, assessment and comparison of this quantitative TA level data is used to determine if there would be a substantial change from existing (2018) conditions that would reasonably constitute a significant impact. As indicated above in Section 3.12.3.3.2, speech interference typically begins at 65 dBA, which is the level of normal conversation, and for the purposes of this EIR, is considered to be the sound level above which learning within a classroom setting could be adversely affected. As also indicated in Section 3.12.3.3.2, standard construction provides approximately 15 dBA of exterior-to-interior noise reduction, assuming the windows are partially open for ventilation, and standard construction with the windows closed provides approximately 20 to 25 dBA of noise reduction in interior spaces. Based on that, interior noise levels above 65 DBA would occur with exterior noise levels of 80 dB with windows open or 85 to 90 dBA with windows closed. For the purposes of this study, a significant impact to schools would be a substantial increase in the amount of time that aircraft-induced noise of 80 dB or greater would affect classroom learning.

3.12.3.4.2 Sleep Disturbance

As described earlier in Section 3.12.2.2, FICAN published a 1997 report to update the FICON finding based on the studies completed since 1992, and as a result of additional research, FICAN revised the previous dose-response curve to provide more of a direct comparison between single event aircraft noise levels and the maximum probability of awakening using single event SEL. The threshold of significance applied to the proposed project utilizes the 1997 FICAN curve as the basis of evaluating the potential for populations around SDIA to be awakened due to a specific aircraft noise event. By using SEL, the methodology can account for the total sound energy during the duration of a nighttime event (as opposed to a maximum sound level measure, without consideration of duration).

Table 3.12-7 shows the relationship between exterior SEL values and probability for awakenings. This table was developed by reducing the exterior SEL value by the appropriate Noise Level Reduction (NLR) to arrive at the interior SEL value and then using the dose-response curve to determine the maximum probability of awakenings. Note that the percent of awakening determined from the FICAN curve is considered conservative, as it is a maximum probability. Also, the FICAN analysis does not account for combined multiple events, because the dose-response curve does not take into account the number of events. A standard to evaluate the impact of combined multiple events has not been established.

Table 3.12-7: Exterior SEL and Maximum Percent of Awakenings

Condition	Noise Level Reduction (NLR)	Exterior SEL (dB)					
		90 dB		85 dB		80 dB	
		Interior SEL	Maximum Percent Awakened	Interior SEL	Max Percent Awakened	Interior SEL	Max Percent Awakened
Windows closed, construction provides for above average attenuation	30 dB	60 dB	3.8%	55 dB	2.8%	50 dB	1.9%
Windows closed, construction provides for average attenuation	25 dB	65 dB	5.1%	60 dB	3.8%	55 dB	2.8%
Windows open for average attenuation	15 dB	75 dB	7.9%	70 dB	6.4%	65 dB	5.1%

Note: Average attenuation reflects outdoor-to-indoor attenuation for standard construction, which, as noted earlier in the section, provides for 15 dB reduction with windows open and 20-25 dB reduction with windows closed. Above average attenuation reflects greater reduction with non-standard construction features such as double- or triple-pane windows and higher levels of insultation in walls and roof.

Source: San Diego County Regional Airport Authority. San Diego International Airport Master Plan Final Environmental Impact Report. SCRRAA #EIR-06-01, State Clearinghouse No. 2005091105. Table 5-1.6. April 2008.

For the purposes of this study, a significant impact in regard to sleep disturbance would be a substantial increase in the number of nighttime flight operations that produce exterior SELs sufficient to awaken an increasing proportion of the population. This study assesses and compares quantitative data (i.e., the number of nighttime flight operations at specific SELs), to determine if there would be a substantial change that would reasonably constitute a significant impact.

3.12.3.5 Project Impacts

3.12.3.5.1 Overall Changes on Aircraft Noise Levels

The following describes the estimated changes in aircraft noise exposure levels associated with SDIA operations in 2024, 2026, 2030, 2035, and 2050, which are the respective completion years of each major phase of the proposed project (i.e., Phase 1a-2024, Phase 1b-2026, Phase 2a-2030, and Phase 2b [Project Buildout]-2035), as well as a future analysis year that coincides with the San Diego Regional Transportation Plan, Sustainable Communities Strategy (RTP/SCS) horizon year (2050), relative to the baseline (2018) conditions.

Table 3.12-8 indicates the population, number of housing units, and acreage within the various CNEL ranges that would be affected in each of the future years, and provides a comparison of each future horizon year to baseline (2018) conditions. It should be noted that the increased number of people and housing units indicated for the future year is attributable to increased aircraft noise levels, and not to future regional growth in population and housing. Also provided in Table 3.12-8, for informational purposes, is a comparison of the proposed project in each future year to the conditions projected to occur in each of those future years, if the proposed project was not implemented (i.e., no project).

Table 3.12-9 provides information relative to other noise-sensitive uses, such as churches (places of worship), schools, libraries, hospitals, colleges, and historic uses, with comparisons between future years and baseline (2018) conditions, and, for informational purposes, comparisons between the proposed project and no project scenarios in each future year.

Figures 3.12-8 through 3.12-12 present the aircraft noise contours projected to occur at the completion of each major phase of the proposed project (i.e., Phase 1a in 2024, Phase 1b in 2026, Phase 2a in 2030, and Phase 2b in 2035), as well as the 2050 analysis year.

Table 3.12-8: Estimated Population, Housing Unit Counts, and Acreage within the Aircraft Noise Contours for Existing and Future Conditions (2018, 2024, 2026, 2030, 2035, and 2050)

	Population					Housing Units					Acreage				
	60-65 CNEL	65-70 CNEL	70-75 CNEL	75+ CNEL	TOTAL	60-65 CNEL	65-70 CNEL	70-75 CNEL	75+ CNEL	TOTAL	60-65 CNEL	65-70 CNEL	70-75 CNEL	75+ CNEL	TOTAL
Existing (2018) Baseline	51,445	17,815	2,873	477	72,610	23,471	7,311	994	354	32,130	4,307	1,741	681	336	7,064
2024 Conditions															
2024 – Proposed Project	57,260	27,927	6,897	872	92,956	26,982	13,026	1,992	600	42,600	6,406	2,370	1,066	538	10,380
Difference Between Proposed Project in 2024 and Existing Baseline	5,815	10,112	4,024	395	20,346	3,511	5,715	998	246	10,470	2,099	629	386	202	3,315
2026 Conditions															
2026 – Proposed Project	57,999	28,791	7,225	959	94,974	27,215	13,446	2,121	633	43,415	6,566	2,409	1,102	557	10,634
Difference Between Proposed Project in 2026 and Existing Baseline	6,554	10,976	4,352	482	22,364	3,744	6,135	1,127	279	11,285	2,259	668	421	222	3,570
2030 Conditions															
2030 – Proposed Project	60,105	30,954	8,254	1,148	100,461	27,807	14,440	2,579	668	45,494	7,071	2,541	1,175	607	11,394
Difference Between Proposed Project in 2030 and Existing Baseline	8,660	13,139	5,381	671	27,851	4,336	7,129	1,585	314	13,364	2,764	800	494	272	4,330
2035 Conditions															
2035 – Proposed Project	61,359	32,435	8,963	1,402	104,159	28,198	15,078	2,901	703	46,880	7,340	2,653	1,238	655	11,885
Difference Between Proposed Project in 2035 and Existing Baseline	9,914	14,620	6,090	925	31,549	4,727	7,767	1,907	349	14,750	3,033	912	557	319	4,821
2050 Conditions															
2050 – Proposed Project	61,228	33,979	9,590	1,589	106,386	28,108	15,875	3,214	721	47,918	7,632	2,772	1,283	692	12,378
Difference Between Proposed Project in 2050 and Existing Baseline	9,783	16,164	6,717	1,112	33,776	4,637	8,564	2,220	367	15,788	3,325	1,031	602	356	5,314

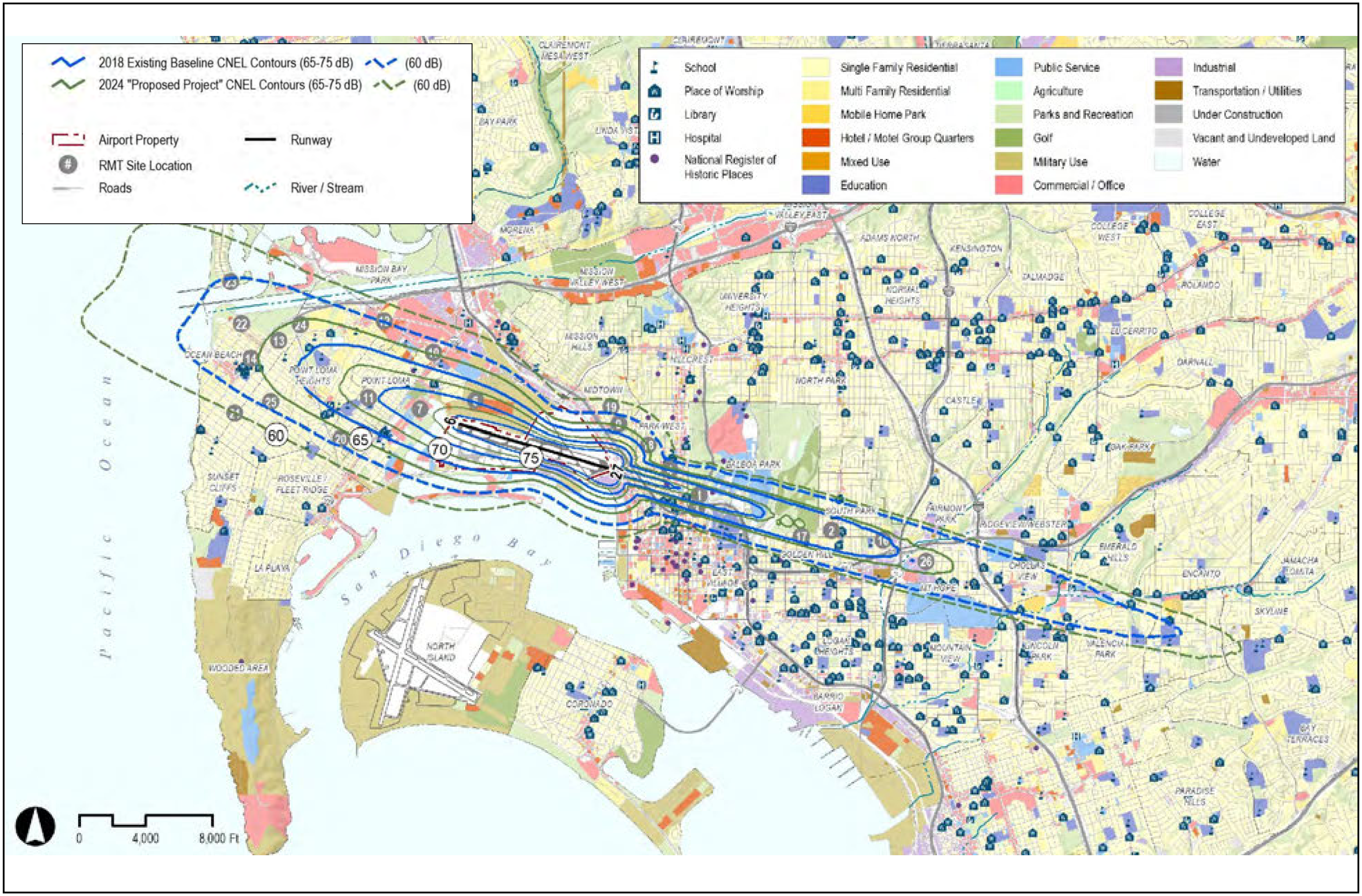
Source: HMMH, 2019.

Table 3.12-9: Estimated Other Noise-Sensitive within the Aircraft Noise Contours Uses for Existing and Future Conditions (2018, 2024, 2026, 2030, 2035, and 2050)

	Church					School					Library					Hospital					College					Historic					Total of All Uses				
	60-65 CNEL	65-70 CNEL	70-75 CNEL	75+ CNEL	Total	60-65 CNEL	65-70 CNEL	70-75 CNEL	75+ CNEL	Total	60-65 CNEL	65-70 CNEL	70-75 CNEL	75+ CNEL	Total	60-65 CNEL	65-70 CNEL	70-75 CNEL	75+ CNEL	Total	60-65 CNEL	65-70 CNEL	70-75 CNEL	75+ CNEL	Total	60-65 CNEL	65-70 CNEL	70-75 CNEL	75+ CNEL	Total	60-65 CNEL	65-70 CNEL	70-75 CNEL	75+ CNEL	Total
Existing (2018) Baseline	27	7	2	0	36	29	13	0	0	42	2	1	0	0	3	0	0	0	0	0	1	0	0	0	1	1	2	2	1	6	60	23	4	1	88
2024 Conditions																																			
2024 – Proposed Project	29	14	3	0	46	37	20	3	0	60	2	1	0	0	3	0	0	0	0	0	2	0	0	0	2	2	3	2	1	8	72	38	8	1	119
Difference Between Proposed Project in 2024 and Existing Baseline	2	7	1	0	10	8	7	3	0	18	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	0	0	2	12	15	4	0	31
2026 Conditions																																			
2026 – Proposed Project	28	15	3	0	46	38	20	3	0	61	2	1	0	0	3	0	0	0	0	0	2	0	0	0	2	3	3	2	1	9	73	39	8	1	121
Difference Between Proposed Project in 2026 and Existing Baseline	1	8	1	0	10	9	7	3	0	19	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	1	0	0	3	13	16	4	0	33
2030 Conditions																																			
2030 – Proposed Project	27	16	3	0	46	39	21	4	0	64	2	1	0	0	3	0	0	0	0	0	2	0	0	0	2	3	3	2	1	9	73	41	9	1	124
Difference Between Proposed Project in 2030 and Existing Baseline	0	9	1	0	10	10	8	4	0	22	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	1	0	0	3	13	18	5	0	36
2035 Conditions																																			
2035 – Proposed Project	28	20	3	0	51	41	21	4	0	66	2	1	0	0	3	0	0	0	0	0	3	0	0	0	3	3	2	3	1	9	77	44	10	1	132
Difference Between Proposed Project in 2035 and Existing Baseline	1	13	1	0	15	12	8	4	0	24	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	1	0	3	17	21	6	0	44
2050 Conditions																																			
2050 – Proposed Project	24	24	3	0	51	39	23	5	0	67	2	1	0	0	3	1	0	0	0	1	4	0	0	0	4	3	2	3	1	9	73	50	11	1	135
Difference Between Proposed Project in 2050 and Existing Baseline	-3	17	1	0	15	10	10	5	0	25	0	0	0	0	0	1	0	0	0	1	3	0	0	0	3	2	0	1	0	3	13	27	7	0	47

Source: HMMH, 2019.

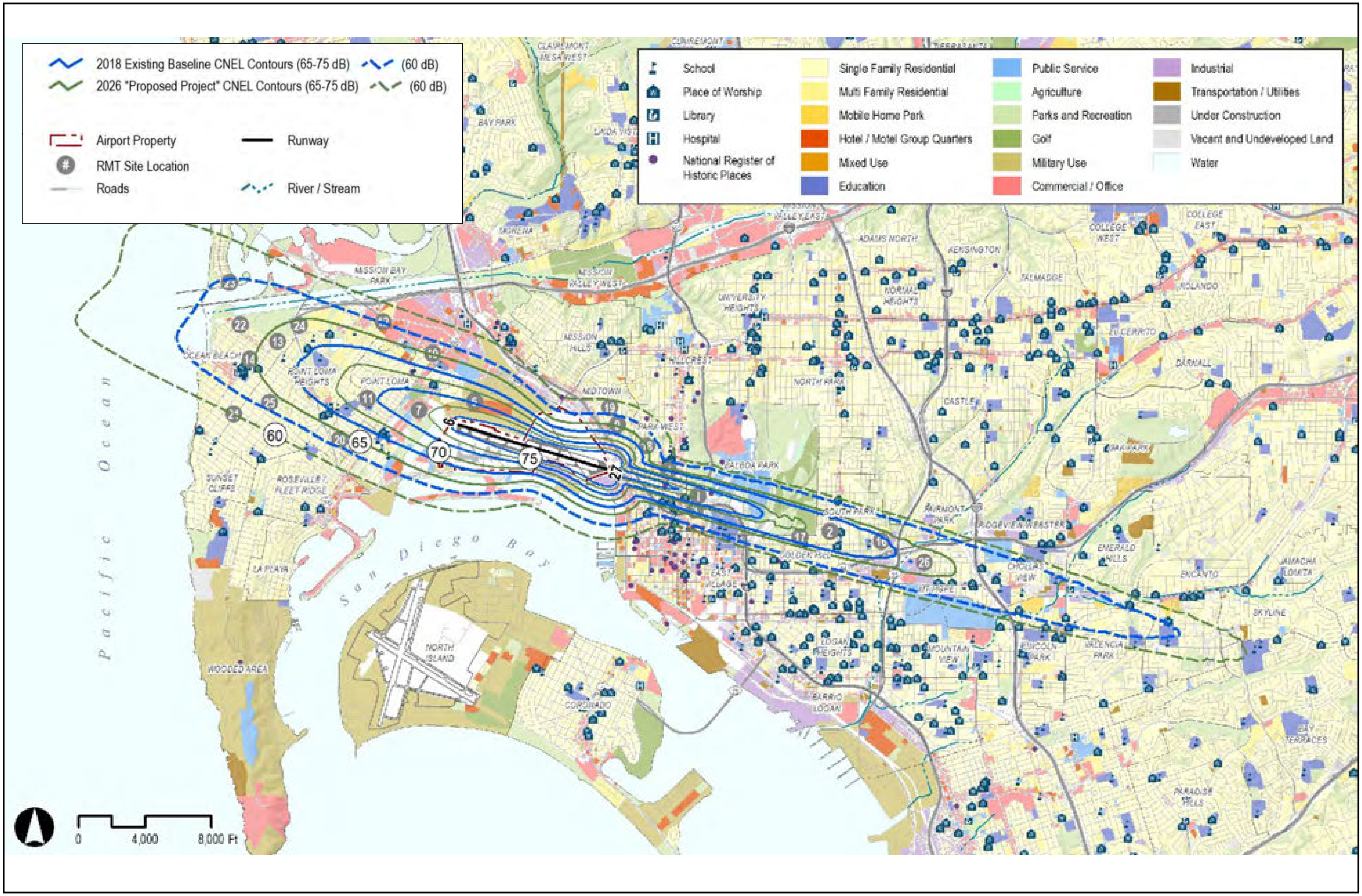
Notes: The columns for Schools include grades K through 12 and the columns for College include colleges and universities. Historic buildings are considered to be a noise-sensitive use under Section 4(f) of the U.S. Department of Transportation Act (49 U.S.C. § 303).



Source: HMMH, 2019

Figure 3.12-8

2024 CNEL CONTOURS (60-75 DB)



Source: HMMH, 2019

Figure 3.12-9

2026 CNEL CONTOURS (60-75 DB)

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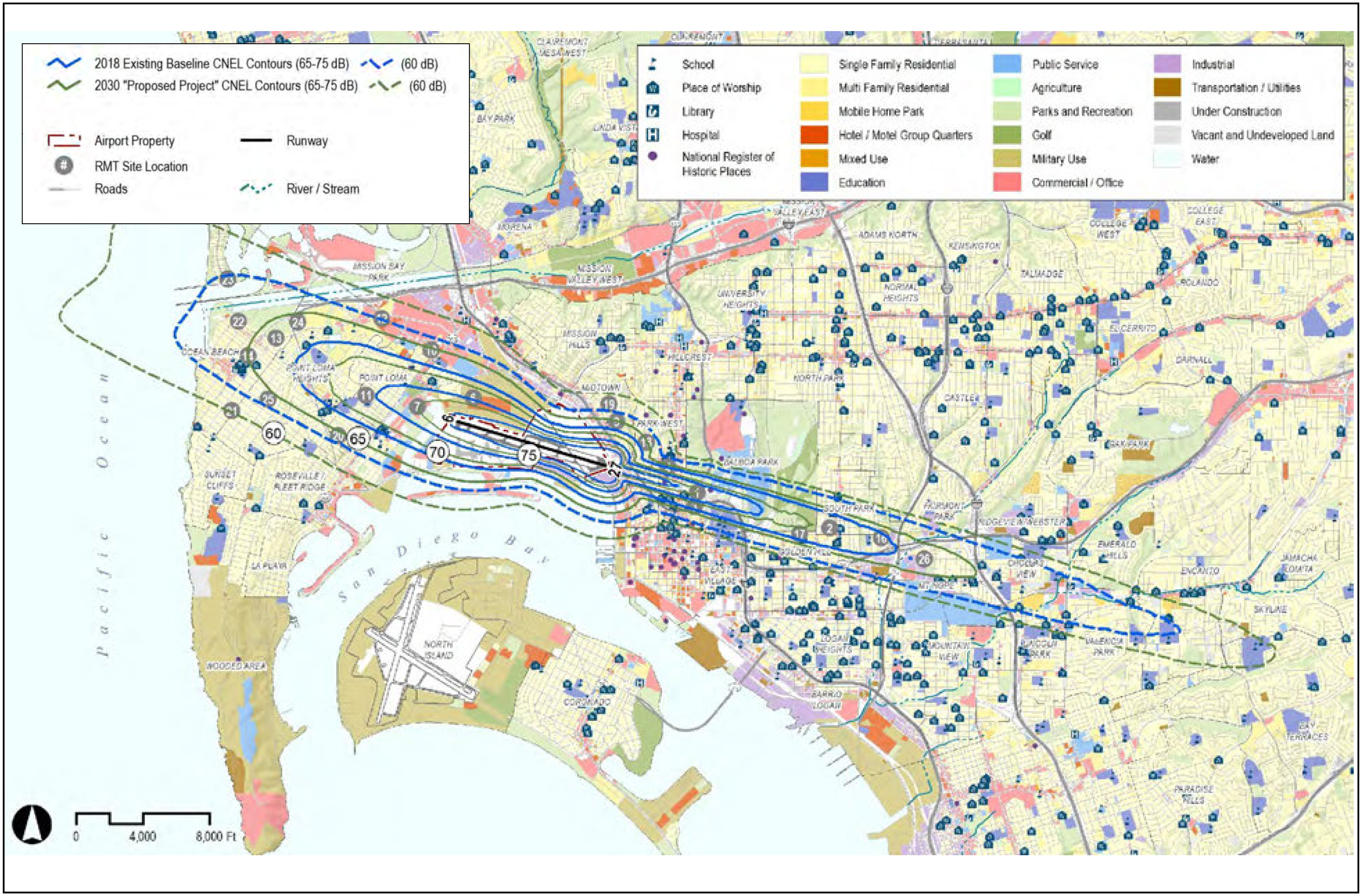
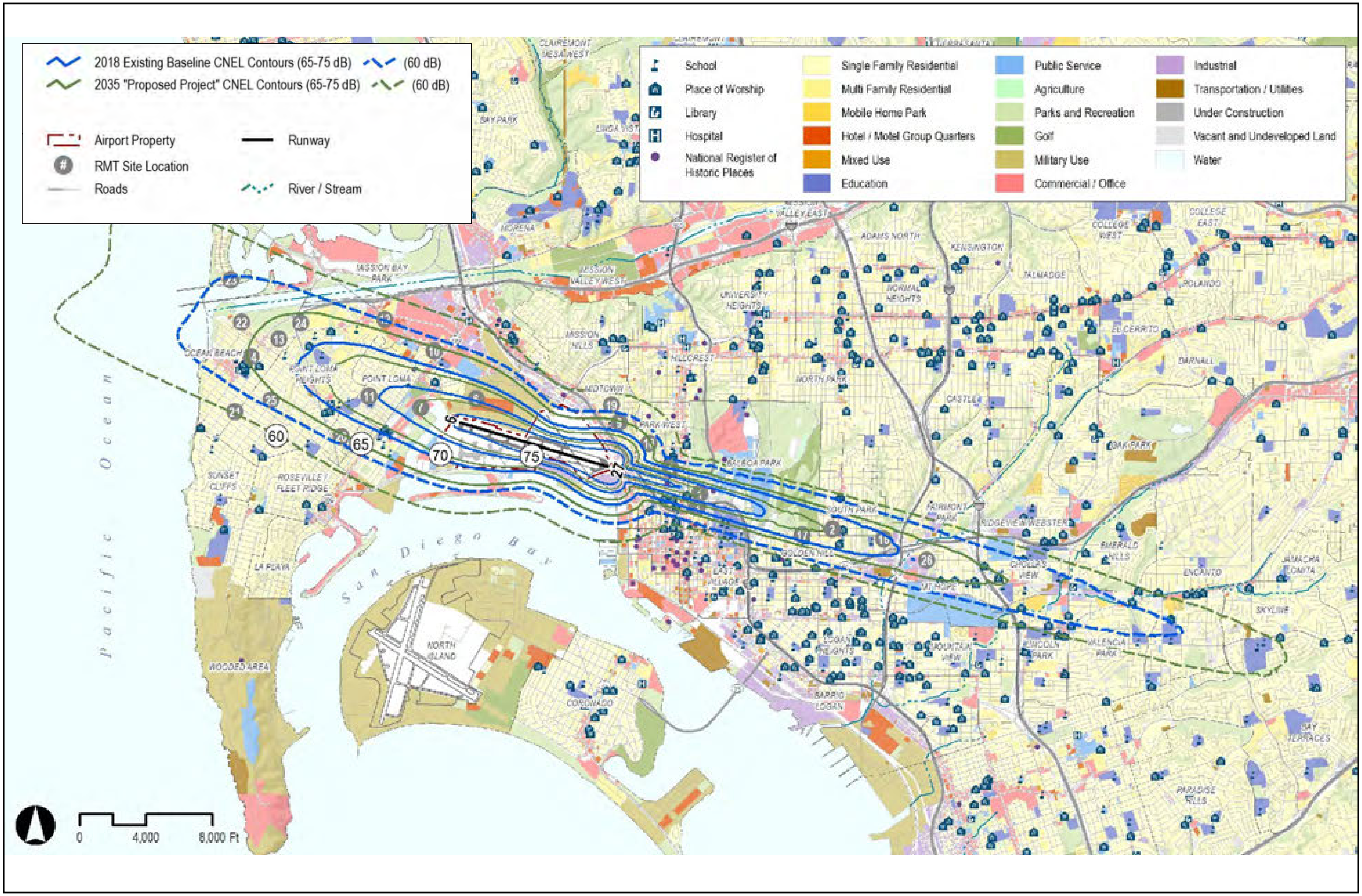


Source: HMMH, 2019

Figure 3.12-10

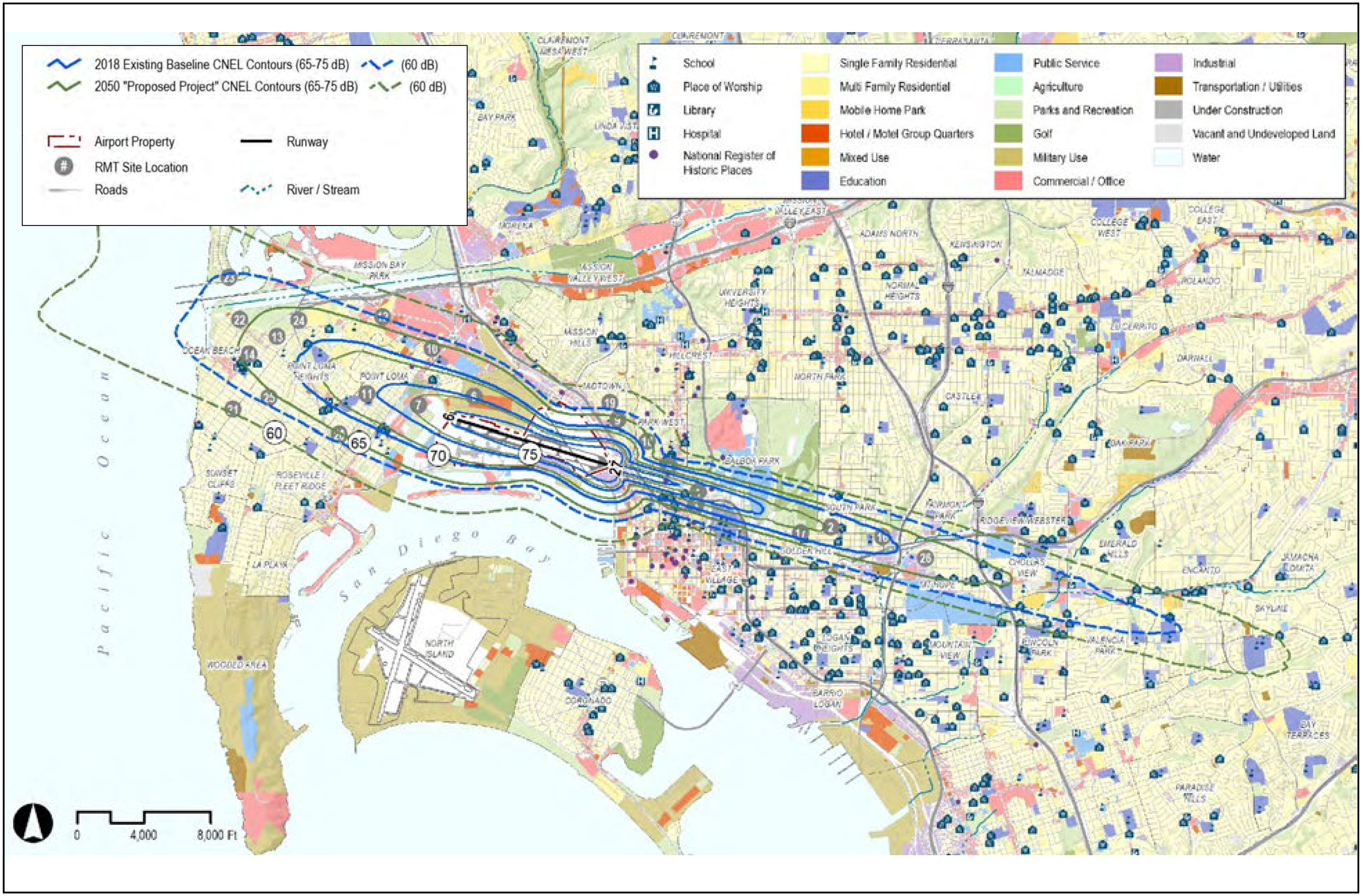
2030 CNEL CONTOURS (60-75 DB)



Source: HMMH, 2019

Figure 3.12-11

2035 CNEL CONTOURS (60-75 DB)



Source: HMMH, 2019

Figure 3.12-12

2050 CNEL CONTOURS (60-75 DB)

San Diego International Airport
Airport Development Plan

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3.12.3.5.2 Impact 3.12-1

Summary Conclusion for Impact 3.12-1: Airport operations at SDIA in future years (2024, 2026, 2030, 2035, and 2050) would generate aircraft noise that would increase noise levels at exterior use areas of residences and other noise-sensitive uses to noise levels of 65 CNEL or above, as compared to the existing (2018) baseline condition. Mitigation through soundproofing could reduce this impact, but it is uncertain whether all of the affected uses would qualify for soundproofing. As such, and as further described below, this would be a *significant and unavoidable impact*.

The following provides the details in support of the above summary conclusion. The impacts analysis below of each future horizon year (i.e., 2024, 2026, 2030, 2035, and 2050) with implementation of the proposed project is based on a comparison to existing (2018) baseline conditions. It should be noted, for informational purposes, that the aircraft noise impacts in each future horizon year would be the same with or without the proposed project (i.e., the noise impacts without implementation of the proposed project in 2024, as well as in each subsequent horizon year, would be the same as with implementation of the project in that year), as further described in Chapter 5, Alternatives Analysis.

Impacts in 2024

As shown in Figure 3.12-8, the 65 CNEL contour projected to occur in 2024 extends beyond the 65 CNEL contour for existing (2018) baseline conditions, at the end of the contours (i.e., very little, if any, change along the sides of the contours). As indicated in Table 3.12-8, the increase in population and housing units within the 65-70 CNEL bracket from existing conditions to 2024 conditions would be 10,112 and 5,715, respectively. As indicated in Table 3.12-9, the increase in churches, schools, and historic uses within the 65-70 CNEL bracket from existing conditions to 2024 conditions would be 7, 7, and 1, respectively. These increases are considered to represent a noise-sensitive use newly exposed to 65 CNEL or greater, which would be a ***significant impact***.

Impacts in 2026

As shown in Figure 3.12-9, the 65 CNEL contour projected to occur in 2026 extends beyond the 65 CNEL contour for existing (2018) baseline conditions, at the end of the contours (i.e., very little, if any, change along the sides of the contours). As indicated in Table 3.12-8, the increase in population and housing units within the 65-70 CNEL bracket from existing conditions to 2026 conditions would be 10,976 and 6,135, respectively. As indicated in Table 3.12-9, the increase in churches, schools, and historic uses within the 65-70 CNEL bracket from existing conditions to 2026 conditions would be 8, 7, and 1, respectively. These increases are considered to represent noise-sensitive uses newly exposed to 65 CNEL or greater, which would be a ***significant impact***.

Impacts in 2030

As shown in Figure 3.12-10, the 65 CNEL contour projected to occur in 2030 extends beyond the 65 CNEL contour for existing (2018) baseline conditions, at the end of the contours (i.e., very little change along the sides of the contours). As indicated in Table 3.12-8, the increase in population and housing units within the 65-70 CNEL bracket from existing conditions to 2030 conditions would be 13,139 and 7,129, respectively. As indicated in Table 3.12-9, the increase in churches, schools, and historic uses within the 65-70 CNEL bracket from existing conditions to 2030 conditions would be 9, 8, and 1, respectively. These increases are considered to represent noise-sensitive uses newly exposed to 65 CNEL or greater, which would be a ***significant impact***.

Impacts in 2035

As shown in Figure 3.12-11, the 65 CNEL contour projected to occur in 2035 extends beyond the 65 CNEL contour for existing (2018) baseline conditions, at the end of the contours (i.e., very little change along the sides of the contours). As indicated in Table 3.12-8, the increase in population and housing units within the 65-70 CNEL bracket from existing conditions to 2035 conditions would be 14,620 and 7,767, respectively. As indicated in Table 3.12-9, the increase in churches and schools within the 65-70 CNEL bracket from existing conditions to 2035 conditions would be 13 and 8, respectively. These increases are considered to represent noise-sensitive uses newly exposed to 65 CNEL or greater, which would be a ***significant impact***.

Impacts in 2050

As shown in Figure 3.12-12, the 65 CNEL contour projected to occur in 2050 extends beyond the 65 CNEL contour for existing (2018) baseline conditions, at the end of the contours (i.e., very little, if any, change along the sides of the contours). As indicated in Table 3.12-8, the increase in population and housing units within the 65-70 CNEL bracket from existing conditions to 2050 conditions would be 16,164 and 8,564, respectively. As indicated in Table 3.12-9, the increase in churches and schools within the 65-70 CNEL bracket from existing conditions to 2050 conditions would be 17 and 10, respectively. These increases are considered to represent noise-sensitive uses newly exposed to 65 CNEL or greater, which would be a ***significant impact***.

3.12.3.5.2.1 Mitigation Measures

MM-NOI-1: **Expansion of SDCRAA's Sound Insulation Program**. The existing SDIA Quieter Home Program is the SDCRAA's Residential Sound Insulation Program. For implementation of the subject Program, the FAA has determined that residences within the FAA-approved 65 dB CNEL contour (and an average interior noise level of 45 dB or greater) around SDIA may be eligible for sound insulation treatments to mitigate aircraft noise and has set a goal of reducing interior noise levels for eligible residents by at least five (5) dB inside the home, providing a noticeable reduction in noise. To mitigate the significant impacts associated with residential units that are newly exposed to 65 dB CNEL or greater from airport operations in future years of the proposed project, the SDCRAA will, subject to continued FAA approval and funding, expand the existing sound insulation program to increase the average number of housing units that are sound attenuated annually.

Likewise, the SDCRAA will expand the existing sound insulation program to include non-residential uses such as churches (places of worship) and schools in order to mitigate the significant impacts to these other noise-sensitive uses, which are newly-exposed to 65 dB CNEL or greater from airport operations in future years of the proposed project. The SDCRAA will apply to the FAA's Airport Improvement Program annually to support the expanded Sound Insulation Program. If the funding is granted by the FAA, then Mitigation Measure MM-NOI-1 is ***feasible*** and will be implemented by SDCRAA. If the FAA does not approve the funding, then Mitigation Measure MM-NOI-1 is considered ***infeasible***.

MM-NOI-2: Update Noise Exposure Maps Every 5 Years. The aircraft noise exposure maps for SDIA will be updated every five years to determine if the SDIA Noise Compatibility Program, prepared pursuant to 14 Code of Federal Regulations Part 150, needs to be updated. By committing to revise the noise exposure maps every five years, the SDCRAA will ensure that recent data is determining which homes are impacted by noise and, therefore, may be eligible to participate in the Quieter Home Program. Mitigation Measure MM-NOI-2 is ***considered feasible***.

MM-NOI-3: Create a Mobile Noise Monitoring Program. A mobile noise monitoring program will be established by SDCRAA to augment SDIA's existing permanent aircraft noise monitors at locations determined by an acoustical engineer. Mitigation Measure MM-NOI-3 is ***considered feasible***.

MM-NOI-4: Assess the Findings of the 2018 FAA Reauthorization Act-Related Noise Studies. The 2018 FAA Reauthorization Act includes a requirement for the FAA to complete various studies related to aircraft noise impacts. SDCRAA will review those studies, once completed, to help inform and update SDIA's noise mitigation programs and policies. Similarly, the Authority is committing to utilize the latest research findings and policy guidance coming from the FAA Reauthorization Act to update noise programs, if applicable. Mitigation Measure MM-NOI-4 is ***considered feasible***.

MM-NOI-5: Utilize Curfew Violation Penalty Fines to Help Fund Aircraft Noise Mitigation Programs. SDCRAA will utilize fines accrued through the aircraft operations curfew violation penalty program to annually fund additional sound insulation or other noise mitigation efforts. Mitigation Measure MM-NOI-5 is ***considered feasible.***

3.12.3.5.2.2 Significance of Impact After Mitigation

Based on uncertainties regarding whether all of the impacted noise-sensitive uses could be mitigated through Mitigation Measures MM-NOI-1 through MM-NOI-5, the impact is considered to be ***significant and unavoidable***. It is important to note, for informational purposes, that the future aircraft noise levels at SDIA would be the same with or without the proposed project (i.e., there is no difference in aircraft noise impacts between the proposed project and the No Project Alternative).

3.12.3.5.3 Impact 3.12-2

Summary Conclusion for Impact 3.12-2: There would be a 1.5 dB or more increase in noise-sensitive areas being exposed to 65 CNEL or greater in 2024, 2026, 2030, 2035, and 2050 as a result of airport operations, as compared to the existing (2018) baseline condition. As such, and as further described below, this would be a *significant and unavoidable impact*.

The following provides the details in support of the above summary conclusion. The impacts analysis below of each future horizon year (i.e., 2024, 2026, 2030, 2035, and 2050) with implementation of the proposed project is based on a comparison to existing (2018) baseline conditions. It should be noted, for informational purposes, that the aircraft noise impacts in each future horizon year would be the same with or without the proposed project (i.e., the noise impacts without implementation of the proposed project in 2024, as well as in each subsequent horizon year, would be the same as with implementation of the project in that year), as further described in Chapter 5, Alternatives Analysis.

Impacts in 2024

Figure 3.12-13 presents a summary depiction of whether, and where, there would be a 1.5 dB increase in the noise level within the 65 CNEL or greater noise contour, with completion of Phase 1a in 2024 compared to existing (2018) baseline conditions. A white dot indicates an area where there would be either no change in the noise level or less than 1.5 dB in change to the noise level within the 65 CNEL or greater noise contour. A red dot indicates an area where there would be a 1.5 dB or greater change in the noise level within the 65 CNEL or greater noise contour. As shown, there are areas to the north, south, and west of SDIA that would experience a 1.5 dB increase in the noise level within the 65 CNEL or greater noise contour in 2024 (i.e., areas with red dots).

Based on the above, in 2024 there would be a 1.5 dB or more increase resulting in noise-sensitive areas being exposed to 65 CNEL or greater, as compared to the existing (2018) baseline conditions due to future increases in aircraft activity; therefore, there would be a ***significant impact***.

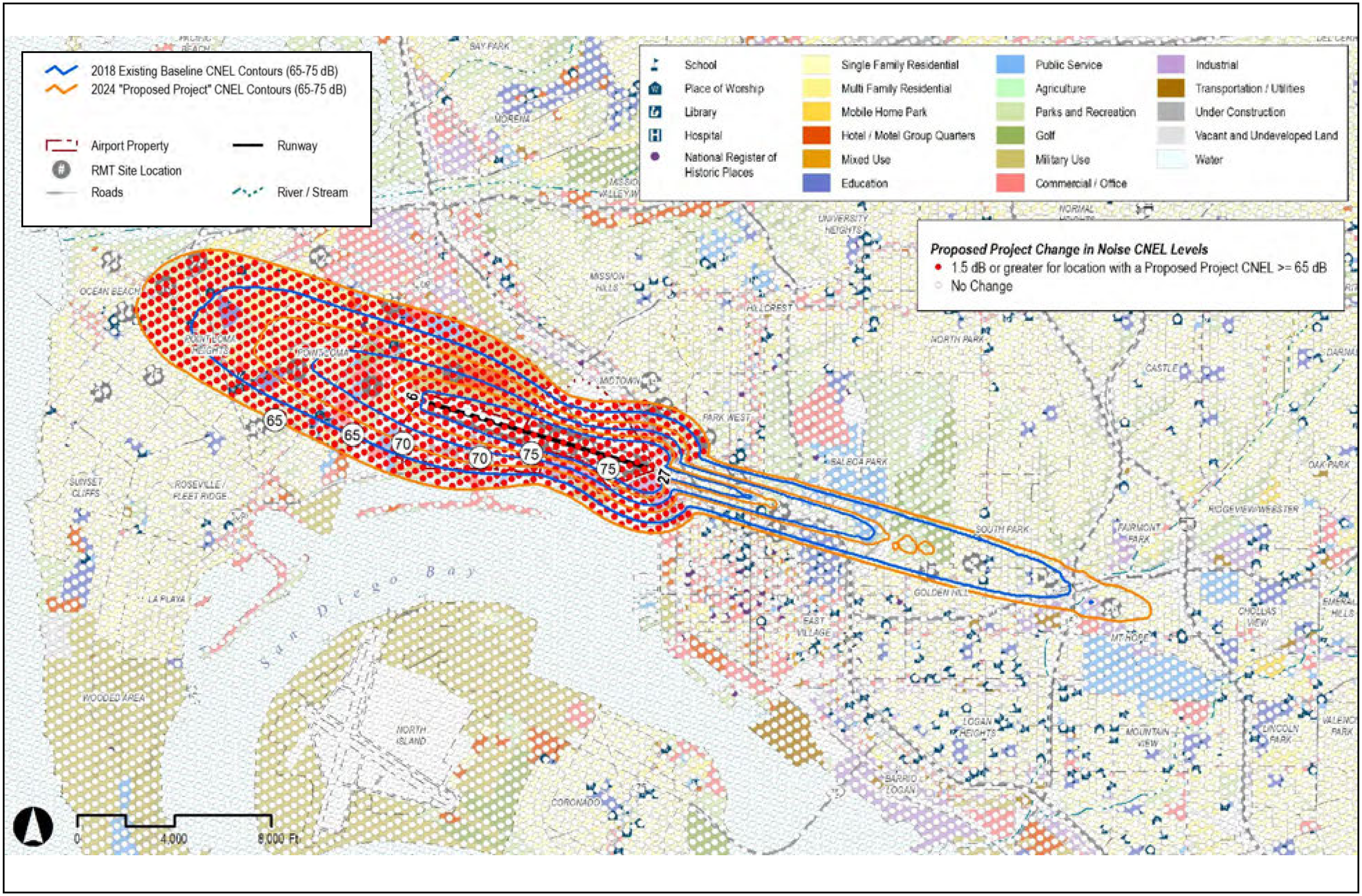
Impacts in 2026

Figure 3.12-14 presents a summary depiction of whether, and where, there would be a 1.5 dB increase in the noise level within the 65 CNEL or greater noise contour, with completion of Phase 1b in 2026 compared to existing (2018) baseline conditions. A white dot indicates an area where there would be either no change in the noise level or less than 1.5 dB in change to the noise level within the 65 CNEL or greater noise contour. A red dot indicates an area where there would be a 1.5 dB or greater change in the noise level within the 65 CNEL or greater noise contour. As shown, there are areas to the north, south, and west of SDIA that would experience a 1.5 dB increase in the noise level within the 65 CNEL or greater noise contour in 2026 (i.e., areas with red dots).

Based on the above, in 2026 there would be a 1.5 dB or more increase resulting in noise-sensitive areas being exposed to 65 CNEL or greater, as compared to the existing (2018) baseline conditions due to future increases in aircraft activity; therefore, there would be a ***significant impact***.

Impacts in 2030

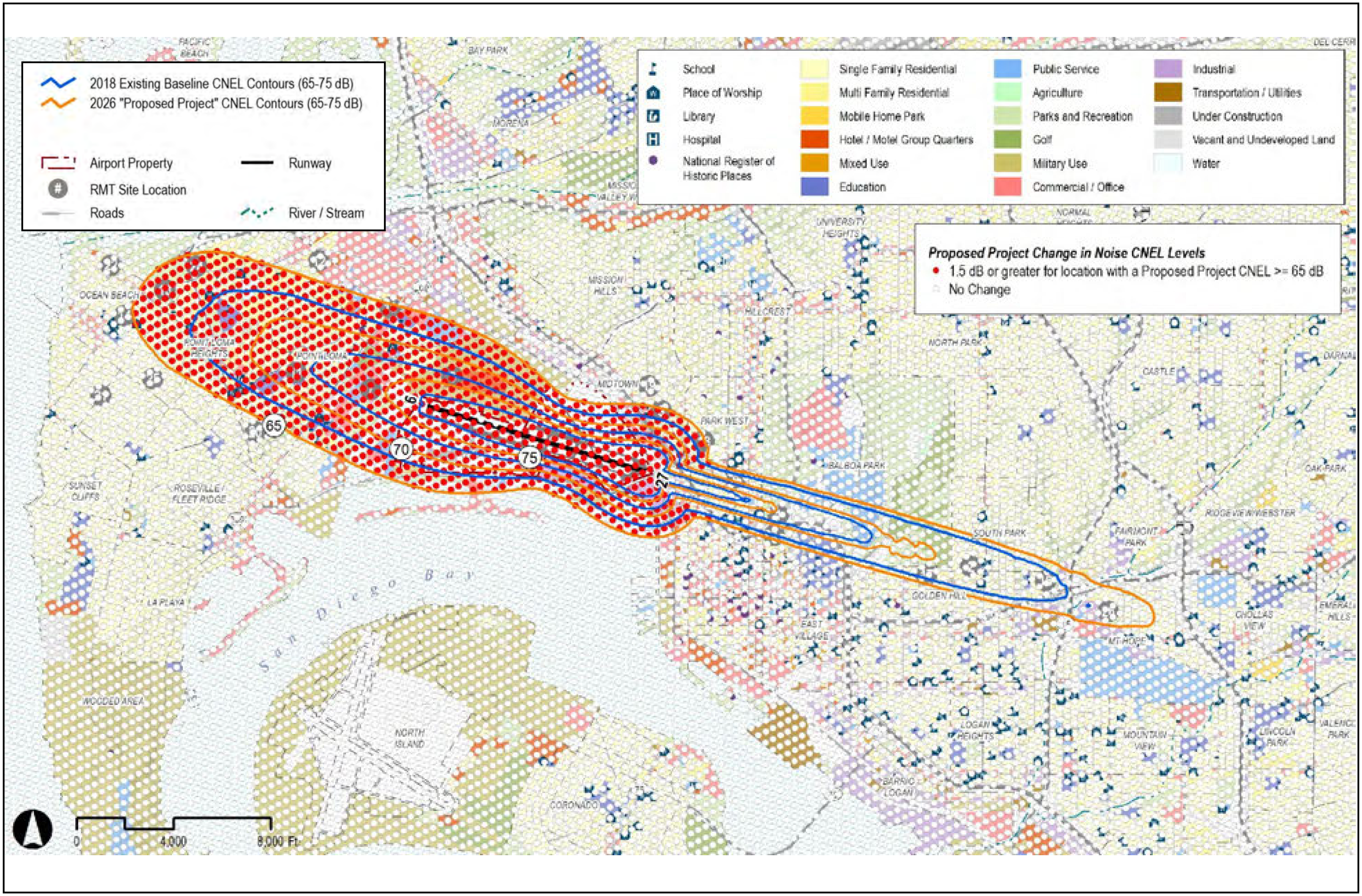
Figure 3.12-15 presents a summary depiction of whether, and where, there would be a 1.5 dB increase in the noise level within the 65 CNEL or greater noise contour, with completion of Phase 2a in 2030 based on forecast airport operations compared to existing (2018) baseline conditions. A white dot indicates an area where there would be either no change in the noise level or less than 1.5 dB in change to the noise level within the 65 CNEL or greater noise contour. A red dot indicates an area where there would be a 1.5 dB or greater change in the noise level within the 65 CNEL or greater noise contour. As shown, there are areas to the north, south, east, and west of SDIA that would experience a 1.5 dB increase in the noise level within the 65 CNEL or greater noise contour in 2030 (i.e., areas with red dots).



Source: HMMH, 2019

Figure 3.12-13

1.5 DB OR GREATER INCREASE IN CNEL: 2024 PROPOSED PROJECT COMPARED TO EXISTING (2018) BASELINE CONDITIONS

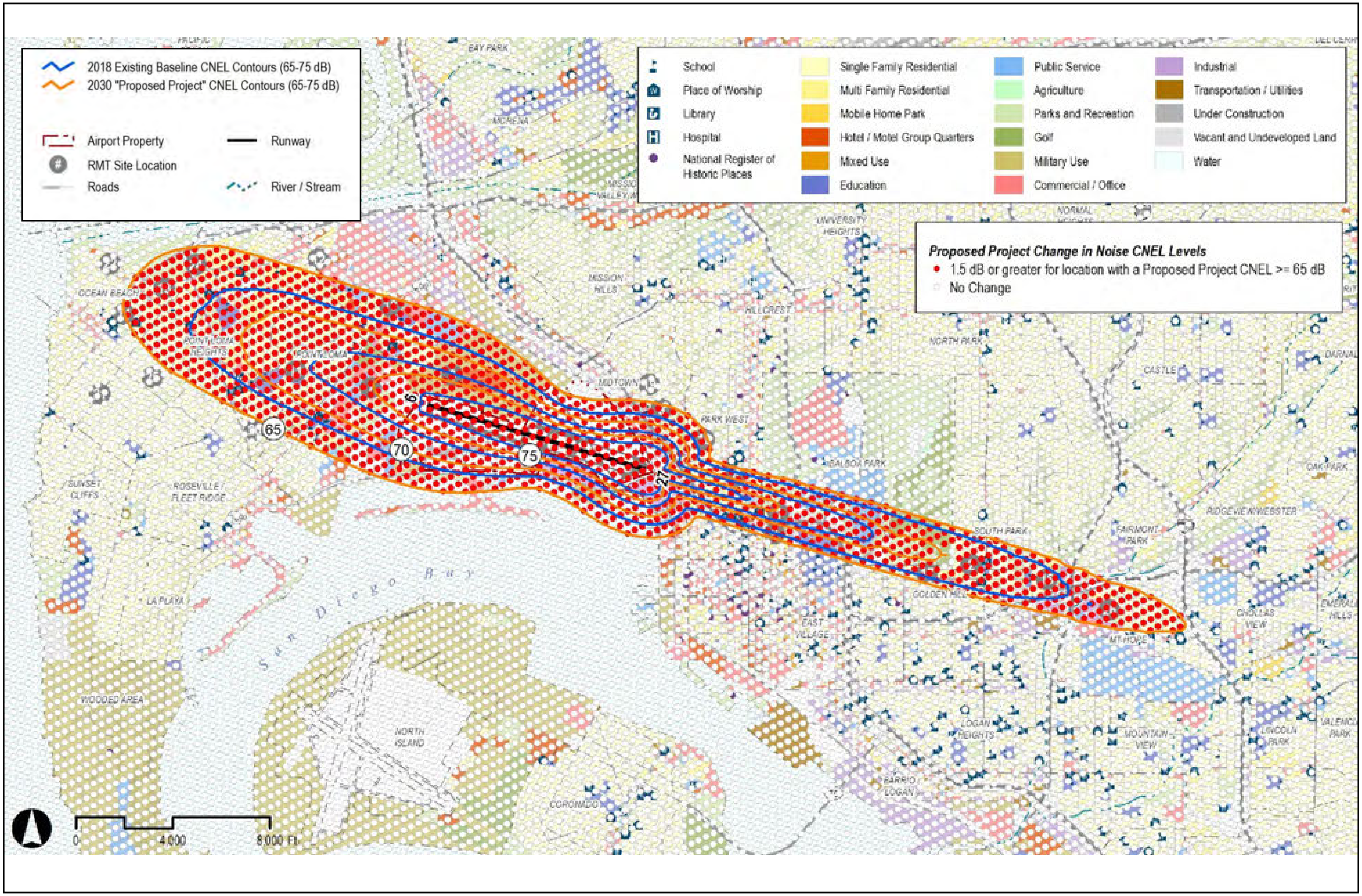


Source: HMMH, 2019

Figure 3.12-14

1.5 DB OR GREATER INCREASE IN CNEL:

2026 PROPOSED PROJECT COMPARED TO EXISTING (2018) BASELINE CONDITIONS



Source: HMMH, 2018

Figure 3.12-15

1.5 DB OR GREATER INCREASE IN CNEL:

2030 PROPOSED PROJECT COMPARED TO EXISTING (2018) BASELINE CONDITIONS

Based on the above, in 2030 there would be a 1.5 dB or more increase resulting in noise-sensitive areas being exposed to 65 CNEL or greater, as compared to the existing (2018) baseline conditions due to future increases in aircraft activity; therefore, there would be a ***significant impact***.

Impacts in 2035

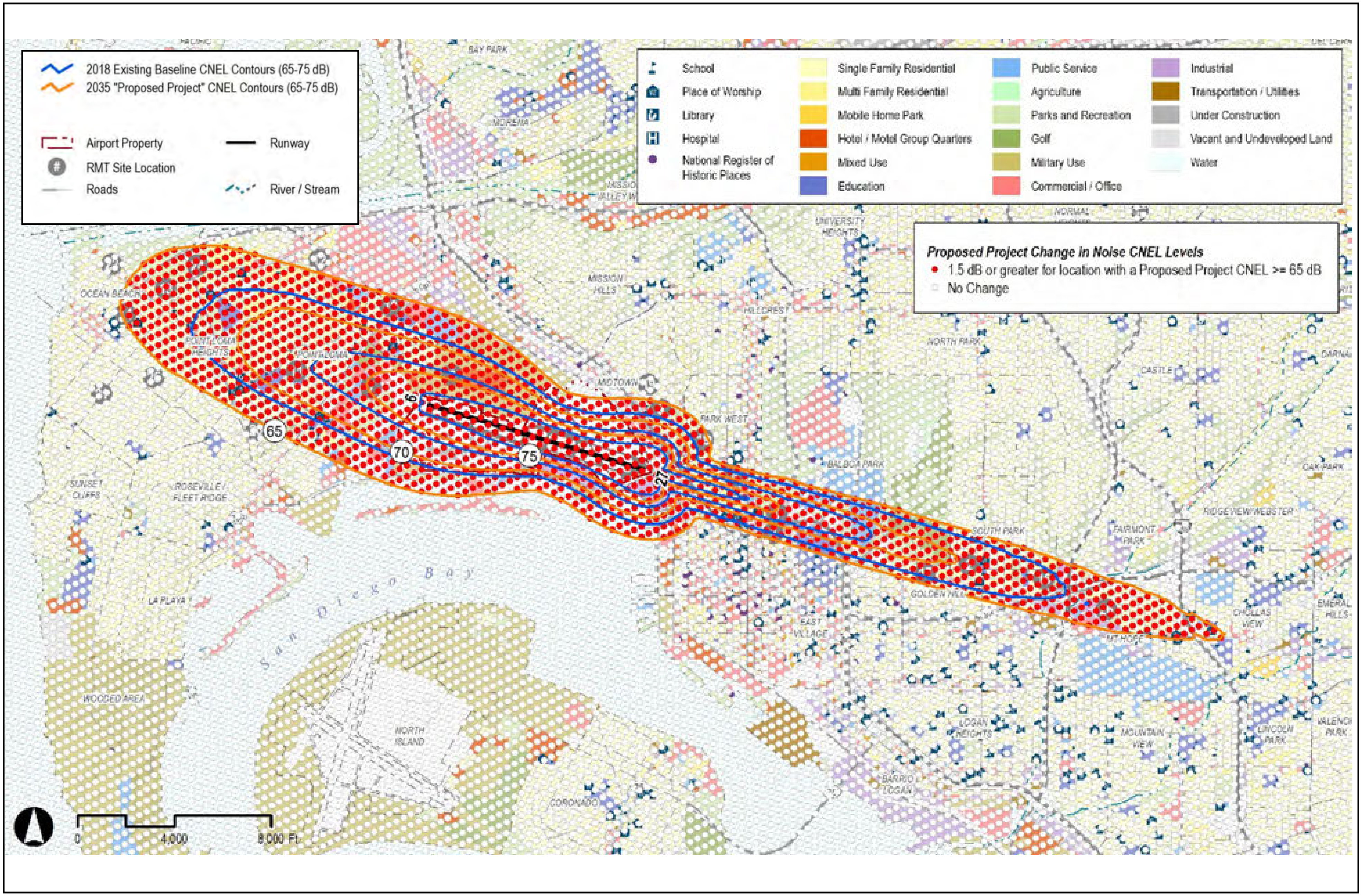
Figure 3.12-16 presents a summary depiction of whether, and where, there would be a 1.5 dB increase in the noise level within the 65 CNEL or greater noise contour, with completion of Phase 2b in 2035 (Project Buildout) compared to existing (2018) baseline conditions. A white dot indicates an area where there would be either no change in the noise level or less than 1.5 dB in change to the noise level within the 65 CNEL or greater noise contour. A red dot indicates an area where there would be a 1.5 dB or greater change in the noise level within the 65 CNEL or greater noise contour. As shown, there are areas to the north, south, east, and west of SDIA that would experience a 1.5 dB increase in the noise level within the 65 CNEL or greater noise contour in 2035 (i.e., areas with red dots).

Based on the above, in 2035 there would be a 1.5 dB or more increase resulting in noise-sensitive areas being exposed to 65 CNEL or greater, as compared to the existing (2018) baseline conditions due to future increases in aircraft activity; therefore, there would be a ***significant impact***.

Impacts in 2050

Figure 3.12-17 presents a summary depiction of whether, and where, there would be a 1.5 dB increase in the noise level within the 65 CNEL or greater noise contour in 2050 compared to existing (2018) baseline conditions. A white dot indicates an area where there would be either no change in the noise level or less than 1.5 dB in change to the noise level within the 65 CNEL or greater noise contour. A red dot indicates an area where there would be a 1.5 dB or greater change in the noise level within the 65 CNEL or greater noise contour. As shown, there are areas to the north, south, east, and west of the Airport that would experience a 1.5 dB increase in the noise level within the 65 CNEL or greater noise contour in 2050 (i.e., areas with red dots).

Based on the above, in 2050 there would be a 1.5 dB or more increase resulting in noise-sensitive areas being exposed to 65 CNEL or greater, as compared to the existing (2018) baseline conditions due to future increases in aircraft activity; therefore, there would be a ***significant impact***.

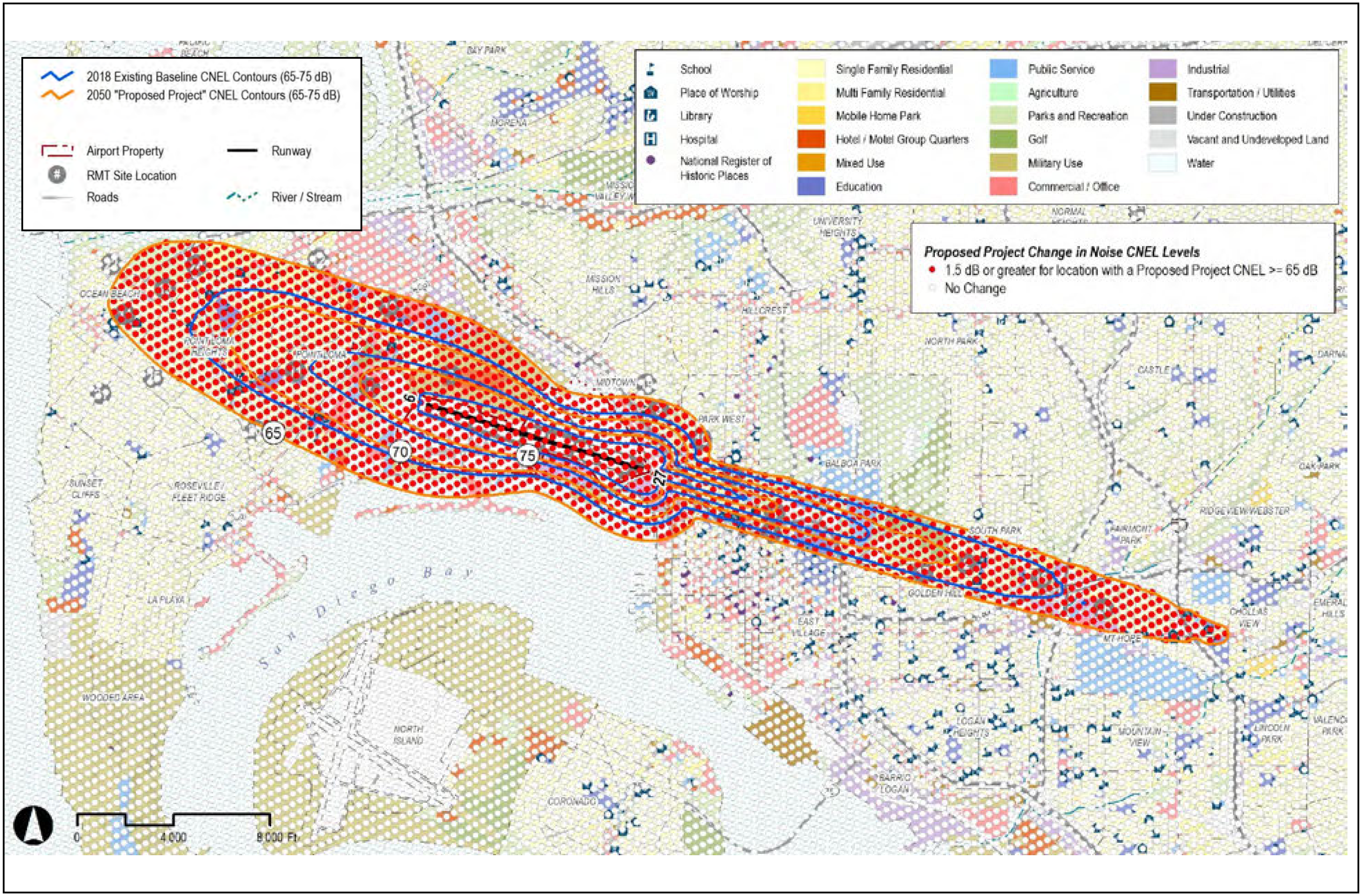


Source: HMMH, 2019

Figure 3.12-16

1.5 DB OR GREATER INCREASE IN CNEL:

2035 PROPOSED PROJECT COMPARED TO EXISTING (2018) BASELINE CONDITIONS



Source: HMMH, 2019

Figure 3.12-17

1.5 DB OR GREATER INCREASE IN CNEL:

2050 PROPOSED PROJECT COMPARED TO EXISTING (2018) BASELINE CONDITIONS

3.12.3.5.3.1 Mitigation Measures

Mitigation Measures MM-NOI-1 through MM-NOI-5, presented earlier in Section 3.12.3.5.2.1 for Impact 3.12-1, are also recommended relative to Impact 3.12-2. MM-NOI-1 provides for expansion of the SDCRAA sound insulation program (i.e., Quieter Home Program), at which residences within the FAA-approved 65 dB CNEL contour around SDIA may be eligible for sound insulation treatments to mitigate aircraft noise, and also provides for expanding the existing sound insulation program to include non-residential uses, all of which is subject to FAA approval of funding. MM-NOI-2 through MM-NOI-5 provide various measures that will help support, inform, and update SDCRAA programs and policies that serve to mitigate aircraft noise impacts to noise-sensitive uses.

It should be noted that in addition to the mitigation measures identified above, the SDCRAA will continue to implement the many noise abatement measures and programs at SDIA that are described in Section 3.12.3.2.3, which serve to address existing and future aircraft noise impacts from SDIA operations.

3.12.3.5.3.2 Significance of Impact After Mitigation

Based on uncertainties regarding whether all of the impacted noise-sensitive uses, specifically, those where there would be a 1.5 dB increase in the noise level within the 65 CNEL or greater noise contour compared to existing conditions, could be mitigated through Mitigation Measures MM-NOI-1 through MM-NOI-5, the impact is considered to be ***significant and unavoidable***. It is important to note, for informational purposes, that the future aircraft noise levels at SDIA would be the same with or without the proposed project (i.e., there is no difference in aircraft noise impacts between the proposed project and the No Project Alternative).

3.12.3.5.4 Impact 3.12-3

Summary Conclusion for Impact 3.12-3: Implementation of the proposed project would cause a 3 dB or more increase resulting in noise-sensitive areas being exposed to 60 CNEL to less than 65 CNEL, in 2024, 2026, 2030, 2035, and 2050, as compared to the existing (2018) baseline condition. As such, and as further described below, this would be a *significant and unavoidable impact*.

The following provides the details in support of the above summary conclusion. The impacts analysis below of each future horizon year (i.e., 2024, 2026, 2030, 2035, and 2050) with implementation of the proposed project is based on a comparison to existing (2018) baseline conditions. It should be noted, for informational purposes, that the aircraft noise impacts in each future horizon year would be the same with or without the proposed project (i.e., the noise impacts without implementation of the proposed project in 2024, as well as in each subsequent horizon year, would be the same as with implementation of the project in that year), as further described in Chapter 5, Alternatives Analysis.

Impacts in 2024

Figure 3.12-18 presents a summary depiction of whether, and where, there would be a 3 dB or more increase resulting in noise-sensitive areas being exposed to 60 CNEL to less than 65 CNEL with completion of Phase 1a in 2024 compared to existing (2018) conditions. A white dot indicates an area where there would be either no change in the noise level or less than 3 dB in change to the noise level in noise-sensitive areas exposed to between 60 CNEL and 65 CNEL. A red dot indicates an area where there would be a 3 dB or greater change in the subject noise setting. As shown, there are areas to the north and south of SDIA that would experience a 3.0 dB increase in the noise level within noise-sensitive areas exposed to between 60 CNEL and 65 CNEL in 2024 compared to existing (2018) conditions (i.e., areas with red dots).

Based on the above, in 2024 there would be a 3.0 dB or more increase resulting in noise-sensitive areas being exposed to between 60 CNEL and 65 CNEL, as compared to the existing (2018) baseline conditions due to future increases in aircraft activity; therefore, there would be a ***significant impact***.

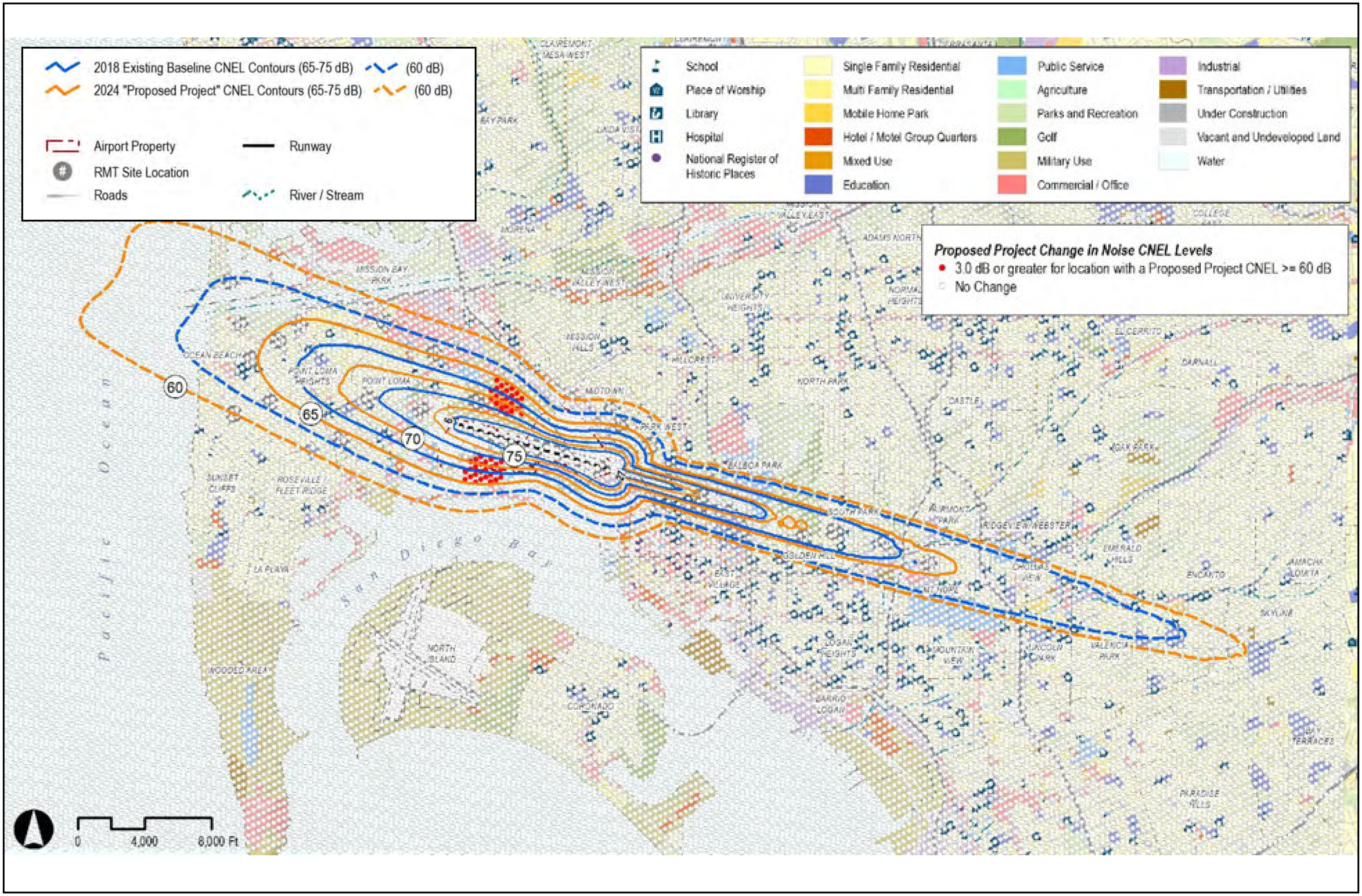
Impacts in 2026

Figure 3.12-19 presents a summary depiction of whether, and where, there would be a 3 dB or more increase resulting in noise-sensitive areas being exposed to 60 CNEL to less than 65 CNEL with completion of Phase 1b in 2026 compared to existing (2018) conditions. A white dot indicates an area where there would be either no change in the noise level or less than 3 dB in change to the noise level in noise-sensitive areas exposed to between 60 CNEL and 65 CNEL. A red dot indicates an area where there would be a 3 dB or greater change in the subject noise setting. As shown, there are areas to the north and south of SDIA that would experience a 3.0 dB increase in the noise level within noise-sensitive areas exposed to between 60 CNEL and 65 CNEL in 2026 compared to existing (2018) conditions (i.e., areas with red dots).

Based on the above, in 2026 there would be a 3.0 dB or more increase resulting in noise-sensitive areas being exposed to between 60 CNEL and 65 CNEL, as compared to the existing (2018) baseline conditions due to future increases in aircraft activity; therefore, there would be a ***significant impact***.

Impacts in 2030

Figure 3.12-20 presents a summary depiction of whether, and where, there would be a 3 dB or more increase resulting in noise-sensitive areas being exposed to 60 CNEL to less than 65 CNEL with completion of Phase 2a in 2030 compared to existing (2018) conditions. A white dot indicates an area where there would be either no change in the noise level or less than 3 dB in change to the noise level in noise-sensitive areas exposed to between 60 CNEL and 65 CNEL. A red dot indicates an area where there would be a 3 dB or greater change in the subject noise setting. As shown, there are areas to the north, northwest, southwest, and south of SDIA that would experience a 3.0 dB increase in the noise level within noise-sensitive areas exposed to between 60 CNEL and 65 CNEL in 2030 compared to existing (2018) conditions (i.e., areas with red dots).

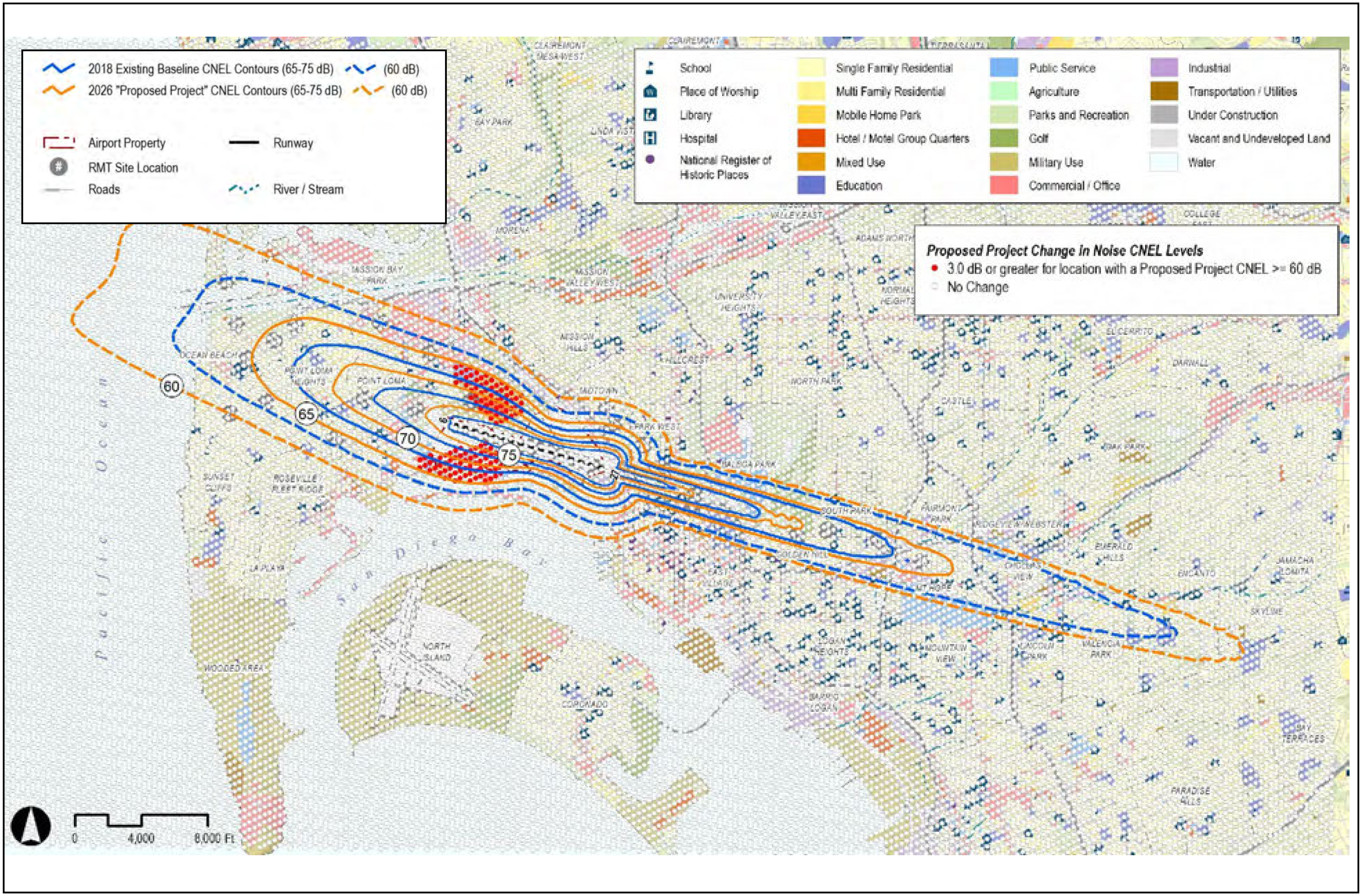


Source: HMMH, 2019

Figure 3.12-18

3 DB OR GREATER INCREASE IN CNEL:

2024 PROPOSED PROJECT COMPARED TO EXISTING (2018) BASELINE CONDITIONS

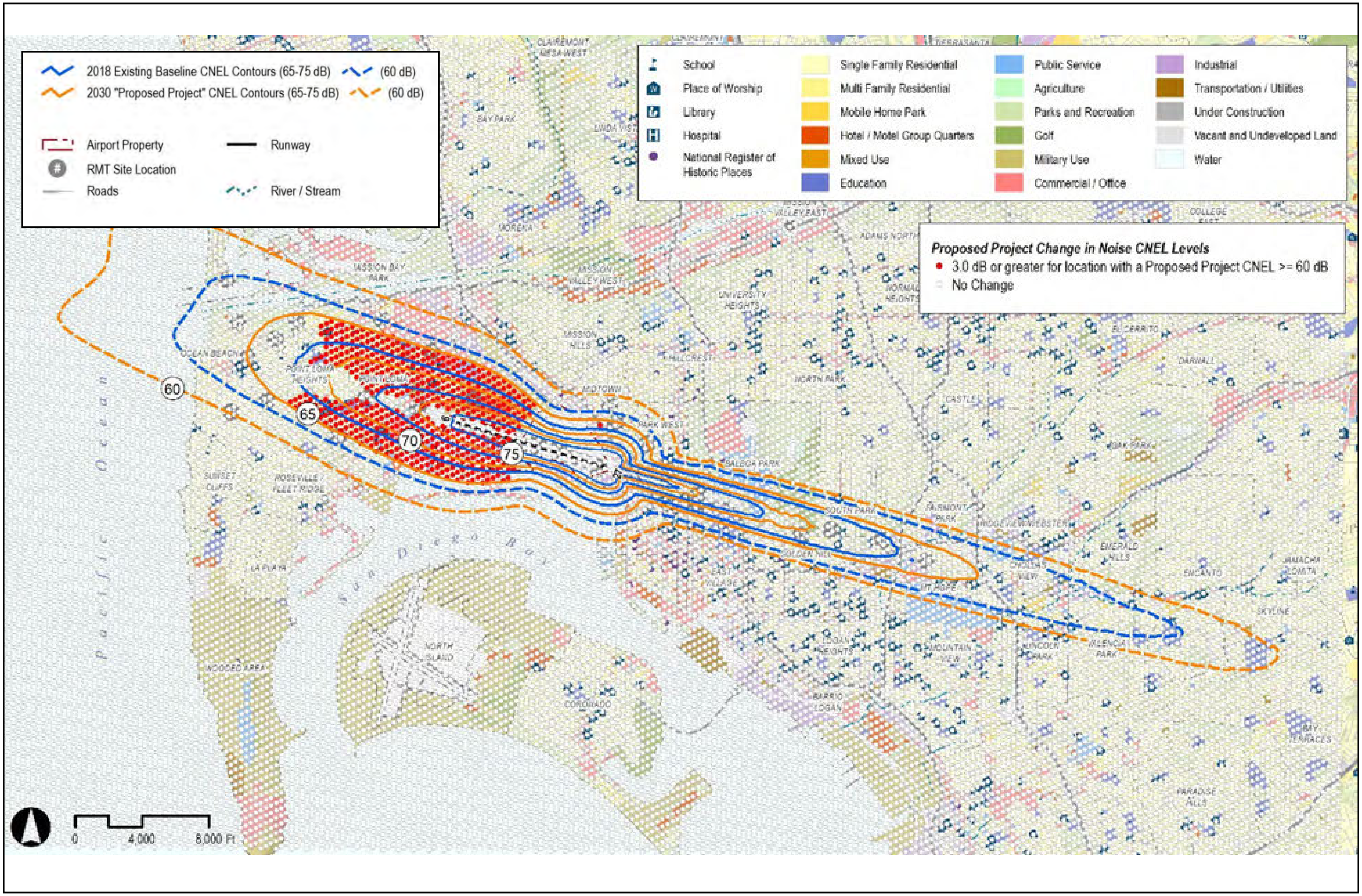


Source: HMMH, 2019

Figure 3.12-19

3 DB OR GREATER INCREASE IN CNEL:

2026 PROPOSED PROJECT COMPARED TO EXISTING (2018) BASELINE CONDITIONS



Source: HMMH, 2019

Figure 3.12-20

3 DB OR GREATER INCREASE IN CNEL:

2030 PROPOSED PROJECT COMPARED TO EXISTING (2018) BASELINE CONDITIONS

Based on the above, in 2030 there would be a 3.0 dB or more increase resulting in noise-sensitive areas being exposed to between 60 CNEL and 65 CNEL, as compared to the existing (2018) baseline conditions due to future increases in aircraft activity; therefore, there would be a ***significant impact***.

Impacts in 2035

Figure 3.12-21 presents a summary depiction of whether, and where, there would be a 3 dB or more increase resulting in noise-sensitive areas being exposed to 60 CNEL to less than 65 CNEL with completion of Phase 2b in 2035 compared to existing (2018) conditions. A white dot indicates an area where there would be either no change in the noise level or less than 3 dB in change to the noise level in noise-sensitive areas exposed to between 60 CNEL and 65 CNEL. A red dot indicates an area where there would be a 3 dB or greater change in the subject noise setting. As shown, there are areas to the north, south, and west of SDIA that would experience a 3.0 dB increase in the noise level within noise-sensitive areas exposed to between 60 CNEL and 65 CNEL in 2035 compared to existing (2018) conditions (i.e., areas with red dots).

Based on the above, in 2035 there would be a 3.0 dB or more increase resulting in noise-sensitive areas being exposed to between 60 CNEL and 65 CNEL, as compared to the existing (2018) baseline conditions due to future increases in aircraft activity; therefore, there would be a ***significant impact***.

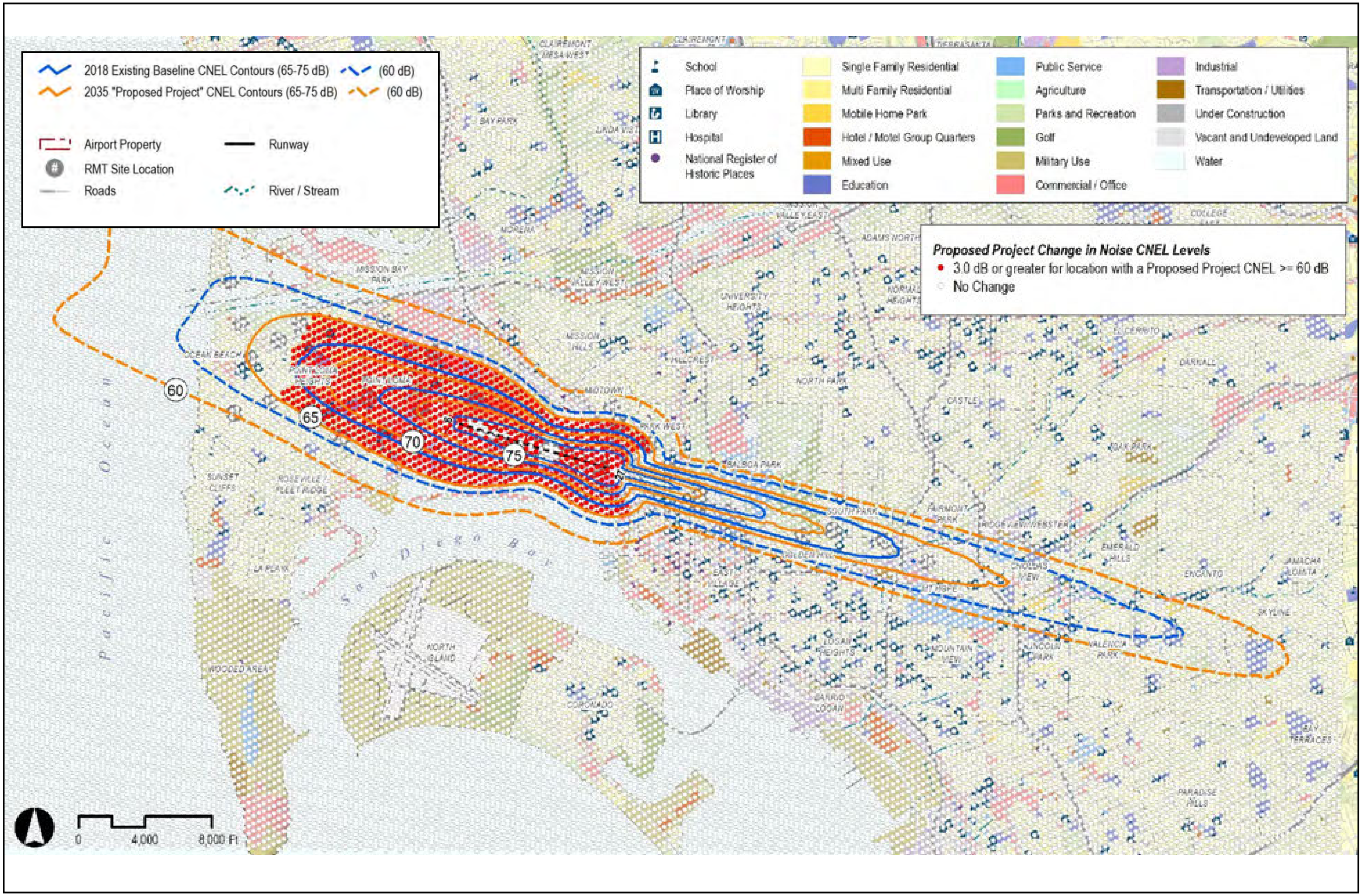
Impacts in 2050

Figure 3.12-22 presents a summary depiction of whether, and where, there would be a 3 dB or more increase resulting in noise-sensitive areas being exposed to 60 CNEL to less than 65 CNEL in 2050 compared to existing (2018) conditions. A white dot indicates an area where there would be either no change in the noise level or less than 3 dB in change to the noise level in noise-sensitive areas exposed to between 60 CNEL and 65 CNEL. A red dot indicates an area where there would be a 3 dB or greater change in the subject noise setting. As shown, there are areas to the north, south, west, and east of SDIA that would experience a 3.0 dB increase in the noise level within noise-sensitive areas exposed to between 60 CNEL and 65 CNEL in 2050 compared to existing (2018) conditions (i.e., areas with red dots).

Based on the above, in 2050 there would be a 3.0 dB or more increase resulting in noise-sensitive areas being exposed to between 60 CNEL and 65 CNEL, as compared to the existing (2018) baseline conditions due to future increases in aircraft activity; therefore, there would be a ***significant impact***.

3.12.3.5.4.1 Mitigation Measures

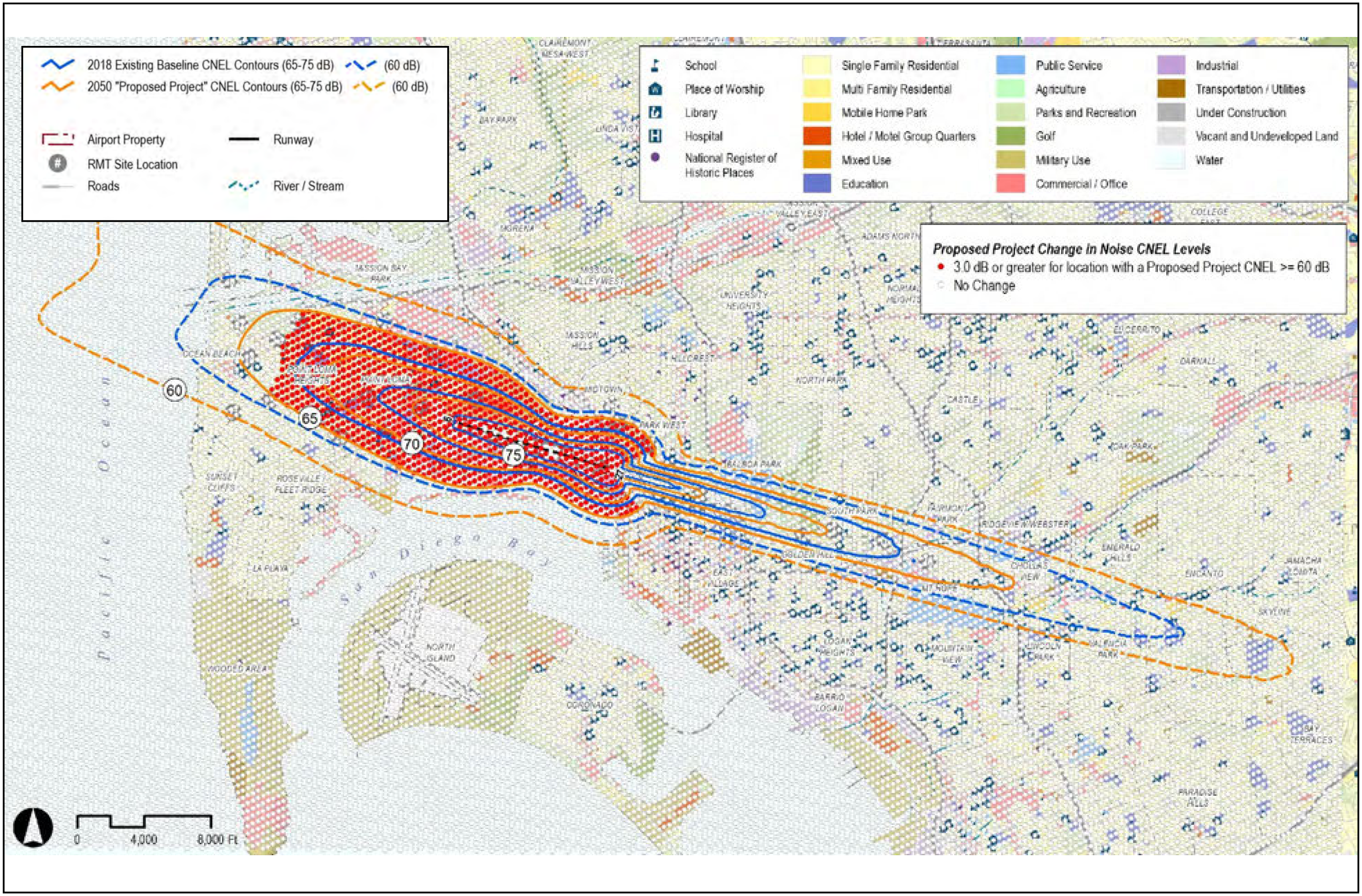
Mitigation Measures MM-NOI-1 through MM-NOI-5, presented earlier in Section 3.12.3.5.2.1 for Impact 3.12-1, are also recommended relative to Impact 3.12-3. MM-NOI-1 provides for expansion of the SDCRAA sound insulation program (i.e., Quieter Home Program), at which residences within the FAA-approved 65 dB CNEL contour around SDIA may be eligible for sound insulation treatments to mitigate aircraft noise, and also provides for expanding the existing sound insulation program to include non-residential uses, all of which is subject to FAA approval of funding. MM-NOI-2 through MM-NOI-5 provide various measures that will help support, inform, and update SDCRAA programs and policies that serve to mitigate aircraft noise impacts to noise-sensitive uses.



Source: HMMH, 2019

Figure 3.12-21

3 DB OR GREATER INCREASE IN CNEL:
2035 PROPOSED PROJECT COMPARED TO EXISTING (2018) BASELINE CONDITIONS



Source: HMMH, 2019

Figure 3.12-22

3 DB OR GREATER INCREASE IN CNEL: 2050 PROPOSED PROJECT COMPARED TO EXISTING (2018) BASELINE CONDITIONS

It should be noted that in addition to the mitigation measures identified above, the SDCRAA will continue to implement the many noise abatement measures and programs at SDIA that are described in Section 3.12.3.2.3, which serve to address existing and future aircraft noise impacts from SDIA operations.

3.12.3.5.4.2 Significance of Impact After Mitigation

Based on uncertainties regarding whether all of the impacted noise-sensitive uses, specifically, those where there would be a 3 dB or more increase resulting in noise-sensitive areas being exposed to 60 CNEL to less than 65 CNEL compared to existing conditions, could be mitigated through Mitigation Measures MM-NOI-1 through MM-NOI-5, the impact is considered to be ***significant and unavoidable***. It is important to note, for informational purposes, that the future aircraft noise levels at SDIA would be the same with or without the proposed project (i.e., there is no difference in aircraft noise impacts between the proposed project and the No Project Alternative).

3.12.3.5.5 Impact 3.12-4

Summary Conclusion for Impact 3.12-4: Implementation of the proposed project would not cause a substantial increase in the amount of time that aircraft-induced noise would affect classroom learning, as compared to the existing (2018) baseline condition. As such, and as further described below, this would be a *less than significant impact*.

The following provides the details in support of the above summary conclusion. The impacts analysis below of each future horizon year (i.e., 2024, 2026, 2030, 2035, and 2050) with implementation of the proposed project is based on a comparison to existing (2018) baseline conditions. It should be noted, for informational purposes, that the aircraft noise impacts in each future horizon year would be the same with or without the proposed project (i.e., the noise impacts without implementation of the proposed project in 2024, as well as in each subsequent horizon year, would be the same as with implementation of the project in that year), as further described in Chapter 5, Alternatives Analysis.

Table 3.12-10 indicates the existing TA exterior noise levels for 21 schools located within the boundary of the 65 CNEL estimated for 2050 conditions (i.e., the most conservative "worst-case" scenario of the future horizon years), and delineates the changes in the amounts of time, in minutes, that the exterior noise levels would exceed aircraft-related exterior noise levels of between 65 dB and 90 dB[42] with completion of each of the major subphases of the proposed project (i.e., Phase 1a in 2024, Phase 1b in 2026, Phase 2a in 2030, and Phase 2b in 2035), and the future analysis year of 2050, as compared to existing (2018) conditions.

[42] The Noise Level values indicated in Table 3.12-10 represent 5 dB increments, ranging from 65 dB (i.e., 65-70 dB) to 90 dB (i.e., 85-90 dB).

Table 3.12-10: Time Above Exterior Noise Level (minutes)

School	Threshold Level	2018 Existing Baseline	2024 Proposed Project	Baseline - 2024 Delta	2026 Proposed Project	Baseline - 2026 Delta	2030 Proposed Project	Baseline - 2030 Delta	2035 Proposed Project	Baseline - 2035 Delta	2050 Proposed Project	Baseline - 2050 Delta
Collier Junior High School	65	82.1	85.8	3.7	87.7	5.6	92.2	10.1	94.6	12.5	95.8	13.7
	70	41	43	2	44.2	3.2	47.7	6.7	48.5	7.5	49.5	8.5
	75	8.6	8.7	0.1	9.2	0.6	10.9	2.3	11.6	3	12.2	3.6
	80	0.8	0.6	-0.2	0.7	-0.1	0.8	0	0.8	0	1	0.2
	85	0	0	0	0	0	0	0	0	0	0	0
Loma Portal Elementary School	65	87.2	92	4.8	95.2	8	102.1	14.9	107.3	20.1	108.3	21.1
	70	48.2	51.4	3.2	53.4	5.2	58.8	10.6	62.2	14	63	14.8
	75	18.8	20.4	1.6	21.5	2.7	25.4	6.6	27.7	8.9	28.2	9.4
	80	3.7	4.1	0.4	4.4	0.7	5.8	2.1	6.6	2.9	6.8	3.1
	85	0	0	0	0	0	0	0	0	0	0.1	0.1
Saint Charles School	65	109.8	115.4	5.6	120.3	10.5	128.7	18.9	136.9	27.1	137.7	27.9
	70	69.6	73.5	3.9	76.9	7.3	83.2	13.6	88.8	19.2	89.4	19.8
	75	37.9	40.4	2.5	42.8	4.9	47.6	9.7	51.5	13.6	52	14.1
	80	13	14.1	1.1	15.4	2.4	19.1	6.1	21.9	8.9	22.2	9.2
	85	1.4	1.6	0.2	1.7	0.3	2.2	0.8	2.4	1	2.5	1.1
Dewey Elementary School	65	100.3	106.2	5.9	111.2	10.9	120.4	20.1	128.4	28.1	129.2	28.9
	70	53.9	57.6	3.7	61	7.1	67.9	14	72.9	19	73.3	19.4
	75	17.6	19.1	1.5	20.5	2.9	25.3	7.7	29	11.4	29.2	11.6
	80	1.9	2.1	0.2	2.2	0.3	3	1.1	3.6	1.7	3.7	1.8
	85	0	0	0	0	0	0	0	0	0	0	0
Brooklyn Children's Center	65	74.2	82.3	8.1	84	9.8	87.3	13.1	89.7	15.5	92.5	18.3
	70	47.6	53.3	5.7	54.5	6.9	57.2	9.6	59.2	11.6	61.3	13.7
	75	22.8	26	3.2	26.5	3.7	29.2	6.4	31.3	8.5	32.6	9.8
	80	1.4	1.5	0.1	1.5	0.1	2	0.6	2.6	1.2	2.6	1.2
	85	0	0	0	0	0	0	0	0	0	0	0

Table 3.12-10: Time Above Exterior Noise Level (minutes)

School	Threshold Level	2018 Existing Baseline	2024 Proposed Project	Baseline - 2024 Delta	2026 Proposed Project	Baseline - 2026 Delta	2030 Proposed Project	Baseline - 2030 Delta	2035 Proposed Project	Baseline - 2035 Delta	2050 Proposed Project	Baseline - 2050 Delta
Montessori School of San Diego Private Elementary School	65	108.5	115.2	6.7	120.2	11.7	136.6	28.1	147.1	38.6	148.6	40.1
	70	26.8	28.2	1.4	29.5	2.7	38.7	11.9	46.2	19.4	46.7	19.9
	75	0.7	0.7	0	0.7	0	0.8	0.1	0.8	0.1	0.8	0.1
	80	0	0	0	0	0	0	0	0	0	0	0
	85	0	0	0	0	0	0	0	0	0	0	0
Loma Alta Children's Private Elementary School	65	80.1	83.8	3.7	85.8	5.7	90.7	10.6	92.8	12.7	93.6	13.5
	70	38.8	40.7	1.9	42	3.2	45.3	6.5	45.9	7.1	46.7	7.9
	75	9.5	9.9	0.4	10.4	0.9	12.2	2.7	13	3.5	13.5	4
	80	1.6	1.6	0	1.7	0.1	2.1	0.5	2.2	0.6	2.4	0.8
	85	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Barnard Elementary School	65	72.8	76.9	4.1	79.6	6.8	86.5	13.7	89.4	16.6	90.2	17.4
	70	28.5	30.3	1.8	31.6	3.1	36.3	7.8	38.3	9.8	38.8	10.3
	75	5.2	5.5	0.3	5.9	0.7	7.2	2	7.8	2.6	8	2.8
	80	0.3	0.4	0.1	0.4	0.1	0.5	0.2	0.6	0.3	0.6	0.3
	85	0	0	0	0	0	0	0	0	0	0	0
Dewey Elementary	65	93.1	99.3	6.2	104.8	11.7	114.4	21.3	121.5	28.4	121.9	28.8
	70	39.1	42.3	3.2	45.5	6.4	53.4	14.3	58	18.9	58.1	19
	75	5.5	5.9	0.4	6.2	0.7	8.6	3.1	10.7	5.2	10.8	5.3
	80	0	0	0	0	0	0	0	0	0	0	0
	85	0	0	0	0	0	0	0	0	0	0	0
Loma Portal Elementary	65	98.7	103.5	4.8	107.6	8.9	114.7	16	121.6	22.9	122.4	23.7
	70	63.2	66.8	3.6	69.6	6.4	75	11.8	79.9	16.7	80.6	17.4
	75	34.7	37.3	2.6	39.4	4.7	43.7	9	46.9	12.2	47.6	12.9
	80	11.9	13.2	1.3	14.4	2.5	17.5	5.6	19.9	8	20.3	8.4
	85	1.8	2	0.2	2.2	0.4	2.8	1	3	1.2	3.2	1.4

Table 3.12-10: Time Above Exterior Noise Level (minutes)

School	Threshold Level	2018 Existing Baseline	2024 Proposed Project	Baseline - 2024 Delta	2026 Proposed Project	Baseline - 2026 Delta	2030 Proposed Project	Baseline - 2030 Delta	2035 Proposed Project	Baseline - 2035 Delta	2050 Proposed Project	Baseline - 2050 Delta
Correia Middle	65	90.4	94.7	4.3	97.3	6.9	102.6	12.2	105.7	15.3	106.8	16.4
	70	50	53	3	54.6	4.6	59	9	60.9	10.9	61.9	11.9
	75	17.7	19	1.3	20	2.3	23.1	5.4	24.2	6.5	24.8	7.1
	80	2.9	3	0.1	3.2	0.3	4	1.1	4.3	1.4	4.6	1.7
	85	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
High Tech Middle	65	99.9	105.8	5.9	110.6	10.7	119.7	19.8	127.6	27.7	128.6	28.7
	70	55.1	59	3.9	62.3	7.2	69.1	14	74.3	19.2	74.9	19.8
	75	20	21.6	1.6	23.4	3.4	28.3	8.3	31.7	11.7	32	12
	80	2.2	2.3	0.1	2.4	0.2	3.4	1.2	4.1	1.9	4.2	2
	85	0	0	0	0	0	0	0	0	0	0	0
High Tech High	65	97.7	103.7	6	108.5	10.8	117.6	19.9	125.4	27.7	126.3	28.6
	70	52.1	55.8	3.7	59.2	7.1	66	13.9	71	18.9	71.6	19.5
	75	16.8	18.3	1.5	19.8	3	24.6	7.8	27.8	11	28	11.2
	80	1	1	0	1	0	1.4	0.4	1.6	0.6	1.7	0.7
	85	0	0	0	0	0	0	0	0	0	0	0
Albert Einstein Academy Charter Elementary	65	74.1	82.1	8	83.7	9.6	86.6	12.5	88.5	14.4	91.3	17.2
	70	47.6	53.3	5.7	54.4	6.8	56.8	9.2	58.4	10.8	60.5	12.9
	75	23.3	26.5	3.2	27	3.7	29.5	6.2	31	7.7	32.3	9
	80	1	1.1	0.1	1	0	1.4	0.4	1.8	0.8	1.8	0.8
	85	0	0	0	0	0	0	0	0	0	0	0
Point Loma High	65	90.7	95.5	4.8	99	8.3	106	15.3	111.9	21.2	112.9	22.2
	70	53.4	56.9	3.5	59.1	5.7	64.7	11.3	68.7	15.3	69.5	16.1
	75	24.5	26.6	2.1	28.1	3.6	32.3	7.8	34.9	10.4	35.4	10.9
	80	5.6	6.1	0.5	6.6	1	8.6	3	10	4.4	10.2	4.6
	85	0.3	0.3	0	0.3	0	0.3	0	0.3	0	0.4	0.1

Table 3.12-10: Time Above Exterior Noise Level (minutes)

School	Threshold Level	2018 Existing Baseline	2024 Proposed Project	Baseline - 2024 Delta	2026 Proposed Project	Baseline - 2026 Delta	2030 Proposed Project	Baseline - 2030 Delta	2035 Proposed Project	Baseline - 2035 Delta	2050 Proposed Project	Baseline - 2050 Delta
High Tech High Media Arts	65	88.4	94.1	5.7	98.6	10.2	107.5	19.1	114.8	26.4	115.6	27.2
	70	42.8	45.8	3	48.8	6	55.6	12.8	60	17.2	60.4	17.6
	75	10.4	11.3	0.9	12.1	1.7	15.7	5.3	18.3	7.9	18.5	8.1
	80	0	0	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1
	85	0	0	0	0	0	0	0	0	0	0	0
Golden Hill K-8	65	69.5	77.5	8	79.1	9.6	83.1	13.6	87.1	17.6	90	20.5
	70	41.1	46.4	5.3	47.5	6.4	50.2	9.1	52.4	11.3	54.6	13.5
	75	14.3	16.3	2	16.7	2.4	19.6	5.3	20.5	6.2	21.5	7.2
	80	0.2	0.1	-0.1	0.1	-0.1	0.1	-0.1	0.1	-0.1	0.1	-0.1
	85	0	0	0	0	0	0	0	0	0	0	0
High Tech Middle Media Arts	65	88.4	94.1	5.7	98.6	10.2	107.5	19.1	114.8	26.4	115.6	27.2
	70	42.8	45.8	3	48.8	6	55.6	12.8	60	17.2	60.4	17.6
	75	10.4	11.3	0.9	12.1	1.7	15.7	5.3	18.3	7.9	18.5	8.1
	80	0	0	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1
	85	0	0	0	0	0	0	0	0	0	0	0
High Tech Elementary Explorer	65	88.4	94.1	5.7	98.6	10.2	107.5	19.1	114.8	26.4	115.6	27.2
	70	42.8	45.8	3	48.8	6	55.6	12.8	60	17.2	60.4	17.6
	75	10.4	11.3	0.9	12.1	1.7	15.7	5.3	18.3	7.9	18.5	8.1
	80	0	0	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1
	85	0	0	0	0	0	0	0	0	0	0	0
The Rock Academy	65	100.4	106.3	5.9	111	10.6	119.9	19.5	127.9	27.5	128.9	28.5
	70	56.9	60.8	3.9	64.1	7.2	70.7	13.8	75.9	19	76.6	19.7
	75	22.3	24.1	1.8	25.9	3.6	30.8	8.5	34.2	11.9	34.5	12.2
	80	3.1	3.4	0.3	3.6	0.5	5	1.9	6.1	3	6.2	3.1
	85	0	0	0	0	0	0	0	0	0	0	0

Table 3.12-10: Time Above Exterior Noise Level (minutes)

School	Threshold Level	2018 Existing Baseline	2024 Proposed Project	Baseline - 2024 Delta	2026 Proposed Project	Baseline - 2026 Delta	2030 Proposed Project	Baseline - 2030 Delta	2035 Proposed Project	Baseline - 2035 Delta	2050 Proposed Project	Baseline - 2050 Delta
Saint Charles Borromeo Academy	65	120.1	126.5	6.4	132.2	12.1	141.4	21.3	150	29.9	150.8	30.7
	70	71.4	76	4.6	80	8.6	87.3	15.9	93.5	22.1	94.1	22.7
	75	34	36.6	2.6	39.3	5.3	44.9	10.9	48.4	14.4	48.7	14.7
	80	7.1	7.7	0.6	8.2	1.1	10.9	3.8	13.2	6.1	13.4	6.3
	85	0.2	0.1	-0.1	0.2	0	0.2	0	0.2	0	0.2	0

Source: HMMH, 2019.

Table 3.12-11 summarizes the changes in the amounts of time, in minutes, that the exterior noise levels at specific schools would exceed aircraft-related exterior noise levels of 80 dB or greater (i.e., the exterior noise level that would result in an interior noise level of 65 dB or greater, which is conservatively assumed to represent the interior noise level that could interrupt speech and adversely affect the learning environment, as explained in Section 3.12.3.4.1) at completion of each major subphase of the proposed project as compared to existing (2018) baseline conditions. It should be noted, for informational purposes, that impacts to schools relative to changes in TA 80 dB, as presented in Table 3.12-10 and summarized in Table 3.12-11, would be exactly the same for both the proposed project and the No Project Alternative (i.e., the same future changes would occur even if the proposed project was not implemented).

Table 3.12-11: Summary of Impacts: Schools Exposed to TA ≥ 80 dB

		Analysis Year					
		2018	2024	2026	2030	2035	2050
Number of schools:	Total in Study Area	21	21	21	21	21	21
	Exposed to TA ≥80 dB	16	16	16	19	19	19
	Currently exposed to TA ≥80 dB that would not experience an increase in the amount of time exposed to TA ≥80 dB in a given year	NA	4	4	2	2	1
	Currently exposed to TA >80 dB that would experience an increase in the amount of time exposed to TA >80 dB in a given year	NA	12	12	17	17	18
	Where increase in exposure to ≥80 dB would be <1 minute in a given year	NA	10	8	8	7	8
	Where increase in exposure to ≥80 dB in a given year would be >1 minute	NA	2	4	9	10	10
	Maximum time increase in a given year, in minutes, of exposure to > 80 dB	NA	1.3	2.5	6.1	8.9	9.2

Source: HMMH, 2019; CDM Smith 2019.

Impacts in 2024

As indicated in Table 3.12-10 and summarized in Table 3.12-11, 16 of the 21 schools evaluated in the study area currently experience exterior noise levels of 80 dB or greater, and 12 of those schools would experience an increase in the amount of exposure time to that noise level with the aircraft activity levels anticipated to occur in 2024 at the completion of Phase 1a, compared to existing (2018) baseline conditions. Of those 12 schools, 10 of them would experience an increase of less than one minute per day and two schools would experience an increase of more than one minute per day, with a maximum 1.3-minute increase per day in such exposure.

Based on the above, operation of the proposed project in 2024 compared to the existing (2018) baseline condition would not cause a substantial increase in the amount of time that aircraft-induced noise would affect classroom learning. As such, there would be a ***less than significant impact***.

Impacts in 2026

As indicated in Table 3.12-10 and summarized in Table 3.12-11, 16 of the 21 schools evaluated in the study area currently experience exterior noise levels of 80 dB or greater, and 12 of those schools would experience an increase in the amount of exposure time to that noise level with the aircraft activity levels anticipated to occur in 2026 at the completion of Phase 1b, compared to existing (2018) baseline conditions. Of those 12 schools, eight of them would experience an increase of less than one minute per day and four schools would experience an increase of more than one minute per day, with a maximum 2.5-minute increase per day in such exposure.

Based on the above, operation of the proposed project in 2026 compared to the existing (2018) baseline condition would not cause a substantial increase in the amount of time that aircraft-induced noise would affect classroom learning. As such, there would be a ***less than significant impact***.

Impacts in 2030

As indicated in Table 3.12-10 and summarized in Table 3.12-11, 19 of the 21 schools evaluated in the study area currently experience exterior noise levels of 80 dB or greater, and 17 of those schools would experience an increase in the amount of exposure time to that noise level with the aircraft activity levels anticipated to occur in 2030 at the completion of Phase 2a, compared to existing (2018) baseline conditions. Of those 17 schools, eight of them would experience an increase of one minute or less per day and nine schools would experience an increase of more than one minute per day, with a maximum 6.7-minute increase per day in such exposure.

Based on the above, operation of the proposed project in 2030 compared to the existing (2018) baseline condition would not cause a substantial increase in the amount of time that aircraft-induced noise would affect classroom learning. As such, there would be a ***less than significant impact***.

Impacts in 2035

As indicated in Table 3.12-10 and summarized in Table 3.12-11, 19 of the 21 schools evaluated in the study area currently experience exterior noise levels of 80 dB or greater, and 17 of those schools would experience an increase in the amount of exposure time to that noise level with the aircraft activity levels anticipated to occur in 2035 at the completion of Phase 2b (Project Buildout), compared to existing (2018) baseline conditions. Of those 17 schools, seven of them would experience an increase of one minute or less per day and 10 schools would experience an increase of more than one minute per day, with a maximum 8.9-minute increase per day in such exposure.

Based on the above, operation of the proposed project in 2035 compared to the existing (2018) baseline condition would not cause a substantial increase in the amount of time that aircraft-induced noise would affect classroom learning. As such, there would be a ***less than significant impact***.

Impacts in 2050

As indicated in Table 3.12-10 and summarized in Table 3.12-11, 19 of the 21 schools evaluated in the study area currently experience exterior noise levels of 80 dB or greater, and 18 of those schools would experience an increase in the amount of exposure time to that noise level with the aircraft activity levels anticipated to occur in 2050, compared to existing (2018) baseline conditions. Of those 18 schools, eight of them would experience an increase of one minute or less per day and 10 would experience an increase of more than one minute per day, with a maximum 9.2-minute increase per day in such exposure.

Based on the above, operation of the proposed project in 2050 compared to the existing (2018) baseline condition would not cause a substantial increase in the amount of time that aircraft-induced noise would affect classroom learning. As such, there would be a ***less than significant impact***.

Summary of Conclusions Regarding School Impacts

As indicated by the modeling results presented in Table 3.12-10 and summarized in Table 3.12-11, the vast majority (approximately 76 to 90 percent) of the 21 schools that were evaluated would not experience exterior noise levels of 80 dBA or above. Of the 16 schools that would experience such noise levels in 2024 and 2026, 25 percent of them already experience such noise levels and would not experience any increase in time of exposure to such noise levels. Of those schools in 2024 and 2026 that would experience an increase, the majority (i.e., approximately 67 to 83 percent) of them would experience an increase of less than one minute per day. In 2030, approximately 42 percent of the 19 schools with an increase in time of exposure to exterior noise levels of 80 dBA or above such noise levels would experience an increase of less than one minute per day. In 2035 and 2050, approximately 37 to 42 percent of the 19 schools with an increase in time of exposure to exterior noise levels of 80 dBA or above such noise levels would experience an increase of less than one minute per day.

It should also be noted that, assuming an average of approximately 300 minutes of classroom time each day,[43] the maximum time increase, in minutes, of exposure to >80 dB shown in Table 3.12-11, ranging from 1.3 minutes per day at one school in 2024 to 9.2 minutes at one school in 2050, would represent an increase of between approximately 0.4 percent and 3.1 percent of classroom time. Based on a 7-hour school day, which would include early morning and late afternoon classes outside the normal classroom hours, the aforementioned maximum increases would represent an increase of between approximately 0.3 percent and 2.2 percent. Such increases would not constitute a substantial increase in the amount of time that aircraft-induced noise would affect classroom learning.

3.12.3.5.5.1 Mitigation Measures

No mitigation is required.

3.12.3.5.5.2 Significance of Impact After Mitigation

As indicated above, no mitigation is needed relative to this impact. The project would result in a ***less than significant impact*** for operations.

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[43] Based on a sampling of elementary, middle, and high schools within the San Diego Unified School District, as accessed online at https://www.sandiegounified.org/our-schools?, daily school sessions tend to run from approximately 8:00 a.m. to 2:20 p.m., with one short day (8:00 a.m. to 12:15 p.m.) every week, for elementary schools, and from approximately 7:30 a.m. to 2:15 p.m., with one short day (7:30 a.m. to 1:15 p.m.) every week, for middle and high schools. Setting aside time for lunch, outdoor activities, and break, approximately 5 hours of classroom instruction per school day is assumed.

3.12.3.5.6 Impact 3.12-5

Summary Conclusion for Impact 3.12-5: Implementation of the proposed project would cause a substantial increase in the number of nighttime flight operations that produce exterior SELs sufficient to awaken an increasing proportion of the population in 2024, 2026, 2030, 2035, and 2050, as compared to the existing (2018) baseline condition. As such, and as further described below, this would be a *significant and unavoidable impact*.

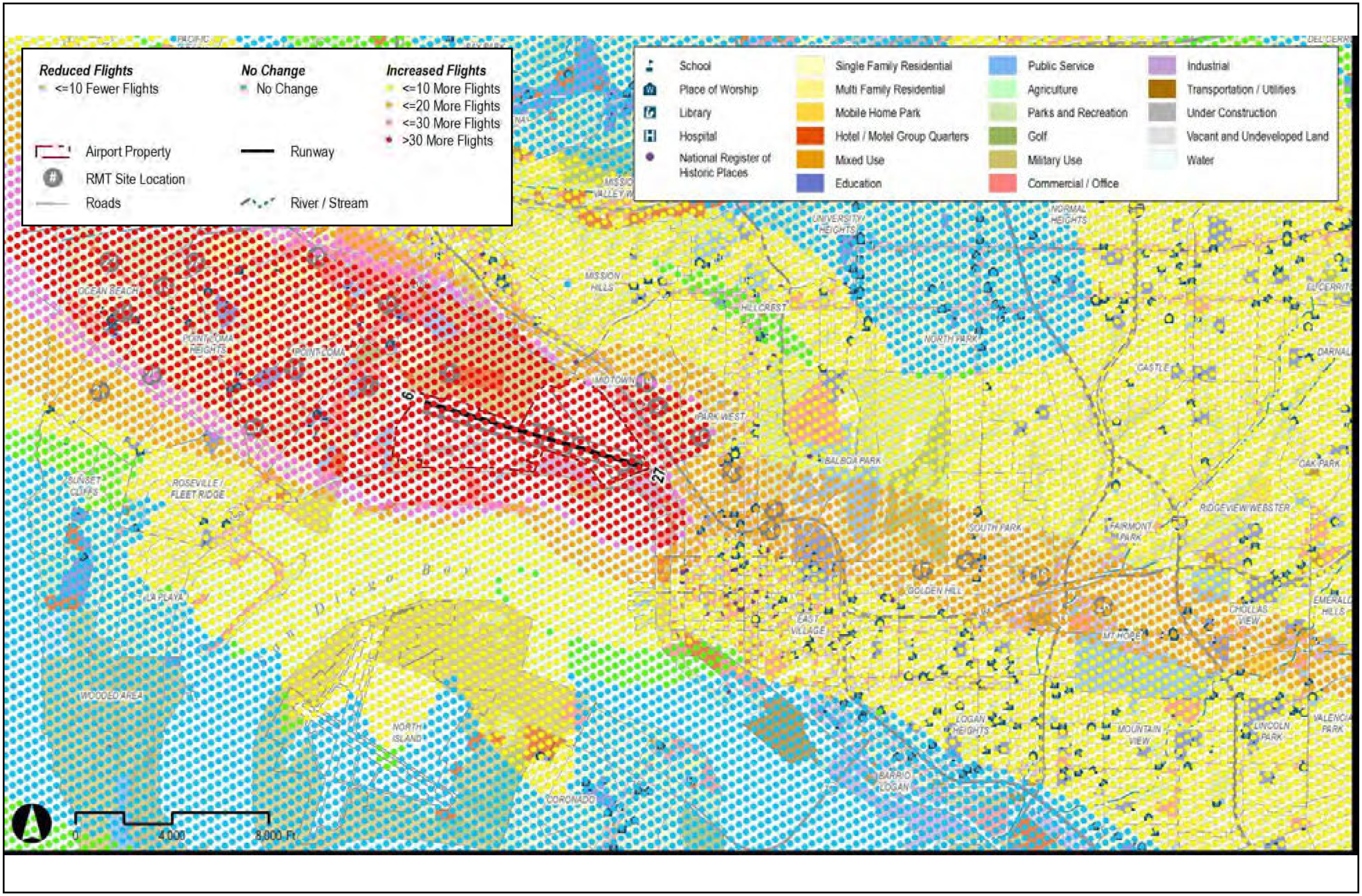
The following provides the details in support of the above summary conclusion. The impacts analysis below of each future horizon year (i.e., 2024, 2026, 2030, 2035, and 2050) with implementation of the proposed project is based on a comparison to existing (2018) baseline conditions. It should be noted, for informational purposes, that the aircraft noise impacts in each future horizon year would be the same with or without the proposed project (i.e., the noise impacts without implementation of the proposed project in 2024, as well as in each subsequent horizon year, would be the same as with implementation of the project in that year), as further described in Chapter 5, Alternatives Analysis.

Impacts in 2024

Figure 3.12-23 shows the change in the number of nighttime aircraft operations above 80 SEL with the proposed project in 2024 at the completion of Phase 1a, as compared to existing (2018) CNEL values, and Figure 3.12-24 provides a similar comparison for noise levels above 90 SEL.

As can be seen in Figures 3.12-23 and 3.12-24, there would be substantial increases in the number of nighttime events at 80 or 90 SEL in 2024, as compared to existing (2018) baseline conditions, for areas around SDIA, especially to the north, west, and south of SDIA. The affected areas include noise-sensitive land uses, primarily in the form of existing residential development.

Based on the above, operation of the proposed project in 2024 is considered to cause a substantial increase in the number of nighttime flight operations that produce exterior SELs sufficient to awaken an increasing proportion of the population, as compared to the existing (2018) baseline condition. As such, there would be a ***significant impact***.

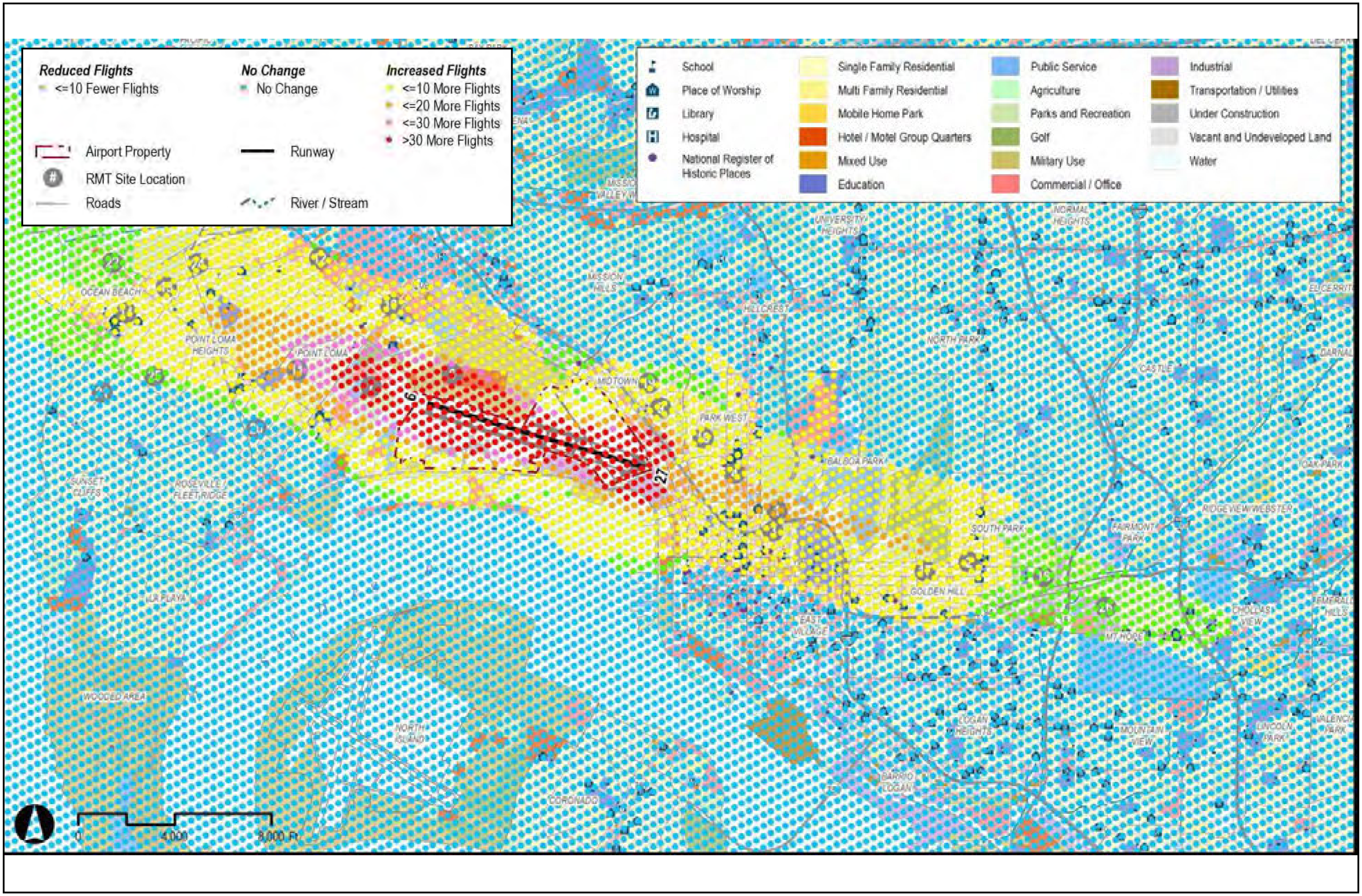


Source: HMMH, 2019

Figure 3.12-23

NA80 NIGHTTIME CHANGE ANALYSIS:

2024 PROPOSED PROJECT COMPARED TO EXISTING (2018) BASELINE



Source: HMMH, 2019

Figure 3.12-24

NA90 NIGHTTIME CHANGE ANALYSIS:

2024 PROPOSED PROJECT COMPARED TO EXISTING (2018) BASELINE

It should be noted that it is not certain that the aforementioned increases in nighttime flights would result in additional nighttime awakenings. As described in Section 3.12.3.4.2 and indicated in Table 3.12-7, the relationship between exterior SEL values and awakenings is a matter of probability. For an exterior SEL of 80 dB, the estimated maximum probability of awakenings is between 1.9 percent and 2.5 percent with building windows closed and 5.1 percent with building windows open (i.e., interior noise levels are comparatively higher or lower, depending on whether windows are open or closed). For an exterior SEL of 90 dB, the estimated maximum probability of awakenings is between 3.8 percent and 5.1 percent with building windows closed and 7.9 percent with building windows open (i.e., interior noise levels are comparatively higher or lower, depending on whether windows are open or closed).

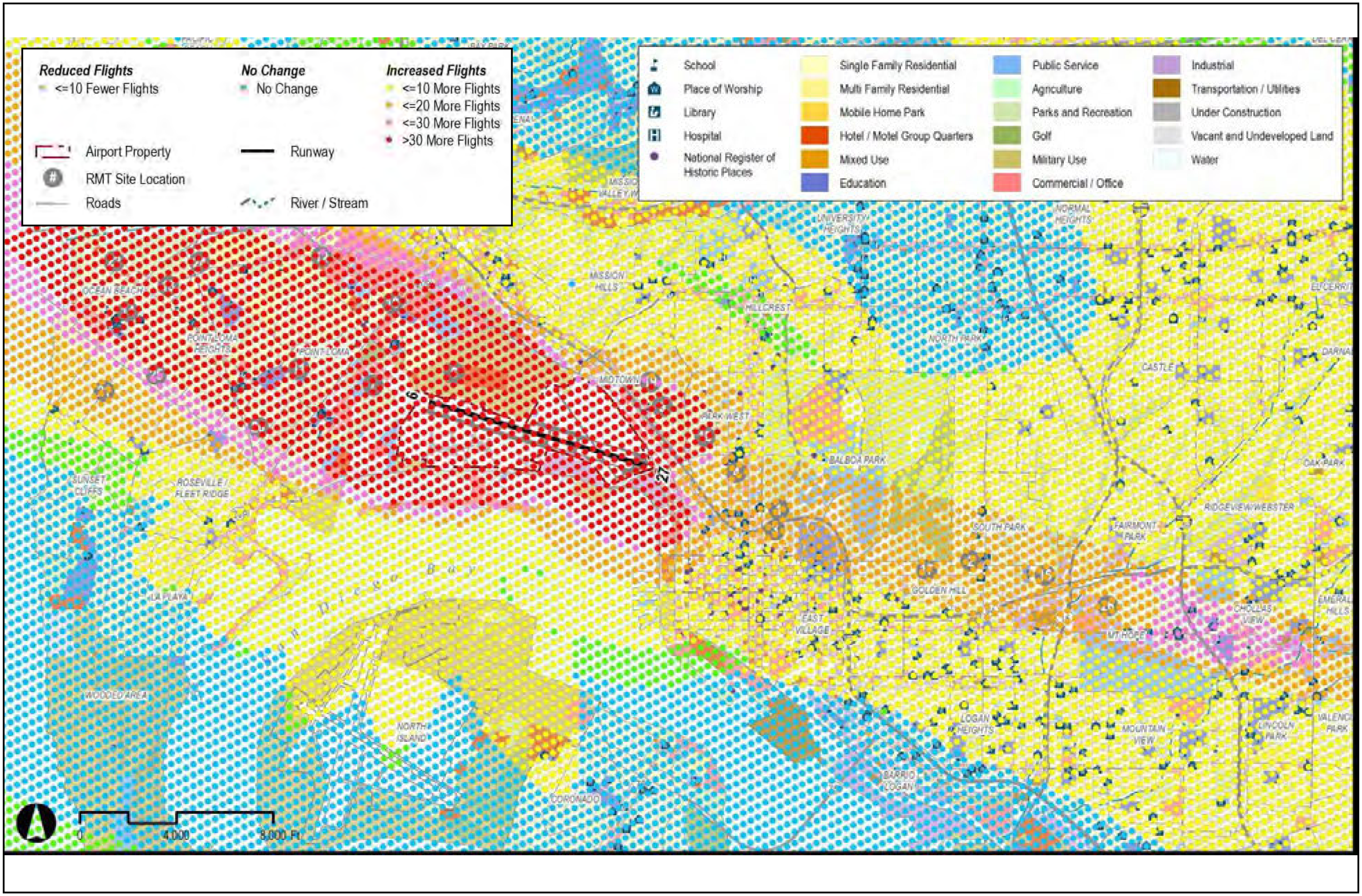
Impacts in 2026

Figure 3.12-25 shows the change in the number of nighttime aircraft operations above 80 SEL with the proposed project in 2026 at the completion of Phase 1b, as compared to existing (2018) CNEL values, and Figure 3.12-26 provides a similar comparison for noise levels above 90 SEL.

As can be seen in Figures 3.12-25 and 3.12-26, there would be substantial increases in the number of nighttime events at 80 or 90 SEL in 2026, as compared to existing (2018) baseline conditions, especially to the north, west, and south of SDIA. The affected areas include noise-sensitive land uses, primarily in the form of existing residential development.

Based on the above, operation of the proposed project in 2026 is considered to cause a substantial increase in the number of nighttime flight operations that produce exterior SELs sufficient to awaken an increasing proportion of the population, as compared to the existing (2018) baseline condition. As such, there would be a ***significant impact.***

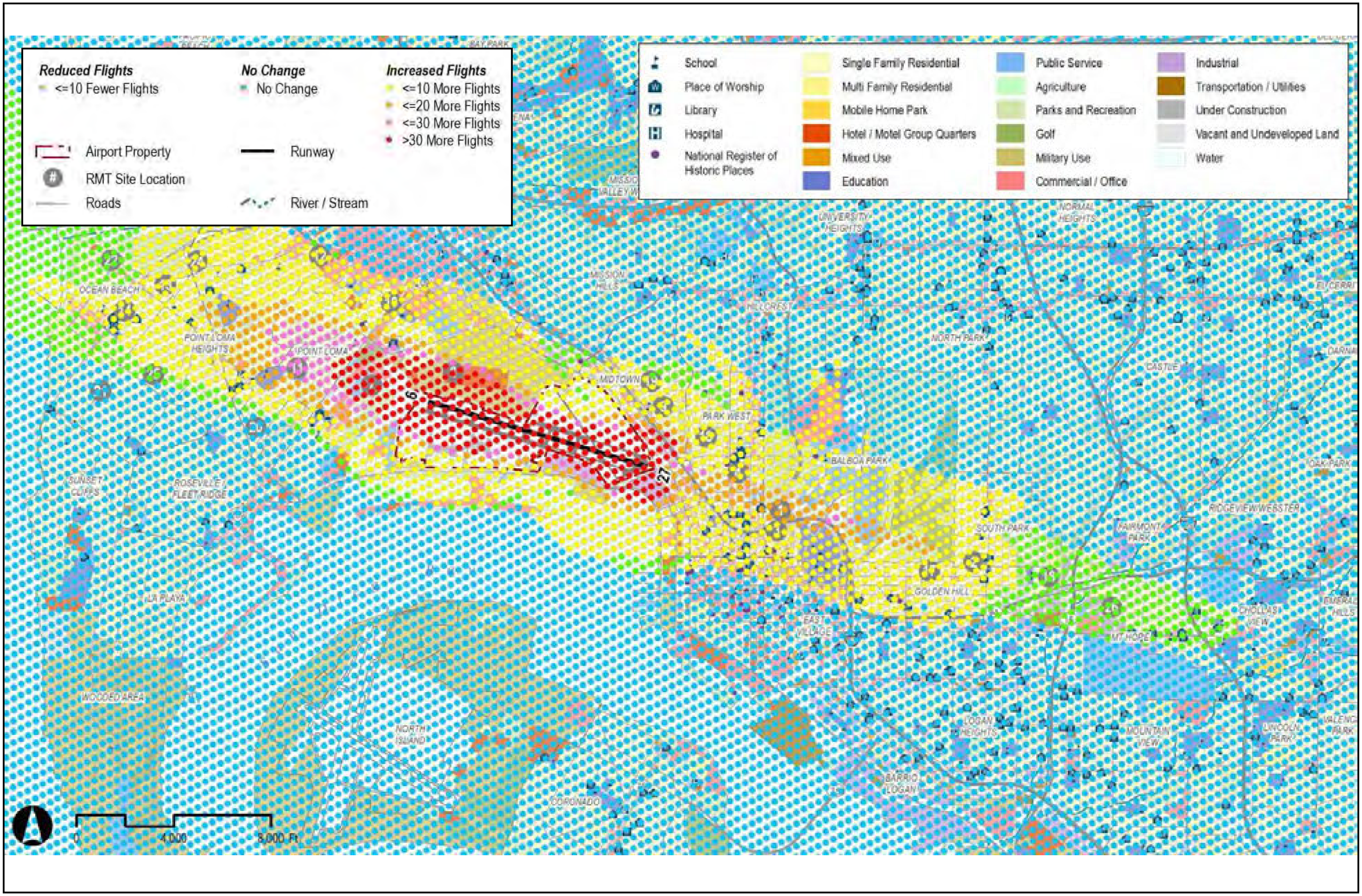
It should be noted that it is not certain that the aforementioned increases in nighttime flights would result in additional nighttime awakenings. As described in Section 3.12.3.4.2 and indicated in Table 3.12-7, the relationship between exterior SEL values and awakenings is a matter of probability. For an exterior SEL of 80 dB, the estimated maximum probability of awakenings is between 1.9 percent and 2.5 percent with building windows closed and 5.1 percent with building windows open (i.e., interior noise levels are comparatively higher or lower, depending on whether windows are open or closed). For an exterior SEL of 90 dB, the estimated maximum probability of awakenings is between 3.8 percent and 5.1 percent with building windows closed and 7.9 percent with building windows open (i.e., interior noise levels are comparatively higher or lower, depending on whether windows are open or closed).



Source: HMMH, 2019

Figure 3.12-25

NA80 NIGHTTIME CHANGE ANALYSIS: 2026 PROPOSED PROJECT COMPARED TO EXISTING (2018) BASELINE



Source: HMMH, 2019

Figure 3.12-26

NA90 NIGHTTIME CHANGE ANALYSIS:

2026 PROPOSED PROJECT COMPARED TO EXISTING (2018) BASELINE

Impacts in 2030

Figure 3.12-27 shows the change in the number of nighttime aircraft operations above 80 SEL with the proposed project in 2030 at the completion of Phase 2a, as compared to existing (2018) CNEL values, and Figure 3.12-28 provides a similar comparison for noise levels above 90 SEL.

As can be seen in Figures 3.12-27 and 3.12-28, there would be substantial increases in the number of nighttime events at 80 or 90 SEL in 2030, as compared to existing (2018) baseline conditions, especially to the north, west, and south of SDIA and, to a lesser degree, in areas east of SDIA. The affected areas include noise-sensitive land uses, primarily in the form of existing residential development.

Based on the above, operation of the proposed project in 2030 is considered to cause a substantial increase in the number of nighttime flight operations that produce exterior SELs sufficient to awaken an increasing proportion of the population, as compared to the existing (2018) baseline condition. As such, there would be a ***significant impact***.

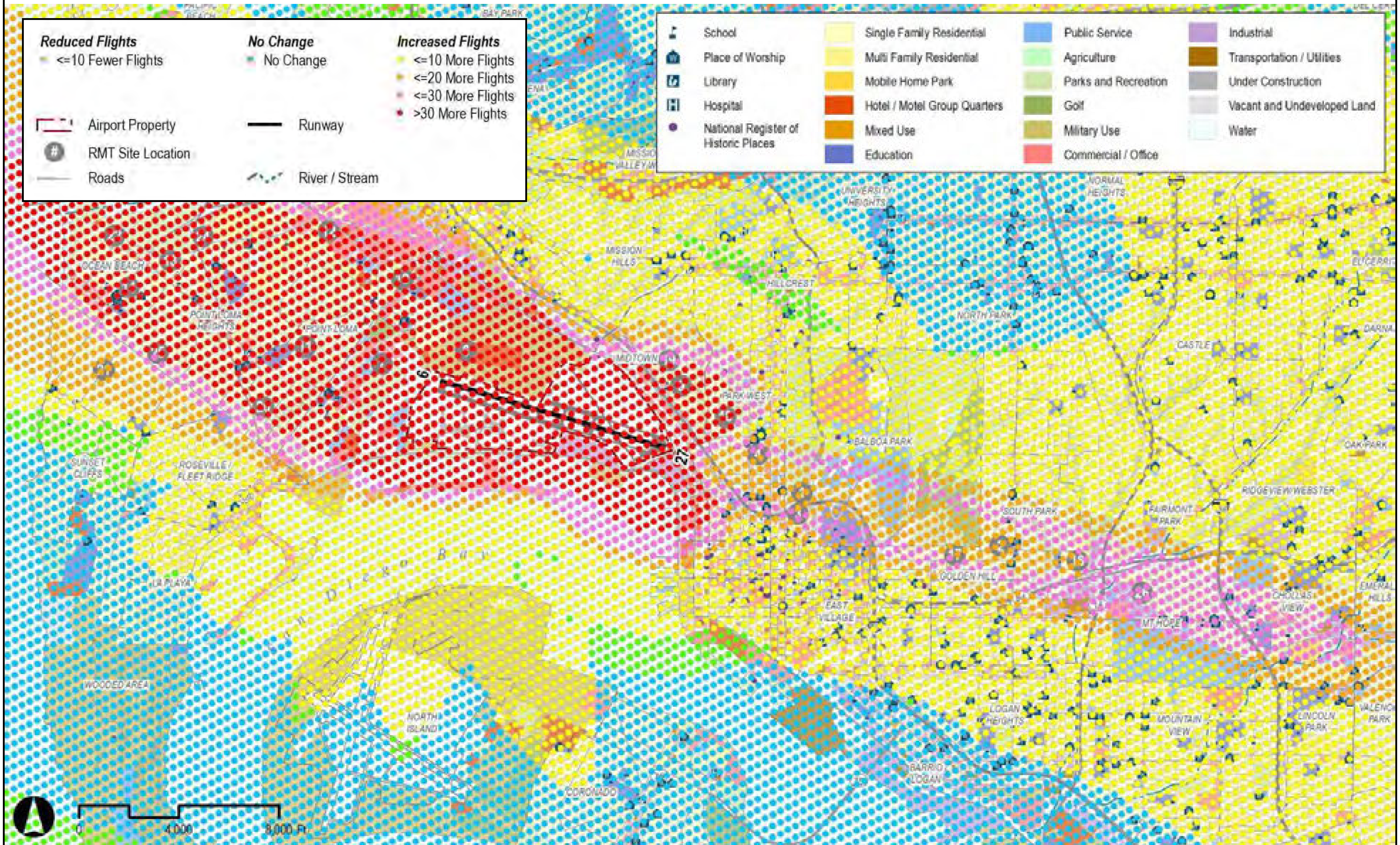
It should be noted that it is not certain that the aforementioned increases in nighttime flights would result in additional nighttime awakenings. As described in Section 3.12.3.4.2 and indicated in Table 3.12-7, the relationship between exterior SEL values and awakenings is a matter of probability. For an exterior SEL of 80 dB, the estimated maximum probability of awakenings is between 1.9 percent and 2.5 percent with building windows closed and 5.1 percent with building windows open (i.e., interior noise levels are comparatively higher or lower, depending on whether windows are open or closed). For an exterior SEL of 90 dB, the estimated maximum probability of awakenings is between 3.8 percent and 5.1 percent with building windows closed and 7.9 percent with building windows open (i.e., interior noise levels are comparatively higher or lower, depending on whether windows are open or closed).

Impacts in 2035

Figure 3.12-29 shows the change in the number of nighttime aircraft operations above 80 SEL with the proposed project in 2035 at the completion of Phase 2b (Project Buildout), as compared to existing (2018) CNEL values, and Figure 3.12-30 provides a similar comparison for noise levels above 90 SEL.

As can be seen in Figures 3.12-29 and 3.12-30, there would be substantial increases in the number of nighttime events at 80 or 90 SEL in 2035, as compared to existing (2018) baseline conditions, especially to the north, west, and south of SDIA, and, to a lesser degree, in areas east of SDIA. The affected areas include noise-sensitive land uses, primarily in the form of existing residential development.

Based on the above, operation of the proposed project in 2035 is considered to cause a substantial increase in the number of nighttime flight operations that produce exterior SELs sufficient to awaken an increasing proportion of the population, as compared to the existing (2018) baseline condition. As such, there would be a ***significant impact***.

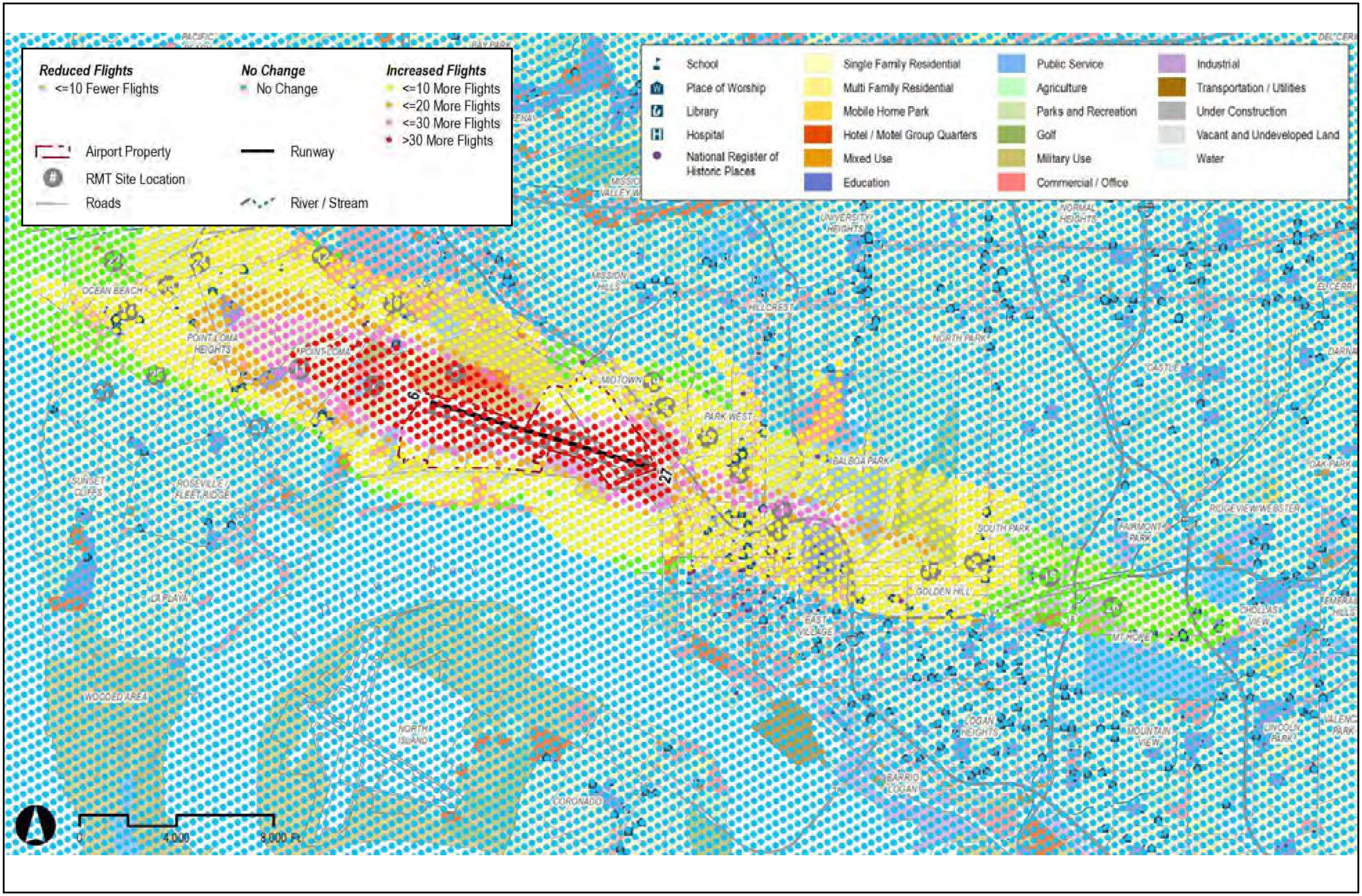


Source: HMMH, 2019

Figure 3.12-27

NA80 NIGHTTIME CHANGE ANALYSIS:

2030 PROPOSED PROJECT COMPARED TO EXISTING (2018) BASELINE

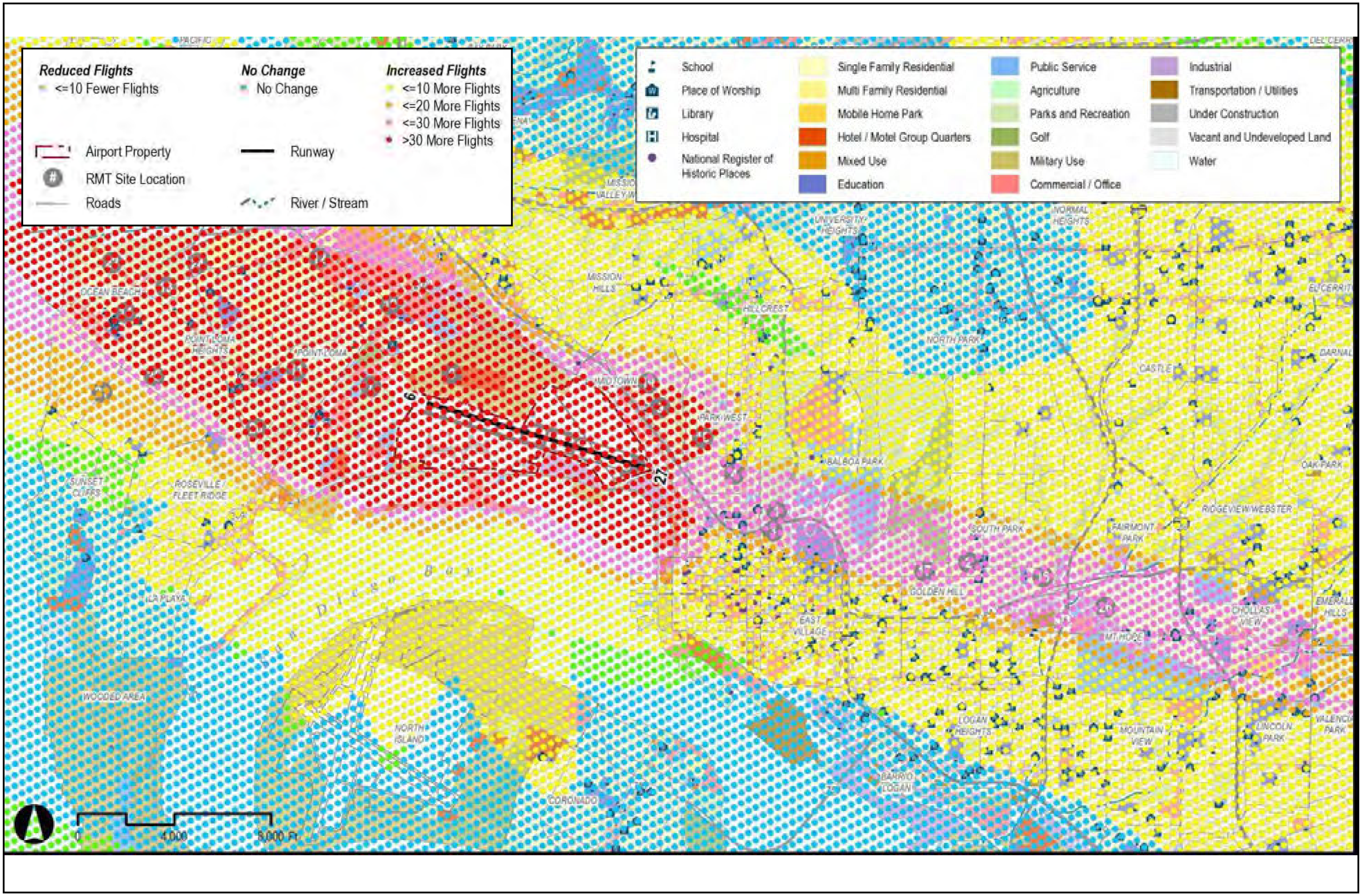


Source: HMMH, 2019

Figure 3.12-28

NA90 NIGHTTIME CHANGE ANALYSIS:

2030 PROPOSED PROJECT COMPARED TO EXISTING (2018) BASELINE

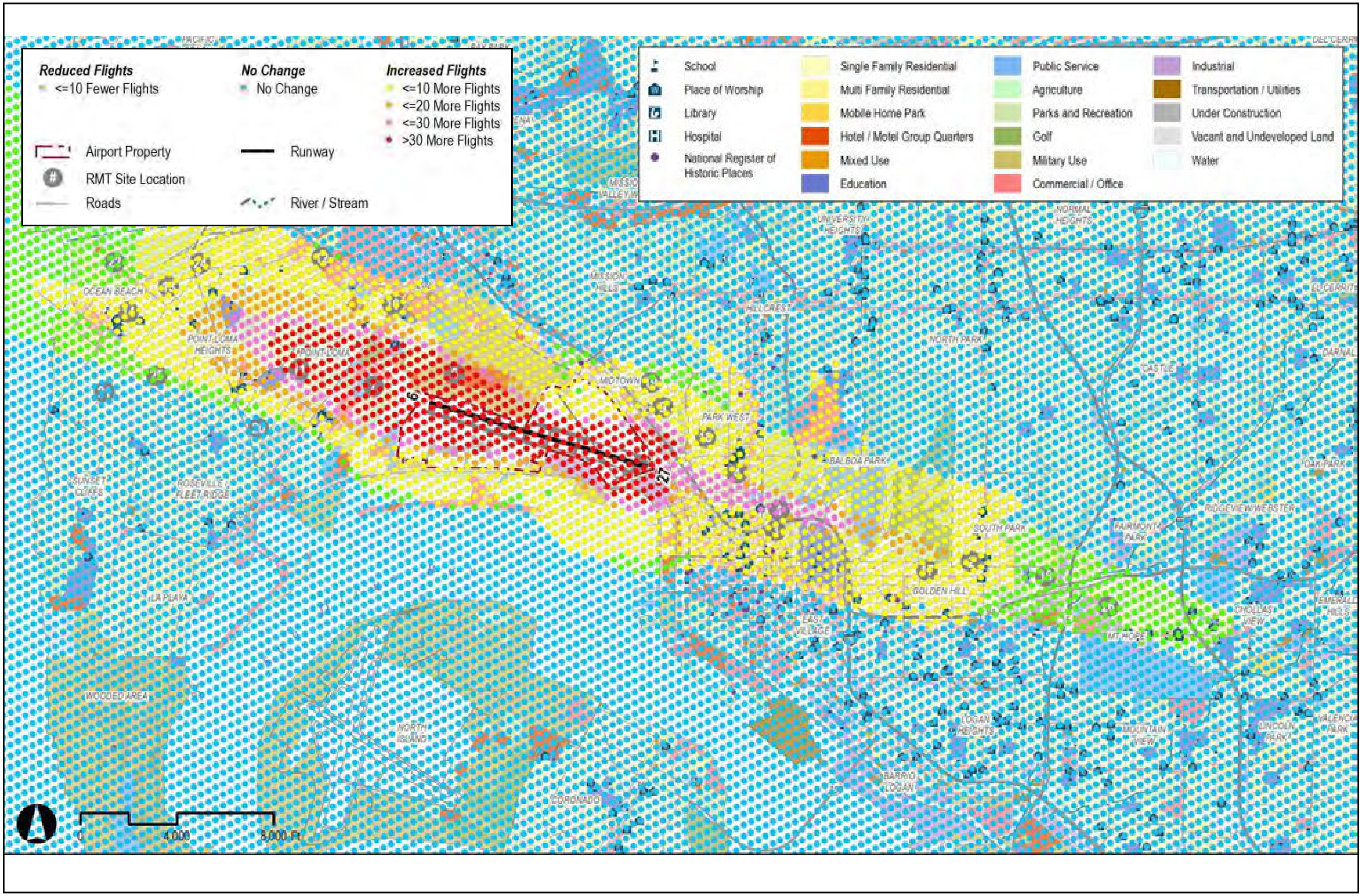


Source: HMMH, 2019

Figure 3.12-29

NA80 NIGHTTIME CHANGE ANALYSIS:

2035 PROPOSED PROJECT COMPARED TO EXISTING (2018) BASELINE



Source: HMMH, 2019

Figure 3.12-30

NA90 NIGHTTIME CHANGE ANALYSIS:

2035 PROPOSED PROJECT COMPARED TO EXISTING (2018) BASELINE

It should be noted that it is not certain that the aforementioned increases in nighttime flights would result in additional nighttime awakenings. As described in Section 3.12.3.4.2 and indicated in Table 3.12-7, the relationship between exterior SEL values and awakenings is a matter of probability. For an exterior SEL of 80 dB, the estimated maximum probability of awakenings is between 1.9 percent and 2.5 percent with building windows closed and 5.1 percent with building windows open (i.e., interior noise levels are comparatively higher or lower, depending on whether windows are open or closed). For an exterior SEL of 90 dB, the estimated maximum probability of awakenings is between 3.8 percent and 5.1 percent with building windows closed and 7.9 percent with building windows open (i.e., interior noise levels are comparatively higher or lower, depending on whether windows are open or closed).

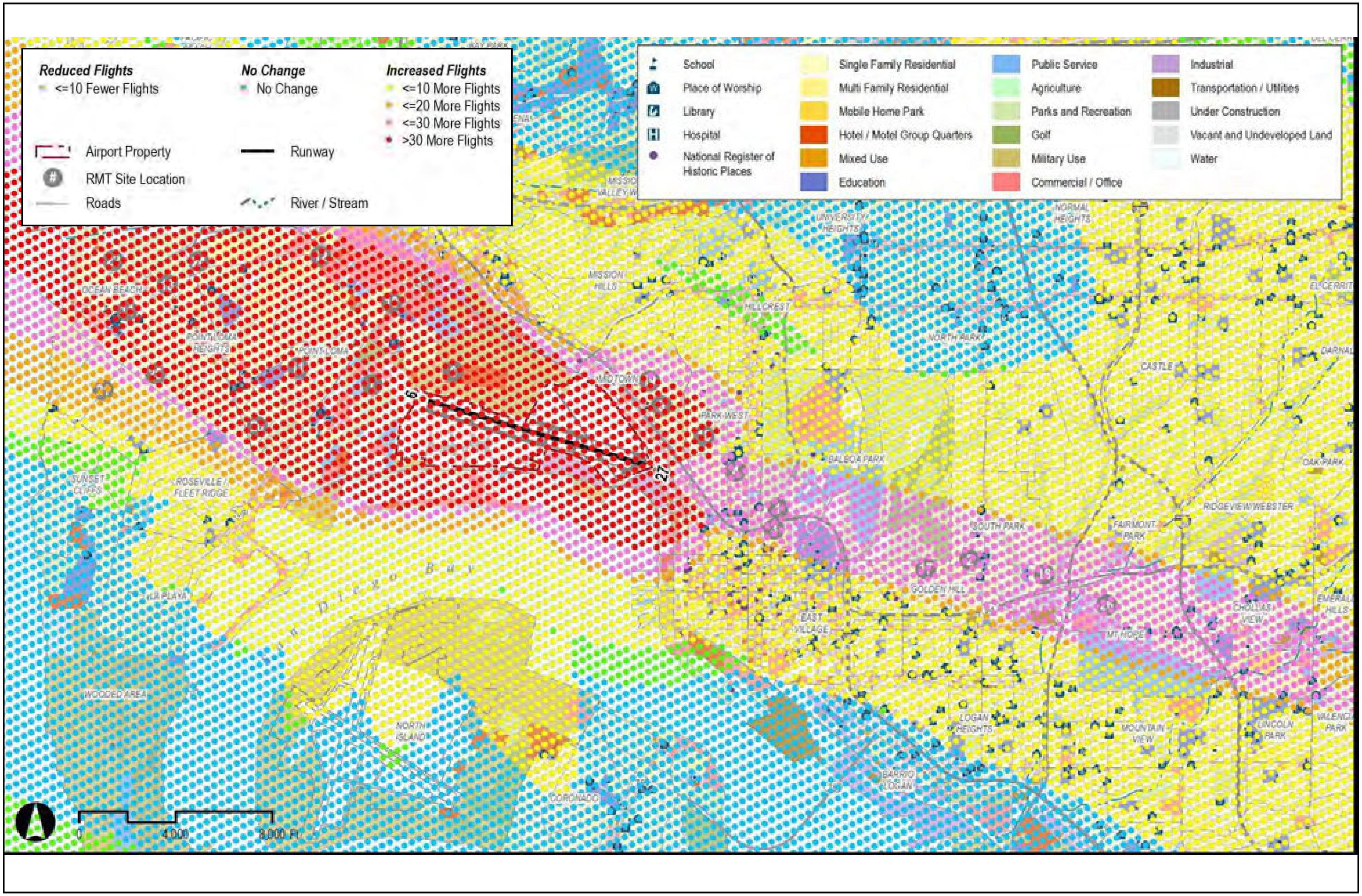
Impacts in 2050

Figure 3.12-31 shows the change in the number of nighttime aircraft operations above 80 SEL with the proposed project in 2050, as compared to existing (2018) CNEL values, and Figure 3.12-32 provides a similar comparison for noise levels above 90 SEL.

As can be seen in Figures 3.12-31 and 3.12-32, there would be substantial increases in the number of nighttime events at 80 or 90 SEL in 2050, as compared to existing (2018) baseline conditions, especially to the north, west, and south of SDIA, and, to a lesser degree, in areas east of SDIA. The affected areas include noise-sensitive land uses, primarily in the form of existing residential development.

Based on the above, operation of the proposed project in 2050 is considered to cause a substantial increase in the number of nighttime flight operations that produce exterior SELs sufficient to awaken an increasing proportion of the population, as compared to the existing (2018) baseline condition. As such, there would be a ***significant impact***.

It should be noted that it is not certain that the aforementioned increases in nighttime flights would result in additional nighttime awakenings. As described in Section 3.12.3.4.2 and indicated in Table 3.12-7, the relationship between exterior SEL values and awakenings is a matter of probability. For an exterior SEL of 80 dB, the estimated maximum probability of awakenings is between 1.9 percent and 2.5 percent with building windows closed and 5.1 percent with building windows open (i.e., interior noise levels are comparatively higher or lower, depending on whether windows are open or closed). For an exterior SEL of 90 dB, the estimated maximum probability of awakenings is between 3.8 percent and 5.1 percent with building windows closed and 7.9 percent with building windows open (i.e., interior noise levels are comparatively higher or lower, depending on whether windows are open or closed).

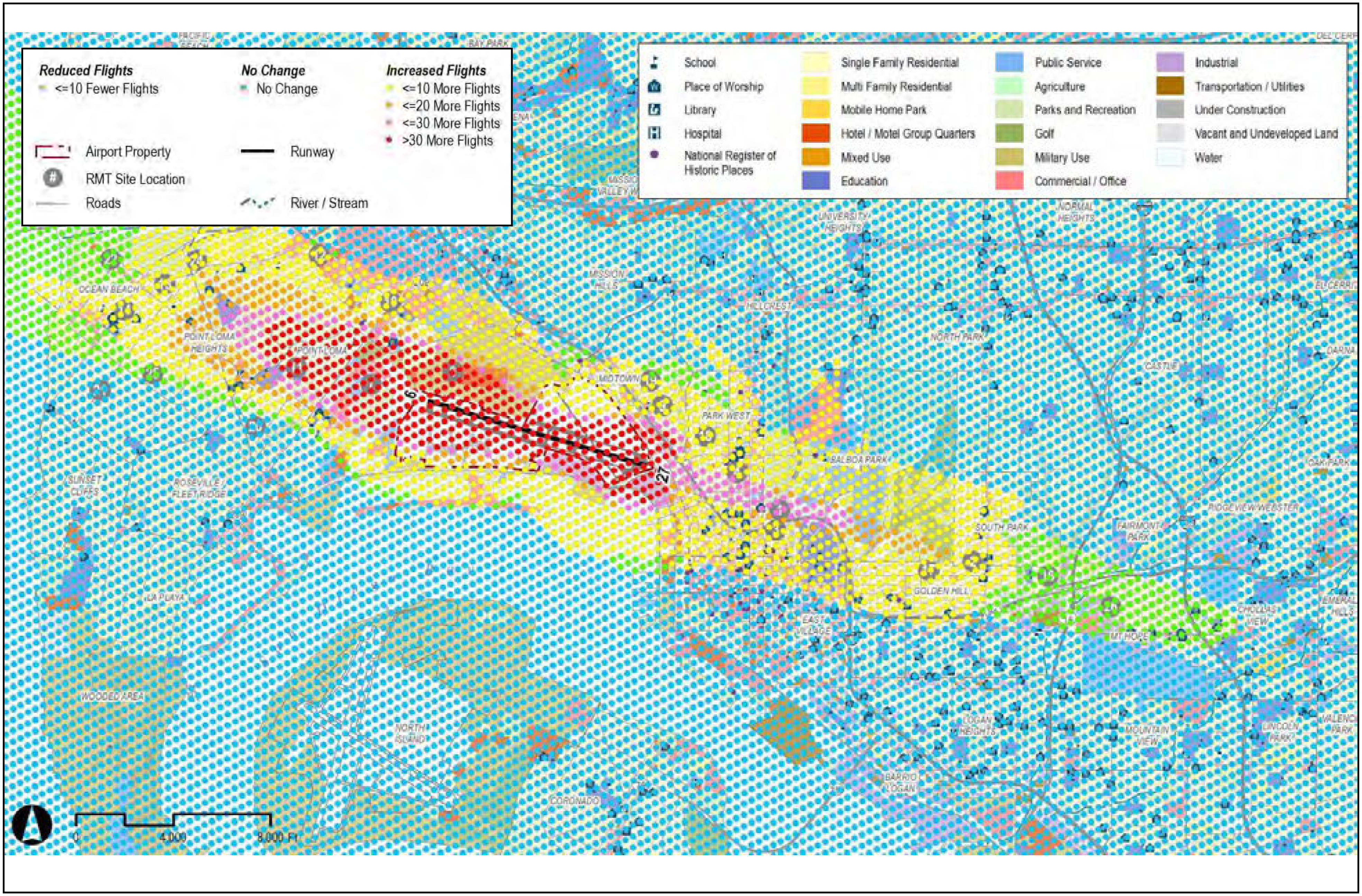


Source: HMMH, 2019

Figure 3.12-31

NA80 NIGHTTIME CHANGE ANALYSIS:

2050 PROPOSED PROJECT COMPARED TO EXISTING (2018) BASELINE



Source: HMMH, 2019

Figure 3.12-32

NA90 NIGHTTIME CHANGE ANALYSIS: 2050 PROPOSED PROJECT COMPARED TO EXISTING (2018) BASELINE

3.12.3.5.6.1 Mitigation Measures

As described in Section 3.12.3.2, there are various federal, state, and local regulations, requirements, and programs that address compatibility of land uses exposed to aircraft noise around airports. At the local level, these include, but are not limited to, the SDIA ALUCP and the various aircraft noise abatement measures and programs described in Section 3.12.3.2.3 that the SDCRAA implements to address and minimize, as possible, aircraft noise impacts from operations at SDIA and seek to promote land use compatibility. Relative to addressing aircraft noise impacts to residential land uses at night, as related to sleep disturbance, the 65 CNEL, which includes noise penalties for evening and nighttime noise (i.e., 5 dB penalty and 10 dB penalty, respectively), is the most recognized threshold and is also the level at which the FAA has determined that residences within the FAA-approved 65 CNEL contour around SDIA may be eligible for sound insulation treatments to mitigate aircraft noise. Many of the areas identified in the impacts analyses above as likely to experience a substantial increase in nighttime flight related to the NA80 and NA90 SELs are already located within the existing 65 CNEL contour. There are no federal guidelines for mitigation of nighttime aircraft noise related to sleep disturbance outside of existing provisions for sound attenuation of residential uses exposed to 65 or more CNEL from aircraft noise. The formulation of a new sound attenuation program specific to nighttime noise may not be feasible from a funding standpoint. Unless the FAA were to approve this type of aircraft noise attenuation program, no FAA grant funds or SDIA revenue can be used to implement the program. Based on the above, formulation of a mitigation measure specific to sleep disturbance is considered ***infeasible.***

It is important to note that the subject increase in nighttime flights related to the NA80 and NA90 SELs is attributable to future growth in aircraft activity at SDIA that is projected to occur irrespective of whether the proposed project is implemented. As noted above in the impacts discussion, there is no difference between the proposed project and the No Project Alternative relative to increases in nighttime flights related to the NA80 and NA90 SELs. It should also be noted that although no feasible mitigation measures are available for this impact, the SDCRAA will continue to implement the many noise abatement measures and programs at SDIA that are described in Section 3.12.3.2.3, which serve to address existing and future aircraft noise impacts from SDIA operations, including, but not limited to, nighttime operations.

3.12.3.5.6.2 Significance of Impact After Mitigation

The impact would be ***significant and unavoidable***.

3.12.4 Surface Transportation Noise

3.12.4.1 General Approach and Methodology

The evaluation of the proposed project-related noise levels due to traffic on the off-airport roadway network included a noise monitoring survey and traffic noise predictions using the latest version of the Federal Highway Administration (FHWA) Traffic Noise Model (TNM Version 2.5).[44]

[44] A description of the FHWA TNM Version 2.5 is available on FHWA's website at: https://www.fhwa.dot.gov/environment/noise/traffic_noise_model/.

The methods used during the noise monitoring survey were consistent with FHWA and Caltrans guidance and policies. Short-term noise measurements were performed using a Larson-Davis 824 (ANSI Type I, "Precision") integrating sound level meter. This noise measurement instrument is calibrated on an annual basis by an independent certification laboratory, following methods and procedures traceable to the National Institute of Standards and Technology. During the noise monitoring survey, the sound level meter was calibrated in the field using a handheld acoustic calibrator at the beginning and end of each measurement period. The objectives of the noise monitoring survey were to document existing ambient noise levels in noise-sensitive locations adjacent to the off-airport roadway network and to provide a means for validating the traffic-noise prediction model. The number and location of measurement sites for the traffic noise assessment was based on best professional judgement, and represented the minimum number of sites required to validate the model for traffic noise. The factors in choosing a measurement site included whether it represented noise-sensitive land use, geographic distribution, and type of road facility.

Traffic noise levels for the forecast years, with and without the proposed project, were computed using the latest version of the FHWA TNM. Using forecast traffic volume data developed by Kimley-Horn for the traffic impacts analysis presented in Section 3.14, Traffic and Circulation, and Appendix R-H, Traffic Data, of this Recirculated Draft EIR, along with hourly vehicle mix and distributions from a site on Harbor Drive, TNM Version 2.5 was used to calculate hourly traffic noise levels expressed in terms of the hourly equivalent sound level (L_{eq}) and CNEL. These noise metrics were computed using a basic model (e.g., flat-earth, semi-infinite/straight roadway, no shielding due to rows of buildings or intervening terrain, etc.) of traffic noise at a representative distance of 50 feet from the edge of each off-airport roadway. The basic model took into account the width of the off-airport roadways, hourly vehicle volumes and speeds, vehicle mix, and sound propagation over different types of ground.

Potential traffic noise impacts were evaluated with respect to thresholds of significance characterized by compatible levels of noise to traffic noise, as well as changes in the worst noise hour L_{eq} and changes in the CNEL.

3.12.4.2 Regulatory Framework

3.12.4.2.1 Federal Noise Standards

Title 23 of the Code of Federal Regulations, Part 772 (23 CFR 772) provides the framework and establishes the standards for the assessment and abatement of highway traffic noise in the United States.[45] The FHWA published revised noise regulations on July 13, 2010, which then became effective on July 13, 2011. FHWA has also published a guidance document to support the new regulations.[46] The FHWA regulations in 23 CFR 772 apply to all federal or federal-aid highway projects authorized under Title 23, United State Code.

[45] U.S. Department of Transportation, Federal Highway Administration. 23 CFR Part 772, as amended 75 FR 39820, Procedures for Abatement of Highway Traffic Noise and Construction Noise. July 13, 2010. Available: https://www.gpo.gov/fdsys/pkg/FR-2010-07-13/pdf/2010-15848.pdf.

[46] U.S. Department of Transportation, Federal Highway Administration. Highway Traffic Noise: Analysis and Abatement Guidance. December 2011. Available: http://www.fhwa.dot.gov/environment/noise/regulations_and_guidance/analysis_and_abatement_guidance/revguidance.pdf.

The FHWA established the Noise Abatement Criteria (NAC) shown in Table 3.12-12 for different categories of land use activity to assess the degree of impact of highway traffic and noise on human activity. The NAC are given in terms of the hourly, A-weighted, equivalent sound levels. Most environmental noise (and the A-weighted sound level) fluctuates from moment to moment, and it is common practice to characterize the fluctuating level by a single number called the equivalent sound level (L_{eq}). As indicated previously in Section 3.12.2.1, L_{eq} is the value or level of a steady, non-fluctuating sound that represents the same sound energy as the actual time-varying sound evaluated over the same time period. For traffic noise assessment, L_{eq} is typically evaluated over a one-hour period, and may be denoted as L_{eq}(h).

Table 3.12-12: FHWA Noise Abatement Criteria

Activity Category	L_{eq}(h)[1]	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B[2]	67 (Exterior)	Residential
C[2]	67 (Exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings
D	52 (interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios
E[2]	72 (exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F
F	--	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing
G	--	Undeveloped lands that are not permitted (without building permits)

Source: 23 CFR 772.

Notes:

1. Hourly equivalent a-weighted sound level (dB)
2. Includes undeveloped lands permitted for this activity category

Traffic noise impact would occur for a particular activity category when predicted exterior noise levels approach or exceed the FHWA NAC during the loudest hour of the day for that category. For example, residential land use is defined as Activity Category B. Therefore, traffic noise impact would occur where predicted exterior sound levels approach or exceed 67 dB L_{eq}(h). FHWA requires state highway agencies to establish an approach level that is at least one decibel less than the NAC for Activity Categories A to E in Table 1. Caltrans defines the word “approach” in “approach or exceed” as within 1 decibel. Therefore, for residential land use in Activity Category B, the threshold for traffic noise impact is where exterior noise levels are within 1 decibel of 67 dB L_{eq}(h), or 66 dB.

Wherever the traffic noise levels approach or exceed the NAC during the loudest hour of the day or cause a substantial increase in existing noise, consideration of traffic noise abatement measures is warranted. If it is found that such mitigation measures will cause adverse social, economic or environmental effects that outweigh the benefits received, they may be dismissed from consideration. For this analysis, traffic noise levels from the off-airport roadway network were determined for existing conditions (2018) and the forecast years of 2024, 2026, 2030, 2035, and 2050.

3.12.4.2.2 State of California Noise Standards

The FHWA regulations in 23 CFR 772 requires state highway agencies prepare updated state-specific policies and procedures for applying the regulation in their state. Caltrans policies and procedures for implementing 23 CFR 772 are contained in *Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects* (the Protocol) in the State of California.[47] Caltrans also has published a guidance document that supplements the Protocol and serves to assist highway noise analysts with the technical aspects of traffic noise analysis.[48]

According to the Caltrans Protocol, and consistent with 23 CFR 772, traffic noise impact occurs when forecast project noise levels cause a substantial noise increase over existing noise. A substantial increase occurs when a project predicted worst-hour design-year noise level exceeds the existing worst-hour noise level by 12 dB or more.

3.12.4.2.3 City of San Diego Noise Standards

As described previously in Section 3.12.3.2.3 and summarized in Table 3.12-3 therein, the Noise Element in the General Plan for the City of San Diego has identified sound levels compatible with various land uses. The maximum acceptable exterior sound level is 65 CNEL for residential development and 75 CNEL for commercial, industrial, and manufacturing facilities. These standards typically apply to useable exterior living areas adjacent to transportation noise sources such as roadways, railways, and areas of aircraft activity.

3.12.4.3 Environmental Setting

A noise monitoring survey was conducted within the project study area, consistent with FHWA and Caltrans recommended procedures. The objectives of the monitoring program were to document existing ambient noise levels in noise-sensitive locations and to provide a means for validation of the traffic noise prediction model.

Noise monitoring was conducted at four short-term (15 to 20 minutes in duration) sites on January 31, 2018. Measurement sites were generally located in areas that were representative of noise-sensitive land use exposed to noise from traffic on the off-airport roadway network. More specifically, the number and locations of the noise measurement sites were based on professional

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[47] California Department of Transportation, Division of Environmental Analysis. Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects. May 2011. Available: http://www.dot.ca.gov/env/noise/docs/traffic-noise-protocol-may2011.pdf.

[48] California Department of Transportation, Division of Environmental Analysis. Technical Noise Supplement to the Caltrans Traffic Noise Analysis Protocol – A Guide for the Measuring, Modeling, and Abating Highway Operation and Construction Noise Impacts. Report No. CT-HWANP-RT-13-069.25.2, September 2013. Available: http://www.dot.ca.gov/env/noise/docs/tens-sep2013.pdf.

judgement, with consideration given to the minimum number of sites necessary to validate the model used for traffic noise calculations. The factors in choosing a measurement site included whether it represented noise-sensitive land use, geographic distribution, and type of road facility. Traffic classification counts on the roadways nearest each measurement site were conducted simultaneously with each noise measurement. The short-term measurements characterized existing noise levels in the study area, but were not necessarily conducted during the loudest hour of the day. They included contributions from sources other than road traffic, such as aircraft. Figure 3.12-33 shows the locations of the noise measurement sites within the project study area. The short-term noise monitoring locations are shown in the study area graphic, and labeled with the prefix "M."

Short-term noise monitoring is not a process to determine design-year noise impacts or noise barrier locations. Short-term noise monitoring provides a level of consistency between what is present in real-world situations and how those situations are represented in the computer noise model. Short-term monitoring does not need to occur everywhere within the study area to validate the computer noise model.

The short-term data collection procedure involved measurement of one-second equivalent sound levels (L_{eq}s) over a period of 15 to 20 minutes. Continuous logging of events was conducted during the monitoring, so that intervals that included events that were not traffic-related could be excluded during the analysis. For each measurement period, a "Total L_{eq}" (includes all sound level contributions from every 1-second interval) and a "Traffic-only L_{eq}" (excludes those intervals that contained noise events unrelated to traffic noise) were determined. By comparing the two totals, the significance of non-traffic events (such as aircraft operations) to the overall noise level can be determined for the measurement period.

The measured noise levels appear in Table 3.12-13 as equivalent sound levels (L_{eq}). The table provides a description of the measurement location, as well as the start time and the duration of the measurement. Measured noise levels are presented both in terms of the "Total L_{eq}" and in terms of the "Traffic-only L_{eq}." Calculated noise levels also presented both in terms of the "Total L_{eq}" and in terms of the "Traffic-only L_{eq}."

Source: HMMH, 2019

Figure 3.12-33

LOCATIONS OF SHORT-TERM NOISE MEASUREMENT SITES

Table 3.12-13: Summary of Short-Term Noise Measurements

Site	Address / Location	Time Start (hh:mm:ss)	Duration (minutes)	Measured Total L_{eq} (dB)	Measured Traffic-only L_{eq} (dB)	Calculated L_{eq} (dB)	Calculated – Traffic L_{eq} (dB)
M-1	Spanish Landing Park	7:50:00	20	67.3	65.4	64.2	-1.2
		12:35:01	15	62.7	61.2	63.1	1.9
M-2	Near the intersection of India and Palm Streets	8:53:00	15	72.2	71.9	72.5	0.6
		14:44:59	15	73.9	72.9	72.9	0.0
M-3	2328 India Street	10:12:00	15	73.8	62.7	60.5	-2.3
		10:32:00	15	72.9	61.3	61.3	0.1
		14:05:59	15	71.9	61.1	60.5	-0.6
M-4	Near the intersection of Hawthorn and Brant Streets	11:12:00	15	72.4	68.6	67.5	-1.1
		13:26:00	15	70.1	68.8	67.5	-1.3

Source: HMMH, 2018.

As shown in Table 3.12-13, the Total L_{eq} ranged from a low of 62.7 dB at Spanish Landing Park (SiteM-1) to a high of 73.9 dB near the intersection of India and Palm Streets (Site M-2). However, at each measurement site the value of the Traffic-only L_{eq} is lower than the Total L_{eq}, which is an indication that noise from aircraft operations at SDIA contributed to the overall noise level and in some cases was the dominant source of noise. The measured Traffic-only L_{eq} at Sites M-1, M-2, and M-4 was approximately 0.3 to 3.7 dB lower than the Total L_{eq}, while the Traffic-only L_{eq} at Site M-3 was approximately 11 dB lower than the Total L_{eq}. Site M-3 is located within 1,400 feet of the end of Runway 9-27; aircraft arrivals to Runway 9-27 dominated the noise environment at the time of the measurements.

Traffic on the local off-airport roadway network and Interstate I-5 also were dominant sources of noise in the absence of aircraft operations. Other sources of noise in the existing environment included, but were not limited to, biogenic sounds (birds and dogs), distant trains, and light construction.

A validation of the noise prediction model was conducted using the traffic counts obtained during the noise monitoring survey. Computed noise levels based on the normalized traffic count data were compared to the corresponding measured noise levels, to confirm the accuracy of the method. As necessary, the modeling assumptions were refined to obtain appropriate agreement between the computed and measured values. The validated modeling assumptions at the measurement sites and for the existing geometry were then extended to the proposed project in each of the forecast years.

Computed noise levels at the measurement sites using the normalized traffic count data as input to TNM Version 2.5 were just slightly lower by approximately 0.4 dB compared to the measured noise levels on average, with a standard deviation of the differences of 1.2 dB. In addition, at none of the sites were the variations between measured and computed levels greater than 3 dB. This agreement confirms that the noise prediction model is validated. The comparison of measured versus computed sound levels at the measurement sites is shown by the values in the rightmost column of the Table 3.12-13.

3.12.4.4 Thresholds of Significance

The proposed project would result in significant impacts related to surface transportation noise if it would:

Impact 3.12-6 Cause traffic noise levels for any existing development to exceed the noise levels considered compatible for noise-sensitive areas associated with the applicable land use categories.

Impact 3.12-7 Cause traffic noise levels that are currently at or already exceed the levels considered compatible for noise-sensitive land use associated with the applicable land use categories to increase by 3 dB CNEL, or more.

Impact 3.12-8 Cause the worst noise hour L_{eq} due to traffic on the off-airport roadways to substantially exceed the existing L_{eq} (i.e., an increase of 12 dB, or more) at noise-sensitive areas associated with the applicable land use categories.

The above thresholds of significance used to evaluate the surface transportation noise impacts of the proposed project are derived from Appendix G of the State CEQA Guidelines, based on the following:

- *Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies*. This threshold is addressed in the evaluation of Impacts 3.12-6, 3.12-7, and 3.12-8.

3.12.4.5 Project Impacts

3.12.4.5.1 Impact Analysis Modeling Approach

As noted above, traffic noise levels for the forecast years, with and without the proposed project, were computed with TNM Version 2.5 using existing and forecast traffic data as input to the model, with the significance determination of impacts being based on a comparison of future year with project conditions being compared to existing (2018) conditions. Traffic data were provided as Average Daily Traffic (ADT) volumes for different sections of the study roadways for the existing condition (2018) and forecast years (2024, 2026, 2030, 2035, and 2050). For all of the forecast year scenarios, two forecast ADTs were provided for each section of roadway as follows:

- A "Without Project" scenario, which represents future traffic conditions (i.e., daily traffic volumes) projected to occur without project-related traffic for that forecast year.
- A "With Project" scenario, which represents future traffic conditions (i.e., daily traffic volumes) projected to occur with the addition of project-related traffic for that forecast year, and also changes to airport access due to the project, as further explained below.

TNM Version 2.5 also requires information about the types of vehicles and the hourly distributions of vehicles on the roadway network. The vehicle mix and hourly distributions used for the modeling were based upon count data for North Harbor Drive between Winship Lane and Liberator Way, which were provided as vehicle volumes by each hour of the day for 13 vehicle classifications.[49] Those data were compiled into the default vehicle types for TNM Version 2.5 and for the time periods shown in Table 3.12-14. The distribution and mix of vehicle types in the table are given in terms of the percent of ADT. Note that heavy trucks and motorcycles comprised less than 0.1 percent of the ADT. Consequently, heavy trucks and motorcycles were excluded from the calculation of CNEL. The distributions shown in the table were used for all study years and for all sections of the off-airport roadways.

Table 3.12-14: Vehicle Mix as Percent of Average Daily Traffic (ADT) for Calculation of CNEL

FHWA TNM 2.5 Default Vehicle Type	Daytime (7 am to 7 pm) Percent of ADT	Evening (7 pm to 10 pm) Percent of ADT	Nighttime (10 pm to 7 am) Percent of ADT
Automobile	63%	12%	19%
Medium Truck	3%	1%	1%
Heavy Truck	<0.1%	<0.1%	<0.1%
Bus	1%	<0.5%	<0.5%
Motorcycle	<0.1%	<0.1%	<0.1%
Total	**67%**	**13%**	**20%**

Source: Compiled by HMMH, 2018, based upon a summary table prepared by National Data & Surveying Services for North Harbor Drive between Winship Lane and Liberator Way, dated June 12, 2017 (included as part of Appendix R-H1 of this EIR).

The count data for North Harbor Drive between Winship Lane and Liberator Way also was used to develop volumes and vehicle mix for the Peak Hour of the day. Based on the data provided, the a.m. Peak Hour was found to occur for the period starting at 9:00 a.m. with the following vehicle mix: 93.6 percent automobile, 4.7 percent medium truck, and 1.7 percent bus. The count data for North Harbor Drive suggested that the a.m. Peak Hour volume was approximately 7 percent of the ADT.

A basic model of traffic noise was developed using TNM Version 2.5 to calculate the hourly equivalent sound level (L_{eq}) and the CNEL at a representative distance of 50 feet from the edge of each off-airport roadway. The basic model assumed flat-earth, semi-infinite/straight roadways, and no shielding due to rows of buildings or intervening terrain. The basic model took into account the width of the off-airport roadways, hourly vehicle volumes and speeds, vehicle mix, and sound propagation over different types of ground.

The roadway noise impacts analysis accounts for future changes in traffic volumes along existing roadways, particularly those roadways that have noise-sensitive uses located nearby. While the proposed project includes development of a new roadway, specifically the on-airport access road, the new roadway would be located parallel to, and north of, North Harbor Drive. The new roadway would be located farther away from the nearest noise-sensitive use – the U.S. Coast Guard Station (with sleeping quarters), located south of North Harbor Drive, and would serve to reduce airport-related traffic on North Harbor Drive. As such, operation of the new on-airport access road would reduce traffic noise levels at the nearest noise-sensitive receptor, which is accounted for in the impacts analysis below.

[49] Based upon a summary table prepared by National Data & Surveying Services for North Harbor Drive between Winship Lane and Liberator Way, dated June 12, 2017 (included as part of Appendix R-H1 of this EIR).

Conclusions regarding impact level of significance were based on the comparison of future With-Project conditions compared to existing baseline conditions.

3.12.4.5.2 Summary of Roadway Noise Modeling Results

Table 3.12-15 presents the existing average daily traffic CNEL along roadway segments evaluated in the project area and the estimated change in average daily traffic CNEL with implementation of the proposed project at each phase of development, compared to existing baseline conditions. The table also shows the estimated change in average daily traffic CNEL in each future horizon year that would occur with growth in background traffic irrespective of the proposed project and the estimated change in average daily traffic CNEL in each future horizon year that would be attributable to growth in airport passenger level activity, when added to the future background traffic growth, but without the proposed project. That latter scenario would represent the No Project Alternative conditions in each future horizon year, which provides a basis to compare the impacts associated with the proposed project to the conditions that would occur in the future without the project.

The following summarizes the future noise levels and land uses along the roadways listed in Table 3.12-15. The evaluation and significance of the impacts associated with those future noise levels are presented in the sections after the summary.

- **Pacific Highway**: Future traffic CNELs for With Project conditions would range from 64.9 to 74.8 dBA. These levels of exposure are compatible with existing land uses classified as light industry and heavy industry. Other land use categories along Pacific highway include commercial, hotel/motel/resort, office, and group quarters residential (i.e., U.S. Marine Corps Recruit Depot (MCRD) barracks and temporary lodging for eligible military and civilian personnel visiting the base). With the exception of the group quarters residential, future traffic CNELs are expected to be compatible, or conditionally compatible, for these other land use categories. For the land use categorized as group quarters residential, the forecast CNELs are incompatible with such land use; however, this parcel is currently exposed to traffic CNELs that are considered incompatible (i.e., impacts of the project are evaluated relative to Impact 3.12-7 below, whether there would be a 3 dB+ increase in CNEL).

- **Kettner Boulevard:** Future traffic CNELs for With Project conditions would range from 68.3 to 71 dBA. Existing land uses along Kettner Boulevard are classified as commercial, light industry, and multi-family residential. These levels of exposure are compatible with light industry and conditionally compatible with commercial. The one area along Kettner Boulevard classified as multi-family residential is adjacent to a segment (Palm Street to Laurel Street) projected to have a future traffic CNEL of up to 69.7 dBA, which is conditionally compatible with that noise exposure level.

Table 3.12-15: Predicted Traffic CNELs at a Distance of 50 feet from the Edge of the Study Roadways

Roadway Segment	Existing CNEL	With Project				
		2024 CNEL (dB)	2026 CNEL (dB)	2030 CNEL (dB)	2035 CNEL (dB)	2050 CNEL (dB)
Pacific Highway						
Kurtz St to Barnett Ave	69.7	69.9	70.0	70.2	70.3	70.8
Barnett Ave to Washington St	73.4	74.2	74.3	74.4	74.6	74.8
Washington St to Sassafras St	66.3	66.7	66.8	67.1	68.0	70.7
Sassafras St to Palm St	66.2	66.8	67.0	67.4	67.7	68.1
Palm St to Laurel St	66.5	67.0	67.2	67.7	68.2	69.1
Laurel St to Juniper St	63.6	64.9	65.1	65.5	66.1	66.9
Kettner Boulevard						
Vine St to Sassafras St	68.7	69.7	70.0	70.6	71.0	70.5
Sassafras St to Palm St	67.1	69.2	69.5	70.2	70.8	70.9
Palm St to Laurel St	67.1	68.3	68.6	69.2	69.6	69.8
India Street						
Sassafras St to Laurel St	66.1	68.0	68.4	69.2	69.5	69.9
Laurel St to Juniper St	60.3	60.5	60.5	60.6	60.7	61.1
Washington Street						
West of Pacific Hwy	57.5	58.7	58.9	59.4	59.8	60.6
Hancock St to San Diego Ave	67.7	68.1	68.3	68.5	68.7	69.0
East of India St	68.0	68.8	68.9	69.2	69.3	69.7
Admiral Boland Way						
Washington St to Terminal Link Rd	64.5	66.7	67.0	67.5	67.9	68.2
Terminal Link Rd to Pacific Hwy	64.5	66.7	67.0	67.5	67.9	68.2
Sassafras Street						
Pacific Hwy to Kettner Blvd	61.9	63.4	63.7	64.2	65.1	65.4
Palm Street						
Pacific Hwy to Kettner Blvd	53.5	59.6	59.8	60.0	61.6	61.7
Laurel Street						
Harbor Dr to Pacific Hwy	69.5	71.0	71.4	72.2	72.6	73.0
Pacific Hwy to India St	64.3	65.1	65.4	66.1	66.4	66.8
Columbia St to State St/Reynard Wy	61.3	61.4	61.5	61.8	62.0	62.3
Hawthorn Street						
Harbor Dr to Pacific Hwy	65.6	65.9	66.1	66.6	67.2	67.6
Pacific Hwy to India St	66.3	66.6	67.0	67.6	68.9	69.2

Table 3.12-15: Predicted Traffic CNELs at a Distance of 50 feet from the Edge of the Study Roadways

Roadway Segment	Existing CNEL	With Project				
		2024 CNEL (dB)	2026 CNEL (dB)	2030 CNEL (dB)	2035 CNEL (dB)	2050 CNEL (dB)
India St to State St	66.3	66.7	67.0	67.7	68.9	69.3
State St to Albatross St	61.6	61.8	61.8	61.9	62.0	62.4
Grape Street						
Harbor Dr to Pacific Hwy	68.2	69.0	69.4	70.1	71.7	72.0
Pacific Hwy to India St	68.9	70.3	70.6	71.2	72.4	72.7
India St to State St	69.6	71.3	71.6	72.2	73.3	73.7
Albatross St to Front St	54.8	56.4	56.8	57.9	58.9	59.2
Harbor Drive						
Scott Rd to Nimitz Blvd	64.8	66.2	66.3	66.5	66.7	67.1
Nimitz Blvd to Laning Rd	66.3	67.5	67.7	68.0	68.2	68.6
Laning Rd to McCain Rd	68.0	68.2	68.4	69.0	69.2	69.6
McCain Rd to Spanish Landing	68.1	68.2	68.5	69.0	69.2	69.6
Spanish Landing to Harbor Island Dr	68.2	68.0	68.3	68.7	68.9	69.2
Harbor Island Dr to Winship Ln	72.3	66.1	67.0	69.2	69.3	70.1
Winship Ln to Liberator Way	72.9	71.7	72.2	73.3	73.6	74.0
Liberator Way to Cell Phone Lot	73.2	71.8	72.3	73.4	73.7	74.1
Cell Phone Lot to Laurel St/ Solar Turbines	73.2	71.9	72.3	73.4	73.8	74.2
Laurel St/ Solar Turbines to W Laurel St	72.2	71.6	72.1	73.2	73.5	74.0
Laurel St to Hawthorn St	71.1	71.6	72.0	72.9	74.1	74.4
Hawthorn St to Grape St	69.2	69.8	70.2	71.2	72.5	72.8
Grape St to Ash St	70.1	70.4	70.7	71.4	71.6	71.9
Harbor Island Drive						
Harbor Dr to Old Rent A Car Access	60.9	61.1	62.2	64.9	65.0	65.1
West of Harbor Island Dr	58.6	61.1	61.2	61.3	61.5	61.8
Harbor Island Dr to Parking Lot	56.6	58.2	58.3	58.3	58.9	61.0
East of Parking Lot	55.7	58.2	58.3	58.3	58.9	61.0

Source: HMMH, 2019.

- **India Street**: future traffic CNELs for With Project conditions would range from 60.5 to 69.9 dBA. These levels of exposure are compatible with existing land uses classified as light industry. Other land use categories along India Street include commercial, multi-family residential, office, and single-family residential. With the exception of single-family residential land use, future traffic CNELs are expected to be conditionally compatible for these other land use categories. The location of the single-family residential land use is currently exposed to traffic CNELs that are considered incompatible (i.e., traffic noise impacts of the project to this land use are evaluated relative to Impact 3.12-7, whether there would be a 3 dB+ increase in CNEL).

- **Washington Street**: Future traffic CNELs for With Project conditions would range from 58.7 to 69.7 dBA. These levels of exposure to traffic noise are compatible with existing light industry and conditionally compatible for commercial and office land use.

- **Admiral Boland Way**: Future traffic CNELs for With Project conditions would range from 66.7 to 68.2 dBA. These levels of exposure are compatible with existing airport-related land uses along this roadway.

- **Laurel Street**: Future traffic CNELs for With Project conditions would range from 61.4 to 73.0 dBA. These levels of exposure are compatible with most land uses along this roadway, with the exception of multi-family residential land use between Pacific Highway and India Street. The areas along Laurel Street classified as multi-family residential are adjacent to a segment (Pacific Highway to India Street) projected to have a future traffic CNEL of up to 66.7 dBA, which is conditionally compatible with that noise exposure level.

- **Hawthorn Street**: Future traffic CNELs for With Project conditions would range from 61.8 to 69.3 dBA, which would be compatible with existing land uses categorized as parks, light industry, and heavy industry. The existing CNEL and the future traffic-related CNELs are expected to be conditionally compatible for commercial, hotel/motel/resort, and multi-family residential land use.

- **Grape Street**: Future traffic CNELs for With Project conditions would range from 56.4 to 73.7 dBA. These noise exposure levels would be compatible with existing commercial uses and conditionally compatible with park uses and hotels/motels/resorts, but would be incompatible with multi-family residential uses.[50]

- **Harbor Drive**: Future traffic CNELs for With Project conditions would range from 66.1 to 74.4 dBA. These noise exposure levels would be compatible with existing commercial and transportation (airport) uses and conditionally compatible with park uses, but would be incompatible with group quarters residential (i.e., U.S. Coast Guard Station barracks). The location of the group quarters residential use is currently exposed to traffic CNELs that are

[50] Although the residential use located at the southeast corner of Grape Street and Columbia Street is indicated in the City's GIS land use database as being Single-Family Residential, its physical attributes along with several real estate listings indicate that it is a 9-unit multifamily complex.

considered incompatible (i.e., impacts of the project are evaluated relative to Impact 3.12-7, whether there would be a 3 dB+ increase in CNEL).

- **Sassafras Street, Palm Street, and Harbor Island Drive:** Future traffic CNELs for With Project conditions would range from 55.6 to 65.4 dBA, which would be compatible or conditionally compatible with all nearby uses.

It should be noted for informational purposes that, with one exception, the future traffic CNELs for all future horizon years (2024, 2026, 2030, 2035 and 2050) would be essentially the same with or without the proposed project (i.e., the CNELs associated with the No Project Alternative would be essentially the same as the CNELs with implementation of the proposed project). This is due to the fact that future increases in roadway traffic would be future background traffic growth and growth in airport traffic that would occur irrespective of the proposed project. The one difference between the proposed project and the No Project scenario that would occur relative to future traffic noise levels would be along Harbor Drive between Winship Lane and Coast Guard/Laurel Street, where completion of the proposed on-airport access road would take much of the airport-related traffic off of Harbor Drive. In that case, the future project-related traffic noise levels would be less than those of the No Project scenario.

3.12.4.5.3 Impact 3.12-6

Summary Conclusion for Impact 3.12-6: Implementation of the proposed project would cause traffic noise levels for existing development along two segments of one roadway to exceed the noise levels considered compatible for noise-sensitive areas associated with the applicable land use categories. As such, and as further described below, this would be a *significant and unavoidable impact*.

The following provides the details in support of the above summary conclusion. The impacts analysis below of each future horizon year (i.e., 2024, 2026, 2030, 2035, and 2050) with implementation of the proposed project is based on a comparison to existing (2018) baseline conditions. It should be noted, for informational purposes, that the roadway noise impacts in each future horizon year would be the same with or without the proposed project (i.e., the noise impacts without implementation of the proposed project in 2024, as well as in each subsequent horizon year, would be the same as with implementation of the project in that year), as further described in Chapter 5, Alternatives Analysis.

Of the land use categories presented earlier in Table 3.12-3, the type of noise-sensitive land use occurring in the study area that has the most restrictive noise compatibility criteria, relative to Impact 3.12-6, would be “Multiple Dwelling Units” whereby an exterior noise level exposure of more than 70 CNEL would be considered incompatible. While there is a Single (Family) Dwelling Unit adjacent to one of the roadway segments evaluated within the study area, and the noise compatibility level for that land use is more restrictive than for Multiple Dwelling Units (i.e., an exterior noise level of up to 70 CNEL is conditionally compatible for Multiple Dwelling Units, whereas the conditionally compatible exterior noise level for Single Dwelling Units is only 65 CNEL), the location of that existing Single Dwelling Unit within the study area is already exposed to an existing traffic-related exterior noise level above 65 CNEL (i.e., 69.6 CNEL), and is therefore evaluated under Impact 3.12-7 (i.e., would the project cause an increase of 3 dB CNEL or more), as presented in the Section 3.12.4.5.4.

Impacts in 2024

Based on the information presented in Table 3.12-15, there would be two segments along Grape Street, where multi-family residential development would experience an increase in traffic-related noise in 2024 that would result in an exterior noise exposure of greater than 70 CNEL, which would be incompatible with that use. Specifically, residential development along Grape Street from Pacific Highway to India Street would be exposed to a future CNEL of 70.3 and from India Street to State Street would be exposed to a future CNEL of 71.3, which would be a ***significant impact.***

Impacts in 2026

Based on the information presented in Table 3.12-15, there would be two segments along Grape Street, where multi-family residential development would experience an increase in traffic-related noise in 2026 that would result in an exterior noise exposure of greater than 70 CNEL, which would be incompatible with that use. Specifically, residential development along Grape Street from Pacific Highway to India Street would be exposed to a future CNEL of 70.6 and from India Street to State Street would be exposed to a future CNEL of 71.6, which would be a ***significant impact.***

Impacts in 2030

Based on the information presented in Table 3.12-15, there would be two segments along Grape Street, where multi-family residential development would experience an increase in traffic-related noise in 2030 that would result in an exterior noise exposure of greater than 70 CNEL. Specifically, residential development along Grape Street from Pacific Highway to India Street would be exposed to a future CNEL of 71.2 and from India Street to State Street would be exposed to a future CNEL of 72.2, which would be a ***significant impact.***

Impacts in 2035

Based on the information presented in Table 3.12-15, there would be two segments along Grape Street, where multi-family residential development would experience an increase in traffic-related noise in 2035 that would result in an exterior noise exposure of greater than 70 CNEL. Specifically, residential development along Grape Street from Pacific Highway to India Street would be exposed to a future CNEL of 72.4 and from India Street to State Street would be exposed to a future CNEL of 73.3, which would be a ***significant impact.***

Impacts in 2050

Based on the information presented in Table 3.12-15, there would be two segments along Grape Street, where multi-family residential development would experience an increase in traffic-related noise in 2050 that would result in an exterior noise exposure of greater than 70 CNEL. Specifically, residential development along Grape Street from Pacific Highway to India Street would be exposed to a future CNEL of 72.7 and from India Street to State Street would be exposed to a future CNEL of 73.7, which would be a ***significant impact.***

3.12.4.5.3.1 Mitigation Measures

MM-NOI-6: **Grape Street Sound Barrier.** Installation of a sound wall/barrier is one method of reducing exterior noise level exposure at noise-sensitive receptors adjacent to roadways. In general terms, a sound wall/barrier that breaks the line-of-sight between the noise source and the noise receptor provides approximately 5 dB of noise reduction.[51] In the case of the significant impacts described above, this would be sufficient to reduce the future traffic noise exposure levels along Grape Street to less than 70 CNEL, thereby reducing the impacts to less than significant. The multifamily residential uses along Grape Street are between four and five stories tall, with heights up to approximately 75 feet. Additionally, the subject developments have little, if any, setbacks from the street, with only an 11-foot-wide sidewalk separating the building from the street. There is neither the lateral or vertical room available to construct a 50- to 55-foot-tall sound wall/barrier to shield existing development from traffic noise emanating from Grape Street. Accordingly, Mitigation Measure MM-NOI-6 is ***not physically feasible***. Additionally, Mitigation Measure MM-NOI-6 is also not considered feasible because the mitigation measure is within the City of San Diego jurisdiction, would itself result in significant environmental impacts, including as to aesthetics and land use/planning, and would require FAA approval of funding. SDCRAA could not require the City to implement this improvement in the right-of-way or approve the improvement on private property. Construction of the very high sound barrier would be inconsistent with the Community Plan and would exceed the height limit for walls stated in the City Code. SDCRAA reasonably presumes that the City of San Diego would not support or implement this improvement, and the City has jurisdiction over the potential improvement. Further, due to FAA regulations, potential improvements currently could not be implemented and are presently not considered feasible because the FAA may not authorize the use of any FAA grant funds or SDIA revenue to be used to construct or fund any off-airport improvements or mitigation measures as discussed in Section 3.14.6 of the Recirculated Draft EIR. SDCRAA has not requested funding of this improvement because it is reasonably presumed the City would not support or implement the improvement, and the City has jurisdiction over the potential improvement. Based on the above, this mitigation measure is considered to be infeasible, and is therefore not recommended for implementation. As such, this impact is considered unmitigable.

MM-NOI-7: **Grape Street Vehicle Speed Reduction.** Along Grape Street, the modeled traffic speed was 35 miles per hour (mph). If traffic calming measures were to be introduced as a noise mitigation method, a 5 mph decrease in vehicle speed (i.e., new speed of 30 mph) would provide a net benefit of approximately 1.6 dBA, while a 10 mph decrease in vehicle speed (i.e., new speed of 25 mph) would provide a net benefit of approximately 3.0 dBA, and a 15 mph decrease in vehicle speed (i.e., new speed of 20 mph) would provide a net benefit of approximately 4.0 dBA. In order

[51] U.S. Department of Transportation, Federal Highway Administration. Highway Traffic Noise Barriers at a Glance. Available: https://www.fhwa.dot.gov/Environment/noise/noise_barriers/design_construction/keepdown.cfm.

to reduce the significant impact of the 3.6 dBA increase in CNEL that would occur in 2050, as compared to existing baseline conditions, the posted speed limit on Grape Street would need to be 20 mph.

Traffic calming measures can include, but not be limited to, vertical deflectors (i.e., speed humps, speed tables, raised intersections), horizontal shifts (i.e., chicanes), and road narrowing. Implementation of this measure would require approval from the City of San Diego, which is anticipated to be subject to completion of a traffic study to assess potential impacts to traffic flows from installation of such measures. It should be noted that posting a speed limit of 20 mph would not change driver behavior and is likely not enforceable unless supported by a Speed Survey that shows that the free flow 85th percentile speed is 20 mph. Given that segment of Grape Street is a main one-way collector for eastbound traffic in the local area, it is unlikely that a nearly 40 percent reduction of the speed limit to 20 miles per hour would be approved. Similar to above for Mitigation Measure MM-NOI-6, Mitigation Measure MM-NOI-7 is ***not considered feasible*** because the mitigation measure is within the City of San Diego jurisdiction, and would require FAA approval of funding. SDCRAA could not require the City to implement this improvement. Further, due to FAA regulations, potential improvements currently could not be implemented and are presently not considered feasible because the FAA may not authorize the use of any FAA grant funds or SDIA revenue to be used to construct or fund any off-airport improvements or mitigation measures as discussed in Section 3.14.6 of the Recirculated Draft EIR. SDCRAA has not requested funding of this improvement because it is reasonably presumed that because it is reasonably presumed that the City would not approve or implement the mitigation measure. Based on the above, this mitigation measure is considered to be infeasible, and is therefore not recommended for implementation. As such, this impact is considered unmitigable.

3.12.4.5.3.2 Significance of Impact After Mitigation

As indicated above, there are no feasible mitigation measures available to address traffic-related noise; hence, the proposed project's impact would be ***significant and unavoidable***. It should be noted, for informational purposes, that the future roadway noise levels that cause that significant impact would be the same even if the proposed project was not implemented (i.e., there would be no difference between the proposed project and the No Project Alternative relative to that impact).

3.12.4.5.4 Impact 3.12-7

Summary Conclusion for Impact 3.12-7: Implementation of the proposed project would cause traffic noise levels along one roadway segment that already exceeds the levels considered compatible for noise-sensitive land use associated with the applicable land use categories to increase by more than 3 dB CNEL, as compared to existing baseline conditions. As such, and as further described below, this would be a *significant and unavoidable impact*.

As indicated above in the Summary of Roadway Noise Modeling Results in Section 3.12.4.5.2, there are three roadway segments where nearby noise-sensitive uses are exposed to existing roadway noise levels that exceed the land use noise compatibility guidelines presented in Table 3.12-3. Those roadway segments and subject uses include:

- Pacific Highway - Barnett Avenue to Washington Street: Group quarters residential exposed to an existing CNEL of 73.4 dBA, which exceeds the conditionally compatible level of 70 dBA.
- India Street - Sassafras Street to Laurel Street: Single family residential exposed to an existing CNEL of 66.1 dBA, which exceeds the conditionally compatible level of 65 dBA.
- Harbor Drive - Cell Phone Lot to Laurel Street/Solar Turbines: Group quarters residential exposed to an existing CNEL of 73.2 dBA, which exceeds the conditionally compatible level of 70 dBA.

The following addresses whether increases in future roadway noise levels along those segments would exceed 3 dB, which would be a significant impact.

Impacts in 2024

Based on the information presented in Table 3.12-15, the changes in roadway noise levels along these segments with project implementation in 2024 would be as follows:

- Pacific Highway - Barnett Avenue to Washington Street: 0.8 CNEL increase
- India Street - Sassafras Street to Laurel Street: 1.9 CNEL increase
- Harbor Drive - Cell Phone Lot to Laurel Street/Solar Turbines: 1.3 CNEL decrease

Based on the above, implementation of the proposed project would not cause traffic noise levels that are currently at or already exceed the levels considered compatible for noise-sensitive land use associated with the applicable land use categories to increase by 3 dB CNEL, or more, as compared to existing baseline conditions; therefore, the impacts for 2024 conditions would be ***less than significant***.

Impacts in 2026

Based on the information presented in Table 3.12-15, the changes in roadway noise levels along these segments with project implementation in 2026 would be as follows:

- Pacific Highway - Barnett Avenue to Washington Street: 0.9 CNEL increase
- India Street - Sassafras Street to Laurel Street: 2.3 CNEL increase
- Harbor Drive - Cell Phone Lot to Laurel Street/Solar Turbines: 0.9 CNEL decrease

Based on the above, implementation of the proposed project would not cause traffic noise levels that are currently at or already exceed the levels considered compatible for noise-sensitive land use associated with the applicable land use categories to increase by 3 dB CNEL, or more, as compared to existing baseline conditions; therefore, the impacts for 2026 conditions would be ***less than significant***.

Impacts in 2030

Based on the information presented in Table 3.12-15, the changes in roadway noise levels along these segments with project implementation in 2030 would be as follows:

- Pacific Highway - Barnett Avenue to Washington Street: 1.0 CNEL increase
- India Street - Sassafras Street to Laurel Street: 3.1 CNEL increase
- Harbor Drive - Cell Phone Lot to Laurel Street/Solar Turbines: 0.2 CNEL increase

Based on the above, implementation of the proposed project would not cause traffic noise levels that are currently at or already exceed the levels considered compatible for noise-sensitive land use associated with the applicable land use categories to increase by 3 dB CNEL, or more, as compared to existing baseline conditions, along two of the three roadway segments (i.e., along Pacific Highway - Barnett Avenue to Washington Street and Harbor Drive - Cell Phone Lot to Laurel Street/Solar Turbines). Implementation of the proposed project would, however, result in a 3.1 dB CNEL increase along India Street - Sassafras Street to Laurel Street. As such, that impact for 2030 conditions would be ***significant***.

Impacts in 2035

Based on the information presented in Table 3.12-15, the changes in roadway noise levels along these segments with project implementation in 2035 would be as follows:

- Pacific Highway - Barnett Avenue to Washington Street: 1.2 CNEL increase
- India Street - Sassafras Street to Laurel Street: 3.4 CNEL increase
- Harbor Drive - Cell Phone Lot to Laurel Street/Solar Turbines: 0.6 CNEL increase

Based on the above, implementation of the proposed project would not cause traffic noise levels that are currently at or already exceed the levels considered compatible for noise-sensitive land use associated with the applicable land use categories to increase by 3 dB CNEL, or more, as compared to existing baseline conditions, along two of the three roadway segments (i.e., along Pacific Highway - Barnett Avenue to Washington Street and Harbor Drive - Cell Phone Lot to Laurel Street/Solar Turbines). Implementation of the proposed project would, however, result in a 3.4 dB CNEL increase along India Street - Sassafras Street to Laurel Street. As such, that impact for 2035 conditions would be ***significant***.

Impacts in 2050

Based on the information presented in Table 3.12-15, the changes in roadway noise levels along these segments with project implementation in 2050 would be as follows:

- Pacific Highway - Barnett Avenue to Washington Street: 1.4 CNEL increase
- India Street - Sassafras Street to Laurel Street: 3.8 CNEL increase
- Harbor Drive - Cell Phone Lot to Laurel Street/Solar Turbines: 1.0 CNEL increase

Based on the above, implementation of the proposed project would not cause traffic noise levels that are currently at or already exceed the levels considered compatible for noise-sensitive land use associated with the applicable land use categories to increase by 3 dB CNEL, or more, as compared to existing baseline conditions, along two of the three roadway segments (i.e., along Pacific Highway - Barnett Avenue to Washington Street and Harbor Drive - Cell Phone Lot to Laurel Street/Solar Turbines). Implementation of the proposed project would, however, result in a 3.8 dB CNEL increase along India Street - Sassafras Street to Laurel Street. As such, that impact for 2050 conditions would be ***significant***.

3.12.4.5.4.1 Mitigation Measures

MM-NOI-8: **India Street Sound Barrier.** Installation of a sound wall/barrier is one method of reducing exterior noise level exposure at noise-sensitive receptors adjacent to roadways. In general terms, a sound wall/barrier that breaks the line-of-sight between the noise source and the noise receptor provides approximately 5 dB of noise reduction.[52] In the case of the significant impacts described above, this would be sufficient to reduce the future increase in traffic noise by more than 3 dB. The single-family dwelling, where the 3+ dB CNEL increase would occur, is located at the northeast corner of India Street and Quince Street. The subject residential lot slopes up (eastward) from India Street, with the house being constructed on a stepped pad that begins approximately 40 feet from the nearest travel lane, at an elevation that is approximately eight feet above India Street, and extends approximately 10 feet east to the west wall of the house. The lower seven feet (approximate) of the west wall provides support for the base of the main floor, which extends up approximately 10 feet to the roof of the building (i.e., the ceiling level of the house is approximately 25 feet above the elevation of India Street). In order to break the line-of-sight between vehicles on India Street and the top of the house, an 18-foot tall barrier would need to be constructed along the western edge of the property. Construction of such a barrier is considered to be physically feasible, although its appearance would be inconsistent with the visual setting of the surrounding area and it would reduce, if not eliminate, the existing unobstructed view of San Diego Bay currently available at the subject site. Mitigation Measure MM-NOI-8 is ***not considered feasible***, however, because the mitigation measure is within the City of San Diego jurisdiction, would itself result in significant environmental impacts, including as to aesthetics and land use/planning, and would require FAA approval of funding. SDCRAA could not require the City to implement this improvement in the right-of-way or approve the improvement on private property. Construction of the very high sound barrier would be inconsistent with the Community Plan and would exceed the height limit for walls stated in the City Code. SDCRAA reasonably presumes that the City of San Diego would not support or implement this improvement, and the City has jurisdiction over the potential improvement. Further, due to FAA regulations, potential improvements currently could not be implemented and are presently not

[52] U.S. Department of Transportation, Federal Highway Administration. Highway Traffic Noise Barriers at a Glance. Available: https://www.fhwa.dot.gov/Environment/noise/noise_barriers/design_construction/keepdown.cfm.

considered feasible because the FAA may not authorize the use of any FAA grant funds or SDIA revenue to be used to construct or fund any off-Airport improvements or mitigation measures as discussed in Section 3.14.6 of the Recirculated Draft EIR. SDCRAA has not requested funding of this improvement because it is reasonably presumed the City would not support or implement the improvement, and the City has jurisdiction over the potential improvement. Based on the above, this mitigation measure is considered to be infeasible, and is therefore not recommended for implementation. As such, this impact is considered unmitigable.

MM-NOI-9: **India Street Vehicle Speed Reduction.** Along India Street, the modeled traffic speed was 35 miles per hour (mph). If traffic calming measures were to be introduced as a noise mitigation method, a 10 mph decrease in the speed limit (i.e., new speed limit of 25 mph) would be needed in order to achieve a CNEL decrease of approximately 3.0 dBA. Traffic calming measures can include, but not be limited to, vertical deflectors (i.e., speed humps, speed tables, raised intersections), horizontal shifts (i.e., chicanes), and road narrowing. Implementation of this measure would require approval from the City of San Diego, which is anticipated to be subject to completion of a traffic study to assess potential impacts to traffic flows from installation of such measures. It should be noted that posting a speed limit of 25 mph would not change driver behavior and is likely not enforceable unless supported by a Speed Survey that shows that the free flow 85th percentile speed is 25 mph. Given that segment of India Street (Sassafras Street to Laurel Street) is a main one-way collector for northbound traffic in the local area, it is unlikely that a 30 percent reduction of the speed limit to 25 mph would be approved. Similar to above for Mitigation Measures MM-NOI-6 through MM-NOI-8, Mitigation Measure MM-NOI-9 is ***not considered feasible*** because the mitigation measure is within the City of San Diego jurisdiction, and would require FAA approval of funding. SDCRAA could not require the City to implement this improvement. Further, due to FAA regulations, potential improvements currently could not be implemented and are presently not considered feasible because the FAA may not authorize the use of any FAA grant funds or SDIA revenue to be used to construct or fund any off-airport improvements or mitigation measures as discussed in Section 3.14.6 of the Recirculated Draft EIR. SDCRAA has not requested funding of this improvement because it is reasonably presumed that the City would not approve or implement the mitigation measure. Based on the above, this mitigation measure is considered to be infeasible, and is therefore not recommended for implementation. As such, this impact is considered unmitigable.

3.12.4.5.4.2 Significance of Impact After Mitigation

As indicated above, there are no feasible mitigation measures available to address the traffic-related increase in CNEL along the subject roadway segment; hence, the proposed project's impact would be ***significant and unavoidable***. It should be noted, for informational purposes, that the future roadway noise levels that cause that significant impact would be the same even if the proposed project was not implemented (i.e., there would be no difference between the proposed project and the No Project Alternative relative to that impact)**.**

3.12.4.5.5 Impact 3.12-8

Summary Conclusion for Impact 3.12-8: Implementation of the proposed project would not cause the worst noise hour L_{eq} due to traffic on the off-airport roadways to substantially exceed the existing L_{eq} (i.e., an increase of 12 dB, or more) at noise-sensitive areas associated with the applicable land use categories. As such, and as further described below, this would be a *less than significant impact*.

Table 3.12-16 presents the estimated change in peak hour traffic L_{eq} with implementation of the proposed project at each phase of development, compared to existing baseline conditions.

Impacts in 2024

As indicated in Table 3.12-16, the greatest change in peak hour traffic L_{eq} in 2024 with completion of Phase 1a, compared to existing baseline conditions, would be 6.1 dB, which is substantially less than the 12 dB threshold. As such, the impact in 2024 would be a ***less than significant impact.***

Impacts in 2026

As indicated in Table 3.12-16, the greatest change in peak hour traffic L_{eq} in 2026 with completion of Phase 1b, compared to existing baseline conditions, would be 6.3 dB, which is substantially less than the 12 dB threshold. As such, the impact in 2026 would be a ***less than significant impact.***

Impacts in 2030

As indicated in Table 3.12-16, the greatest change in peak hour traffic L_{eq} in 2030 with completion of Phase 2a, compared to existing baseline conditions, would be 6.5 dB, which is substantially less than the 12 dB threshold. As such, the impact in 2030 would be a ***less than significant impact.***

Impacts in 2035

As indicated in Table 3.12-16, the greatest change in peak hour traffic L_{eq} in 2035 with completion of Phase 2b (Project Buildout), compared to existing baseline conditions, would be 8.1 dB, which is substantially less than the 12 dB threshold. As such, the impact in 2035 would be a ***less than significant impact.***

Impacts in 2050

As indicated in Table 3.12-16, the greatest change in peak hour traffic L_{eq} in 2050, compared to existing baseline conditions, would be 8.2 dB, which is substantially less than the 12 dB threshold. As such, the impact in 2050 would be a ***less than significant impact.***

Table 3.12-16: Change in Peak Hour Traffic Leq Compared to Existing Baseline Condition

Roadway Segment	Existing Baseline Conditions Leq At 50 Ft From Edge Of Road	With Project				
		2024 Am Peak Hour Leq (Db)	2026 Am Peak Hour Leq (Db)	2030 Am Peak Hour Leq (Db)	2035 Am Peak Hour Leq (Db)	2050 Am Peak Hour Leq (Db)
Pacific Highway						
Kurtz St to Barnett Ave	66.7	66.9	67.1	67.3	67.4	67.9
Barnett Ave to Washington St	70.5	70.7	71.4	71.5	71.7	71.9
Washington St to Sassafras St	63.4	63.6	63.9	64.2	65.0	67.8
Sassafras St to Palm St	63.3	64.1	64.1	64.4	64.7	65.2
Palm St to Laurel St	63.6	64.4	64.3	64.7	65.3	66.2
Laurel St to Juniper St	60.7	61.5	62.2	62.6	63.2	63.9
Kettner Boulevard						
Vine St to Sassafras St	65.8	66.7	67.0	67.6	68.1	67.4
Sassafras St to Palm St	64.2	65.0	66.6	67.2	67.9	68.0
Palm St to Laurel St	64.2	64.6	65.7	66.3	66.7	66.8
India Street						
Sassafras St to Laurel St	63.1	65.0	65.4	66.2	66.5	66.9
Laurel St to Juniper St	57.4	57.4	57.6	57.7	57.8	58.1
Washington Street						
West of Pacific Hwy	54.5	56.0	55.9	56.4	56.8	57.6
Hancock St to San Diego Ave	64.7	64.9	65.3	65.6	65.7	66.1
East of India St	65.1	65.3	66.0	66.2	66.4	66.7
Admiral Boland Way						
Washington St to Terminal Link Rd	64.2	67.0	66.7	67.2	67.6	67.9
Terminal Link Rd to Pacific Hwy	64.2	67.0	66.7	67.2	67.7	68.0
Sassafras Street						
Pacific Hwy to Kettner Blvd	58.9	60.7	60.7	61.2	62.1	62.4
Palm Street						
Pacific Hwy to Kettner Blvd	50.5	56.6	56.8	57.0	58.6	58.7
Laurel Street						
Harbor Dr to Pacific Hwy	66.6	68.1	68.5	69.3	69.7	70.1
Pacific Hwy to India St	61.3	62.0	62.5	63.2	63.5	63.8
Columbia St to State St/Reynard Wy	58.3	58.7	58.6	58.8	59.0	59.3

Table 3.12-16: Change in Peak Hour Traffic Leq Compared to Existing Baseline Condition

Roadway Segment	Existing Baseline Conditions Leq At 50 Ft From Edge Of Road	With Project				
		2024 Am Peak Hour Leq (Db)	2026 Am Peak Hour Leq (Db)	2030 Am Peak Hour Leq (Db)	2035 Am Peak Hour Leq (Db)	2050 Am Peak Hour Leq (Db)
Hawthorn Street						
Harbor Dr to Pacific Hwy	62.7	63.3	63.2	63.6	64.3	64.7
Pacific Hwy to India St	63.4	63.8	64.0	64.7	66.0	66.3
India St to State St	63.4	63.8	64.1	64.7	66.0	66.3
State St to Albatross St	58.7	58.7	58.9	59.0	59.1	59.4
Grape Street						
Harbor Dr to Pacific Hwy	65.3	65.8	66.4	67.2	68.8	69.1
Pacific Hwy to India St	66.0	66.4	67.7	68.3	69.5	69.8
India St to State St	66.6	66.9	68.7	69.3	70.4	70.7
Albatross St to Front St	54.9	54.9	56.9	58.0	59.0	59.3
Harbor Drive						
Scott Rd to Nimitz Blvd	61.2	61.4	62.8	62.9	63.1	63.5
Nimitz Blvd to Laning Rd	63.4	63.8	64.8	65.1	65.3	65.7
Laning Rd to McCain Rd	65.1	65.5	65.5	66.1	66.3	66.7
McCain Rd to Spanish Landing	65.1	66.0	65.5	66.1	66.3	66.6
Spanish Landing to Harbor Island Dr	65.3	66.2	65.4	65.7	66.0	66.3
Harbor Island Dr to Winship Ln	69.4	67.8	64.1	66.2	66.4	67.2
Winship Ln to Liberator Way	70.0	69.3	69.3	70.4	70.7	71.1
Liberator Way to Cell Phone Lot	70.2	69.5	69.4	70.5	70.8	71.2
Cell Phone Lot to Laurel St/ Solar Turbines	70.2	69.2	69.4	70.5	70.8	71.3
Laurel St/ Solar Turbines to W Laurel St	69.3	68.4	69.1	70.3	70.6	71.0
Laurel St to Hawthorn St	68.2	68.7	69.1	69.9	71.1	71.5
Hawthorn St to Grape St	66.3	66.7	67.3	68.3	69.6	69.9
Grape St to Ash St	63.6	63.9	64.2	64.9	65.1	65.4
Harbor Island Drive						
Harbor Dr to Old Rent A Car Access	57.9	58.0	59.2	61.9	62.0	62.1

Table 3.12-16: Change in Peak Hour Traffic Leq Compared to Existing Baseline Condition

Roadway Segment	Existing Baseline Conditions Leq At 50 Ft From Edge Of Road	With Project				
		2024 Am Peak Hour Leq (Db)	2026 Am Peak Hour Leq (Db)	2030 Am Peak Hour Leq (Db)	2035 Am Peak Hour Leq (Db)	2050 Am Peak Hour Leq (Db)
West of Harbor Island Dr	55.7	55.8	58.2	58.3	58.5	58.8
Harbor Island Dr to Parking Lot	53.6	53.6	55.3	55.4	55.9	58.1
East of Parking Lot	52.8	52.8	55.3	55.4	55.9	58.1

Source: HMMH, 2019.

3.12.4.5.5.1 Mitigation Measures

No mitigation is required for this impact.

3.12.4.5.5.2 Significance of Impact After Mitigation

As indicated above, no mitigation is required relative to this impact. The project would result in a ***less than significant impact***.

3.12.5 Construction Noise

3.12.5.1 General Approach and Methodology

Table 3.12-17 provides the source noise emission levels for construction equipment that is contained within the FHWA Roadway Construction Noise Model. This table provides two values of the A-weighted maximum sound pressure levels (L_{max}) at a reference distance of 50 feet – one based on the Specification 721.560 and one based on a sample of measurement data.

At this stage of the proposed project planning, the phasing of construction activities is limited to the generalized descriptions in the preceding section. Detailed information about the specific types and numbers of equipment will not be known until later in the proposed project development process; however, the information presented herein regarding the general noise characteristics of typical construction activities and the nature and location of land uses near the project site is sufficient to draw conclusions on whether construction of the proposed project would result in significant noise impacts to noise-sensitive uses.

Table 3.12-17: Source Noise Emission Levels for Construction Equipment

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Spec 721.560 Lmax @ 50 ft (dB, slow)	Measured Lmax @ 50 ft (dB, slow)	No. of Data Samples
All Other Equipment > 5 HP	No	50	85	-- N/A --	0
Auger Drill Rig	No	20	85	84	36
Backhoe	No	40	80	78	372
Bar Bender	No	20	80	-- N/A --	0
Blasting	Yes	-- N/A --	94	-- N/A --	0
Boring Jack Power Unit	No	50	80	83	1
Chain Saw	No	20	85	84	46
Clam Shovel (dropping)	Yes	20	93	87	4
Compactor (ground)	No	20	80	83	57

Table 3.12-17: Source Noise Emission Levels for Construction Equipment

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Spec 721.560 Lmax @ 50 ft (dB, slow)	Measured Lmax @ 50 ft (dB, slow)	No. of Data Samples
Compressor (air)	No	40	80	78	18
Concrete Batch Plant	No	15	83	-- N/A --	0
Concrete Mixer Truck	No	40	85	79	40
Concrete Pump Truck	No	20	82	81	30
Concrete Saw	No	20	90	90	55
Crane	No	16	85	81	405
Dozer	No	40	85	82	55
Drill Rig Truck	No	20	84	79	22
Drum Mixer	No	50	80	80	1
Dump Truck	No	40	84	76	31
Excavator	No	40	85	81	170
Flat Bed Truck	No	40	84	74	4
Front End Loader	No	40	80	79	96
Generator	No	50	82	81	19
Generator (<25KVA, VMS signs)	No	50	70	73	74
Gradall	No	40	85	83	70
Grader	No	40	85	-- N/A --	0
Grapple (on backhoe)	No	40	85	87	1
Horizontal Boring Hydr. Jack	No	25	80	82	6
Hydra Break Ram	Yes	10	90	-- N/A --	0
Impact Pile Driver	Yes	20	95	101	11
Jackhammer	Yes	20	85	89	133
Man Lift	No	20	85	75	23
Mounted Impact Hammer (hoe ram)	Yes	20	90	90	212
Pavement Scarafier	No	20	85	90	2
Paver	No	50	85	77	9
Pickup Truck	No	40	55	75	1
Pneumatic Tools	No	50	85	85	90
Pumps	No	50	77	81	17
Refrigerator Unit	No	100	82	73	3
Rivit Buster/chipping gun	Yes	20	85	79	19
Rock Drill	No	20	85	81	3
Roller	No	20	85	80	16
Sand Blasting (Single Nozzle)	No	20	85	96	9
Scraper	No	40	85	84	12
Shears (on backhoe)	No	40	85	96	5
Slurry Plant	No	100	78	78	1
Slurry Trenching Machine	No	50	82	80	75
Soil Mix Drill Rig	No	50	80	-- N/A --	0
Tractor	No	40	84	-- N/A --	0
Vacuum Excavator (Vac-truck)	No	40	85	85	149
Vacuum Street Sweeper	No	10	80	82	19
Ventilation Fan	No	100	85	79	13
Vibrating Hopper	No	50	85	87	1
Vibratory Concrete Mixer	No	20	80	80	1
Vibratory Pile Driver	No	20	95	101	44
Warning Horn	No	5	85	83	12
Welder / Torch	No	40	73	74	5

Source: Based on Table 1 in FHWA Roadway Construction Noise Model, Version 1.0 User's Guide.

A generalized model for construction noise was used to estimate average noise levels at various distances from piece of equipment. The model takes into account the effects of spherical spreading from a point source and atmospheric absorption, and ignores the excess attenuation provided by intervening structures and buildings, and is given by the following equation:

L_{eq} (at distance "D") = L_{max} at 50 feet – 20 log (D / 50) – 10 log (UF) – α (D / 1000)

Where,

- L_{max} at 50 feet is the maximum of the two values for a particular piece of equipment in Table 3.12-17;
- D is the distance of interest as measured in feet;
- UF is the acoustical usage factor from Table 3.12-17; and
- α is the atmospheric absorption in decibels per 1,000 feet.

3.12.5.2 Regulatory Framework

3.12.5.2.1 City of San Diego Noise Standards

Section 59.5.0404(a) of the City of San Diego Municipal Code[53] states that it is unlawful to create disturbing, excessive or offensive noise during construction between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day. A project proponent can apply for a permit that conditionally allows nighttime construction noise; however, the City's Noise Abatement and Control Administrator must grant approval before work can commence. In the approval, the Administrator will prescribe conditions, working times, types of construction equipment to be used, and permissible noise levels deemed appropriate.

Section 59.5.0404(b) of the City of San Diego Municipal Code established a construction noise limit of 75 dB L_{eq}, between the hours of 7:00 a.m. and 7:00 p.m., at or beyond the property lines of any property zoned residential.

3.12.5.3 Environmental Setting

The proposed project site is located in the southern portion of SDIA, with the surrounding land uses being characterized by: airport uses immediately to the north and military uses (i.e., MCRD) farther to the north; a major roadway (i.e., Pacific Highway) and commercial uses to the east; a major roadway (i.e., North Harbor Drive), recreational uses, commercial uses, and military uses (i.e., U.S. Coast Guard) to the south; and the Navy Boat Channel and mixed-use development (Liberty Station) to the west. Military barracks that house sleeping quarters in the central portion of MCRD are located approximately 2,000 feet from the nearest portion of the proposed project (i.e., from the northwestern tip of the Taxiway B improvement). The closest residential land uses east of project site are located approximately 3,000 feet east of the eastern edge of the project area (i.e., the eastern edge of the proposed Taxiways A and B extension/relocation). The closest

[53] City of San Diego Municipal Code Section 59.5.0404 - Construction Noise. Available: http://docs.sandiego.gov/municode/MuniCodeChapter05/Ch05Art9.5Division04.pdf.

residential land uses west of project site are located approximately 2,400 feet west of the western edge of the project area (i.e., the western edge of the proposed T2-West Modification [Stinger]).

3.12.5.4 Thresholds of Significance

The proposed project would result in significant impacts related to construction noise if it would:

Impact 3.12-9 Cause construction noise levels that would exceed 75 dB L_{eq} during the 12-hour period between the hours of 7:00 a.m. and 7:00 p.m. at or beyond the property line of a residential property.

Impact 3.12-10 Cause construction noise that would substantially interfere with normal business communication, or affect sensitive receptors, such as day care facilities.

The above thresholds of significance used to evaluate the construction noise impacts of the proposed project are derived from Appendix G of the State CEQA Guidelines, based on the following:

- *Generation of excessive groundborne vibration or groundborne noise levels*. This threshold is addressed in the evaluation of Impacts 3.12-9 and 3.12-10.

3.12.5.5 Project Impacts

3.12.5.5.1 Impact Analysis Modeling Approach

Table 3.12-18 provides calculated construction noise levels expressed in terms of the A-weighted L_{eq} for each piece of equipment listed in Table 3.12-17 using the generalized model for construction noise. Levels of construction noise in a community are primarily a function of the number and types of equipment used, and the distances between the construction equipment and noise-sensitive land use. While detailed information about the specific types and numbers of equipment are unknown at this stage of project planning, it is possible to draw some broad conclusions about the likelihood of potential construction noise impact in the community.

Based on an assumption that all of the pieces of equipment in Table 3.12-18 were operating on the same site at the same time, the total L_{eq} at a distance of 50 feet from the activity would be 96.9 dB. At a distance of 1,000 feet from the activity, the construction noise level would be 69.5 dB L_{eq}. At distances of 2,000 feet, or more from the construction activity, the total noise level would be 62.2 dB L_{eq}. These projected noise levels are somewhat conservative and do not include the effects of excess attenuation provided by intervening buildings and/or terrain.

Table 3.12-18: Average A-weighted Noise Levels (Leq in dB) for Construction Equipment

Equipment Description	50 ft	500 ft**	1,000 ft**	1,500 ft**	2,000 ft**	2,500 ft**	3,000 ft**	3,500 ft**	4,000 ft**	4,500 ft**
Other Equipment > 5 HP	68.0	47.6	41.1	37.1	34.2	31.8	29.7	28.0	26.3	24.9
Auger Drill Rig	72.0	51.5	45.1	41.1	38.1	35.8	33.7	31.9	30.3	28.9
Backhoe	64.0	43.5	37.1	33.1	30.1	27.8	25.7	23.9	22.3	20.8
Bar Bender	67.0	46.5	40.1	36.1	33.1	30.8	28.7	26.9	25.3	23.9
Blasting*	94.0	73.3	66.5	62.2	59.0	56.3	53.9	51.8	49.9	48.2
Boring Jack Power Unit	66.0	45.6	39.1	35.1	32.2	29.8	27.7	26.0	24.3	22.9
Chain Saw	72.0	51.5	45.1	41.1	38.1	35.8	33.7	31.9	30.3	28.9
Clam Shovel (dropping)	80.0	59.2	52.5	48.2	44.9	42.3	39.9	37.8	35.9	34.2
Compactor (ground)	70.0	49.5	43.1	39.1	36.1	33.8	31.7	29.9	28.3	26.9

Table 3.12-18: Average A-weighted Noise Levels (Leq in dB) for Construction Equipment

Equipment Description	50 ft	500 ft**	1,000 ft**	1,500 ft**	2,000 ft**	2,500 ft**	3,000 ft**	3,500 ft**	4,000 ft**	4,500 ft**
Compressor (air)	64.0	43.5	37.1	33.1	30.1	27.8	25.7	23.9	22.3	20.8
Concrete Batch Plant	71.2	50.8	44.3	40.3	37.4	35.0	33.0	31.2	29.6	28.1
Concrete Mixer Truck	69.0	48.5	42.1	38.1	35.1	32.8	30.7	28.9	27.3	25.8
Concrete Pump Truck	69.0	48.5	42.1	38.1	35.1	32.8	30.7	28.9	27.3	25.9
Concrete Saw	77.0	56.5	50.1	46.1	43.1	40.8	38.7	36.9	35.3	33.9
Crane	73.0	52.5	46.0	42.1	39.1	36.7	34.7	32.9	31.3	29.8
Dozer	69.0	48.5	42.1	38.1	35.1	32.8	30.7	28.9	27.3	25.8
Drill Rig Truck	71.0	50.5	44.1	40.1	37.1	34.8	32.7	30.9	29.3	27.9
Drum Mixer	63.0	42.6	36.1	32.1	29.2	26.8	24.7	23.0	21.3	19.9
Dump Truck	68.0	47.5	41.1	37.1	34.1	31.8	29.7	27.9	26.3	24.8
Excavator	69.0	48.5	42.1	38.1	35.1	32.8	30.7	28.9	27.3	25.8
Flat Bed Truck	68.0	47.5	41.1	37.1	34.1	31.8	29.7	27.9	26.3	24.8
Front End Loader	64.0	43.5	37.1	33.1	30.1	27.8	25.7	23.9	22.3	20.8
Generator	65.0	44.6	38.1	34.1	31.2	28.8	26.7	25.0	23.3	21.9
Generator (<25KVA)	56.0	35.6	29.1	25.1	22.2	19.8	17.7	16.0	14.3	12.9
Gradall	69.0	48.5	42.1	38.1	35.1	32.8	30.7	28.9	27.3	25.8
Grader	69.0	48.5	42.1	38.1	35.1	32.8	30.7	28.9	27.3	25.8
Grapple (on backhoe)	71.0	50.5	44.1	40.1	37.1	34.8	32.7	30.9	29.3	27.8
Horizontal Boring	68.0	47.6	41.1	37.1	34.2	31.8	29.8	28.0	26.4	24.9
Hydra Break Ram	80.0	59.3	52.5	48.2	45.0	42.3	39.9	37.8	35.9	34.2
Impact Pile Driver	88.0	67.2	60.5	56.2	52.9	50.3	47.9	45.8	43.9	42.2
Jackhammer	76.0	55.2	48.5	44.2	40.9	38.3	35.9	33.8	31.9	30.2
Man Lift	72.0	51.5	45.1	41.1	38.1	35.8	33.7	31.9	30.3	28.9
Mounted Impact Hammer	77.0	56.2	49.5	45.2	41.9	39.3	36.9	34.8	32.9	31.2
Pavement Scarafier	77.0	56.5	50.1	46.1	43.1	40.8	38.7	36.9	35.3	33.9
Paver	68.0	47.6	41.1	37.1	34.2	31.8	29.7	28.0	26.3	24.9
Pickup Truck	59.0	38.5	32.1	28.1	25.1	22.8	20.7	18.9	17.3	15.8
Pneumatic Tools	68.0	47.6	41.1	37.1	34.2	31.8	29.7	28.0	26.3	24.9
Pumps	64.0	43.6	37.1	33.1	30.2	27.8	25.7	24.0	22.3	20.9
Refrigerator Unit	62.0	41.6	35.1	31.1	28.2	25.8	23.7	21.9	20.3	18.9
Rivit Buster/chipping gun	72.0	51.2	44.5	40.2	36.9	34.3	31.9	29.8	27.9	26.2
Rock Drill	72.0	51.5	45.1	41.1	38.1	35.8	33.7	31.9	30.3	28.9
Roller	72.0	51.5	45.1	41.1	38.1	35.8	33.7	31.9	30.3	28.9
Sand Blasting (one nozzle)	83.0	62.5	56.1	52.1	49.1	46.8	44.7	42.9	41.3	39.9
Scraper	69.0	48.5	42.1	38.1	35.1	32.8	30.7	28.9	27.3	25.8
Shears (on backhoe)	80.0	59.5	53.1	49.1	46.1	43.8	41.7	39.9	38.3	36.8
Slurry Plant	58.0	37.6	31.1	27.1	24.2	21.8	19.7	17.9	16.3	14.9
Slurry Trenching Machine	65.0	44.6	38.1	34.1	31.2	28.8	26.7	25.0	23.3	21.9
Soil Mix Drill Rig	63.0	42.6	36.1	32.1	29.2	26.8	24.7	23.0	21.3	19.9
Tractor	68.0	47.5	41.1	37.1	34.1	31.8	29.7	27.9	26.3	24.8
Vacuum Excavator	69.0	48.5	42.1	38.1	35.1	32.8	30.7	28.9	27.3	25.8
Vacuum Street Sweeper	72.0	51.6	45.1	41.1	38.2	35.8	33.7	31.9	30.3	28.9
Ventilation Fan	65.0	44.6	38.1	34.1	31.2	28.8	26.7	24.9	23.3	21.9
Vibrating Hopper	70.0	49.6	43.1	39.1	36.2	33.8	31.7	30.0	28.3	26.9
Vibratory Concrete Mixer	67.0	46.5	40.1	36.1	33.1	30.8	28.7	26.9	25.3	23.9
Vibratory Pile Driver	88.0	67.5	61.1	57.1	54.1	51.8	49.7	47.9	46.3	44.9
Warning Horn	78.0	57.6	51.1	47.1	44.2	41.8	39.7	38.0	36.3	34.9
Welder / Torch	58.0	37.5	31.1	27.1	24.1	21.8	19.7	17.9	16.3	14.8

Source: HMMH, 2018.

Notes:

* An acoustical usage factor is not available for blasting, so the L_{max} is provided in this table.

** Predicted equipment noise levels at distances of 500 feet and beyond include atmospheric absorption at a rate of 1.5 dB per 1,000 feet for impact devices (re: 1,000 Hz) and 0.9 dB per 1,000 feet for non-impact devices (re: 500 Hz).

3.12.5.5.2 Impact 3.12-9

Summary Conclusion for Impact 3.12-9: Implementation of the proposed project would not cause construction noise levels that would exceed 75 dB L_{eq} during the 12-hour period between the hours of 7:00 a.m. and 7:00 p.m. at or beyond the property line of a residential property. As such, and as further described below, this would be a *less than significant impact*.

Impacts through 2024

Based on the information presented in Table 3.12-18, none of the construction equipment noise, on an individual piece of equipment basis, would exceed 75 dB L_{eq}. With the nearest residential use being 2,400 feet away and the nearest military barracks being 2,000 feet away, the highest equipment noise level at the closer distance (i.e., 2,000 feet) would be 52.9 dB L_{eq}. With a very conservative assumption of all equipment operating at once, the combined noise level would be 62.2 dB L_{eq} at a distance of 2,000 feet, which is well below the threshold of 75 dB L_{eq}.

Based on the above, construction noise impacts in 2024 would be ***less than significant***.

Impacts through 2026

The construction noise impacts in 2026 would be similar to those identified above for 2024. During Phase 1b, which would be completed by the 2026 horizon year, construction of the Taxiway A extension and the Taxiway B relocation is scheduled to occur, which would place construction activities as close as approximately 650 feet of the U.S. Coast Guard Station, within which sleeping quarters are located. Although not zoned/designated as a residential use, it can be noted that the construction noise levels at this location from individual pieces of construction equipment would be less than 67.2 dB L_{eq} according to Table 3.12-18, and for combined construction equipment noise, with the conservative assumption that all construction equipment is operating at the same time at the Taxiway A/Taxiway B site, would be approximately 73.6 dB L_{eq}. Both of these noise levels would be below the threshold of 75 dB L_{eq}.

Based on the above, construction noise impacts in 2026 would be ***less than significant***.

Impacts through 2030

The construction noise impacts in 2030 would be similar to those identified above for 2024. As such, construction noise impacts in 2030 would be ***less than significant***.

Impacts through 2035

The construction noise impacts in 2035 would be similar to those identified above for 2024. As such, construction noise impacts in 2035 would be ***less than significant***.

3.12.5.5.2.1 Mitigation Measures

No mitigation is required for this impact.

3.12.5.5.2.2 Significance of Impact After Mitigation

As indicated above, no mitigation is required relative to this impact. The project would result in a ***less than significant impact***.

3.12.5.5.3 Impact 3.12-10

Summary Conclusion for Impact 3.12-10: Implementation of the proposed project would not cause construction noise that would substantially interfere with normal business communication, or affect sensitive receptors, such as day care facilities. As such, and as further described below, this would be a *less than significant impact*.

Impacts through 2024

No sensitive receptors, such as day care facilities, are known to be located near the project site. Based on the location of the proposed project site being at SDIA, which has existing ambient noise levels influenced by commercial aircraft operations throughout the day and nearby businesses and military operations already operating in that existing noise environment, it is not anticipated that project-related construction activities would substantially interfere with normal business communication. Based on the above, construction noise impacts in 2024 would be ***less than significant***.

Impacts through 2026

The impacts in 2026 would be the same as those described above for 2024, which would be ***less than significant***.

Impacts through 2030

The impacts in 2030 would be the same as those described above for 2024, which would be ***less than significant***.

Impacts through 2035

The impacts in 2035 would be the same as those described above for 2024, which would be ***less than significant***.

3.12.5.5.3.1 Mitigation Measures

No mitigation is required for this impact.

3.12.5.5.3.2 Significance of Impact After Mitigation

As indicated above, no mitigation is required relative to this impact. The project would result in a ***less than significant impact***.

3.12.6 Summary of Impact Determinations

Table 3.12-19 summarizes the impact determinations of the proposed project related to noise, as described above in the detailed discussion in Sections 3.12.3 through 3.12.5. Identified potential impacts are based on the significance criteria presented in those sections, the information and data sources cited therein, and the professional judgment of the report preparers, as applicable.

Table 3.12-19: Summary Matrix of Potential Impacts and Mitigation Measures Associated with the Proposed Project Related to Noise

Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
Impact 3.12-1: Airport operations at SDIA in future years (2024, 2026, 2030, 2035, and 2050) would generate aircraft noise that would increase noise levels at exterior use areas of residences and other noise-sensitive uses to noise levels of 65 CNEL or above, as compared to the existing (2018) baseline condition. Mitigation through soundproofing could reduce this impact, but it is uncertain whether all of the affected uses would qualify for soundproofing. As such, this would be a *significant and unavoidable impact*.	Construction: Not applicable Operation: Significant Impact	Mitigation Measures MM-NOI-1: Expansion of SDCRAA's Sound Insulation Program, MM-NOI-2: Update Noise Exposure Maps Every 5 Years, MM-NOI-3: Create a Mobile Noise Monitoring Program, MM-NOI-4: Assess the Findings of the 2018 FAA Reauthorization Act-Related Noise Studies, and MM-NOI-5: Utilize Curfew Violation Penalty Fines to Help Fund Aircraft Noise Mitigation Programs. MM-NOI-1 is subject to funding availability and FAA approval. If the funding is granted by the FAA, then Mitigation Measure MM-NOI-1 is feasible and will be implemented by SDCRAA. If the FAA does not approve the funding, then Mitigation Measure MM-NOI-1 is considered infeasible. MM-NOI-2 through MM-NOI-5 are considered feasible and will be implemented by SDCRAA.	Construction: Not applicable Operation: Significant and Unavoidable
Impact 3.12-2: There would be a 1.5 dB or more increase in noise-sensitive areas being exposed to 65 CNEL or greater in 2024, 2026, 2030, 2035, and 2050 as a result of airport operations, as compared to the existing (2018) baseline condition. As such, this would be a *significant and unavoidable impact*.	Construction: Not applicable Operation: Significant Impact	Mitigation Measures MM-NOI-1: Expansion of SDCRAA's Sound Insulation Program, MM-NOI-2: Update Noise Exposure Maps Every 5 Years, MM-NOI-3: Create a Mobile Noise Monitoring Program, MM-NOI-4: Assess the Findings of the 2018 FAA Reauthorization Act-Related Noise Studies, and MM-NOI-5: Utilize Curfew Violation Penalty Fines to Help Fund Aircraft Noise Mitigation Programs. MM-NOI-1 is subject to funding availability and FAA approval. If the funding is granted by the FAA, then Mitigation Measure MM-NOI-1 is feasible and will be implemented by SDCRAA. If the FAA does not approve the funding, then Mitigation Measure MM-NOI-1 is considered infeasible. MM-NOI-2 through MM-NOI-5 are considered feasible and will be implemented by SDCRAA.	Construction: Not applicable Operation: Significant and Unavoidable

Table 3.12-19: Summary Matrix of Potential Impacts and Mitigation Measures Associated with the Proposed Project Related to Noise

Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
Impact 3.12-3: Implementation of the proposed project would cause a 3 dB or more increase resulting in noise-sensitive areas being exposed to 60 CNEL to less than 65 CNEL in 2024, 2026, 2030, 2035, and 2050, as compared to the existing (2018) baseline condition. As such, this would be a *significant and unavoidable impact*.	Construction: Not applicable Operation: Significant Impact	Mitigation Measures MM-NOI-1: Expansion of SDCRAA's Sound Insulation Program, MM-NOI-2: Update Noise Exposure Maps Every 5 Years, MM-NOI-3: Create a Mobile Noise Monitoring Program, MM-NOI-4: Assess the Findings of the 2018 FAA Reauthorization Act-Related Noise Studies, and MM-NOI-5: Utilize Curfew Violation Penalty Fines to Help Fund Aircraft Noise Mitigation Programs. MM-NOI-1 is subject to funding availability and FAA approval. If the funding is granted by the FAA, then Mitigation Measure MM-NOI-1 is feasible and will be implemented by SDCRAA. If the FAA does not approve the funding, then Mitigation Measure MM-NOI-1 is considered infeasible. MM-NOI-2 through MM-NOI-5 are considered feasible and will be implemented by SDCRAA.	Construction: Not applicable Operation: Significant and Unavoidable
Impact 3.12-4: Implementation of the proposed project would not cause a substantial increase in the amount of time that aircraft-induced noise would affect classroom learning, as compared to the existing (2018) baseline condition. As such, this would be a *less than significant impact*.	Construction: Not applicable Operation: Less than Significant	No mitigation is required	Construction: Not applicable Operation: Less than Significant
Impact 3.12-5: Implementation of the proposed project would cause a substantial increase in the number of nighttime flight operations that produce exterior SELs sufficient to awaken an increasing proportion of the population in 2024, 2026, 2030, 2035, and 2050, as compared to the existing (2018) baseline condition. As such, this would be a *significant and unavoidable impact*.	Construction: Not applicable Operation: Significant Impact	No feasible mitigation measures available	Construction: Not applicable Operation: Significant and Unavoidable

Table 3.12-19: Summary Matrix of Potential Impacts and Mitigation Measures Associated with the Proposed Project Related to Noise

Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
Impact 3.12-6: Implementation of the proposed project would cause traffic noise levels for existing development along two segments of one roadway to exceed the noise levels considered compatible for noise-sensitive areas associated with the applicable land use categories. As such, this would be a *significant and unavoidable impact*.	Construction: Not applicable Operation: Significant Impact	Potential Mitigation Measure MM-NOI-6: Grape Street Sound Barrier, is not physically feasible and is also not considered to be feasible because the FAA may not authorize the use of any FAA grant funds or SDIA revenue to be used to construct or fund any off-Airport improvements. Potential Mitigation Measure MM-NOI-7: Grape Street Vehicle Speed Reduction, is not considered feasible due to unlikely nature of achieving the necessary speed reduction and because the FAA may not authorize the use of any FAA grant funds or SDIA revenue to be used to construct or fund any off-Airport improvements.	Construction: Not applicable Operation: Significant and Unavoidable
Impact 3.12-7: Implementation of the proposed project would cause traffic noise levels along one roadway segment that already exceeds the levels considered compatible for noise-sensitive land use associated with the applicable land use categories to increase by more than 3 dB CNEL, as compared to existing baseline conditions. As such, this would be a *significant and unavoidable impact*.	Construction: Not applicable Operation: Significant Impact	Potential Mitigation Measure MM-NOI-8: India Street Sound Barrier, is not physically feasible and is also not considered to be feasible because the FAA may not authorize the use of any FAA grant funds or SDIA revenue to be used to construct or fund any off-airport improvements. Potential Mitigation Measure MM-NOI-9: India Street Vehicle Speed Reduction, is not considered feasible due to unlikely nature of achieving the necessary speed reduction and because the FAA may not authorize the use of any FAA grant funds or SDIA revenue to be used to construct or fund any off-airport improvement and MM-NOI-9: India Street Vehicle Speed Reduction, is not consider feasible due to federal restrictions on use of FAA/airport funds, and because the measures are within the jurisdiction/authority of the City of San Diego, not SDCRAA.	Construction: Not applicable Operation: Significant and Unavoidable
Impact 3.12-8: Implementation of the proposed project would not cause the worst noise hour L_{eq} due to traffic on the off-airport roadways to substantially exceed the existing L_{eq} (i.e., an increase of 12 dB, or more) at noise-sensitive areas associated with the applicable land use categories. As such, this would be a *less than significant impact*.	Construction: Not applicable Operation: Less than Significant	No mitigation is required	Construction: Not applicable Operation: Less than Significant

Table 3.12-19: Summary Matrix of Potential Impacts and Mitigation Measures Associated with the Proposed Project Related to Noise

Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
Impact 3.12-9: Implementation of the proposed project would not cause construction noise levels that would exceed 75 dB L_{eq} during the 12-hour period between the hours of 7:00 a.m. and 7:00 p.m. at or beyond the property line of a residential property. As such, this would be a *less than significant impact*.	Construction: Less than Significant Operation: Not applicable	No mitigation is required	Construction: Less than Significant Operation: Not applicable
Impact 3.12-10: Implementation of the proposed project would not cause construction noise that would substantially interfere with normal business communication, or affect sensitive receptors, such as day care facilities. As such, this would be a *less than significant impact*.	Construction: Less than Significant Operation: Not applicable	No mitigation is required	Construction: Less than Significant Operation: Not applicable

3.12.6.1 Mitigation Measures

MM-NOI-1: Expansion of SDCRAA's Sound Insulation Program. The existing SDIA Quieter Home Program is the SDCRAA's Residential Sound Insulation Program. For implementation of the subject Program, the FAA has determined that residences within the FAA-approved 65 dB CNEL contour (and an average interior noise level of 45 dB or greater) around SDIA may be eligible for sound insulation treatments to mitigate aircraft noise and has set a goal of reducing interior noise levels for eligible residents by at least five (5) dB inside the home, providing a noticeable reduction in noise. To mitigate the significant impacts associated with residential units that are newly exposed to 65 dB CNEL or greater from airport operations in future years of the proposed project, the SDCRAA will, subject to continued FAA approval and funding, expand the existing sound insulation program to increase the average number of housing units that are sound attenuated annually.

Likewise, the SDCRAA will expand the existing sound insulation program to include non-residential uses such as churches (places of worship) and schools in order to mitigate the significant impacts to these other noise-sensitive uses, which are newly-exposed to 65 dB CNEL or greater from airport operations in future years of the proposed project. The SDCRAA will apply to the FAA's Airport Improvement Program annually to support the expanded Sound Insulation Program. If the funding is granted by the FAA, then Mitigation Measure MM-NOI-1 is ***feasible*** and will be implemented by SDCRAA. If the FAA does not approve the funding, then Mitigation Measure MM-NOI-1 is considered ***infeasible.***

MM-NOI-2: Update Noise Exposure Maps Every 5 Years. The aircraft noise exposure maps for SDIA will be updated every five years to determine if the SDIA Noise Compatibility Program, prepared pursuant to 14 Code of Federal Regulations Part 150, needs to be updated. By committing to revise the noise exposure maps every five years, the SDCRAA will ensure that recent data is determining which homes are impacted by noise and, therefore, may be eligible to participate in the Quieter Home Program. Mitigation Measure MM-NOI-2 is ***considered feasible***.

MM-NOI-3: Create a Mobile Noise Monitoring Program. A mobile noise monitoring program will be established by SDCRAA to augment SDIA's existing permanent aircraft noise monitors at locations determined by an acoustical engineer. Mitigation Measure MM-NOI-3 is ***considered feasible***.

MM-NOI-4: Assess the Findings of the 2018 FAA Reauthorization Act-Related Noise Studies. The 2018 FAA Reauthorization Act includes a requirement for the FAA to complete various studies related to aircraft noise impacts. SDCRAA will review those studies, once completed, to help inform and update SDIA's noise mitigation programs and policies. Similarly, the Authority is committing to utilize the latest research findings and policy guidance coming from the FAA Reauthorization Act to update noise programs, if applicable. Mitigation Measure MM-NOI-4 is ***considered feasible***.

MM-NOI-5: Utilize Curfew Violation Penalty Fines to Help Fund Aircraft Noise Mitigation Programs. SDCRAA will utilize fines accrued through the aircraft operations curfew violation penalty program to annually fund additional sound insulation or other noise mitigation efforts. Mitigation Measure MM-NOI-5 is ***considered feasible.***

MM-NOI-6: Grape Street Sound Barrier. Installation of a sound wall/barrier is one method of reducing exterior noise level exposure at noise-sensitive receptors adjacent to roadways. In general terms, a sound wall/barrier that breaks the line-of-sight between the noise source and the noise receptor provides approximately 5 dB of noise reduction.[54] In the case of the significant impacts described above, this would be sufficient to reduce the future traffic noise exposure levels along Grape Street to less than 70 CNEL, thereby reducing the impacts to less than significant. The multifamily residential uses along Grape Street are between four and five stories tall, with heights up to approximately 75 feet. Additionally, the subject developments have little, if any, setbacks from the street, with only an 11-foot-wide sidewalk separating the building from the street. There is neither the lateral or vertical room available to construct a 50- to 55-foot-tall sound wall/barrier to shield existing development from traffic noise emanating from Grape Street. Accordingly, Mitigation Measure MM-NOI-6 is ***not physically feasible***. Additionally, Mitigation Measure MM-NOI-6 is also ***not considered feasible*** because the mitigation measure is within the City of San Diego jurisdiction, would itself result in significant environmental impacts, including as to aesthetics and land use/planning, and would require FAA approval of funding. SDCRAA could not

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[54] U.S. Department of Transportation, Federal Highway Administration. Highway Traffic Noise Barriers at a Glance. Available: https://www.fhwa.dot.gov/Environment/noise/noise_barriers/design_construction/keepdown.cfm.

require the City to implement this improvement in the right-of-way or approve the improvement on private property. Construction of the very high sound barrier would be inconsistent with the Community Plan and would exceed the height limit for walls stated in the City Code. SDCRAA reasonably presumes that the City of San Diego would not support or implement this improvement, and the City has jurisdiction over the potential improvement. Further, due to FAA regulations, potential improvements currently could not be implemented and are presently not considered feasible because the FAA may not authorize the use of any FAA grant funds or SDIA revenue to be used to construct or fund any off-airport improvements or mitigation measures as discussed in Section 3.14.6 of the Recirculated Draft EIR. SDCRAA has not requested funding of this improvement because it is reasonably presumed the City would not support or implement the improvement, and the City has jurisdiction over the potential improvement. Based on the above, this mitigation measure is considered to be infeasible, and is therefore not recommended for implementation. As such, this impact is considered unmitigable.

MM-NOI-7: Grape Street Vehicle Speed Reduction. Along Grape Street, the modeled traffic speed was 35 miles per hour (mph). If traffic calming measures were to be introduced as a noise mitigation method, a 5 mph decrease in vehicle speed (i.e., new speed of 30 mph) would provide a net benefit of approximately 1.6 dBA, while a 10 mph decrease in vehicle speed (i.e., new speed of 25 mph) would provide a net benefit of approximately 3.0 dBA, and a 15 mph decrease in vehicle speed (i.e., new speed of 20 mph) would provide a net benefit of approximately 4.0 dBA. In order to reduce the significant impact of the 3.6 dBA increase in CNEL that would occur in 2050, as compared to existing baseline conditions, the posted speed limit on Grape Street would need to be 20 mph.

Traffic calming measures can include, but not be limited to, vertical deflectors (i.e., speed humps, speed tables, raised intersections), horizontal shifts (i.e., chicanes), and road narrowing. Implementation of this measure would require approval from the City of San Diego, which is anticipated to be subject to completion of a traffic study to assess potential impacts to traffic flows from installation of such measures. It should be noted that posting a speed limit of 20 mph would not change driver behavior and is likely not enforceable unless supported by a Speed Survey that shows that the free flow 85th percentile speed is 20 mph. Given that segment of Grape Street is a main one-way collector for eastbound traffic in the local area, it is unlikely that a nearly 40 percent reduction of the speed limit to 20 miles per hour would be approved. Similar to above for Mitigation Measure MM-NOI-6, Mitigation Measure MM-NOI-7 is ***not considered feasible*** because the mitigation measure is within the City of San Diego jurisdiction, and would require FAA approval of funding. SDCRAA could not require the City to implement this improvement. Further, due to FAA regulations, potential improvements currently could not be implemented and are presently not considered feasible because the FAA may not authorize the use of any FAA grant funds or SDIA revenue to be used to construct or fund any off-airport improvements or mitigation measures as discussed in Section 3.14.6 of the Recirculated Draft EIR. SDCRAA has not requested funding of this improvement because it is reasonably presumed that because it is reasonably presumed that the City would not approve or implement the mitigation measure. Based on the above, this mitigation measure is considered to be infeasible, and is therefore not recommended for implementation. As such, this impact is considered unmitigable.

MM-NOI-8: India Street Sound Barrier. Installation of a sound wall/barrier is one method of reducing exterior noise level exposure at noise-sensitive receptors adjacent to roadways. In general terms, a sound wall/barrier that breaks the line-of-sight between the noise source and the noise receptor provides approximately 5 dB of noise reduction.[55] In the case of the significant impacts described above, this would be sufficient to reduce the future increase in traffic noise by more than 3 dB. The single-family dwelling, where the 3+ dB CNEL increase would occur, is located at the northeast corner of India Street and Quince Street. The subject residential lot slopes up (eastward) from India Street, with the house being constructed on a stepped pad that begins approximately 40 feet from the nearest travel lane, at an elevation that is approximately eight feet above India Street, and extends approximately 10 feet east to the west wall of the house. The lower seven feet (approximate) of the west wall provides support for the base of the main floor, which extends up approximately 10 feet to the roof of the building (i.e., the ceiling level of the house is approximately 25 feet above the elevation of India Street). In order to break the line-of-sight between vehicles on India Street and the top of the house, an 18-foot tall barrier would need to be constructed along the western edge of the property. Construction of such a barrier is considered to be physically feasible, although its appearance would be inconsistent with the visual setting of the surrounding area and it would reduce, if not eliminate, the existing unobstructed view of San Diego Bay currently available at the subject site. Mitigation Measure MM-NOI-8 is ***not considered feasible,*** however, because the mitigation measure is within the City of San Diego jurisdiction, would itself result in significant environmental impacts, including as to aesthetics and land use/planning, and would require FAA approval of funding. SDCRAA could not require the City to implement this improvement in the right-of-way or approve the improvement on private property. Construction of the very high sound barrier would be inconsistent with the Community Plan and would exceed the height limit for walls stated in the City Code. SDCRAA reasonably presumes that the City of San Diego would not support or implement this improvement, and the City has jurisdiction over the potential improvement. Further, due to FAA regulations, potential improvements currently could not be implemented and are presently not considered feasible because the FAA may not authorize the use of any FAA grant funds or SDIA revenue to be used to construct or fund any off-Airport improvements or mitigation measures as discussed in Section 3.14.6 of the Recirculated Draft EIR. SDCRAA has not requested funding of this improvement because it is reasonably presumed the City would not support or implement the improvement, and the City has jurisdiction over the potential improvement. Based on the above, this mitigation measure is considered to be infeasible, and is therefore not recommended for implementation. As such, this impact is considered unmitigable.

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[55] U.S. Department of Transportation, Federal Highway Administration. Highway Traffic Noise Barriers at a Glance. Available: https://www.fhwa.dot.gov/Environment/noise/noise_barriers/design_construction/keepdown.cfm.

MM-NOI-9: India Street Vehicle Speed Reduction. Along India Street, the modeled traffic speed was 35 miles per hour (mph). If traffic calming measures were to be introduced as a noise mitigation method, a 10 mph decrease in the speed limit (i.e., new speed limit of 25 mph) would be needed in order to achieve a CNEL decrease of approximately 3.0 dBA. Traffic calming measures can include, but not be limited to, vertical deflectors (i.e., speed humps, speed tables, raised intersections), horizontal shifts (i.e., chicanes), and road narrowing. Implementation of this measure would require approval from the City of San Diego, which is anticipated to be subject to completion of a traffic study to assess potential impacts to traffic flows from installation of such measures. It should be noted that posting a speed limit of 25 mph would not change driver behavior and is likely not enforceable unless supported by a Speed Survey that shows that the free flow 85th percentile speed is 25 mph. Given that segment of India Street (Sassafras Street to Laurel Street) is a main one-way collector for northbound traffic in the local area, it is unlikely that a 30 percent reduction of the speed limit to 25 mph would be approved. Similar to above for Mitigation Measures MM-NOI-6 through MM-NOI-8, Mitigation Measure MM-NOI-9 is ***not considered feasible*** because the mitigation measure is within the City of San Diego jurisdiction, and would require FAA approval of funding. SDCRAA could not require the City to implement this improvement. Further, due to FAA regulations, potential improvements currently could not be implemented and are presently not considered feasible because the FAA may not authorize the use of any FAA grant funds or SDIA revenue to be used to construct or fund any off-airport improvements or mitigation measures as discussed in Section 3.14.6 of the Recirculated Draft EIR. SDCRAA has not requested funding of this improvement because it is reasonably presumed that the City would not approve or implement the mitigation measure. Based on the above, this mitigation measure is considered to be infeasible, and is therefore not recommended for implementation. As such, this impact is considered unmitigable.

3.12.7 Significant Unavoidable Impacts

Noise impacts associated with operation of the proposed project would be ***significant and unavoidable***. There would be no significant and unavoidable noise impacts associated with construction of the proposed project. It should be noted, for informational purposes, that the significant and unavoidable aircraft noise and roadway noise impacts associated with airport operations in the future would also occur even if the project was not implemented (i.e., there is no difference in operations-related noise impacts between the proposed project and the No Project Alternative).

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