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TRADE ZONE PARK ENVIRONMENTAL NOISE AND VIBRATION ASSESSMENT

San José, California

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INTRODUCTION

This report assesses the noise and vibration impacts resulting from the development of the Trade Zone Boulevard Technology Park (Trade Zone Park) which would include an advanced manufacturing building (AMB), the SVY data center , and the SVY backup generating facility (SVYBGF). The AMB will comprise a four-story building of approximately 135,000 square feet of light industrial and ancillary support uses.

The SVYDC project will consists of construction of two three-story buildings (SVYDC05 and SVYDC06) encompassing approximately 526,800 square feet. Building SVY05 will be approximately 220,300 square feet and Building SVY06 will be approximately 306,500 square feet.

The SVYBGF will be an emergency backup generating facility with a generation capacity of up to 90 MW to support the need for the SVYDC to provide uninterruptible power supply for its tenant's servers. The SVYBGF will consist of thirty-six (36) 3 MW and two (2) 1 MW diesel-fired backup generators arranged in two generation yards, each designed to serve one of the two data center buildings that make up the SVYDC. The SVYBGF Project elements will also include switchgear and distribution cabling to interconnect the generators to their respective portions of the buildings.

This report evaluates the project's potential to result in significant impacts with respect to applicable California Environmental Quality Act (CEQA) guidelines. The report is divided into three sections: 1) the Setting Section provides a brief description of the fundamentals of environmental noise and groundborne vibration, summarizes applicable regulatory criteria, and discusses ambient noise conditions in the project vicinity; 2) the Plan Consistency Analysis section discusses noise and land use compatibility utilizing policies in the City's General Plan; and, 3) the Impacts and Mitigation Measures Section describes the significance criteria used to evaluate project impacts, provides a discussion of each project impact, and presents mitigation measures, where necessary, to mitigate project impacts to a less-than-significant level.

SETTING

Fundamentals of Environmental Noise

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its *pitch* or its *loudness*. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (*frequency*) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. A *decibel (dB)* is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest

sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10 decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 1.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level (dBA).* This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 2. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This *energy-equivalent sound/noise descriptor* is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Since the sensitivity to noise increases during the evening and at night -- because excessive noise interferes with the ability to sleep -- 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Community Noise Equivalent Level* (*CNEL*) is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 pm - 10:00 pm) and a 10 dB addition to nocturnal (10:00 pm - 7:00 am) noise levels. The *Day/Night Average Sound Level* (*DNL* or L_{dn}) is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this three-hour period are grouped into the daytime period.

Effects of Noise

The thresholds for speech interference indoors are about 45 dBA if the noise is steady and above 55 dBA if the noise is fluctuating. Outdoors the thresholds are about 15 dBA higher. Steady noises of sufficient intensity (above 35 dBA) and fluctuating noise levels above about 45 dBA have been shown to affect sleep. Typically, the highest steady traffic noise level during the daytime is about equal to the L_{dn}/CNEL and nighttime levels are 10 dBA lower. The standard is designed for sleep and speech protection and most jurisdictions apply the same criterion for all residential uses. Typical structural attenuation is 12 to 17 dBA with open windows. With closed windows in good condition, the noise attenuation factor is around 20 dBA for an older structure and 25 dBA for a newer dwelling. Sleep and speech interference is therefore possible when exterior noise levels are about 57 to 62 dBA L_{dn}/CNEL with open windows and 65 to 70 dBA L_{dn}/CNEL if the windows are closed. Levels of 55 to 60 dBA are common along collector streets and secondary arterials,

while 65 to 70 dBA is a typical value for a primary/major arterial. Levels of 75 to 80 dBA are normal noise levels at the first row of development outside a freeway right-of-way. In order to achieve an acceptable interior noise environment, bedrooms facing secondary roadways need to be able to have their windows closed, and those facing major roadways and freeways typically need special glass windows.

TABLE 1 Definition of Acoustical Terms Used in this Report

Term	Definition
Decibel, dB	A unit describing, the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 micro Pascals.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e. g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sounds are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, L_{dn} or DNL	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 p.m. and 7:00 a.m.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 p.m.to 10:00 p.m. and after addition of 10 decibels to sound levels measured in the night between 10:00 p.m. and 7:00 a.m.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Handbook of Acoustical Measurements and Noise Control, Harris, 1998.

TABLE 2 Typical Noise Levels in the Environment

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110 dBA	Rock band
Jet fly-over at 1,000 feet		
	100 dBA	
Gas lawn mower at 3 feet		
	90 dBA	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80 dBA	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	70 dBA	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60 dBA	
		Large business office
Quiet urban daytime	50 dBA	Dishwasher in next room
Quiet urban nighttime	40 dBA	Theater, large conference room
Quiet suburban nighttime		
	30 dBA	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20 dBA	
		Broadcast/recording studio
	10 dBA	
	0 dBA	

Source: Technical Noise Supplement (TeNS), California Department of Transportation, September 2013.

Fundamentals of Groundborne Vibration

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One method is the Peak Particle Velocity (PPV). The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. In this report, a PPV descriptor with units of mm/sec or in/sec is used to evaluate construction generated vibration for building damage and human complaints. Table 3 displays the reactions of people and the effects on buildings that continuous or frequent intermittent vibration levels produce. The guidelines in Table 3 represent syntheses of vibration criteria for human response and potential damage to buildings resulting from construction vibration.

Construction activities can cause vibration that varies in intensity depending on several factors. The use of pile driving and vibratory compaction equipment typically generates the highest construction related groundborne vibration levels. Because of the impulsive nature of such activities, the use of the PPV descriptor has been routinely used to measure and assess groundborne vibration and almost exclusively to assess the potential of vibration to cause damage and the degree of annoyance for humans.

The two primary concerns with construction-induced vibration, the potential to damage a structure and the potential to interfere with the enjoyment of life, are evaluated against different vibration limits. Human perception to vibration varies with the individual and is a function of physical setting and the type of vibration. Persons exposed to elevated ambient vibration levels, such as people in an urban environment, may tolerate a higher vibration level.

Structural damage can be classified as cosmetic only, such as paint flaking or minimal extension of cracks in building surfaces; minor, including limited surface cracking; or major, that may threaten the structural integrity of the building. Safe vibration limits that can be applied to assess the potential for damaging a structure vary by researcher. The damage criteria presented in Table 3 include several categories for ancient, fragile, and historic structures, the types of structures most at risk to damage. Most buildings are included within the categories ranging from “Historic and some old buildings” to “Modern industrial/commercial buildings”. Construction-induced vibration that can be detrimental to the building is very rare and has only been observed in instances where the structure is at a high state of disrepair and the construction activity occurs immediately adjacent to the structure.

The annoyance levels shown in Table 3 should be interpreted with care since vibration may be found to be annoying at lower levels than those shown, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage.

TABLE 3 Reaction of People and Damage to Buildings from Continuous or Frequent Intermittent Vibration Levels

Velocity Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.01	Barely perceptible	No effect
0.04	Distinctly perceptible	Vibration unlikely to cause damage of any type to any structure
0.08	Distinctly perceptible to strongly perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
0.1	Strongly perceptible	Threshold at which there is a risk of damage to fragile buildings with no risk of damage to most buildings
0.25	Strongly perceptible to severe	Threshold at which there is a risk of damage to historic and some old buildings.
0.3	Strongly perceptible to severe	Threshold at which there is a risk of damage to older residential structures
0.5	Severe - Vibrations considered unpleasant	Threshold at which there is a risk of damage to new residential and modern commercial/industrial structures

Source: Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020.

Regulatory Background - Noise

This section describes the relevant guidelines, policies, and standards established by State Agencies, Santa Clara County, the City of San José, and the City of Milpitas. The State CEQA Guidelines, Appendix G, are used to assess the potential significance of impacts pursuant to local General Plan policies, Municipal Code standards, or the applicable standards of other agencies. A summary of the applicable regulatory criteria is provided below.

State CEQA Guidelines. The CEQA contains guidelines to evaluate the significance of effects of environmental noise attributable to a proposed project. Under CEQA, noise impacts would be considered significant if the project would result in:

(a) 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;

(b) Generation of excessive groundborne vibration or groundborne noise levels;

(c) For a project located within the vicinity of a private airstrip or an airport land use plan or where such a plan has not been adopted within two miles of a public airport or public use airport, if the project would expose people residing or working in the project area to excessive noise levels.

2019 California Green Building Standards Code (Cal Green Code). The State of California established exterior sound transmission control standards for new non-residential buildings as set

forth in the 2019 California Green Building Standards Code (Section 5.507.4.1 and 5.507.4.2). Section 5.507 states that either the prescriptive (Section 5.507.4.1) or the performance method (Section 5.507.4.2) shall be used to determine environmental control at indoor areas. The prescriptive method is very conservative and not practical in most cases; however, the performance method can be quantitatively verified using exterior-to-interior calculations. For the purposes of this report, the performance method is utilized to determine consistency with the Cal Green Code. Both of the sections that pertain to this project are as follows:

> **5.507.4.1 Exterior noise transmission, prescriptive method.** Wall and roof-ceiling assemblies making up the building envelope that are exposed to the noise source shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 when the building falls within the 65 dBA L_{dn} noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway noise source, as determined by the local general plan noise element.
>
> **5.507.4.2 Performance method.** For buildings located within the 65 dBA L_{dn} noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway noise source, wall and roof-ceiling assemblies making up the building envelope and exposed to the noise source shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level ($L_{eq\ (1\text{-}hr)}$) of 50 dBA in occupied areas during any hour of operation.

The performance method, which establishes the acceptable interior noise level, is the method typically used when applying these standards.

Santa Clara County

Santa Clara County Airport Land Use Commission Comprehensive Land Use Plan. The Comprehensive Land Use Plan (CLUP) adopted by the Santa Clara County Airport Land Use Commission contains standards for projects within the vicinity of San José International Airport which are relevant to this project;

4.3.2.1 Noise Compatibility Policies

N-1 The Community Noise Equivalent Level (CNEL) method of representing noise levels shall be used to determine if a specific land use is consistent with the CLUP.

N-2 In addition to the other policies herein, the Noise Compatibility Policies presented in Table 4-1 shall be used to determine if a specific land use is consistent with this CLUP.

N-3 Noise impacts shall be evaluated according to the Aircraft Noise Contours presented on Figure 5 (not shown in this report).

N-6 Noise level compatibility standards for other types of land uses shall be applied in the same manner as the above residential noise level criteria. Table 4-1 presents acceptable noise levels for other land uses in the vicinity of the Airport.

Table 4 - 1

NOISE COMPATIBILITY POLICIES

LAND USE CATEGORY	CNEL					
	55-60	60-65	65-70	70-75	75-80	80-85
Residential – low density Single-family, duplex, mobile homes	*	**	***	****	****	****
Residential – multi-family, condominiums, townhouses	*	**	***	****	****	****
Transient lodging - motels, hotels	*	*	**	****	****	****
Schools, libraries, indoor religious assemblies, hospitals, nursing homes	*	***	****	****	****	****
Auditoriums, concert halls, amphitheaters	*	***	***	****	****	****
Sports arena, outdoor spectator sports, parking	*	*	*	**	***	****
Playgrounds, neighborhood parks	*	*	***	****	****	****
Golf courses, riding stables, water recreation, cemeteries	*	*	*	**	***	****
Office buildings, business commercial and professional, retail	*	*	**	***	****	****
Industrial, manufacturing, utilities, agriculture	*	*	*	***	***	****
* Generally Acceptable	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements. Mobile homes may not be acceptable in these areas. Some outdoor activities might be adversely affected.					
** Conditionally Acceptable	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Outdoor activities may be adversely affected. Residential: Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.					
*** Generally Unacceptable	New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design. Outdoor activities are likely to be adversely affected.					
**** Unacceptable	New construction or development shall not be undertaken.					

Source: Based on General Plan Guidelines, Appendix C (2003), Figure 2 and Santa Clara County ALUC 1992 Land Use Plan, Table 1

Source: Comprehensive Land Use Plan Santa Clara County, Norman Y Mineta San José International Airport, May 25, 2011, Amended May 23, 2019.

City of San José

City of San José General Plan. The Environmental Leadership Chapter in the Envision San José 2040 General Plan sets forth policies with the goal of minimizing the impact of noise on people through noise reduction and suppression techniques, and through appropriate land use policies in the City of San José. The following policies are applicable to the proposed project:

EC-1.2 Minimize the noise impacts of new development on land uses sensitive to increased noise levels (Categories 1, 2, 3, and 6) by limiting noise generation and by requiring use of noise attenuation measures such as acoustical enclosures and sound barriers, where feasible. The City considers significant noise impacts to occur if a project would:

- Cause the DNL at noise sensitive receptors to increase by five dBA DNL or more where the noise levels would remain "Normally Acceptable"; or
- Cause the DNL at noise sensitive receptors to increase by three dBA DNL or more where noise levels would equal or exceed the "Normally Acceptable" level.

EC-1.6 Regulate the effects of operational noise from existing and new industrial and commercial development on adjacent uses through noise standards in the City's Municipal Code.

EC-1.7 Require construction operations within San José to use best available noise suppression devices and techniques and limit construction hours near residential uses per the City's Municipal Code. The City considers significant construction noise impacts to occur if a project located within 500 feet of residential uses or 200 feet of commercial or office uses would:

- Involve substantial noise generating activities (such as building demolition, grading, excavation, pile driving, use of impact equipment, or building framing) continuing for more than 12 months.

For such large or complex projects, a construction noise logistics plan that specifies hours of construction, noise and vibration minimization measures, posting or notification of construction schedules, and designation of a noise disturbance coordinator who would respond to neighborhood complaints will be required to be in place prior to the start of construction and implemented during construction to reduce noise impacts on neighboring residents and other uses.

City of San José Municipal Code. The City's Municipal Code contains a Zoning Ordinance that limits noise levels at adjacent properties. Chapter 20.50.300 states that sound pressure levels generated by any use or combination of uses on a property zoned for industrial use shall not exceed 55 dBA at any property line shared with land zoned for residential purposes, 60 dBA at any property line shared with land zoned for commercial purposes, and 70 dBA at any property line shared with land zoned for industrial or use other than commercial or residential purposes, except upon issuance and in compliance with a Conditional Use Permit. The code is not explicit in terms of the acoustical descriptor associated with the noise level limit.

Chapter 20.100.450 of the Municipal Code establishes allowable hours of construction within 500 feet of a residential unit between 7:00 a.m. and 7:00 p.m. Monday through Friday unless permission is granted with a development permit or other planning approval. No construction activities are permitted on the weekends at sites within 500 feet of a residence.

Chapter 20.80.2030 limits testing of generators to the hours of 7 a.m. to 7 p.m., Monday through Friday.

City of Milpitas

City of Milpitas General Plan. The Noise Element in the Milpitas General Plan (Adopted March 9, 2021) sets forth policies to address major noise sources and to promote safe and comfortable noise levels throughout Milpitas. The Noise Element contains goals, policies, and actions that seek to reduce community exposure to excessive noise levels through the establishment of noise level standards for a variety of land uses. The following policies are applicable to the proposed project:

N 1-2 Consider the noise compatibility of existing and future development when making land use planning decisions. Require development and infrastructure projects to be consistent with the land use compatibility standards contained in Tables N-1 and N-2 to ensure acceptable noise exposure levels for existing and future development.

N 1-2 Require new development to mitigate excessive noise to the standards indicated in Tables N-1 and N-2 through best practices, including building location and orientation, building design features, placement of noise-generating equipment, placement of noise-tolerant features between noise sources and sensitive receptors, and use of noise-minimizing materials.

N 1-6 For projects that are required to prepare an acoustical study to analyze noise impacts, the following criteria shall be used to determine the significance of those impacts:

Stationary and Non-Transportation Noise Sources

- A significant impact will occur if the project results in an exceedance of the noise level standards contained in this element, in instances where the ambient noise level is already above the standards contained in this element, a significant impact will occur if the project results in an increase in ambient noise levels by more than 3 dB. This does not apply to temporary construction activities.

Transportation Noise Sources

- Where existing traffic noise levels are 60 dB L_{dn} or less at the outdoor activity areas of noise-sensitive uses, a +5 dB L_{dn} increase in roadway noise levels will be considered significant;

- Where existing traffic noise levels are greater than 60 dB L_{dn} and up to 65 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a +3 dB L_{dn} increase in roadway noise levels will be considered significant; and

- Where existing traffic noise levels are greater than 65 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a +1.5 dB L_{dn} increase in roadway noise levels will be considered significant.

N 1-8 Require construction activities to comply with standard best practices to reduce noise exposure to adjacent sensitive receptors (see Action N-1d).

N 1-12 Require non-transportation related noise from specific noise sources to comply with the standards shown in Table N-2.

N 1-15 Temporary emergency operations or emergency equipment usage authorized by the City shall be exempt from noise standard criteria set by this element.

Table N-2: Stationary (Non-Transportation) Noise Source Standards

Land Use Receiving the Noise	Hourly Noise-Level Descriptor	Exterior Noise-Level Standard (dBA)	
		Daytime (7am-10pm)	Nighttime (10pm-7am)
Residential	L_{eq}	55	45
	L_{max}	70	65

Notes:

a) The residential standards apply to all properties that are zoned for residential use. The exterior noise level standard is to be applied at the property line of the receiving land use or at a designated outdoor activity area. For mixed-use projects, the exterior noise level standard may be waived in conjunction with Policy N 2-2 (at the discretion of the decision-making body) if the residential portion of the project does not include a designated activity area and mitigation of property line noise is not practical.

b) Each of the noise levels specified above shall be lowered by 5 dBA for tonal noises characterized by a whine, screech, or hum, noises consisting primarily of speech or music, or recurring impulsive noises. In no case shall mitigation be required to a level that is less than existing ambient noise levels, as determined through measurements conducted during the same operational period as the subject noise source.

c) In situations where the existing noise level exceeds the noise levels indicated in the above table, any new noise source must include mitigation that reduces the noise level of the noise source to the existing level plus 3 dB.

Tonal Noises are characterized by a whine, screech, beep, or hum, consisting primarily of speech or music, or recurring impulsive noises. Tonal noises can cause unpleasant experiences in spaces adjacent to areas that produce tonal noise, which annoys occupants and, in turn, lead to increased complaints from nearby sensitive receptors.

Regulatory Background – Vibration

City of San José

City of San José General Plan. The Environmental Leadership Chapter in the Envision San José 2040 General Plan sets forth policies to achieve the goal of minimizing vibration impacts on people, residences, and business operations in the City of San José. The following policies are applicable to the proposed project:

EC-2.3 Require new development to minimize continuous vibration impacts to adjacent uses during demolition and construction. For sensitive historic structures, including ruins and ancient monuments or building that are documented to be structurally weakened, a continuous vibration limit of 0.08 in/sec PPV (peak particle velocity) will be used to minimize the potential for cosmetic damage to a building. A continuous vibration limit of 0.20 in/sec PPV will be used to minimize the potential for cosmetic damage at

buildings of normal conventional construction. Equipment or activities typical of generating continuous vibration include but are not limited to: excavation equipment; static compaction equipment; vibratory pile drivers; pile-extraction equipment; and vibratory compaction equipment. Avoid use of impact pile drivers within 125 feet of any buildings, and within 300 feet of historical buildings, or buildings in poor condition. On a project-specific basis, this distance of 300 feet may be reduced where warranted by a technical study by a qualified professional that verifies that there will be virtually no risk of cosmetic damage to sensitive buildings from the new development during demolition and construction. Transient vibration impacts may exceed a vibration limit of 0.08 in/sec PPV only when and where warranted by a technical study by a qualified professional that verifies that there will be virtually no risk of cosmetic damage to sensitive buildings from the new development during demolition and construction.

Existing Noise Environment

The project includes the development of the Trade Zone Boulevard Technology Park located east of Ringwood Avenue between Fortune Drive and Trade Zone Boulevard in San José, California. The site is currently developed with two buildings used for office space and light industrial use, and a parking lot. Directly east of the site is an office building located at 1931 Fortune Drive. Office and commercial uses are located to the south and west along Fortune Drive and Ringwood Avenue. The nearest residential uses are to the north across Trade Zone Boulevard within the City of Milpitas.

A noise measurement survey was conducted between Wednesday, September 29, 2021 and Friday, October 1, 2021. The survey included two long-term measurements (LT-1 and LT-2) and two short-term measurements (ST-1 and ST-2). Noise measurement locations are shown in Figure 1. The daily trends in noise levels at long-term measurement locations are shown in Figures 2 through 7. Noise measurement results are summarized in Tables 4 and 5.

Long-term measurement LT-1 was made approximately 50 feet north of the centerline of Fortune Drive at the southern end of the project site. Hourly average noise levels at this location ranged from 52 to 64 dBA L_{eq} during the day and from 49 to 61 dBA L_{eq} at night. The day-night average noise level at this location was 62 dBA L_{dn}/DNL on Thursday, September 30, 2021. Long-term measurement LT-2 was made approximately 40 feet north of the centerline of Trade Zone Boulevard adjacent to the residential uses nearest to the project site and located in the City of Milpitas. Hourly average noise levels at this location range from 69 to 74 dBA L_{eq} during the day and from 63 to 73 dBA L_{eq} at night. The day-night average noise level at this location was 76 dBA L_{dn}/DNL on Thursday, September 30, 2021.

Short-term measurement ST-1 was made near the LT-1 measurement location at 315 Trade Zone Boulevard. The 10-minute L_{eq} at this location, measured from 1:10 to 1:20 p.m. on Wednesday, September 29, 2021, was 69 dBA L_{eq}. Short-term measurement ST-2 was made west of the site near 2290 Ringwood Avenue. The 10-minute L_{eq} at this location, measured from 1:10 to 1:20 p.m. on Wednesday, September 29, 2021, was 67 dBA L_{eq}.

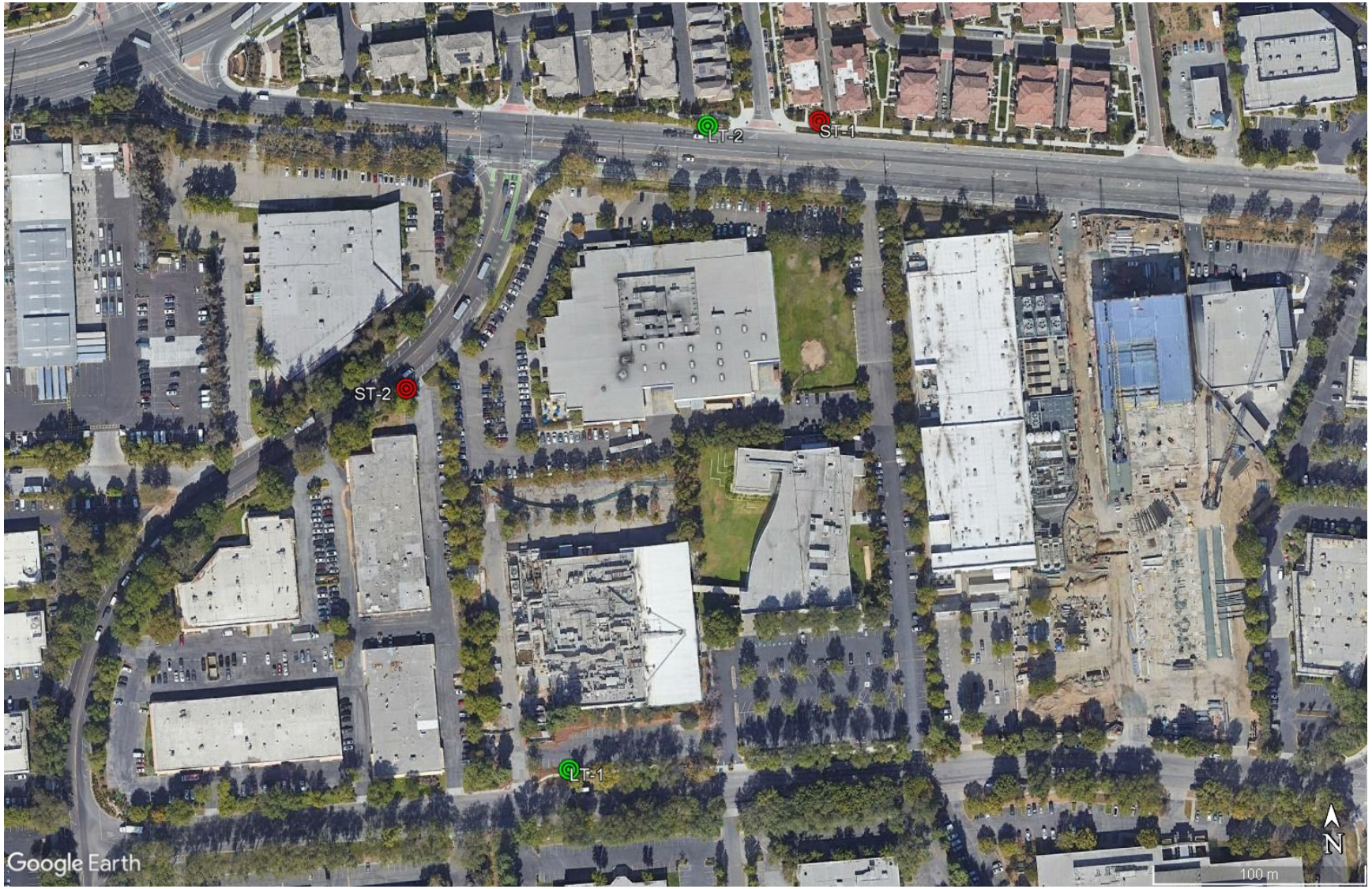
TABLE 4 Summary of Long-Term Noise Measurements (dBA)

Location	Date	Hourly-Average Noise Level, L_{eq}		L_{dn}/DNL
		Daytime	Nighttime	
LT-1: ~50 ft. North of Fortune Drive Centerline	Wednesday, 9/29/2021	52 to 62	52 to 53	-
	Thursday, 9/30/2021	53 to 64	49 to 59	62
	Friday, 10/1/2021	60 to 63	50 to 61	-
LT-2: ~40 ft. North of Trade Zone Boulevard Centerline	Wednesday, 9/29/2021	69 to 74	67 to 68	-
	Thursday, 9/30/2021	69 to 73	63 to 73	76
	Friday, 10/1/2021	71 to 73	63 to 72	-

TABLE 5 Summary of Short-Term Noise Measurements (dBA)

Noise Measurement Location	$L_{(1)}$	$L_{(10)}$	$L_{(50)}$	$L_{(90)}$	L_{eq}	Primary Noise Sources
ST-1: 315 Trade Zone Boulevard. (Wednesday, 9/29/2021, 1:10 p.m.-1:20 p.m.)	77	73	67	56	69	Traffic on Trade Zone Boulevard
ST-2: 2290 Ringwood Avenue. (Wednesday, 9/29/2021, 1:10 p.m. - 1:20 p.m.)	79	70	63	54	67	Traffic on Ringwood Avenue and Trade Zone Boulevard

FIGURE 1 Noise Measurement Locations



Source: Google Earth 2022

FIGURE 2 Daily Trend in Noise Levels at Noise Measurement Site LT-1 on Wednesday, September 29, 2021

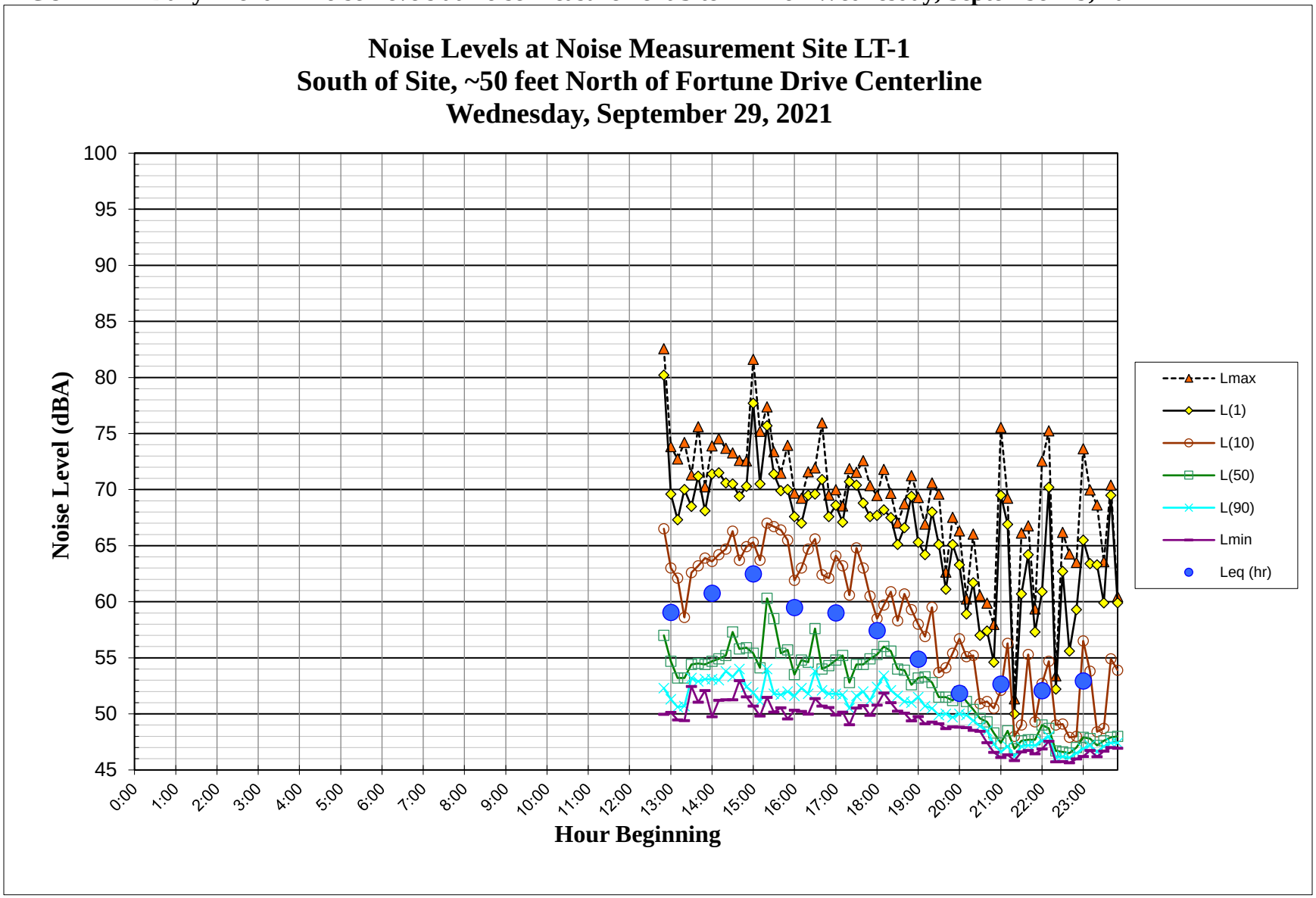


FIGURE 3 Daily Trend in Noise Levels at Noise Measurement Site LT-1 on Thursday, September 30, 2021

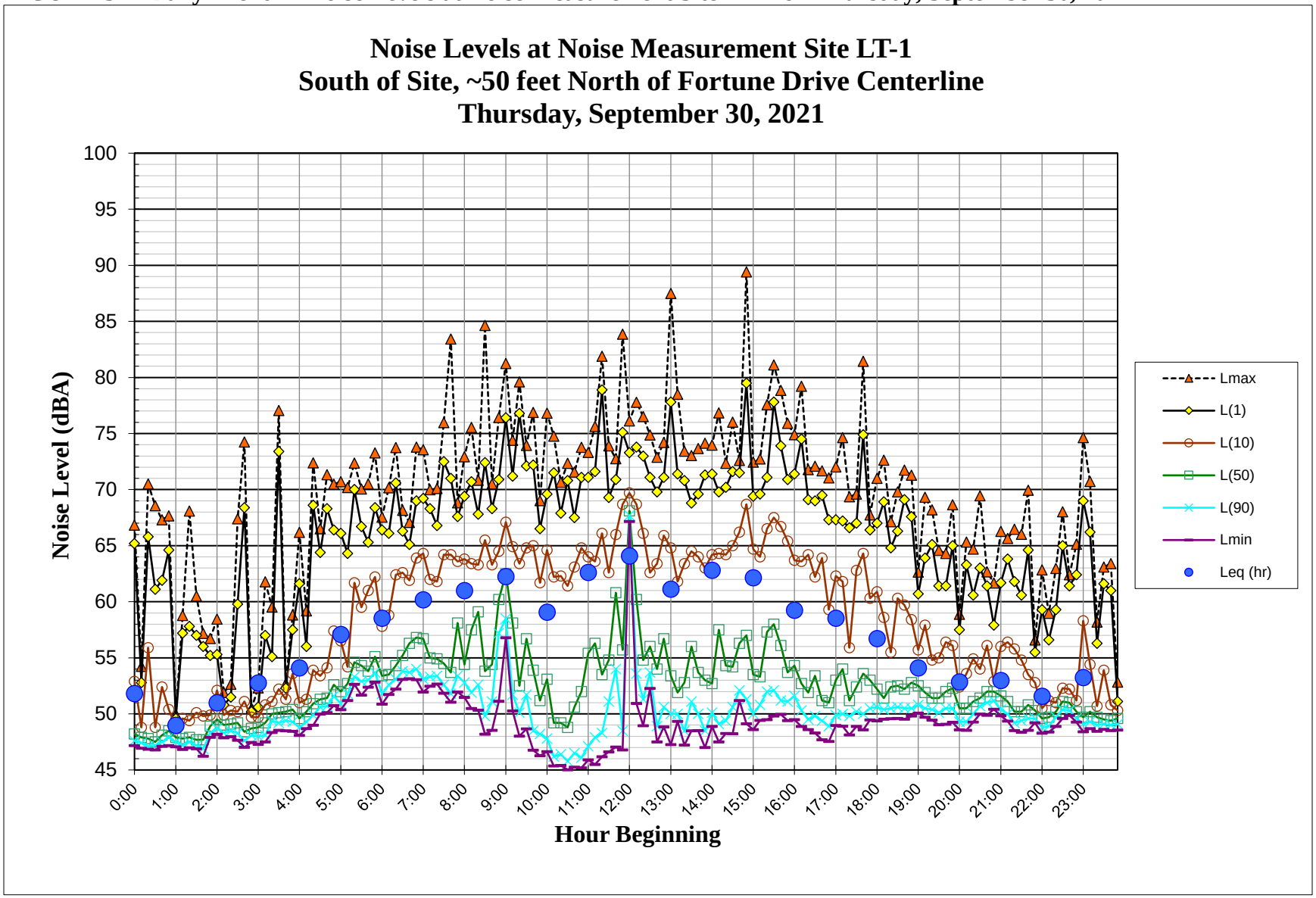


FIGURE 4 Daily Trend in Noise Levels at Noise Measurement Site LT-1 on Friday, October 1, 2021

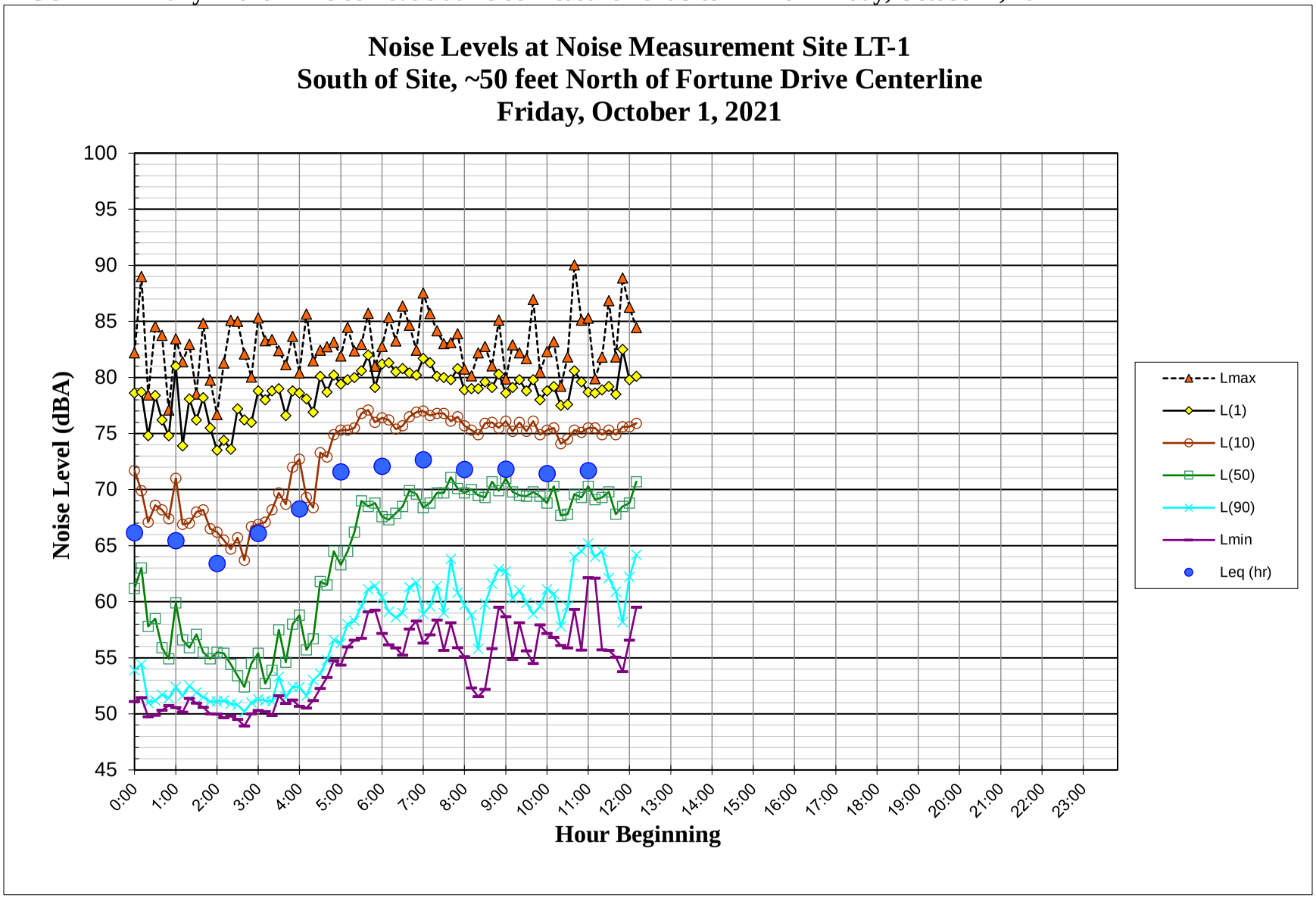


FIGURE 5 Daily Trend in Noise Levels at Noise Measurement Site LT-2 on Wednesday, September 29, 2021

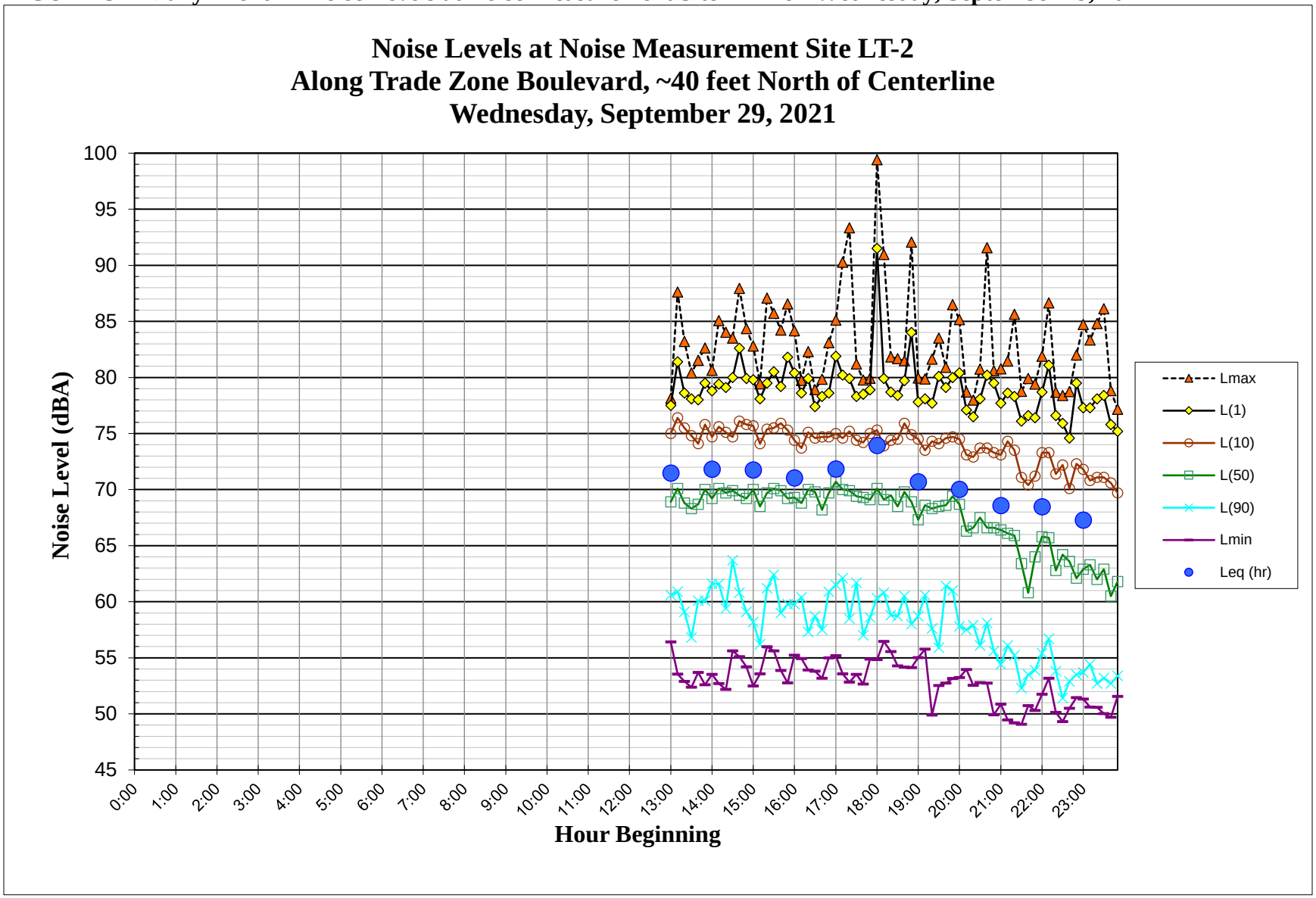


FIGURE 6 Daily Trend in Noise Levels at Noise Measurement Site LT-2 on Thursday, September 30, 2021

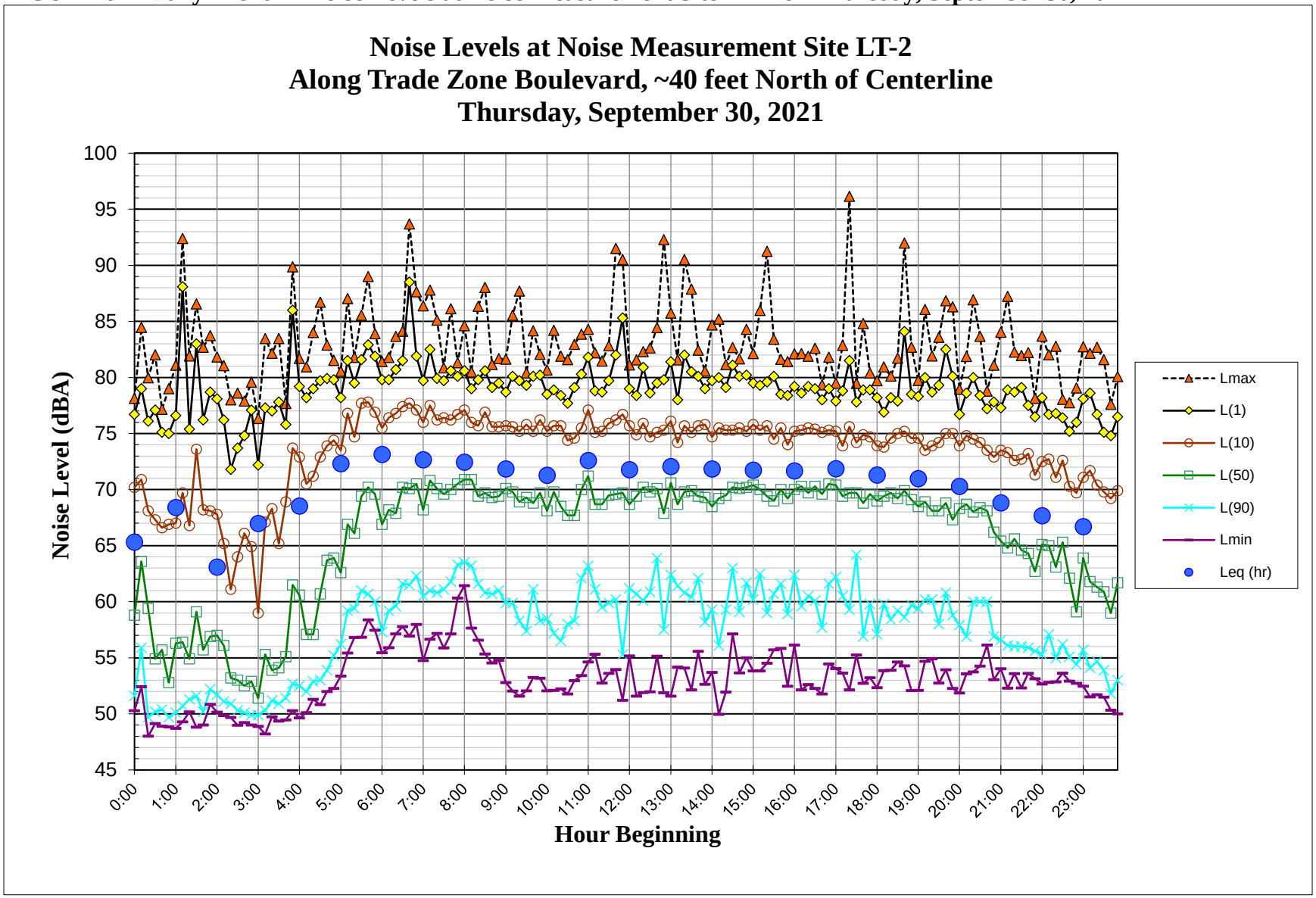
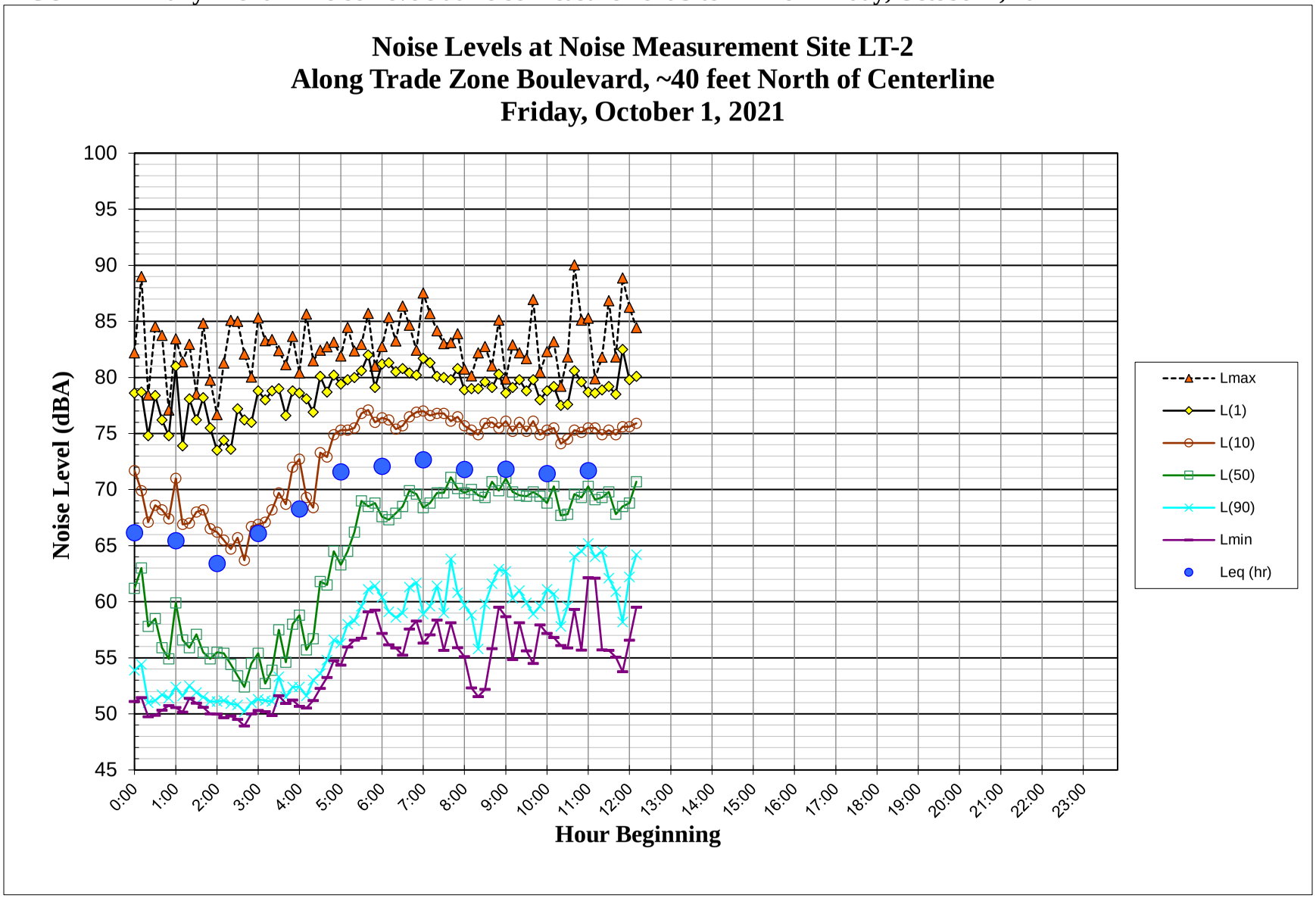


FIGURE 7 Daily Trend in Noise Levels at Noise Measurement Site LT-2 on Friday, October 1, 2021



PLAN CONSISTENCY ANALYSIS

Noise and Land Use Compatibility

For buildings with exterior noise levels at the façade exceeding 65 dBA L_{dn}, the California Green Building Code limits interior noise levels within new non-residential land uses to an hourly equivalent noise level ($L_{eq\ (1\text{-}hr)}$) of 50 dBA in occupied areas during any hour of operation.

Future Noise Environment

The project proposes to construct two three-story buildings encompassing a total of approximately 526,800 square feet. The buildings would be used for data center halls, advanced manufacturing, and office space. A parking structure would be built adjacent to the northern data center SVY05. An electrical substation would be constructed west of the parking structure along Trade Zone Boulevard. No outdoor use areas are proposed as part of the project.

The future noise environment at the project site would continue to be dominated by vehicular traffic along nearby roads with Trade Zone Boulevard expected to continue to be the greatest contributor. Assuming a 1 dBA L_{dn}/DNL increase in traffic noise resulting from greater traffic volumes, noise levels at a distance of 40 feet from the centerline of Trade Zone Boulevard are anticipated to reach about 77 dBA L_{dn}/DNL. The proposed building nearest Trade Zone Boulevard would be the Advanced Manufacturing section of the northern building, located approximately 78 feet from the centerline of Trade Zone Boulevard. At this distance, day-night noise levels at the building façade with the greatest noise exposure would reach about 73 dBA L_{dn}/DNL. Loudest-hour noise levels measured during the noise survey were 2 dBA L_{eq} less than the L_{dn}/DNL, and therefore a loudest-hour noise level exposure at the northern façade of the Advanced Manufacturing section of the northern building is anticipated to reach about 71 dBA $L_{eq\ (1\text{-}hr)}$. Noise exposure at all other building façades is anticipated to be lower than this based on noise measurement data (see Tables 4 and 5) and existing traffic volumes observed during the measurement survey. The proposed buildings are of a light industrial nature which with modern construction materials and techniques can be expected to provide about 25 dBA of exterior-to-interior noise reduction. Applying this reduction, loudest-hour interior noise levels are anticipated to reach up to 46 dBA $L_{eq\ (1\text{-}hr)}$. This would comply with the California Green Building Code. Interior noise levels resulting from exterior sources would be less than 50 dBA $L_{eq\ (1\text{-}hr)}$ within all other areas of the building.

NOISE IMPACTS AND MITIGATION MEASURES

Significance Criteria

The following criteria were used to evaluate the significance of noise and vibration impacts resulting from the project:

1. **Temporary or Permanent Noise Increases in Excess of Established Standards.** A significant noise impact would be identified if the project would generate a substantial temporary or permanent noise level increase over ambient noise levels at existing noise-sensitive receptors surrounding the project site or would exceed applicable noise standards presented in the General Plan or Municipal Code at existing noise-sensitive receptors surrounding the project site.

    a. Temporary Noise Increase. A significant noise impact would be identified if construction-related noise would temporarily increase ambient noise levels at sensitive receptors. The City of San José considers large or complex projects involving substantial noise-generating activities and lasting more than 12 months significant when within 500 feet of residential land uses or within 200 feet of commercial land uses or offices. After a period of 12 months, a significant temporary noise impact would occur if construction noise levels would exceed 80 dBA L_{eq} at residential land uses near the site or 90 dBA L_{eq} at commercial land uses near the site. The City of Milpitas requires standard best practices for construction noise reduction be followed.

    b. Permanent Noise Increase. In San José, a significant permanent noise level increase would occur if project-generated traffic would result in: a) a noise level increase of 5 dBA L_{dn}/DNL or greater, with a future noise level considered "Normally Acceptable," or b) a noise level increase of 3 dBA L_{dn}/DNL or greater, with a future noise level which exceeds the "Normally Acceptable" level. In Milpitas, a significant permanent noise level increase would occur if project-generated traffic would result in: a) a noise level increase of 5 dBA DNL or greater, where existing traffic noise levels are 60 dBA L_{dn}/DNL or less, b) a noise level increase of 3 dBA L_{dn}/DNL or greater, where existing traffic noise levels are greater than 60 dBA L_{dn}/DNL and up to 65 dBA L_{dn}/DNL, or c) a traffic noise level increase of 1.5 dBA L_{dn}/DNL where existing roadway noise levels exceed 65 dBA L_{dn}/DNL.

    c. Operational Noise in Excess of Standards. A significant noise impact would be identified if the project would expose persons to or generate noise levels that would exceed applicable noise standards presented in the San José or Milpitas General Plans or Municipal Codes.

2. **Generation of Excessive Groundborne Vibration.** A significant impact would be identified if the construction of the project would expose persons to excessive vibration

levels. Groundborne vibration levels exceeding 0.2 in/sec PPV would have the potential to result in "architectural" damage to normal buildings.

3. **Excessive Aircraft Noise.** A significant noise impact would be identified if the project would expose people residing or working in the project area to excessive aircraft noise levels.

Impact 1: **Temporary or Permanent Noise Increases in Excess of Established Standards.** Project construction and traffic would not result in a substantial temporary or permanent noise level increase at existing noise-sensitive land uses in the project vicinity. Operational noise from mechanical equipment would be reduced to a less-than-significant level with mitigation in the form of taller parapet walls and modifications to chillers. **This is a less-than-significant impact with mitigation.**

a. Temporary Noise Increases from Project Construction

Chapter 20.100.450 of the City of San José's Municipal Code establishes allowable hours of construction within 500 feet of a residential unit between 7:00 am and 7:00 pm Monday through Friday unless permission is granted with a development permit or other planning approval. No construction activities are permitted on the weekends at sites within 500 feet of a residence. Policy EC-1.7 of the City of San José's General Plan requires that all construction operations within the City use best available noise suppression devices and techniques and to limit construction hours near residential uses per the Municipal Code allowable hours. Further, the City of San José considers significant construction noise impacts to occur if a project located within 500 feet of residential uses or 200 feet of commercial or office uses would involve substantial noise-generating activities (such as building demolition, grading, excavation, pile driving, use of impact equipment, or building framing) continuing for more than 12 months. Action N 1-d of the Milpitas General Plan applies the same limit to hours of construction and additionally prohibits construction occurring on national holidays.

Construction activities for individual projects are typically carried out in stages. During each stage of construction, there would be a different mix of equipment operating, and noise levels would vary by stage and vary within stages, based on the amount of equipment in operation and the location at which the equipment is operating. Typical construction noise levels at a distance of 50 feet are shown in Tables 6 and 7. Table 6 shows the average noise level ranges by construction phase, and Table 7 shows the average and maximum noise level ranges for different construction equipment. Construction-generated noise levels drop off at a rate of about 6 dBA per doubling of the distance between the source and receptor. Shielding by buildings or terrain can provide an additional 5 to 10 dBA noise reduction at distant receptors.

TABLE 6 Typical Ranges of Construction Noise Levels at 50 Feet, L_{eq} (dBA)

	Domestic Housing		Office Building, Hotel, Hospital, School, Public Works		Industrial Parking Garage, Religious Amusement & Recreations, Store, Service Station		Public Works Roads & Highways, Sewers, and Trenches	
	I	**II**	**I**	**II**	**I**	**II**	**I**	**II**
Ground Clearing	83	83	84	84	84	83	84	84
Excavation	88	75	89	79	89	71	88	78
Foundations	81	81	78	78	77	77	88	88
Erection	81	65	87	75	84	72	79	78
Finishing	88	72	89	75	89	74	84	84

I - All pertinent equipment present at site.
II - Minimum required equipment present at site.

Source: U.S.E.P.A., Legal Compilation on Noise, Vol. 1, p. 2-104, 1973.

TABLE 7 Construction Equipment 50-foot Noise Emission Levels (dBA)

Equipment Category	$L_{eq}^{1,2,3}$	$L_{max}^{1,2}$	Equipment Category	$L_{eq}^{1,2,3}$	$L_{max}^{1,2}$
Air Hose	93	100	Horizontal Bore Drill	87	88
Air-Operated Post Driver	83	85	Impact Pile Driver	99	105
Asphalt Distributor Truck (Asphalt Sprayer)	-	70	Impact Wrench	68	72
Auger Drill	88	101	Jackhammer	91	95
Backhoe	76	84	Jig Saw	92	95
Bar Bender	66	75	Joint Sealer	-	74
Blasting (Abrasive)	100	103	Man Lift	72	73
Blasting (Explosive)	83	93	Movement Alarm	79	80
Chainsaw	79	83	Mud Recycler	73	74
Chip Spreader	-	77	Nail Gun	70	74
Chipping Gun	95	100	Pavement Scarifier (Milling Machine)	-	84
Circular Saw	73	76	Paving – Asphalt (Paver, Dump Truck)	-	82
Compactor (Plate)	-	75	Paving – Asphalt (Paver, MTV, Dump Truck)	-	83
Compactor (Roller)	82	83	Paving – Concrete (Placer, Slipform Paver)	87	91
Compressor	66	67	Paving – Concrete (Texturing/Curing Machine)	73	74
Concrete Batch Plant	87	90	Paving – Concrete (Triple Roller Tube Paver)	85	88
Concrete Grinder	-	97	Power Unit (Power Pack)	81	82
Concrete Mixer Truck	81	82	Pump	73	74
Concrete Pump Truck	84	88	Reciprocating Saw	64	66
Concrete Saw	85	88	Rivet Buster	100	107
Crane	74	76	Rock Drill	92	95
Directional Drill Rig	68	80	Rumble Strip Grinding	-	87
Drum Mixer	66	71	Sander	65	68
Dump Truck (Cyclical)	82	92	Scraper	-	92
Dump Truck (Passby)	-	73	Shot Crete Pump/Spray	78	87
Excavator	76	87	Street Sweeper	-	81
Flatbed Truck	-	74	Telescopic Handler (Forklift)	-	88
Front End Loader (Cyclical)	72	81	Vacuum Excavator (Vac-Truck)	86	87
Front End Loader (Passby)	-	71	Ventilation Fan	62	63
Generator	67	68	Vibratory Concrete Consolidator	78	80
Grader (Passby)	-	79	Vibratory Pile Driver	99	105
Grinder	68	71	Warning Horn (Air Horn)	94	99
Hammer Drill	72	75	Water Spray Truck	-	72
Hoe Ram	92	99	Welding Machine	71	72

Notes: [1] Measured at 50 feet from the construction equipment, with a “slow” (1 sec.) time constant.

[2] Noise levels apply to total noise emitted from equipment and associated components operating at full power while engaged in its intended operation.

[3] Equipment without average (L_{eq}) noise levels are non-stationary and best represented only by maximum instantaneous noise level (L_{max}).

Source: Project 25-49 Data, National Cooperative Highway Research Program, https://apps.trb.org/cmsfeed/trbnetprojectdisplay.asp?projectid=3889, October 2018

Detailed information on project construction equipment was not available at this time. Construction would occur over a period of approximately 35 months. Typical hourly average construction noise levels for projects of this type would range from 75 to 89 dBA L_{eq} at a distance of 50 feet, depending on the intensity of construction activity at a given time. The nearest residences are located about 200 feet to the north of the approximate center of construction of the northern Advanced Manufacturing building and would be exposed to construction noise levels of about 63 to 77 dBA L_{eq} during busy periods of construction of the Advanced Manufacturing building. Construction of the SVY05 and SVY06 data center buildings and of the generator yard would result in lower noise levels at these residences. The office building located to the east at 1931 Fortune Drive would be exposed to high noise levels resulting from project construction. The nearest building façades are located about 250 feet from the approximate centers of construction of the SVY05 and SVY06 data center buildings. At this distance, construction noise levels at the nearest office façades would range from 61 to 75 dBA L_{eq} during busy periods of construction. The commercial buildings to the west located at 2290 Ringwood Avenue are about the same distance from the approximate centers of construction of SVY05 and SVY06 and would also be exposed to construction noise levels ranging from 61 to 75 dBA L_{eq} during busy construction periods. The nearest façade of the church building located to the northwest at 2371 Ringwood Avenue is at a distance of about 300 feet from the approximate center of construction of the SVY05 data center building. At this distance, construction noise levels at the nearest church façade would range from 59 to 73 dBA L_{eq}.

Policy EC-1.7 of the City of San José General Plan states that for large or complex projects within 500 feet of residential land uses or within 200 feet of commercial land uses or offices involving substantial noise-generating activities lasting more than 12 months, a construction noise logistics plan that specifies hours of construction, noise and vibration minimization measures, posting or notification of construction schedules, and designation of a noise disturbance coordinator who would respond to neighborhood complaints will be required to be in place prior to the start of construction and implemented during construction to reduce noise impacts on neighboring residents and other uses.

Policy N 1-8 of the City of Milpitas General Plan requires construction activities comply with best standard practices to reduce noise exposure to surrounding sensitive uses as specified in Action N-1d.

Construction would not produce noise levels exceeding 80 dBA L_{eq} at residential land uses or 90 dBA L_{eq} at commercial land uses in the project vicinity. However, since project construction would last for a period of more than one year and considering that the project site is within 500 feet of existing residential uses and within 200 feet of existing commercial uses, this temporary construction impact would be considered significant in accordance with Policy EC-1.7 of the City's General Plan.

Mitigation Measure 1a: Pursuant to General Plan Policy EC-1.7, a construction noise logistics plan shall be prepared that specifies hours of construction, noise and vibration minimization measures, posting or notification of construction schedules, and designation of a noise disturbance coordinator who would respond to neighborhood complaints will be required to be in place prior to the start of construction and implemented during construction to reduce noise impacts on

neighboring residents and other uses. Project construction operations shall use best available noise suppression devices and techniques including, but not limited to the following:

- Limit construction hours to between 7:00 AM and 7:00 PM, Monday through Friday, with no construction on national holidays, unless permission is granted with a development permit or other planning approval. No construction activities are permitted on the weekends at sites within 500 feet of a residence. Construction outside of these hours may be approved through a development permit based on a site-specific "construction noise mitigation plan" and a finding by the Director of PBCE that the construction noise mitigation plan is adequate to prevent noise disturbance of affected residential uses.
- Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.
- Prohibit unnecessary idling of internal combustion engines.
- Locate stationary noise-generating equipment such as air compressors or portable power generators as far as possible from sensitive receptors. Construct temporary noise barriers to screen stationary noise-generating equipment when located near adjoining sensitive land uses.
- Utilize "quiet" air compressors and other stationary noise sources where technology exists.
- Control noise from construction workers' radios to a point where they are not audible at existing residences bordering the project site.
- Notify all adjacent business, residences, and other noise-sensitive land uses of the construction schedule, in writing, and provide a written schedule of "noisy" construction activities to adjacent land uses and nearby residences.
- If complaints are received or excessive noise levels cannot be reduced using the measures above, erect a temporary noise control blanket barrier along surrounding building facades that face the construction sites.
- Designate a "disturbance coordinator" who would be responsible for responding to any complaints about construction noise. The disturbance coordinator will determine the cause of the noise complaint (e.g., bad muffler, etc.) and will require that reasonable measures be implemented to current the problem. Conspicuously post a telephone number for the disturbance coordinator at the construction site and include it in the notice sent to neighbors regarding the construction schedule.

With the implementation of GP Policy EC-1.7, Zoning Code requirements, and the above measures, the temporary construction noise impact would be **less-than-significant**.

b. Permanent Noise Increases from Project Traffic

Policy EC-1.2 of the City of San José General Plan identifies a significant permanent noise increase to occur if the project would increase noise levels at noise-sensitive receptors by 3 dBA DNL or more where ambient noise levels exceed the "normally acceptable" noise level standard. Where ambient noise levels are at or below the "normally acceptable" noise level standard, noise level increases of 5 dBA DNL or more would be considered significant. The City of Milpitas General Plan imposes similar permanent noise increase standards, but with a more sensitive upper bound limit of 1.5 dBA L_{dn}/DNL for areas with existing traffic noise levels exceeding 65 dBA L_{dn}/DNL. For reference, a 3 dBA DNL noise increase would be expected if the project would double existing traffic volumes along a roadway.

A traffic study was not prepared for the project. The project site would include a total of 339 parking spaces provided in the proposed parking structure. This would be an increase of 19 spaces over those currently provided by the occupied Olympus building located at 2400 Ringwood Avenue which would be demolished for the proposed project. Additionally, the total employment for the proposed project is anticipated to be approximately 198 employees. Traffic counts performed during the noise measurement survey during non-peak hours recorded hourly-equivalent bi-directional traffic volumes of 576 vehicles travelling along Ringwood Avenue and 1,572 vehicles travelling along Trade Zone Boulevard. A net increase of 19 vehicles along either of these roads would result in a noise increase of 0 dBA L_{dn}/DNL. From these details, it can reasonably be expected that the project would not result in generation of new traffic volumes large enough to cause a significant increase in traffic noise levels at nearby noise-sensitive uses. This is a **less-than-significant** impact.

Mitigation Measure 1b: None required.

c. Permanent Noise Increases from On-Site Operational Noise

Section 20.50.300 of the City of San José Municipal Code establishes noise level performance standards for sources of noise originating from land zoned for industrial use. Noise levels are not to exceed 55 dBA at property lines shared with property used or zoned for residential purposes, 60 dBA at property lines shared with property used or zoned for commercial purposes, or 70 dBA at property lines shared with property used or zoned for industrial or use other than commercial or residential purposes. The City's Municipal Code would only be applicable to operational sources such as heating, ventilation, and air conditioning (HVAC) equipment and the testing of the generators and not to the operation of emergency generators necessary to provide services during an emergency. The City of Milpitas General Plan limits noise from stationary sources, as measured at the receiving residential property line or designated outdoor use area, to 55 dBA L_{eq} and 70 dBA L_{max} during daytime hours, and 45 dBA L_{eq} and 65 dBA L_{max} during nighttime hours.

The project would include 36 3-MW diesel-fueled generators and two 1-MW diesel-fueled house generators, located within generator yards adjacent to the north side of the SVY06 building and the south side of the SVY05 building. Each generator would be enclosed and tested only during daytime hours. Under full load, each 3 MW generator would meet a design goal of 70 dBA at a distance of 23 feet. HVAC equipment including a total of 78 chillers would be located on the

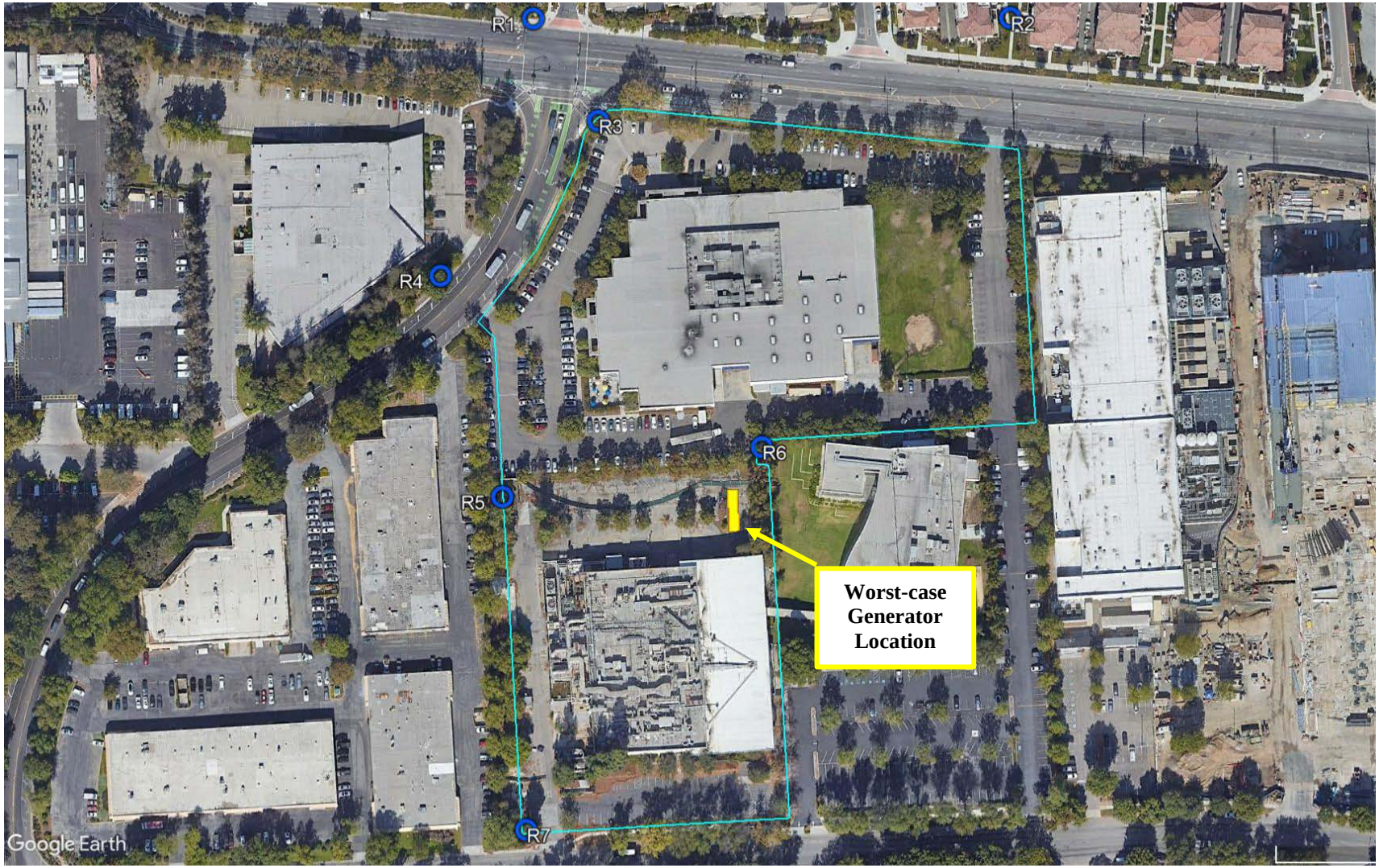
rooftops of the SVY05 and SVY06 data center buildings. Noise data provided for the chillers indicated a sound power level of 100 dBA L_w when operating at 100% load. Other mechanical and electrical equipment located inside the buildings would not be anticipated to emit audible noise outside.

Proposed fixed sources of noise at the site were modeled using SoundPLAN, a three-dimensional noise modeling software that considers site geometry, the characteristics of the noise sources, and shielding from structures and barriers. The two primary noise scenarios evaluated were operational noise resulting from all chillers running at 100% load, and all chillers running at 100% load with concurrent testing of one generator, also at 100% load. A detailed generator testing schedule was not available at the time of this writing, however, due to limits on generator testing frequency imposed by the City of San José and the Bay Area Air Quality Management District and testing schedules of similar projects, a worst-case scenario of a yearly, hour-long "load bank" test of one generator at the worst-case individual generator location was considered. These two scenarios are representative of what would be the peak-hour noise level resulting from project operations during the daytime when generator testing would occur, and during the nighttime when only HVAC equipment would be running. Results of the two scenarios with no additional noise mitigation are summarized in Table 8. Noise levels which exceed the relevant standards are highlighted. Receptor locations and land uses are identified in Figure 8.

TABLE 8 Calculated Noise Levels Resulting from On-Site Operations with No Additional Mitigation

Receiver Number	Receiver Location	Calculated Noise Levels, dBA L_{eq}	
		HVAC Only	HVAC and Generator Testing
R1	Milpitas Residential Property Line to North	**53**	**53**
R2	Trento Loop Greenspace	49	50
R3	Northern Property Line of Project Site	51	51
R4	Church Property Line to West	57	58
R5	Western Property Line of Project Site	59	63
R6	Office Property Line to East	**64**	**68**
R7	Southwestern Corner of Project Site	53	53

FIGURE 8 Modeled Noise Receiver Locations and Worst-Case Generator Location



As seen in Table 8, with no additional noise mitigation, noise levels would exceed City of San José and City of Milpitas standards at the office property line to the east, represented by receiver R6, and at the nearest residential property line to the north in Milpitas, represented by Receptor R1. However, Milpitas General Plan Policy N 1-6 states that in instances where the existing ambient noise level is already above the standards, a significant impact would occur if the project were to result in an ambient noise level increase of more than 3 dBA. Existing noise levels at the residential property line were measured during the noise survey (see Table 4 and Figures 5 through 7). Nighttime hourly average noise levels along this property line ranged from 63 to 73 dBA L_{eq}. Project-generated noise levels would be 10 dBA L_{eq} below the existing noise levels during the quietest hour and would therefore not result in an increase to the existing ambient noise environment on an hourly average or daily average basis.

The applicable standard for project-generated noise at the neighboring office property line represented by receiver R6 is 60 dBA at any time of day, as established in Chapter 20.50.300 of the City of San José Municipal Code. Without further mitigation, noise resulting from operation of chillers alone would result in an hourly average noise level of 64 dBA L_{eq} at the shared property line. Two potential forms of noise level mitigation were evaluated to reduce noise at this location: taller parapet walls along the perimeters of the SVY05 and SVY06 data center buildings, and reduced chiller sound power levels. A scenario was evaluated in which parapet walls were increased to a height of 16 feet above the roof level and a 3 dBA L_w sound power level reduction was applied to each individual chiller. This sound power reduction could be achieved through a noise reduction package, operational load limits, or alternative chiller model selection. Figure 9 shows the locations of the increased parapet wall heights, and Table 9 lists the noise levels at evaluated receivers after mitigation.

FIGURE 9 Location of Increased Parapet Wall Heights

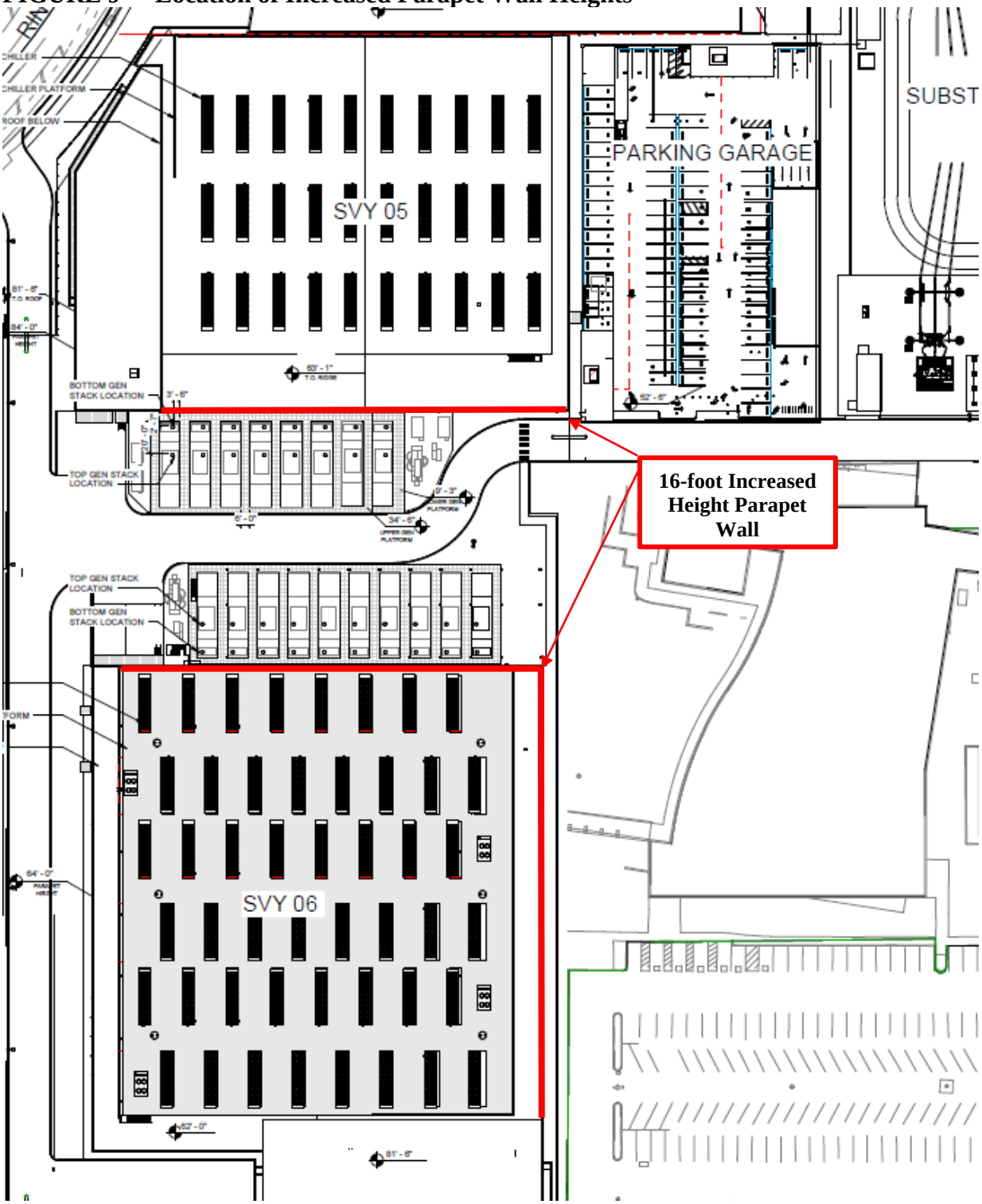


TABLE 9 Calculated Noise Levels Resulting from On-Site Operations with 16-foot Parapet Walls and 3 dBA L_w Chiller Noise Reduction

Receiver Number	Receiver Location	Calculated Noise Levels, dBA L_{eq}	
		HVAC Only	HVAC and Generator Testing
R1	Milpitas Residential Property Line to North	53	53
R2	Trento Loop Greenspace	49	50
R3	Northern Property Line of Project Site	51	51
R4	Church Property Line to West	52	54
R5	Western Property Line of Project Site	54	62
R6	Office Property Line to East	59	**67**
R7	Southwestern Corner of Project Site	50	50

As seen in Table 9, increasing the height of parapet walls at the locations shown and reducing chiller sound power levels by 3 dBA would reduce the overall operational noise to below the relevant standards at all receptors, with the exception of at the office property line during generator testing. Generator testing is limited to 50 hours of testing per year. Of this maximum of 50 hours per generator per year, it is anticipated that only one hour would be a test at full load. Most generator testing is done at a lower load or no load. Noise levels from zero-load testing are lower than those of full load testing, and typically occur for durations of less than one hour.

While testing of generators located near the property line shared with the office use to the east would occasionally exceed the 60 dBA L_{eq} standard, it should be noted that the noise level at the nearest office building façade would be less than that experienced at the property line. The nearest office building façade is located approximately 90 feet east of the shared property line. At this increased distance, noise levels would attenuate by about 3 dBA, resulting in a noise exposure of about 64 dBA at the building façade. Assuming a 20 dBA exterior-to-interior noise reduction resulting from modern office construction, worst-case interior noise levels within the office building would reach approximately 44 dBA $L_{eq\ (1\text{-}hr)}$, well below the California Building Code limit of 50 dBA $L_{eq\ (1\text{-}hr)}$. Additionally, with generator testing not exceeding one hour per day, the increase to the average day-night noise level would be minimal.

Mitigation Measure 1c: The following measures are recommended to reduce operational noise levels to a less-than-significant level:

- Rooftop chillers shall be modified so as not to exceed sound power levels of 97 dBA L_w per unit.

- Rooftop parapet walls at the locations shown in Figure 9 shall be constructed at a height of 16 feet to shield the nearby uses from operational noise. Suitable materials for sound wall construction should have a minimum surface weight of 3 pounds per square foot (such as ¾-inch-thick plywood or other solid sheet materials).

- As a courtesy to the residents of the office building to the east, full-load testing of generators shall be limited to the hours of 5 p.m. to 7 p.m. so as not to overlap with the typical workday.

With these measures in place and with the consideration that generator testing will most often occur at zero-load for short periods of time, this is a **less-than-significant impact with mitigation**.

Impact 2: Generation of Excessive Groundborne Vibration due to Construction. Construction-related vibration levels are not anticipated to exceed limits at the nearest structures. This is a **less-than-significant impact**.

Construction of the project would occur over a period of approximately 35 months. A significant impact would be identified if the construction of the project would generate groundborne vibration levels at adjacent structures exceeding 0.2 in/sec PPV, as these levels would have the potential to result in "architectural" damage to normal buildings. The vibration limits contained in this policy are conservative and designed to provide the ultimate level of protection for existing buildings in San José.

Project construction activities, such as drilling, the use of jackhammers, rock drills and other high-power or vibratory tools, and rolling stock equipment (tracked vehicles, compactors, etc.) may generate substantial vibration in the immediate vicinity of the work area. Impact or vibratory pile driving is not proposed as a method of construction. Vibration levels would vary depending on soil conditions, construction methods, and equipment used. Table 10 presents typical vibration levels that could be expected from construction equipment at a distance of 25 feet, and calculated vibrations levels that could be expected at distances of 100 and 150 feet, representative of the distances from the site to the nearest structures. According to the San José and Milpitas Historical Resource Inventories, there are no historic structures in the project vicinity which would be susceptible to vibration.

TABLE 10 Vibration Source Levels for Construction Equipment (in/sec PPV)

Equipment		Reference Distance (25 feet)	Office Building (95 feet)	Commercial Building (120 feet)	Church and Residences (150 feet)
Vibratory Roller		0.210	0.048	0.037	0.029
Clam Shovel Drop		0.202	0.047	0.036	0.028
Hoe Ram		0.089	0.020	0.016	0.012
Large bulldozer		0.089	0.020	0.016	0.012
Caisson drilling		0.089	0.020	0.016	0.012
Loaded trucks		0.076	0.018	0.014	0.011
Jackhammer		0.035	0.008	0.006	0.005
Hydromill (slurry wall)	in soil	0.017	0.004	0.003	0.002
	in rock	0.008	0.002	0.001	0.001
Small bulldozer		0.003	0.001	0.001	0.000

Source: Transit Noise and Vibration Impact Assessment, United States Department of Transportation, Office of Planning and Environment, Federal Transit Administration, September 2018 as modified by Illingworth & Rodkin, Inc., March 2022.

These levels calculated assuming normal propagation conditions, using a standard equation of *PPVeqmt-PPVref * (25/D) 1.5*, from FTA, May 2006.

The closest existing structures to the project site the office building located approximately 95 feet to the east, the commercial buildings located approximately 120 feet to the west, and the church building and residences located approximately 150 feet to the northwest and north, respectively. As seen in Table 10, construction-generated vibration levels would not exceed 0.2 in/sec PPV at any structure in the project vicinity. This is a **less-than-significant impact**.

Mitigation Measure 2: **None required**.

Impact 3: **Excessive Aircraft Noise Levels.** The proposed project would be located in a compatible noise environment with respect to noise generated by Norman Y. Mineta International Airport. There is **no impact**.

Norman Y. Mineta International Airport is located approximately 3 miles southwest of the project site. The project site is located outside of all 2037 noise contours shown in the Norman Y. Mineta International Airport Master Plan (amended 4/28/2020). The site would not be exposed to excessive aircraft noise. There is **no impact**.

Mitigation Measure 3: **None required.**