

# **APPENDIX H1**

## Noise Impact Study



March 6, 2024

Mr. Eric Turner  
VCS ENVIRONMENTAL  
30900 Rancho Viejo Road, Suite 100  
San Juan Capistrano, CA 92675

**Subject: Ginkgo Stonehouse Residential Noise Impact Study, City of Sierra Madre**

Dear Mr. Turner:

## **1.0 Introduction**

RK ENGINEERING GROUP, INC. (RK) is pleased to provide this focused noise analysis for the proposed Ginkgo Stonehouse Residential Project (hereinafter referred to as “project”). The proposed project site is located at 935 East Grand View Avenue and 965 East Grand View Avenue, in the City of Sierra Madre.

The purpose of this study is to evaluate the noise impact of the project pursuant to the California Environmental Quality Act (CEQA), the City of Sierra Madre General Plan Hazard Protection Element, and the City of Sierra Madre Municipal Code Chapter 9.32 - Noise. This technical letter analyzes the construction and operational noise impacts from the project to the surrounding community and provides recommendations, where necessary, to meet the applicable noise requirements.

## **1.1 Project Description**

The proposed project consists of developing up to nine (9) single-family residential homes on approximately 9 acres of land. Approximately four (4) of the 9 acres within the project boundary are proposed as a non-buildable area that would prohibit construction of vertical structures but would allow for landscaping, hardscaping, and fencing in the future.

The project site is currently occupied by 4 existing residential structures with accessory gazebos and sheds that will be demolished during project construction.

A project site location map is provided in Exhibit A. The project’s site plan is provided in Exhibit B.

## 1.2 Sensitive Receptors

There are several noise sensitive receptors adjacent to the proposed project site, including:

**Western Receptors** Existing residential land uses located along the western boundary of the project site, approximately 30 feet north of the centerline of East Grand View Avenue.

**Southern Receptors** Existing residential land uses located approximately 48 feet south of the project site's southern boundary, approximately 23 feet south of the centerline of East Grand View Avenue.

**Eastern Receptors** Existing residential land uses located along the eastern boundary of the project site, approximately 22 feet north of the centerline of East Grand Avenue.

## 2.0 Regulatory Setting

The proposed project is located in the City of Sierra Madre and is subject to state and local regulations.

### 2.1 State Regulations

The State of California has established noise insulation standards as outlined in Title 24 of the Building Standards Code which in some cases requires acoustical analyses to outline exterior noise levels and to ensure interior noise levels do not exceed the interior threshold.

Noise insulation design standards for residential dwellings are established in the 2022 California Building Code, Title 24, Part 2, Volume 1, Section 1206 Sound Transmission. The City is required by the State Housing Law to adopt these State codes as minimum performance standards. The City may enact stricter noise standards throughout the city or on a case-by-case basis if deemed necessary. In brief, the Title 24 noise standards require the following for allowable interior noise levels:

1. Interior noise levels due to exterior sources must not exceed a community noise equivalent level (CNEL) or a day-night level (LDN) of 45 dBA, in any habitable room.
2. Penetrations or openings in sound rated assemblies must be treated to maintain required ratings.

## 2.1 City of Sierra Madre Noise Regulations

The proposed project is located in the City of Sierra Madre and is subject to the standards and regulations established by the City of Sierra Madre General Plan Hazard Protection Element Section Four: Noise and Municipal Code Chapter 9.32 – Noise, as discussed below.

Copies of the City of Sierra Madre General Plan Hazard Protection Element and Municipal Code Chapter 9.32 are provided in Appendix A.

### General Plan Noise Standards

Section Four of the City's General Plan Hazard Protection Element does not establish quantitative noise level thresholds for noise sources within the City. However, the General Plan includes policies aimed at maintaining a quiet city, minimizing noise impacts from commercial uses, and minimizing the impacts of construction noise. The General Plan policies applicable to the proposed project include, but are not limited to, the following:

- Hz14.1** Formulate measures to mitigate noise impacts from mobile and stationary noise sources through compatible land use planning and the discretionary review of development projects.
- Hz14.2** Enact noise regulations to prohibit unnecessary excessive and annoying noise sources. These controls currently relate to the general category of disturbing-the-peace nuisances.
- Hz16.1** Limit construction activities to reasonable weekday and weekend/holiday hours in order to reduce noise impacts on adjacent residences.
- Hz16.2** Require that construction activities incorporate feasible and practical techniques to minimize the noise impacts on adjacent uses.

### Municipal Code Noise Standards

The City of Sierra Madre Municipal Code Chapter 9.32 – Noise establishes noise thresholds for stationary noise sources within the City. Per the Municipal Code, it is unlawful for any person to willfully make or continue, to cause to be made or continued, any loud, unnecessary, or unusual noise which unreasonably disturbs the peace and quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area.

The following noise thresholds apply to residential land uses within the City:

- a. No person shall produce, suffer or allow to be produced by any machine or device, or any combination of the same, on residential property, a noise level more than 6 dBA above the local ambient at any point outside of the property plane.
- b. No person shall produce, suffer or allow to be produced by any machine, device, or any combination of same, on multi-residential property, a noise level which exceeds 6 dBA above the local ambient three feet from any wall, floor, or ceiling inside any dwelling unit on the same property, open or closed doors or windows, except within the dwelling unit in which the noise source or sources may be located.

The Municipal Code outlines several conditions that are exempt from the above standards, including:

- a. Daytime Exceptions. Any noise source which does not produce a noise level exceeding 80 dBA at a distance of twenty-five feet under its most noisy condition of use shall be exempt from the provisions of Sections 9.32.030 and 9.32.050 between the hours of seven a.m. and nine p.m. daily except Sundays and holidays, when the exemption herein shall apply between ten a.m. and six p.m.
- b. Construction. Notwithstanding any other provision of this chapter, including Section 9.32.100, between the hours of seven a.m. and seven p.m. daily, except Sundays and holidays when the exemption herein shall apply between ten a.m. and six p.m., construction, alteration or repair activities which are authorized by a valid city permit shall be allowed if the noise level at any point outside the property plane shall not exceed 85 dBA.

### **3.0 Existing Noise Environment**

The existing noise environment for the project site and surrounding areas has been established based on 24-hour noise measurement data collected by RK. The project setting is residential, and the primary environmental noise impacting the project site is roadway noise from East Grand View Avenue.

RK conducted the sound level measurements in accordance with Caltrans technical noise specifications. All measurement equipment meets American National Standards Institute (ANSI) specifications for sound level meters (ANSI S1.4: Specification for Sound Level Meter, 1983).

Piccolo-II Type 2 integrating-averaging level meters were used to conduct noise measurements at the project site and property boundaries.

The Leq, Lmin, Lmax, L2, L8, L25, and L50 statistical data were recorded over the measurement time intervals and the information was utilized to define the noise characteristics for the project. The following gives a brief description of the procedures for sound level measurements:

- Microphones for sound level meters were placed five (5) feet above the ground for long-term noise measurements;
- Sound level meters were calibrated before each measurement;
- Following the calibration of equipment, a windscreen was placed over the microphone;
- Frequency weighting was set on "A" and slow response; and
- Temperature and sky conditions were observed and documented.

Noise levels were measured on November 7, 2023. Noise monitoring locations were selected based on the proximity and location of adjacent sensitive receptors. Exhibit C graphically illustrates the location of the noise measurements.

- **Noise Monitoring Location 1 (L-1)** was taken near the southwest corner of the project site, approximately 90 feet north of the centerline of East Grand View Avenue.
- **Noise Monitoring Location 2 (L-2)** was taken near the southeast corner of the project site, approximately 45 feet north of the centerline of East Grand View Avenue.

Noise measurements were conducted at the above-selected locations to determine the existing ambient noise environment at the nearby sensitive receptors. Ambient noise sources during the measurement period consisted of residential activity, roadway noise along East Grand View Avenue, and nature/bird chirping.

Results of the noise measurements are shown in Tables 1 and 2. Appendix B includes photographs, field sheets, and measured noise data.

**Table 1**  
**24-Hour Noise Measurement Results – L-1<sup>1</sup>**

Time	Leq (dBA)	Time	Leq (dBA)
12:00 AM	38.9	12:00 PM	49.0
1:00 AM	37.1	1:00 PM	50.3
2:00 AM	39.2	2:00 PM	49.0
3:00 AM	36.2	3:00 PM	50.8
4:00 AM	36.9	4:00 PM	49.7
5:00 AM	41.3	5:00 PM	51.3
6:00 AM	47.6	6:00 PM	48.2
7:00 AM	51.0	7:00 PM	48.4
8:00 AM	50.0	8:00 PM	47.2
9:00 AM	51.4	9:00 PM	46.8
10:00 AM	47.4	10:00 PM	45.7
11:00 AM	47.3	11:00 PM	43.9
<b>24-Hour CNEL</b>			<b>51.4</b>

<sup>1</sup> L-1 was recorded on 11/7/2023.

**Table 2**  
**24-Hour Noise Measurement Results – L-2<sup>1</sup>**

Time	Leq (dBA)	Time	Leq (dBA)
12:00 AM	48.3	12:00 PM	54.9
1:00 AM	44.0	1:00 PM	53.8
2:00 AM	42.6	2:00 PM	55.7
3:00 AM	37.5	3:00 PM	55.0
4:00 AM	41.5	4:00 PM	55.5
5:00 AM	40.4	5:00 PM	56.6
6:00 AM	41.0	6:00 PM	55.3
7:00 AM	45.7	7:00 PM	56.4
8:00 AM	54.0	8:00 PM	54.5
9:00 AM	56.7	9:00 PM	54.2
10:00 AM	56.6	10:00 PM	52.6
11:00 AM	57.7	11:00 PM	52.2
<b>24-Hour CNEL</b>			<b>57.1</b>

<sup>1</sup> L-2 was recorded on 11/7/2023.

As shown in Tables 1 and 2, noise levels at the project site and adjacent sensitive receptors range from 51.4 dBA Leq to 57.1 dBA Leq.

## **4.0 Noise Impact Analysis**

This assessment analyzes the anticipated noise levels generated by the project and compares them to standards established in the City of Sierra Madre General Plan and Municipal Code.

### **4.1 Stationary Source Noise Impacts**

The proposed project consists of developing nine (9) single family residential homes. Residential land uses are typically considered compatible with other residential uses and are not generally categorized as generating loud, unnecessary, or unusual noise that disturbs the peace or quiet of a neighborhood, or that cause discomfort or annoyance to any person of normal sensitiveness. In particular, residential land uses typically generate substantially less noise during the noise-sensitive nighttime hours.

The main sources of potential stationary noise from the project would include HVAC equipment. In order to ensure that the project complies with the City's stationary noise standards, future on-site HVAC noise is assessed compared with the City's thresholds. Per the City's Municipal Code, it is unlawful to produce noise on residential property that exceeds 6 dB above the ambient noise level at any point outside of the property boundaries. Hence, this analysis assesses future noise impacts using a threshold of 57.4 dBA CNEL (i.e., 6 dB above the measured 51.4 dBA CNEL noise level measured at L-1).

HVAC noise was projected using a computer program that replicates the FHWA Noise Prediction Model (FHWA-RD-77-108). The FHWA model arrives at the predicted noise level through a series of adjustments to a reference energy noise level. For HVAC noise, a referenced noise level of 75 dBA Leq at a distance of 1 foot was applied to the model. HVAC noise is assumed to be operating continuously throughout the daytime and nighttime hours. The result is a worst-case assessment of impacts, as in reality, HVAC units would likely only run intermittently throughout the day.

The referenced noise level used for the analysis is indicative of the noise level generated by a typical HVAC unit at the noise source location. However, it should be noted that the specific equipment type and location has not yet been identified. To estimate noise level impacts at the surrounding residential receptor locations, the above referenced noise level is input into the FHWA model and projected from the nearest proposed HVAC location to the nearest adjacent sensitive receptor. The model projections take into account the noise attenuation effects from distance, local topography, ground effects, and physical barriers to arrive at the predicted noise level at the receptor.

The locations of the HVAC units on the proposed project site have not yet been determined. However, it is assumed that on-site HVAC units will be no closer than 20 feet from the nearest project property line. Therefore, this analysis conservatively analyzes HVAC noise level impacts at a distance of 20 feet.

Table 3 shows the results of the stationary noise impact analysis. Stationary noise calculation worksheets are provided in Appendix C.

**Table 3  
Stationary Noise Impact Analysis**

Noise Source	Receptor Distance from Noise Source (feet)	Noise Level at Receptor	
		dBA Leq	dBA CNEL
HVAC <sup>1</sup>	20.0	49.0	55.7
Noise Level Threshold <sup>2</sup>		--	57.4
<b>Noise Level Exceeds Threshold (?)</b>		<b>No</b>	

<sup>1</sup> Noise level is representative of a single unit.

<sup>2</sup> Per the City of Sierra Madre Municipal Code standards, the stationary noise threshold is 6 dBA above the existing ambient noise level measured by RK on November 7, 2023.

As shown in Table 3, noise levels generated by the project are not expected to exceed the City’s noise standards at any off-site sensitive receptor location.

## 4.2 Mobile Source Noise Impacts

### 4.2.1 Roadway Noise

The project is not expected to cause a substantial increase in ambient noise levels in the vicinity of the site as a result of increased traffic volumes along adjacent roadways. Typically, it takes a doubling of traffic volume along a roadway to cause a significant increase in ambient noise levels of more than 3 dBA.

The main source of roadway noise in the vicinity of the project site is activity along East Grand View Avenue. Per the General Plan, East Grand View Avenue is classified as a local collector street and has an existing daily traffic volume of 2,700 vehicles and an existing volume capacity of 7,500 vehicles.

The project is expected to generate approximately 47 net daily trips<sup>1</sup>. Hence, the amount of traffic generated by the project will not double the amount of traffic along East Grand Avenue either directly or cumulatively, and therefore the increase in roadway noise levels as a result of the project will be less than significant.

#### **4.2.2 Airport Noise**

The San Gabriel Valley Airport, located in El Monte, California, is the nearest airport to the proposed project site, at a distance of approximately 5.25 miles. The proposed project site is not located within the vicinity of the San Gabriel Valley Airport or any others' private airstrip or airport land use plan, nor is it within two miles of a public or private use airport. Therefore, the project will have no impact on airport-adjacent land uses.

#### **4.3 Construction Noise and Vibration Impacts**

Temporary construction noise and vibration impacts have been assessed from the project site to the surrounding adjacent land uses. The degree of construction noise will vary depending on the type of construction activity taking place and the location of the activity relative to the surrounding properties.

The City of Sierra Madre exempts construction noise from the standards outlined in the Municipal Code, provided that the following provisions are met:

*"Notwithstanding any other provision of this chapter, including Section 9.32.100, between the hours of seven a.m. and seven p.m. daily, except Sundays and holidays when the exemption herein shall apply between ten a.m. and six p.m., construction, alteration or repair activities which are authorized by a valid city permit shall be allowed if the noise level at any point outside the property plane shall not exceed 85 dBA."*

To ensure the project does not conflict with the standards in the Sierra Madre Municipal Code, project-related construction activity should not occur between the hours of 7:00 p.m. and 7:00 a.m. Monday through Friday or between 6:00 p.m. and 10:00 a.m. on Sundays and holidays.

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<sup>1</sup> Source: *Ginkgo Stonehouse Residential Trip Generation & Vehicle Miles Traveled (VMT) Screening Analysis, City of Sierra Madre, CA.*

### 4.3.1 Construction Noise

A construction noise assessment has been prepared to ensure noise levels do not exceed 85 dBA, pursuant to City of Sierra Madre Municipal Code standards. This analysis utilizes the Federal Highway Administration (FHWA) Roadway Construction Noise Model, together with several key construction parameters, to estimate future construction noise levels during each phase of construction. Consistent with the FTA General Assessment methodology, the following assumptions have been utilized in the construction noise model:

- Noise emission level ( $L_{\text{emission}}$ ) – Determine the emission level at 50 feet according to noise from typical construction equipment.
- Usage factor ( $Adj_{\text{usage}}$ ) – Assume a usage factor of one (1). This assumes a time period of one-hour with full power operation.
- Distance (D) – Assume that all equipment operates at the center of the project, or centerline for guideway or highway construction projects.
- Ground effect (G) – G equals zero (0) assuming free-field conditions and ignoring ground effects.
- The  $L_{\text{eq, equip}}$  is determined only for the two noisiest pieces of equipment expected to be used in each phase of construction. The equipment noise levels are summed for each phase of construction using decibel addition.

Noise levels were projected from the center of potential construction activities to the closest project property line, at a distance of approximately 165 feet. While some construction activity may occur closer than 165 feet from the nearest property line, noise levels are based on an average distance from the center of the site per Federal Transit Administration (FTA) General Assessment recommendations.

Table 4 shows the expected noise impacts during all phases of construction, including demolition, site preparation, grading, building construction, paving, and architectural coating.

**Table 4**

**Project Construction Noise Levels – at 165 Feet**

Phase	Equipment	Quantity	Equipment Noise Level at 165 ft (dBA Leq)	Combined Noise Level (dBA Leq)
<b>Demolition</b>	Concrete/Industrial Saws	1	79.2	79.9
	Rubber Tired Dozers	1	71.3	
<b>Site Preparation</b>	Tractors/Loaders/Backhoes	2	73.6	76.6
<b>Grading</b>	Graders	1	74.6	77.2
	Tractors/Loaders/Backhoes	1	73.6	
<b>Building Construction</b>	Tractors/Loaders/Backhoes	2	73.6	76.6
<b>Paving</b>	Rollers	2	69.6	72.6
<b>Architectural Coating</b>	Air Compressors	1	67.3	67.3
Worst Case Construction Phase Noise Level (dBA Leq)				79.9
<b>City of Sierra Madre Construction Noise Exemption Criteria (dBA Leq)<sup>1</sup></b>				<b>85.0</b>
Noise level exceeds exemption criteria?				No

<sup>1</sup> Source: City of Sierra Madre Municipal Code Chapter 9.32 – Noise.

The project is expected to generate a maximum noise level of 79.9 dBA. Based on the above table, the project’s construction-related noise levels will not exceed the City of Sierra Madre construction noise exemption threshold of 85.0 dBA.

Therefore, by complying with the City’s noise ordinance requirements, the project’s impact from construction-related noise would be less than significant.

**4.3.1 Construction Vibration**

The following construction vibration assessment is based on the methodology set forth within the *Caltrans Transportation and Construction Induced Vibration Guidance Manual*. The vibration impacts from vibratory rollers and compactors, heavy truck loading and bulldozer activity is analyzed. All vibratory activity is analyzed as a continuous and/or frequent event and is required to comply with the applicable guidance thresholds criteria. It is expected that vibration levels will be highest during paving phase. No impact pile driving is expected as part of this project.

Construction vibration impacts are compared with the vibration thresholds established by the *Caltrans Transportation and Construction Induced Vibration Guidance Manual*. The vibration thresholds for annoyance potential and damage potential are provided in Tables 3 and 4, respectively.

**Table 5  
Vibration Annoyance Potential Criteria**

Human Response	PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.90	0.10
Severe	2.00	0.40

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

**Table 6  
Vibration Damage Potential Threshold Criteria**

Structure and Condition	PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings ruin ancient monuments	0.12	0.08
Fragile buildings	0.20	0.10
Historic and some old buildings	0.50	0.25
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial/commercial buildings	2.00	0.50

Vibratory impacts were calculated from the nearest expected area of equipment use to the nearest adjacent receptors and structures using the reference vibration levels, soil conditions and the reference equation  $PPV = PPV_{ref} (25/D)^n$  (in/sec) (from Caltrans Manual) where:

PPV = reference measurement at 25 feet from vibration source

D = distance from equipment to property line

n = vibration attenuation rate through ground (n=1.1 was utilized for this study)

Table 5 shows the project’s construction related vibration analysis at the nearest structures to the nearest expected areas of equipment use.

**Table 7**  
**Construction Vibration Impact Analysis**

Construction Activity	Distance to Nearest Structure (ft)	Calculated Vibration Level - PPV (in/sec)	Annoyance Potential	Damage Potential
Vibratory Roller	158	0.028	Barely Perceptible	None
Large Bulldozer	40	0.053	Distinctly Perceptible	None
Loaded Trucks	40	0.045	Distinctly Perceptible	None

As shown in Table 5, the worst-case vibration levels resulting from project construction are below the damage potential threshold for extremely fragile historic buildings, ruins, and ancient monuments.

As discussed above, there is no potential for damage to existing buildings or structures based on the impact analysis. There is a potential for occupants of the closest buildings to experience occurrences of distinctly perceptible vibration. Neither strongly perceptible nor severely perceptible vibration occurrences are anticipated. In addition, distinctly perceptible vibration levels would be short-term for each particular receptor as the construction equipment moves from one location to another on the Project site. Project construction would also be restricted to the City’s permitted daytime hours pursuant to the Municipal Code. Based on the analysis above, **potential impacts are considered less than significant, and no mitigation is required.**

Construction vibration calculation worksheets are provided in Appendix D.

## **5.0 Standard Conditions and Best Practices**

Based upon this review, the Ginkgo Stonehouse Residential Project is not expected to result in a significant temporary or permanent increase in noise. In order to further ensure noise levels comply with City standards, the following standard conditions and best practices are recommended. The below features would typically be included as part of the conditions of approval for the project and are not considered mitigation under CEQA.

### *Construction*

- The project shall comply with the City of Sierra Madre Municipal Code requirements. All construction will take place Monday through Saturday between the hours of 7:00 a.m. to 7:00 p.m. and on Sundays and holidays between the hours of 10:00 a.m. and 6:00 p.m.
- All construction equipment shall be equipped with mufflers and other suitable noise attenuation devices (e.g., engine shields).
- Establish an electric connection to the site to avoid the use of diesel- and gas-powered generators, to the extent feasible.
- Construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than five (5) minutes.

### *Operations*

- All HVAC equipment should be shielded from the line of sight of adjacent properties behind enclosures.

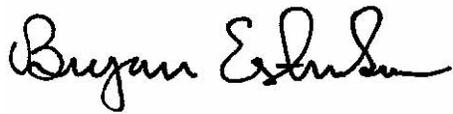
## **6.0 Conclusion**

Based upon this review, the Ginkgo Stonehouse Residential Project would not result in exposure of persons to or generation of noise in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Additionally, the project would not result in a substantial permanent or temporary increase in ambient noise levels.

**The project-related noise impacts are considered less than significant.**

If you have any questions regarding this study, or would like further review, please do not hesitate to contact us at (949) 474-0809.

Sincerely,  
RK ENGINEERING GROUP, INC.



Bryan Estrada, AICP, PTP  
Principal



Becca Morrison  
Environmental Specialist

Attachments

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# Exhibits

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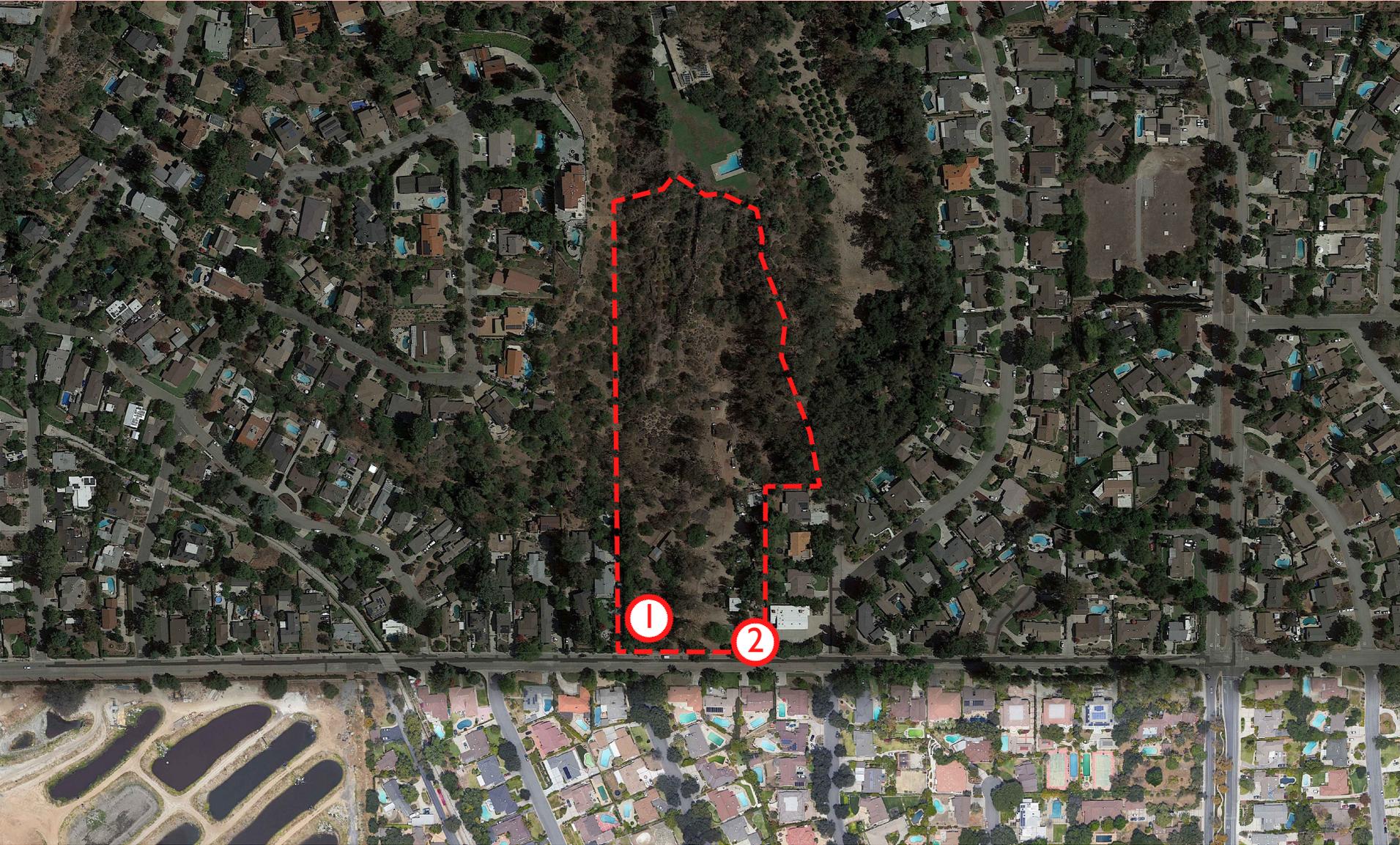


**Legend:**

-  = Project Site Boundary
-  = Project Site







**Legend:**

- = Project Site Boundary
- ① = Noise Monitoring Location



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# Appendices

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## **Appendix A**

City of Sierra Madre General Plan Hazard Protection Element Section Four:  
Noise and Municipal Code Chapter 9.32 – Noise.

# Section Four:

## Noise

### OVERVIEW OF EXISTING CONDITIONS

Sound is a disturbance in air pressure. It may be interpreted in different ways depending on one's perception and may be described in qualitative or quantitative terms. Qualitative terms describe the noise in terms such as loud, soft, noisy, quiet, annoying or pleasant.

Quantitative descriptions of sound permit the application of noise standards and criteria as well as measures to mitigate noise impacts. Quantified measurements of sound involve three primary characteristics: Amplitude, frequency, and temporal pattern or duration. Amplitude is the sound pressure measured in Decibels (dB). Decibels are based on a logarithmic scale in order to compress the wide range of sound intensities. Frequency is the rate at which the sound source vibrates or causes the air to vibrate. The frequency in sound measured in Hertz (Hz) which is the number of cycles per second. Temporal pattern or duration is the length of time associated with a sound (e.g. continuous, intermittent, fluctuating, etc.)

Human perception of sound also depends on the time of day when the sound occurs. Sound levels that normally occur during daylight hours and that are not considered objectionable may be excessive when they occur at night. The use of frequency-weighted sound measurement estimates the human perception of noise or annoying sounds. Frequency weighting is expressed in terms of A-weighted decibels dB(A). It de-emphasizes the very low and very high frequency ranges of sound and places greater emphasis on frequencies within the sensitivity range of the human ear.

Generally, outdoor noise levels are highly variable. Levels (Ldn) occur as low as 30 to 40 dB(A) in wilderness areas as high as 85-90 dB(A) in urban areas. A normal suburban community would have a typical ambient noise level of 50-60 dB(A), a very noisy residential area, up to 70 dB(A).

In residential areas, major contributors to outdoor noise are transportation, industry, construction, gardening equipment, and human and animal sources. Population density is a primary determinant of ambient noise levels. Based on the population characteristics of Sierra Madre, the City would be considered as a normal suburban community with a typical noise level of 55 dB(A) as described above. In addition to the outdoor noise, additional exposure of humans to noise results from sources inside homes (e.g. appliances, radio and television, people and animals) and sources in the workplace, especially from mechanical and electronic equipment.

Sierra Madre has a noise ordinance in effect that seeks to protect the citizens of the City from excessive, unnecessary and unreasonable noises, and contains policies to control the adverse effects of noise. The ordinance determines allowable noise limits in terms of the “Local Ambient” noise level.

Sierra Madre is primarily a residential community with no major highway, freeway or other transportation corridors traversing it. The City contains 30.4 acres of land devoted to commercial uses constituting stationary sources of noise. As such, stationary noise in Sierra Madre is considered minimal and located in the City center, primarily along Sierra Madre Boulevard west of Baldwin Avenue to Lima Street and east of Baldwin Avenue to Mountain Trail Avenue. Along these roadway segments are included typical commercial establishments such as retail stores, restaurants, etc. Some additional commercial uses are found east of Baldwin Avenue on Montecito Avenue, including small warehousing establishments and small machine-shops. The Interstate 210 (I-210) Freeway is considered a significant source of noise for the City given its proximity (about 1.25 miles south). Although some studies claim noise from the I- 210 Freeway is not significant, residents of the City consider it to be a significant source of noise because freeway noise is amplified by the topography of the area.

As mandated by the State, noise sensitive receptors must be identified for a particular jurisdiction. A sensitive receptor is any area containing schools, hospitals, rest homes, long- term medical or mental care facilities, or any other land use deemed noise sensitive by the local jurisdiction. In Sierra Madre, the existing schools are considered sensitive land uses. There are no hospitals

or mental care facilities located in Sierra Madre; however, there are board and care facilities that are considered a sensitive land use.

#### NOISE GOAL

A City where the adverse effects of noise on residents are prevented and/or minimized.

Objective Hz14: Maintaining the quiet residential character of the City, free from excessive noise from transportation or fixed source generators.

#### Policies:

- Hz14.1 Formulate measures to mitigate noise impacts from mobile and stationary noise sources through compatible land use planning and the discretionary review of development projects.
- Hz14.2 Identify and control the noise levels associated with transportation and general circulation patterns in the City to ensure the residential quality of the community.
- Hz14.3 Enact noise regulations to prohibit unnecessary excessive and annoying noise sources. These controls currently relate to the general category of disturbing- the-peace nuisances.
- Hz14.4 Ensure that the noise level of the commercial districts does not interfere with the normal business, commercial or residential activities.
- Hz14.5 To the extent possible, protect schools, hospitals, libraries, churches, parks and recreational areas from excessive sound levels so as not to adversely affect their normal activities.
- Hz14.6 Review current guidelines regarding the use of gas powered lawn equipment and consider restricting

the type of equipment, hours and duration of operation.

Objective Hz15: Minimizing the noise impacts associated with the development of residential units above ground floor commercial uses.

Policies:

- Hz15.1      Require that commercial uses developed as part of a residential mixed-use project are not noise intensive.
- Hz15.2      Design mixed-use structures to prevent the transfer of noise from the commercial use to the residential use.
- Hz15.3      Require that common walls and floors between commercial and residential uses be constructed to minimize the transmission of noise and vibration.

Objective Hz16: Minimizing the impacts of construction noise on adjacent uses.

Policies:

- Hz16.1      Limit construction activities to reasonable weekday and weekend/holiday hours in order to reduce noise impacts on adjacent residences.
- Hz16.2      Require that construction activities incorporate feasible and practical techniques to minimize the noise impacts on adjacent uses.

## Chapter 9.32 - NOISE

**Sections:**

## 9.32.010 - Declaration of policy.

It is declared to be the policy of the city, in the exercise of its authority, that the peace, health, safety and welfare of the citizens of Sierra Madre require protection from excessive, unnecessary and unreasonable noises from all sources in the community. At certain levels, noises are detrimental to the health and welfare of the citizenry and it is therefore the intention of the city to control the adverse effect of such noises and sources on the citizenry, especially those conditions of use which have severe impact upon any person.

(Ord. 1012 § 2 (part), 1984: prior code § 5100)

## 9.32.020 - Definitions.

For the purposes of this chapter, the words and phrases used in this chapter are defined as follows:

"A" level means the total sound level of all noise as measured with a sound level meter using the "A" weighting network. The unit is the dba.

Decibel. The decibel is a unit measure of sound (noise) level relative to a standard reference sound on a logarithmic scale. It denotes the ratio between two quantities which are proportional to power; the number of decibels corresponding to the ratio of two amounts of power is ten times the logarithm to the base ten, of this ratio.

Decipherable. Sounds are "decipherable" if they are of sufficient level that words or musical tunes can be made out or recognized by a person of normal hearing.

"Emergencies" are essential activities necessary to restore, preserve, protect or save lives or property from imminent danger of loss or harm, or work by private or public utilities in restoring service.

"Holiday" means and includes New Year's Day (January 1), Memorial Day (the last Monday in May), Independence Day (July 4), Labor Day (the first Monday in September), Thanksgiving Day (the fourth Thursday in November), and Christmas Day (December 25).

"Leaf blower" means any portable machine used to blow leaves, dirt and other debris off sidewalks, driveways, lawns or other surfaces.

"Local ambient" is the lowest sound level repeating itself during a two minute period as measured with a precision sound level meter, using slow response and "A" weighting as determined with the noise source at issue silent, and in the same location as the measurement of the noise level of the source or sources at issue. However, in no case shall the local ambient be considered or determined to be less than (1) 30 dba for interior noise in Section 9.32.040; (2) 40 dba in all other sections.

"Noise level" is the maximum continuous sound level of repetitive peak level produced by a source or group of sources as measured with a provision sound level meter using the "A" weighting scale and the meter response function set to "SLOW."

"Person" means a person, firm, association, co-partnership, joint venture, corporation, or any entity, public or private in nature.

Precision Sound Level Meter. A "precision sound level meter" is a device for measuring sound level in decibel units within the performance specifications in the American National Standards Institute Standard S1.4, "Specification for Sound Level Meters."

"Property plane" is a vertical plane including the property line which determines the property boundaries in space.

"Sound amplifying equipment" means any machine or device for the amplification of the human voice, music, or any other sound. "Sound amplifying equipment" shall not include warning devices on authorized emergency vehicles or horns or other warning devices on any vehicle used only for traffic safety purposes.

"Sound level" expressed in decibels (dba) is a logarithmic indication of the ratio between the acoustic energy present at a given location and the lowest amount of acoustic energy audible to sensitive human ears and weighted by frequency to account for characteristics of human hearing, as given in the American National Standards Institute Standard S1.1, "Acoustic Terminology," paragraph 2.9, or successor reference. All references to db in this chapter utilize the A-level weighting scale, abbreviated dba, measured as set forth in this section.

"Vehicle" is any device by which any person or property may be propelled, moved, or drawn upon a highway or street.

(Ord. 1012 § 2 (part), 1984: prior code § 5101)

(Ord. No. 1287, § 1, 2-24-09; Ord. No. 1295, §§ 1—3, 7-14-09)

#### 9.32.030 - Residential property noise limits.

- (a) No person shall produce, suffer or allow to be produced by any machine or device, or any combination of same, on residential property, a noise level more than 6 dba above the local ambient at any point outside of the property plane.
- (b) No person shall produce, suffer or allow to be produced by any machine, device, or any combination of same, on multi-residential property, a noise level which exceeds 6 dba above the local ambient three feet from any wall, floor, or ceiling inside any dwelling unit on the same property, open or closed doors or windows, except within the dwelling unit in which the noise source or sources may be located.

(Ord. 1012 § 2 (part), 1984: prior code § 5102)

#### 9.32.040 - Commercial and industrial property noise.

No person shall produce, suffer or allow to be produced by any machine or device, or any combination of same, on commercial or industrial property, a noise level more than 8 dba above the local ambient at any point outside of the property plane.

(Ord. 1012 § 2 (part), 1984: prior code § 5103)

#### 9.32.050 - Public property noise limits.

- A. No person shall produce, suffer or allow to be produced by any machine or device, or any combination of same, on public property, a noise level more than 15 dba above the local ambient at a distance of twenty-five feet or more, unless otherwise provided in this chapter.
- B. Performances using sound amplifying equipment and special events shall not exceed 60 dba measured at a distance of fifty feet from the source without an exemption issued by the city manager or his designee. These exemptions must consider the standards set forth in Sections 9.32.070 and 9.32.100. The exemption permit must be obtained in addition to any other permit or license.
- C. Vehicle horns, or other devices primarily intended to create a loud noise for warning purposes, shall not be used when the vehicle is at rest, or when a situation endangering life, health, or property is not imminent, without a valid noise permit.

(Ord. 1185 § 2(part), 2000: Ord. 1012 § 2 (part), 1984: prior code § 5104)

#### 9.32.060 - Special exception provisions.

- A. Daytime Exceptions. Any noise source which does not produce a noise level exceeding 80 dba at a distance of twenty-five feet under its most noisy condition of use shall be exempt from the provisions of Sections 9.32.030, 9.32.040 and 9.32.050 between the hours of seven a.m. and nine p.m. daily except Sundays and holidays, when the exemption herein shall apply between ten a.m. and six p.m.
- B. Emergencies. Emergencies are exempt from this chapter.
- C. Construction. Notwithstanding any other provision of this chapter, including Section 9.32.100, between the hours of seven a.m. and seven p.m. daily, except Sundays and holidays when the exemption herein shall apply between ten a.m. and six p.m., construction, alteration or repair activities which are authorized by a valid city permit shall be allowed if the noise level at any point outside the property plane shall not exceed 85 dba.
- D. Leaf blower. Notwithstanding any other provision of this chapter, including Section 9.32.100, no person shall operate a leaf blower within the city outside of the hours of eight a.m. to seven p.m., Monday through Saturday, and ten a.m. to six p.m., Sundays and holidays. The foregoing prohibition shall not apply within any commercial zone. Noise generated by leaf blowers within any commercial zone shall be regulated by other sections of this chapter.

(Ord. 1012 § 2 (part), 1984: prior code § 5105)

(Ord. No. 1287, § 2, 2-24-09; Ord. No. 1295, § 4, 7-14-09)

#### 9.32.070 - Schools, hospitals and churches.

It is unlawful for any person to create any noise on any street, sidewalk, or public place adjacent to any school, institution of learning, or church while the same is in use or adjacent to any hospital, which noise unreasonably interferes with the workings of such institution or which disturbs or unduly annoys patients in the hospital, provided conspicuous signs are displayed in such streets, sidewalk or public place indicating the presence of a school, church, or hospital.

(Ord. 1012 § 2 (part), 1984: prior code § 5106)

#### 9.32.080 - Motor-driven vehicles.

It is unlawful for any person to operate any motor driven vehicle within the city in such a manner that a reasonable person of normal sensitiveness residing in the area is caused discomfort or annoyance; provided, however, any such vehicle which is operated upon any public highway, street, or right-of-way shall be excluded from the provisions of this section.

(Ord. 1012 § 2 (part), 1984: prior code § 5107)

#### 9.32.090 - Exception permits.

If the applicant can show to the city manager or his designee that a diligent investigation of available noise abatement techniques indicates that immediate compliance with the requirements of this chapter would be impractical or unreasonable, a permit to allow exception from the provisions contained in all or a portion of this chapter may be issued, with appropriate conditions to minimize the public detriment caused by such exceptions. Any such permit shall be of as short duration as possible up to three months, but renewable upon a showing of good cause, and shall be conditioned by a schedule for compliance and details of methods therefor in appropriate cases. Any person aggrieved with the decision of the city manager or his designee may appeal to the city council for final determination.

(Ord. 1185 § 2 (part), 2000: Ord. 1012 § 2 (part), 1984: prior code § 5108)

#### 9.32.100 - General noise regulations.

Notwithstanding any other provision of this chapter, and in addition thereto, it shall be unlawful for any person to willfully make or continue, to cause to be made or continued, any loud, unnecessary, or unusual noise which unreasonably disturbs the peace and quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area. The standards which shall be considered in determining whether a violation of the provisions of this section exists shall include the following:

- A. The volume, pitch and intensity of the noise;
- B. The duration and frequency of occurrence of the noise;
- C. Whether the nature of the noise is typical or atypical of the area;
- D. Whether the origin of the noise is natural or unnatural, controllable or uncontrollable;
- E. The volume and intensity of the background noise;
- F. The proximity of the noise to residential sleeping facilities;
- G. The nature and zoning of the area within which the noise emanates;
- H. The time of the day or night the noise occurs;
- I. Whether the noise is recurrent, intermittent, or constant;
- J. Whether the noise is produced by a commercial or noncommercial activity;
- K. Whether the amplified sound is loud enough to be decipherable outside the property plane.

(Ord. 1012 § 2 (part), 1984: prior code § 5109)

#### 9.32.110 - Violation—Penalty.

Any persons violating without satisfactory cause any provisions of this chapter will be deemed guilty of a misdemeanor and, upon conviction, shall be fined an amount not exceeding one thousand dollars or be imprisoned in the city or county jail up to, but not exceeding six months or by both such fine and imprisonment. Each day such violation is committed or permitted is to constitute a separate offense and shall be punishable as such.

(Ord. 1012 § 2 (part), 1984: prior code § 5110)

#### 9.32.120 - Violations—Additional remedies—Injunctions.

As an additional remedy, the operation or maintenance of any device, instrument, vehicle, or machinery in violation of any provision of this chapter, which operation or maintenance causes discomfort or annoyance to reasonable persons of normal sensitiveness or which endangers the comfort, repose, health, or peace of residents in the area, shall be deemed, and is declared to be a public nuisance and may be subject to abatement summarily by a restraining order or injunction issued by a court of competent jurisdiction.

(Ord. 1012 § 2 (part), 1984: prior code § 5111)

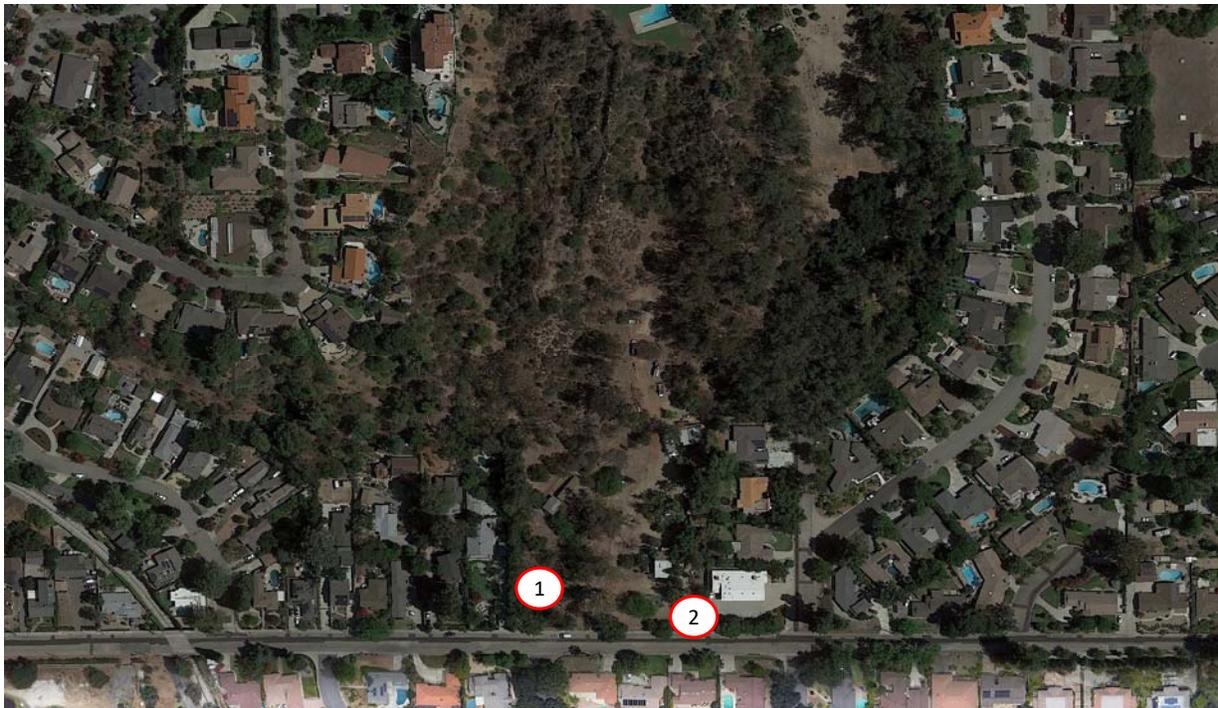
## **Appendix B**

Field Data and Photos

## Field Sheet

<b>Project:</b> Ginkgo Stonehouse Residential Project		<b>Engineer:</b> B. Morrison		<b>Date:</b> 11/6/2023		
				<b>JN:</b> 2389-2023-08		
<b>Measurement Address:</b> 935 and 965 East Grand View Avenue			<b>City:</b> Sierra Madre, CA			
			<b>Site No.:</b> 1			
<b>Sound Level Meter:</b> Piccolo II		<b>Calibration Record:</b>		<b>Conditions (11/7/2023):</b> Temp (Deg. F.): High: 70; Low: 58 Windspeed: 15 m.p.h. Direction: Varies Skies: Clear		
Serial #	P0222082204	Meter	Input, dB/		Time	Date
	P0222082205	1	94.0		1:51 p.m.	11/6/2023
		2	94.0		1:53 p.m.	11/6/2023
		3	/		/	/
		4	/		/	/
<b>Calibrator:</b> BSWA						
Serial #	500732	5	/	/	/	
<b>Meter Settings:</b>						
<input checked="" type="checkbox"/> A-WTD	<input type="checkbox"/> LINEAR	<input checked="" type="checkbox"/> SLOW	<input type="checkbox"/> 1/1 OCT	<input checked="" type="checkbox"/> .60_ MINUTE INTERVALS		
<input type="checkbox"/> C-WTD	<input type="checkbox"/> IMPULSE	<input type="checkbox"/> FAST	<input type="checkbox"/> 1/3 OCT	<input checked="" type="checkbox"/> L(N) PERCENTILE VALUES		

<b>Notes:</b> Noise measurements were taken at 1-hour intervals over a 24-hour period on 11/7/2023. Ambient noise sources during the measurement period consisted of roadway noise from East Grand View Avenue, general residential noise, and bird/nature sounds.	<b>Measurement Type:</b>
	<input checked="" type="checkbox"/> Long-term <input type="checkbox"/> Short-term



1 = Noise Monitoring Location

## Field Sheet - Noise Monitoring Location 1 Photo

**Project:** Ginkgo Stonehouse Residential Project **Engineer:** B. Morrison

**Date:** 11/6/2023

**JN:** 2389-2023-08

**Measurement Address:** 935 and 965 East Grand View Avenue **City:** Sierra Madre, CA

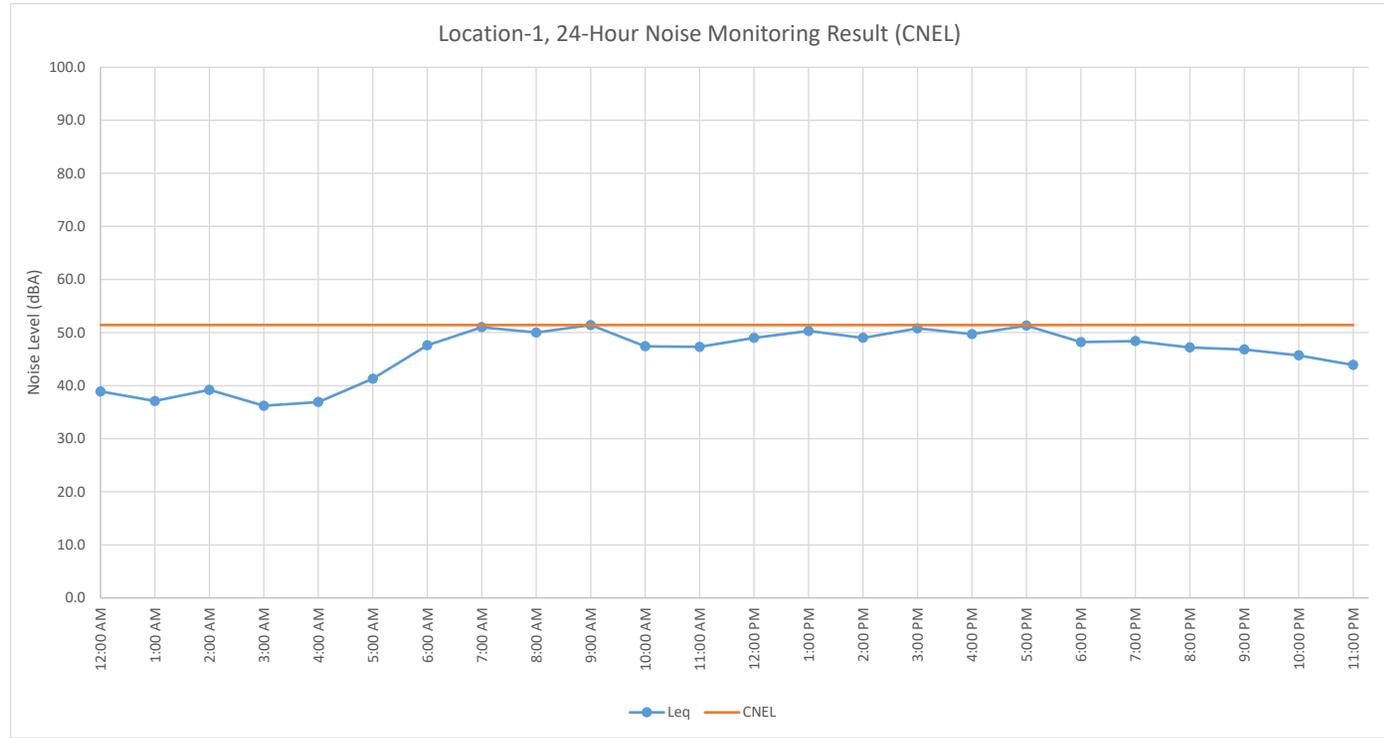
**Location No.:** 1

**Notes:** Noise Monitoring Location 1 (L-1) was taken near the southwest corner of the project site, approximately 90 feet north of the centerline of East Grand View Avenue.

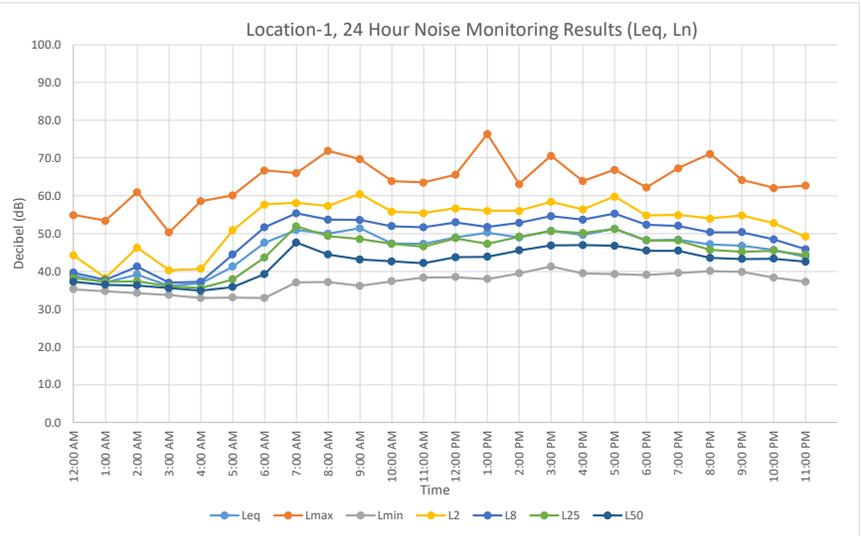


Time	Leq	CNEL
12:00 AM	38.9	51.4
1:00 AM	37.1	51.4
2:00 AM	39.2	51.4
3:00 AM	36.2	51.4
4:00 AM	36.9	51.4
5:00 AM	41.3	51.4
6:00 AM	47.6	51.4
7:00 AM	51.0	51.4
8:00 AM	50.0	51.4
9:00 AM	51.4	51.4
10:00 AM	47.4	51.4
11:00 AM	47.3	51.4
12:00 PM	49.0	51.4
1:00 PM	50.3	51.4
2:00 PM	49.0	51.4
3:00 PM	50.8	51.4
4:00 PM	49.7	51.4
5:00 PM	51.3	51.4
6:00 PM	48.2	51.4
7:00 PM	48.4	51.4
8:00 PM	47.2	51.4
9:00 PM	46.8	51.4
10:00 PM	45.7	51.4
11:00 PM	43.9	51.4

Day Min: 46.8  
Night Min: 36.2

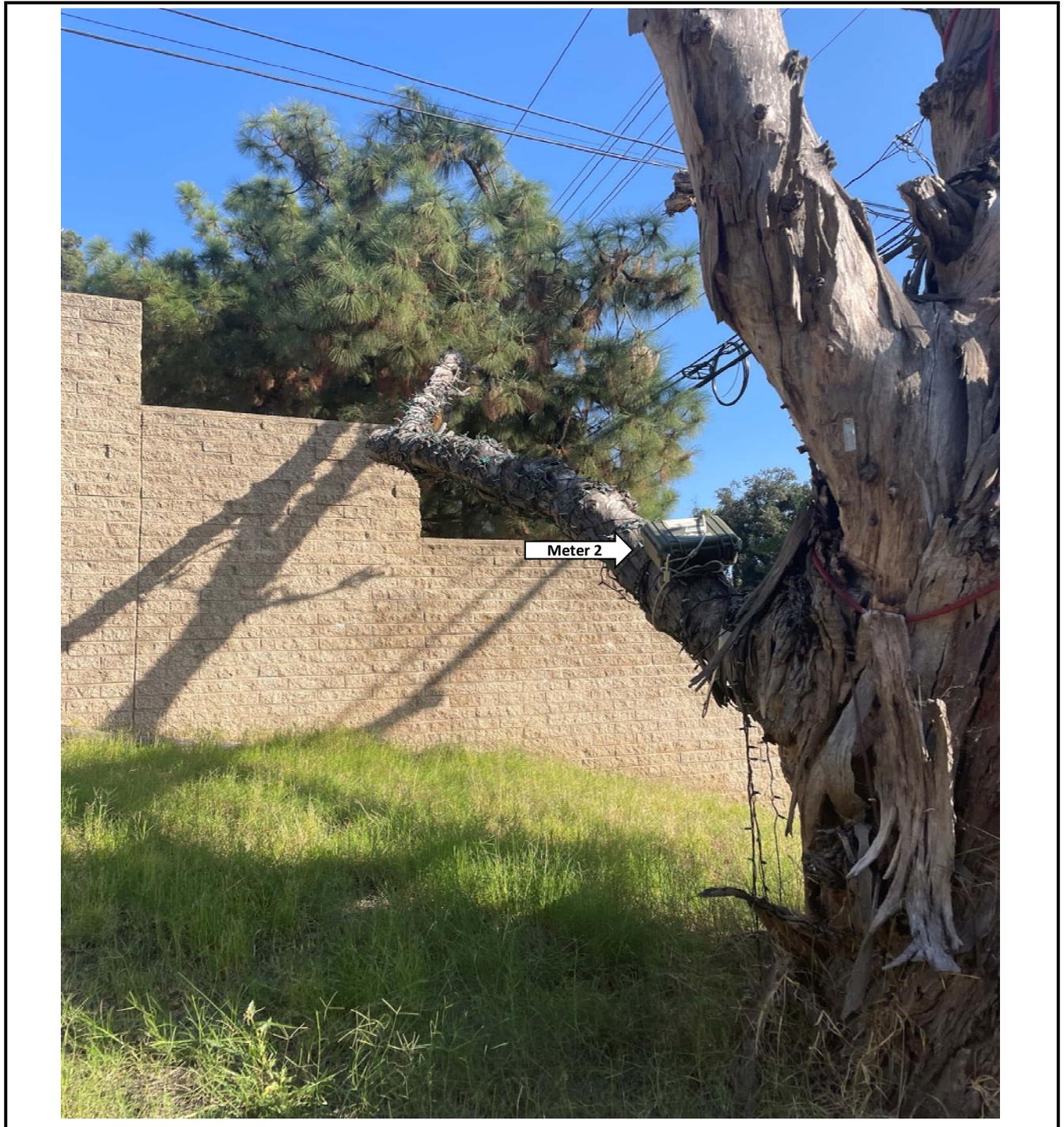


PROJECT:	Ginkgo Stonehouse Residential Project						JOB #:	2389-2023-08
NOISE METER:	Piccolo II SLM, 24-Hour Measurement						DATE:	11/7/2023
LOCATION:	1						BY:	B. Morrison
Time	Leq	Lmax	Lmin	L2	L8	L25	L50	
12:00 AM	38.9	54.9	35.3	44.3	39.7	38.2	37.3	
1:00 AM	37.1	53.4	34.8	38.3	37.8	37.3	36.5	
2:00 AM	39.2	61.0	34.3	46.3	41.3	37.4	36.3	
3:00 AM	36.2	50.3	33.8	40.3	37.0	36.1	35.6	
4:00 AM	36.9	58.6	33.0	40.7	37.3	35.6	34.9	
5:00 AM	41.3	60.1	33.1	50.9	44.5	37.9	35.9	
6:00 AM	47.6	66.7	33.0	57.7	51.7	43.7	39.3	
7:00 AM	51.0	66.0	37.1	58.1	55.4	51.9	47.6	
8:00 AM	50.0	71.9	37.2	57.3	53.7	49.4	44.5	
9:00 AM	51.4	69.7	36.2	60.5	53.6	48.6	43.2	
10:00 AM	47.4	63.9	37.4	55.8	52.0	47.3	42.7	
11:00 AM	47.3	63.5	38.4	55.4	51.7	46.6	42.2	
12:00 PM	49.0	65.6	38.5	56.7	53.0	48.8	43.8	
1:00 PM	50.3	76.4	38.0	56.0	51.8	47.3	43.9	
2:00 PM	49.0	63.1	39.5	56.0	52.9	49.2	45.6	
3:00 PM	50.8	70.6	41.3	58.4	54.6	50.7	46.9	
4:00 PM	49.7	63.9	39.5	56.4	53.7	50.2	47.0	
5:00 PM	51.3	66.9	39.3	59.8	55.3	51.3	46.8	
6:00 PM	48.2	62.2	39.1	54.8	52.4	48.3	45.5	
7:00 PM	48.4	67.3	39.6	54.9	52.1	48.2	45.5	
8:00 PM	47.2	71.1	40.1	54.0	50.4	45.7	43.6	
9:00 PM	46.8	64.2	39.9	54.8	50.4	45.2	43.3	
10:00 PM	45.7	62.1	38.4	52.8	48.5	45.5	43.4	
11:00 PM	43.9	62.7	37.3	49.2	45.9	44.4	42.6	
Daytime	49.3	76.4	36.2	56.8	52.9	48.8	45.0	
Nighttime	42.0	66.7	33.0	50.5	45.0	40.1	38.1	



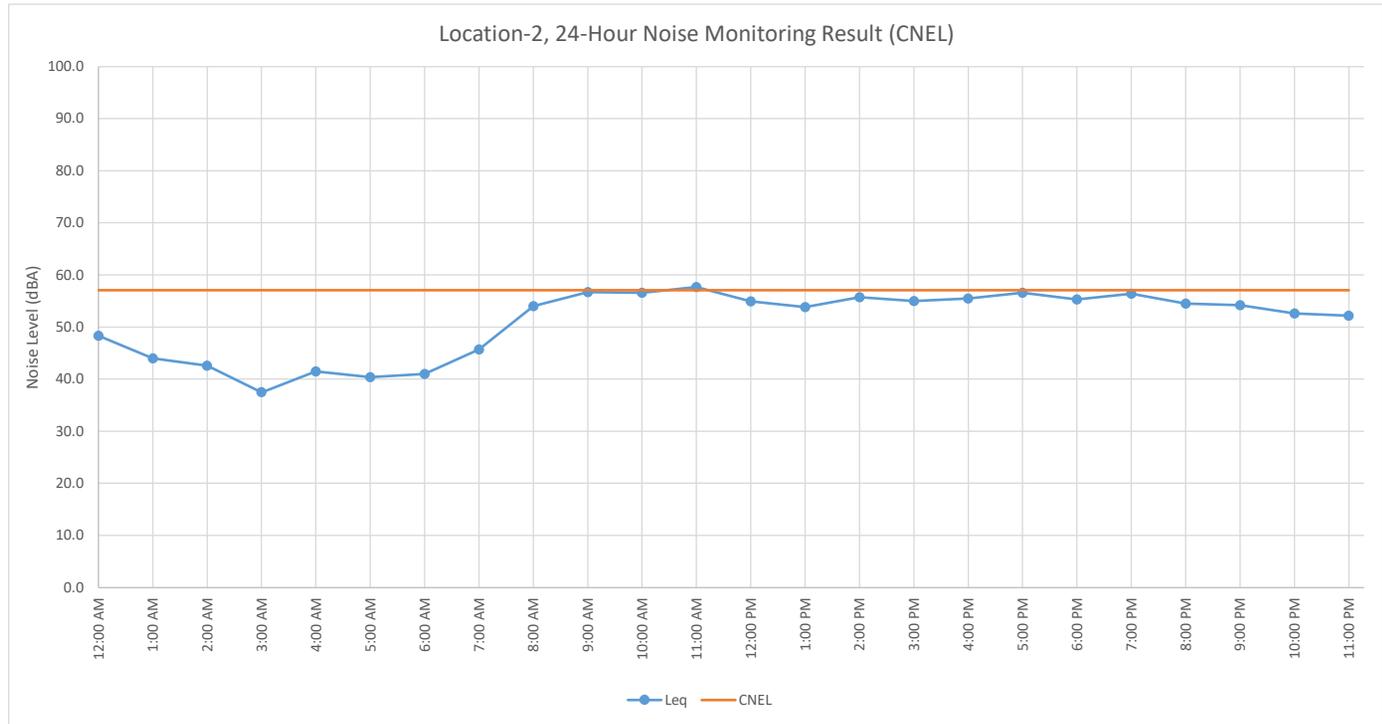
### Field Sheet - Noise Monitoring Location 2 Photo

<b>Project:</b> Ginkgo Stonehouse Residential Project <b>Engineer:</b> B. Morrison	<b>Date:</b> 11/6/2023 <b>JN:</b> 2389-2023-08
<b>Measurement Address:</b> 935 and 965 East Grand View Avenue <b>City:</b> Sierra Madre, CA	<b>Location No.:</b> 2
<b>Notes:</b> Noise Monitoring Location 2 (L-2) was taken near the southeast corner of the project site, approximately 45 feet north of the centerline of East Grand View Avenue.	

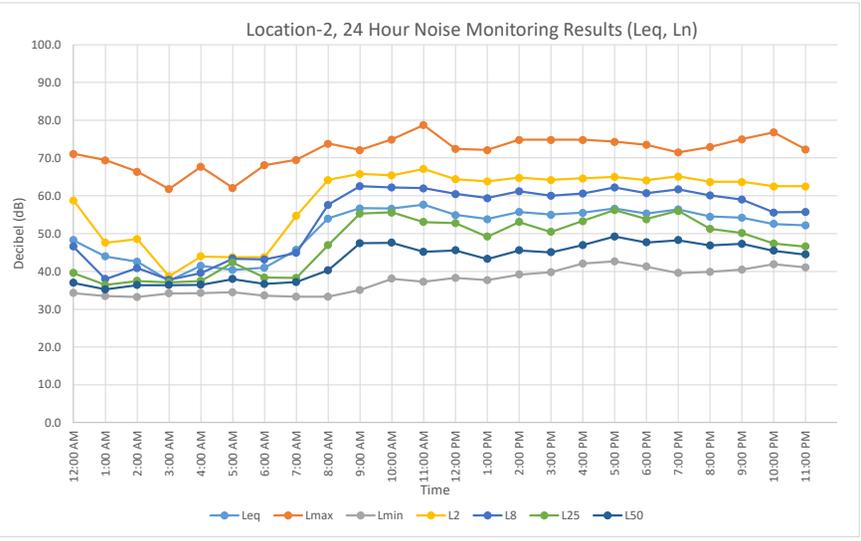


Time	Leq	CNEL
12:00 AM	48.3	57.1
1:00 AM	44.0	57.1
2:00 AM	42.6	57.1
3:00 AM	37.5	57.1
4:00 AM	41.5	57.1
5:00 AM	40.4	57.1
6:00 AM	41.0	57.1
7:00 AM	45.7	57.1
8:00 AM	54.0	57.1
9:00 AM	56.7	57.1
10:00 AM	56.6	57.1
11:00 AM	57.7	57.1
12:00 PM	54.9	57.1
1:00 PM	53.8	57.1
2:00 PM	55.7	57.1
3:00 PM	55.0	57.1
4:00 PM	55.5	57.1
5:00 PM	56.6	57.1
6:00 PM	55.3	57.1
7:00 PM	56.4	57.1
8:00 PM	54.5	57.1
9:00 PM	54.2	57.1
10:00 PM	52.6	57.1
11:00 PM	52.2	57.1

Day Min: 45.7  
Night Min: 37.5



PROJECT:	Ginkgo Stonehouse Residential Project						JOB #:	2389-2023-08
NOISE METER:	Piccolo II SLM, 24-Hour Measurement						DATE:	11/7/2023
LOCATION:	2						BY:	B. Morrison
Time	Leq	Lmax	Lmin	L2	L8	L25	L50	
12:00 AM	48.3	71.1	34.3	58.8	46.6	39.6	37.0	
1:00 AM	44.0	69.4	33.5	47.6	38.0	36.4	35.2	
2:00 AM	42.6	66.4	33.2	48.6	40.9	37.5	36.4	
3:00 AM	37.5	61.8	34.2	38.7	37.8	37.1	36.4	
4:00 AM	41.5	67.7	34.3	44.0	39.6	37.5	36.5	
5:00 AM	40.4	62.1	34.5	43.8	43.4	42.4	38.0	
6:00 AM	41.0	68.1	33.6	43.8	43.2	38.4	36.7	
7:00 AM	45.7	69.5	33.3	54.7	44.9	38.3	37.2	
8:00 AM	54.0	73.8	33.3	64.2	57.6	47.0	40.3	
9:00 AM	56.7	72.1	35.1	65.8	62.6	55.3	47.5	
10:00 AM	56.6	74.9	38.1	65.4	62.2	55.6	47.6	
11:00 AM	57.7	78.8	37.3	67.1	62.0	53.1	45.2	
12:00 PM	54.9	72.4	38.3	64.4	60.5	52.8	45.6	
1:00 PM	53.8	72.1	37.7	63.8	59.4	49.2	43.3	
2:00 PM	55.7	74.8	39.2	64.8	61.2	53.1	45.6	
3:00 PM	55.0	74.8	39.8	64.2	60.0	50.5	45.1	
4:00 PM	55.5	74.8	42.1	64.6	60.6	53.3	47.0	
5:00 PM	56.6	74.3	42.7	65.0	62.2	56.2	49.2	
6:00 PM	55.3	73.5	41.3	64.1	60.7	53.8	47.7	
7:00 PM	56.4	71.5	39.6	65.1	61.7	56.0	48.3	
8:00 PM	54.5	72.9	39.9	63.7	60.1	51.3	46.9	
9:00 PM	54.2	75.0	40.5	63.7	59.0	50.2	47.3	
10:00 PM	52.6	76.8	41.9	62.5	55.6	47.4	45.5	
11:00 PM	52.2	72.3	41.1	62.5	55.7	46.6	44.5	
Daytime	55.2	78.8	33.3	64.4	60.4	52.9	46.3	
Nighttime	46.0	72.3	33.2	55.4	47.9	41.0	38.8	



## **Appendix C**

Stationary Noise  
Calculation Worksheets

## NOISE BARRIER CALCULATIONS - BASED UPON FHWA - RD-77-108

PROJECT:	Ginkgo Stonehouse Residential Project	JOB #:	2389-2023-08
SOURCE:	HVAC Unit	DATE:	11/8/2023
LOCATION:	20 feet from noise source	BY:	B. Morrison

### NOISE INPUT DATA

OBS DIST=	20.0		
DT WALL=	0.0		
DT W/OB=	20.0		
HTH WALL=	0.0	*****	
BARRIER =	0.0	(0=WALL,1=BERM)	
OBS HTH=	5.0		
NOISE HTH=	4.0	BARRIER+	
OBS EL =	0.0	TOPO SHIELDING =	0.00
NOISE EL =	0.0	NOISE HTH EL=	4.0
DROP-OFF=	20.0	(20 = 6 dBA PER DOUBLING OF DISTANCE)	

### NOISE OUTPUT DATA (dBA)

	DIST (FT)	Leq	Lmax	L2	L8	L25	L50
REF LEVEL	1	75.0	91.9	84.7	82.5	78.6	71.5
PROJ LEVEL	20	49.0	65.9	58.7	56.5	52.6	45.5
SHIELDING	20	0.0	0.0	0.0	0.0	0.0	0.0
ADJ LEVEL	20	<b>49.0</b>	<b>65.9</b>	<b>58.7</b>	<b>56.5</b>	<b>52.6</b>	<b>45.5</b>

NOISE LEVEL REDUCTION DUE TO DISTANCE = -26.0205999

Project: Ginkgo Stonehouse Residential Project  
 Source: HVAC Unit  
 Location: 20 feet from noise source

Date: 11/8/2023  
 Job #: 2389-2023-08

**CNEL CALCULATIONS**

HOURLY LEQ	LEQ	HOURLY LEQ WEIGHTING	ADJUSTED HOURLY LEQ	10^ADJ HRLY LEQ/10
0000	49.0	10.0	59.0	794328.2347
0100	49.0	10.0	59.0	794328.2347
0200	49.0	10.0	59.0	794328.2347
0300	49.0	10.0	59.0	794328.2347
0400	49.0	10.0	59.0	794328.2347
0500	49.0	10.0	59.0	794328.2347
0600	49.0	10.0	59.0	794328.2347
0700	49.0	0.0	49.0	79432.82347
0800	49.0	0.0	49.0	79432.82347
0900	49.0	0.0	49.0	79432.82347
1000	49.0	0.0	49.0	79432.82347
1100	49.0	0.0	49.0	79432.82347
1200	49.0	0.0	49.0	79432.82347
1300	49.0	0.0	49.0	79432.82347
1400	49.0	0.0	49.0	79432.82347
1500	49.0	0.0	49.0	79432.82347
1600	49.0	0.0	49.0	79432.82347
1700	49.0	0.0	49.0	79432.82347
1800	49.0	0.0	49.0	79432.82347
1900	49.0	5.0	54.0	251188.6432
2000	49.0	5.0	54.0	251188.6432
2100	49.0	5.0	54.0	251188.6432
2200	49.0	10.0	59.0	794328.2347
2300	49.0	10.0	59.0	794328.2347
<b>CNEL (dBA):</b>				<b>55.7</b>

## **Appendix D**

Construction Noise and Vibration  
Calculation Worksheets

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/8/2023

Case Description: Ginkgo Stonehouse Residential Project

---- Receptor #1 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Demolition	Residential	45.7	45.7	45.7

Equipment

Description	Impact Device	Spec Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	100		89.6	165	0
Dozer	No	100		81.7	165	0

Results

Calculated (dBA)

Equipment	*Lmax	Leq
Concrete Saw	79.2	79.2
Dozer	71.3	71.3
Total	79.2	79.9

\*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/8/2023

Case Description: Ginkgo Stonehouse Residential Project

---- Receptor #1 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Site Preparation	Residential	45.7	45.7	45.7

Equipment

Description	Impact Device	Usage(%)	Spec	Actual	Receptor	Estimated
			Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Tractor	No	100	84	84	165	0
Tractor	No	100	84	84	165	0

Results

Calculated (dBA)

Equipment	*Lmax	Leq
Tractor	73.6	73.6
Tractor	73.6	73.6
Total	73.6	76.6

\*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/8/2023

Case Description: Ginkgo Stonehouse Residential Project

---- Receptor #1 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Grading	Residential	45.7	45.7	45.7

Equipment

Description	Impact Device	Usage(%)	Spec	Actual	Receptor Distance (feet)	Estimated Shielding (dBA)
			Lmax (dBA)	Lmax (dBA)		
Grader	No	100		85	165	0
Tractor	No	100		84	165	0

Results

Calculated (dBA)

Equipment	*Lmax	Leq
Grader	74.6	74.6
Tractor	73.6	73.6
Total	74.6	77.2

\*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/8/2023  
 Case Description: Ginkgo Stonehouse Residential Project

---- Receptor #1 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Building Construction	Residential	45.7	45.7	45.7

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	100		84	165	0
Tractor	No	100		84	165	0

Results

Calculated (dBA)

Equipment	*Lmax	Leq
Tractor	73.6	73.6
Tractor	73.6	73.6
Total	73.6	76.6

\*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/8/2023  
 Case Description: Ginkgo Stonehouse Residential Project

---- Receptor #1 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Paving	Residential	45.7	45.7	45.7

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Roller	No	100		80	165	0
Roller	No	100		80	165	0

Results

Calculated (dBA)

Equipment	*Lmax	Leq
Roller	69.6	69.6
Roller	69.6	69.6
Total	69.6	72.6

\*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/8/2023  
 Case Description: Ginkgo Stonehouse Residential Project

---- Receptor #1 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Architectural Coating	Residential	45.7	45.7	45.7

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	100		77.7	165	0

Results

Calculated (dBA)

Equipment	*Lmax	Leq
Compressor (air)	67.3	67.3
Total	67.3	67.3

\*Calculated Lmax is the Loudest value.

**VIBRATION IMPACTS FROM CONSTRUCTION AND OPERATIONS**

PROJECT:	Ginkgo Stonehouse Residential Project	JOB #:	2389-2023-08
ACTIVITY:	Vibration Impact Study	DATE:	10/27/2023
LOCATION:	Nearest adjacent structures	ENGINEER:	B. Morrison

**VIBRATION INPUT/OUTPUT DATA**

**OTHER CONSTRUCTION EQUIPMENT**

$$PPV = PPV_{ref}(25/D)^n \text{ (in/sec)}$$

**PPV = 0.053 in/sec**

Equipment Type =	2 Large Bulldozer
PPV <sub>ref</sub> =	0.089 Reference PPV at 25 ft.
D =	40.00 Distance from Equipment to receiver in ft.
n =	1.10 Vibration attenuation rate through the ground

EQUIPMENT PPV REFERENCE LEVELS		
Type	Equipment	Reference PPV
1	Vibratory Roller	0.210
2	Large Bulldozer	0.089
3	Caisson Drilling	0.089
4	Loaded Trucks	0.076
5	Jackhammer	0.035
6	Small Bulldozer	0.003
7	Crack and Seat	2.400

**VIBRATION IMPACTS FROM CONSTRUCTION AND OPERATIONS**

PROJECT: SEC Warren Road and Poplar Street  
 ACTIVITY: Vibration Impact Study  
 LOCATION: Nearest adjacent structures

JOB #: 3078-2022-02  
 DATE: 9/19/2023  
 ENGINEER: B. Morrison

**VIBRATION INPUT/OUTPUT DATA**

**OTHER CONSTRUCTION EQUIPMENT**

$$PPV = PPV_{ref}(25/D)^n \text{ (in/sec)}$$

PPV = **0.028 in/sec**

Equipment Type =	1 Vibratory Roller
PPV <sub>ref</sub> =	0.210 Reference PPV at 25 ft.
D =	158.00 Distance from Equipment to receiver in ft.
n =	1.10 Vibration attenuation rate through the ground

**EQUIPMENT PPV REFERENCE LEVELS**

Type	Equipment	Reference PPV
1	Vibratory Roller	0.210
2	Large Bulldozer	0.089
3	Caisson Drilling	0.089
4	Loaded Trucks	0.076
5	Jackhammer	0.035
6	Small Bulldozer	0.003
7	Crack and Seat	2.400

**VIBRATION IMPACTS FROM CONSTRUCTION AND OPERATIONS**

PROJECT: SEC Warren Road and Poplar Street  
 ACTIVITY: Vibration Impact Study  
 LOCATION: Nearest adjacent structures

JOB #: 3078-2022-02  
 DATE: 9/19/2023  
 ENGINEER: B. Morrison

**VIBRATION INPUT/OUTPUT DATA**

**OTHER CONSTRUCTION EQUIPMENT**

$$PPV = PPV_{ref}(25/D)^n \text{ (in/sec)}$$

PPV = **0.045 in/sec**

Equipment Type =	4 Loaded Trucks
PPV <sub>ref</sub> =	0.076 Reference PPV at 25 ft.
D =	40.00 Distance from Equipment to receiver in ft.
n =	1.10 Vibration attenuation rate through the ground

EQUIPMENT PPV REFERENCE LEVELS		
Type	Equipment	Reference PPV
1	Vibratory Roller	0.210
2	Large Bulldozer	0.089
3	Caisson Drilling	0.089
4	Loaded Trucks	0.076
5	Jackhammer	0.035
6	Small Bulldozer	0.003
7	Crack and Seat	2.400