

**Noise Analysis for 36017  
Calico Rd Yermo, CA 92398**



**Prepared for:**  
Tesla Inc.

**Prepared by:**  
Elevated Entitlements LLC  
280 E Thousand Oaks Blvd. #H  
Thousand Oaks, CA 91360

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## **1.0 INTRODUCTION**

Tesla Inc is proposing to build a new Tesla supercharging station. The proposed supercharging station is the development of a 500 superchargers project on a 12.46-acre property located at 4875 Spring Road in Moorpark, California. The site spans one parcel numbered 0537-161-19. The existing project site comprises the following: vacant undeveloped land. This project proposes construction of a new Tesla supercharger parking lot, new landscaping, new commercial buildings and a zone change.

Land uses on the Project site and surrounding parcels are governed by the County of San Bernardino General Plan/Development Code. The subject site does not fall within an overlay zone. The current zoning of this property RL (Rural Living). The General Plan Single Family Residential. A supercharging station is not permitted in this zone.

The project site is bordered by Calico Boulevard to the North and Dividing Line Street to the East. To the north of the property there lays vacant land zoned Rural Living. To the south of the property is a single-family housing community zoned RS-10M (Single Family Residential – 10,000). To the east of the property is vacant RS-10M and RL zone. And to the west of the property is commercial zoned CH (Highway Commercial).

### **1.1 PURPOSE**

The purpose of this technical noise analysis is to analyze the potential noise impacts associated with construction and operation of the proposed Supercharging station. This study describes the existing noise conditions at the proposed project site, the regulatory setting, and the potential impacts of the proposed project. Sources of information used for the preparation of this technical study included data from the County of San Bernardino Municipal Code and County of San Bernardino General Plan Noise Element.

Figure 1 Project Vicinity Map

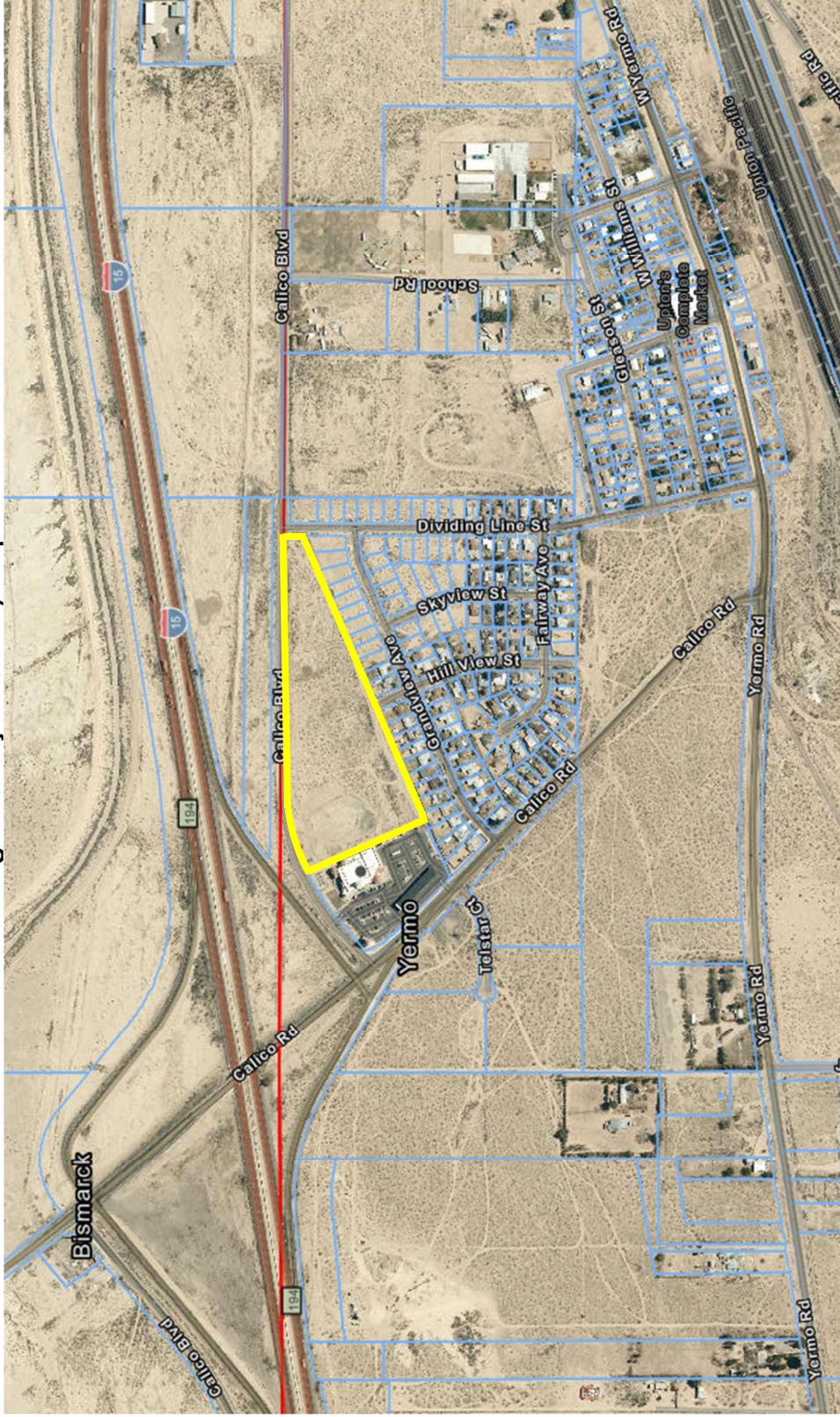
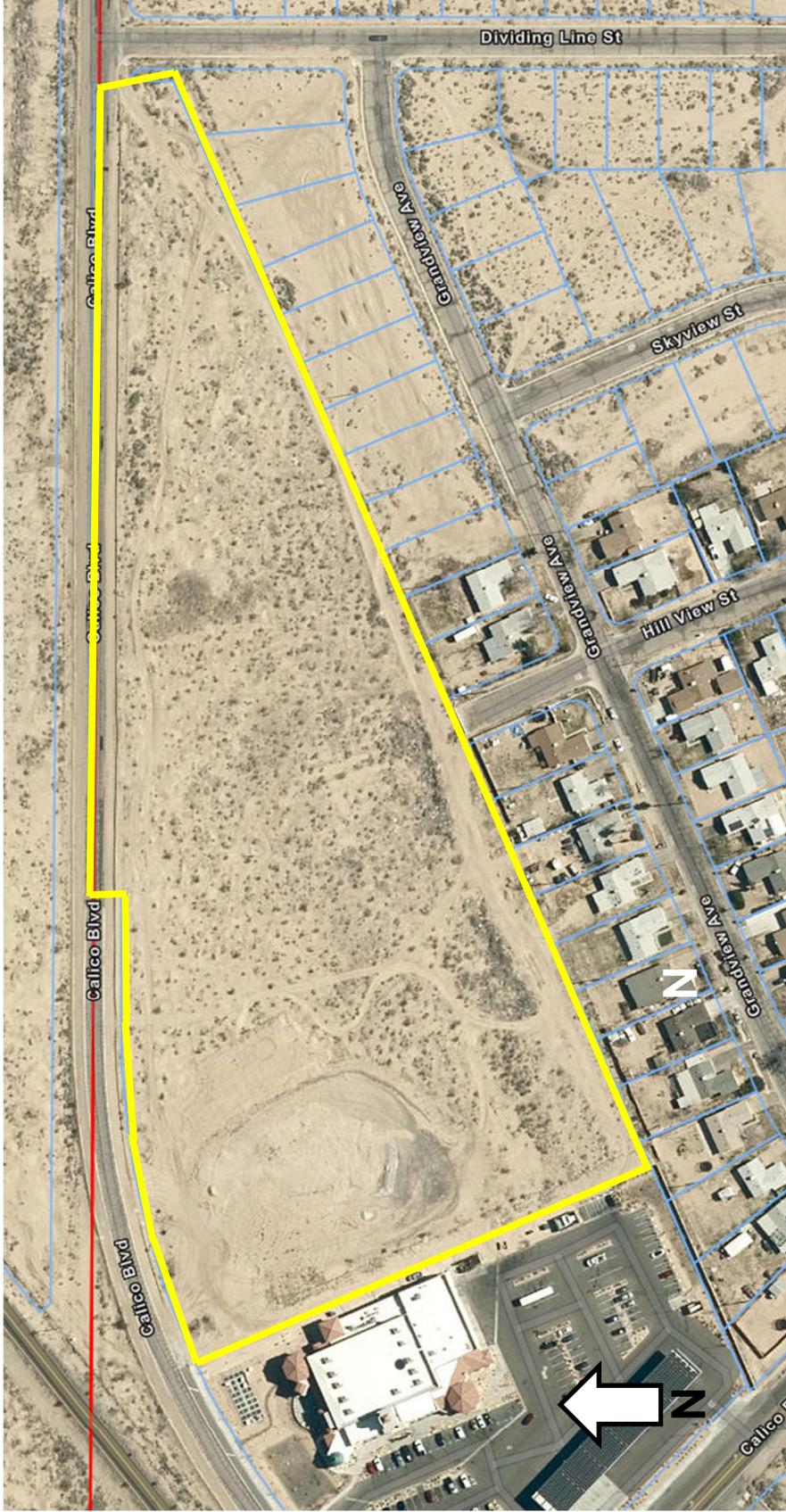


Figure 2 Project Location Map





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## **2.0 TERMINOLOGY AND FUNDAMENTALS OF ENVIRONMENTAL ACOUSTICS**

The decibel (dB) is the preferred unit used to measure sound levels utilizing a logarithmic scale to account for large range in audible sound intensities. A general rule for the decibel scale is that a 10-dB increase in sound is perceived as a doubling of loudness by the human ear. For example, a 55 dB sound level will sound twice as loud as a 45 dB sound level. The average healthy person cannot detect differences of 1 dB whereas a 5 dB change is clearly noticeable.

Several sound measurement descriptors are used to assess the effects of sound on the human environment. These include the equivalent sound level,  $L_{eq}$ , which is the level of a constant sound that has the same sound energy as the actual fluctuating sound. It is similar to the average sound level. The day-night sound level,  $L_{dn}$ , is similar to the 24-hour  $L_{eq}$  except that a 10 dB penalty is added to sound levels between 10 p.m. and 7 a.m. to account for the greater sensitivity of people to sound at night. The Community Noise Equivalent Level (CNEL) also places a weighted factor on sound events occurring in the evening hours. The  $L_{90}$  value is the sound level (L) that is exceeded 90 percent of the time and is often used to describe the background or residual sound level. Each of these sound level descriptors is found within the Municipal Codes and/or General Plans for each of the cities, describing noise regulation or policy.

Acoustics is defined as the science of sound, including the generation, transmission, and effects of sound waves, both audible and inaudible. Noise, on the other hand, is generally defined as loud, unpleasant, unexpected, or undesired sound that disrupts or interferes with normal human activities. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The objectionable nature of sound is caused by its pitch or loudness. Pitch is the height or depth of a tone or sound wave, depending on the relative rapidity (frequency) of the sound 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 is a measure of the amplitude or height of the sound wave. Frequency describes the sound's pitch and is measured in Hertz (Hz), while intensity describes the sound's loudness and is measured in dB.

The dB is the preferred unit for measuring sound that indicates the relative amplitude (height) of a particular sound wave. The zero (0) on the decibel scale is based on the lowest sound level that a healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic scale. Thus, an increase of 10 dB represents a ten-fold increase in acoustic energy, while a 20 dB increase is 100 times more intense, and a 30 dB increase is 1,000 times more intense. There is a direct relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10-dB increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. The A-weighted decibel (dBA) is a method of sound measurement which assigns weighted values to selected frequency bands in an attempt to reflect how the human ear responds to sound. The range of human hearing is from 0 dBA (the threshold of hearing) to about 140 dBA which is the threshold of pain. In general, a 3 to 5 dBA change in community noise levels starts to become noticeable, while 1 to 2 dBA changes are generally not perceived. Quiet suburban areas typically have noise levels in the range of 40–50

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dBa, while those along arterial streets are in the 50–60 dBA or greater range. Normal conversational levels are in the 60–65 dBA ranges.

In addition to the actual instantaneous measurements of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. To analyze the overall noise levels in an area, noise events are combined for an instantaneous value or averaged over a specific time period. The time-weighted measure is referred to as equivalent sound level and represented by energy equivalent sound level (Leq). The percentage of time that a given sound level is exceeded also can be designated as L10, L50, and L90. The subscript denotes the percentage of time that the noise level was exceeded during the measurement period. Namely, an L10 indicates the sound level is exceeded 10 percent of the time and is generally taken to be indicative of the highest noise levels experienced at the proposed project site. The L90 is that level exceeded 90 percent of the time and this level is often called the base level of noise at a location. The L50 sound (that level exceeded 50 percent of the time) is frequently used in noise standards and ordinances.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within  $\pm 1$  dBA. The data is then imported into computer sound models. These computer models are used to predict environmental noise levels from sources such as roadways and airports over a given area using equal sound level contours. The accuracy of the predicted models depends upon the distance the receptor is from the noise source and natural attenuation caused by structures and other sound barriers. The closer to the noise source, the greater is the model's accuracy ( $\pm 1-2$  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 that are added to quiet-time noise events. The Community Noise Equivalent Level (CNEL) is a measure of the cumulative noise exposure in a community during a 24-hour period. The Day/Night Average Sound Level (Ldn) 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. The measurement of any sound level requires language used specifically for the measurement of acoustical conditions. Table 1 defines technical terms that are used in this document.

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**Table 1 Definitions of Acoustical Terms**

| Terms                                  | Definitions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| dB, Decibel                            | Unit of measurement of sound level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| dBA, decibel A-Weighted                | A unit of measurement of sound level corrected to the A-weighted scale, as defined in ANSI S1.4-1971 (R1976), using a reference level of 20 micropascals (0.00002 Newtons per square meter).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| A – Weighted Scale                     | A sound measurement scale, which corrects the pressures of individual frequencies according to human sensitivities. The scale is based upon the fact that the region of highest sensitivity for the average ear is between 2,000 and 4,000 Hz. Sound levels are measured on a logarithmic scale in decibels, dB. The universal measure for environmental sound is the A-weighted sound level, dBA.                                                                                                                                                                                                                                                                                                                                                                                            |
| Hz, Hertz                              | Unit of measurement of frequency, numerically equal to cycles per second.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Loudness                               | A listener's perception of sound pressure incident in his ear.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| L01, L10, L50, L90                     | The A-weighted noise levels that are exceeded 1 %, 10 %, 50 %, and 90 % of the time during the measurement period.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Leq, Equivalent Noise Level            | Also called the equivalent continuous noise level. It is the continuous sound level that is equivalent, in terms of noise energy content, to the actual fluctuating noise existing at the location over a given period, usually one hour. Leq is usually measured in hourly intervals over long periods in order to develop 24-hour noise levels.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| CNEL, Community Noise Equivalent Level | The CNEL is a measure of the cumulative noise exposure in the community, with greater weights applied to evening and nighttime periods. This noise descriptor is the equivalent noise level over a 24-hour period mathematically weighted during the evening and night when residents are more sensitive to intrusive noise. The daytime period is from 7:00 a.m. to 7:00 p.m.; evening from 7:00 p.m. to 10:00 p.m.; and nighttime from 10:00 p.m. to 7:00 a.m. A weighting factor of 1 dB is added to the measured day levels defined as 7 a.m. to 7 p.m., evening levels (7 p.m. to 10 p.m.) have a weighting factor of three and 10 dB to the nighttime levels (10 p.m. to 7 a.m.). The weighted levels over a 24-hour period are then averaged to produce the single number CNEL rating. |
| Ldn, Day/Night Noise Level             | The same as CNEL except that the evening time period is not considered separately, but instead it is included as part of the daytime period. Measurements of both CNEL and Ldn in the same residential environments reveal that CNEL is usually slightly higher (by less than 1 dB) than Ldn due to the evening factor weighting.                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Lmin, Lmax                             | The minimum and maximum A-weighted noise level during the measurement period.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

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## **3.0 REGULATORY SETTING**

### **3.1 COUNTY OF SAN BERNARDINO GENERAL PLAN NOISE ELEMENT**

The County of San Bernardino Noise Element (adopted 2007) is a set of policies and programs put in place by local governments to protect community residents from excessive noise levels. To achieve this, the element requires local governments to analyze and quantify noise levels through actual measurement or the use of noise modeling. The gathered technical data on mobile and point sources are used to create a set of noise control policies and programs that minimize community exposure to excessive noise. Noise-level contours are mapped, and the conclusions of the element used as a basis for land use decisions, specifically guiding decisions concerning the location of new roads and transit facilities. The Noise Background Report provides a wealth of technical data that includes generalized estimates of distances to noise contours for typical traffic volumes on County roadways, and it is the major source for this information. Most common sources of environmental noise in San Bernardino County are associated with roads, airports, railroad operations, and industrial activities. The facilities are used to transport residents, consumer products and provide basic infrastructure for the community by creating jobs and economic stability. In many areas of the County, noise-sensitive land uses such as residences, schools, churches, and parks exist in proximity to these major noise sources. The county has implemented regulations for noise from land development and construction projects and has identified traffic and rail noise as major contributors to excessive noise levels in some areas of the county.

### **3.2 COUNTY OF SAN BERNARDINO NOISE ORDINANCE**

The County of San Bernardino Noise Abatement and Control Ordinance, located in Chapter 7, regulates noise levels in the city. Section 24.0705 of the County code prohibits any person or property owner within the County from making, causing, or allowing a noise that would be considered disturbing, excessive, or offensive to a reasonable person. This includes, but is not limited to, yelling, shouting, hooting, whistling, singing, playing a musical instrument, or emitting loud music or noise from audio equipment or sound amplifying equipment.

In determining whether a noise violates this section, various factors are taken into account such as the level of the noise, the level and intensity of background noise, proximity of the noise to residential or commercial sleeping areas, nature and zoning of the area, density of habitation in the area, time of day or night the noise occurs, duration of the noise, frequency of the noise, and origin of the noise. The enforcement authority also considers whether the noise is from a commercial or noncommercial activity in making the determination.

Furthermore, Section 24.0706 of the local code addresses special sound source standards, which outline additional restrictions on certain types of noise in addition to the general sound level limits outlined in section 24.0704 and the prohibition on disturbing, excessive, or offensive noise outlined in section 24.0705. These special sound sources are subject to additional standards in order to protect the reasonable expectation of peace and quiet during certain hours of the evening and early morning.

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The section lays out specific restrictions for four types of special sound sources: audio equipment, sound amplifying equipment and live music, power tools and equipment, and construction activity. For audio equipment and sound amplifying equipment, the code states that it is prohibited to operate or allow the operation of such equipment between the hours of 10:00 p.m. and 7:00 a.m., if the equipment can be plainly heard inside an occupied dwelling other than the dwelling where the equipment is located. For power tools and equipment and construction activity, the code states that operation of such equipment is prohibited between the hours of 10:00 p.m. and 7:00 a.m. (with the exception of emergency work) if it can be plainly heard inside an occupied dwelling other than the dwelling where the equipment is located.

| <b>Noise Standards for Stationary Noise Sources</b>                                                                                                                                                                                                                                                                                                        |                                   |                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|
| <b>Affected Land Uses (Receiving Noise)</b>                                                                                                                                                                                                                                                                                                                | <b>7:00 a.m. - 10:00 p.m. Leq</b> | <b>10:00 p.m. - 7:00 a.m. Leq</b> |
| Residential                                                                                                                                                                                                                                                                                                                                                | 55 dB(A)                          | 45 dB(A)                          |
| Professional Services                                                                                                                                                                                                                                                                                                                                      | 55 dB(A)                          | 55 dB(A)                          |
| Other Commercial                                                                                                                                                                                                                                                                                                                                           | 60 dB(A)                          | 60 dB(A)                          |
| Industrial                                                                                                                                                                                                                                                                                                                                                 | 70 dB(A)                          | 70 dB(A)                          |
| Leq = (Equivalent Energy Level). The sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period, typically one, eight or 24 hours.                                                                                                                                       |                                   |                                   |
| dB(A) = (A-weighted Sound Pressure Level). 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, placing greater emphasis on those frequencies within the sensitivity range of the human ear. |                                   |                                   |
| Ldn = (Day-Night Noise Level). The average equivalent A-weighted sound level during a 24-hour day obtained by adding 10 decibels to the hourly noise levels measured during the night (from 10:00 p.m. to 7:00 a.m.). In this way Ldn takes into account the lower tolerance of people for noise during nighttime periods.                                 |                                   |                                   |

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| <b>Noise Standards for Adjacent Mobile Noise Sources</b>                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                          |                                |                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------|--------------------------------|
| <b>Land Use</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                          | <b>Ldn (or CNEL) dB(A)</b>     |                                |
| <b>Categories</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Uses</b>                                                              | <b>Interior <sup>(1)</sup></b> | <b>Exterior <sup>(2)</sup></b> |
| Residential                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Single and multi-family, duplex, mobile homes                            | 45                             | 60 <sup>(3)</sup>              |
| Commercial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Hotel, motel, transient housing                                          | 45                             | 60 <sup>(3)</sup>              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Commercial retail, bank, restaurant                                      | 50                             | N/A                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Office building, research and development, professional offices          | 45                             | 65                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Amphitheater, concert hall, auditorium, movie theater                    | 45                             | N/A                            |
| Institutional/Public                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Hospital, nursing home, school classroom, religious institution, library | 45                             | 65                             |
| Open Space                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Park                                                                     | N/A                            | 65                             |
| <b>Notes:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                          |                                |                                |
| (1) The indoor environment shall exclude bathrooms, kitchens, toilets, closets and corridors.                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                          |                                |                                |
| (2) The outdoor environment shall be limited to: <ul style="list-style-type: none"> <li>· Hospital/office building patios</li> <li>· Hotel and motel recreation areas</li> <li>· Mobile home parks</li> <li>· Multi-family private patios or balconies</li> <li>· Park picnic areas</li> <li>· Private yard of single-family dwellings</li> <li>· School playgrounds</li> </ul>                                                                                                                  |                                                                          |                                |                                |
| (3) An exterior noise level of up to 65 dB(A) (or CNEL) shall be allowed provided exterior noise levels have been substantially mitigated through a reasonable application of the best available noise reduction technology, and interior noise exposure does not exceed 45 dB(A) (or CNEL) with windows and doors closed. Requiring that windows and doors remain closed to achieve an acceptable interior noise level shall necessitate the use of air conditioning or mechanical ventilation. |                                                                          |                                |                                |
| CNEL = (Community Noise Equivalent Level). The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night from 10:00 p.m. to 7:00 a.m.                                                                                                                                                                                     |                                                                          |                                |                                |

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### **3.3 STATE STANDARDS AND REGULATIONS**

California encourages each local government to perform noise studies and implement a noise element as part of their general plan. Standards and implementation are administered by the California Department of Industrial Relations' Division of Occupational Safety and Health (Cal-OSHA), which are based on the USEPA occupational guidelines to protect the hearing of workers.

According to Cal/OSHA, the standard is set at the noise threshold where hearing loss may occur from long-term exposures. The maximum allowable level is 90 dBA averaged over an eight (8)-hour time period. SB 4 Section 2, Article 3, Section 3160(a)(4) requires that operators consider, among several other items, potential noise pollution.

### **3.4 FEDERAL STANDARDS AND REGULATIONS**

Federal regulations safeguard the hearing of workers exposed to occupational noise, enforced by OSHA (e.g. 29 CFR 1919.120). For example, it is unlawful for employees to be exposed to noise levels in excess of 115 dBA for more than 15 minutes during any working day. The USEPA has developed guidelines on recommended maximum noise levels to protect public health and welfare (U.S. EPA, 1978). The USEPA identifies a 24-hour exposure level of 70 dBA as the level of environmental noise which will prevent any measurable hearing loss over a lifetime. Likewise, levels of 55 dBA outdoors and 45 dBA indoors are identified as activity interference and annoyance (USEPA, 1978).

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## **4.0 ENVIRONMENTAL SETTING**

### **4.1 AFFECTED NOISE ENVIRONMENT**

Some land uses are recognized as being more sensitive than others to noise levels and vibration. Residences, motels and hotels, schools, libraries, houses of worship, hospitals, nursing homes, auditoriums, parks, and outdoor recreation areas are generally more sensitive to noise and vibration than are business, park, and commercial land uses. Existing land uses surrounding the project site include: single-family residential to the south and south-east also, commercial uses to the west. All areas to the north and east are vacant land.

The primary noise source affecting sensitive receptors (single-family residences) in the area are mobile traffic sources generated by street traffic especially along Calico Road, the 15 Mojave Freeway and commercial noise from businesses north of the project site. Sources of noise from vehicles including tire squealing, car engine acceleration during pass-bys and truck engines or backup warnings during deliveries may also affect sensitive receptors to the south of the project site.

The existing ambient noise environment in the project area is described in the County of San Bernadino General Plan "Policy Map HZ-7B Existing Noise Contours - North Desert Region, Victor Valley & Barstow". The project site is bounded by Calico Road and Calico Blvd and existing noise contours are represented below in Table 2: Existing Noise Contours. Roadway noise levels at 100 feet from the centerline of Calico Road are 60 dBA to 65 dBA CNEL, which is conditionally acceptable near a commercial zone.

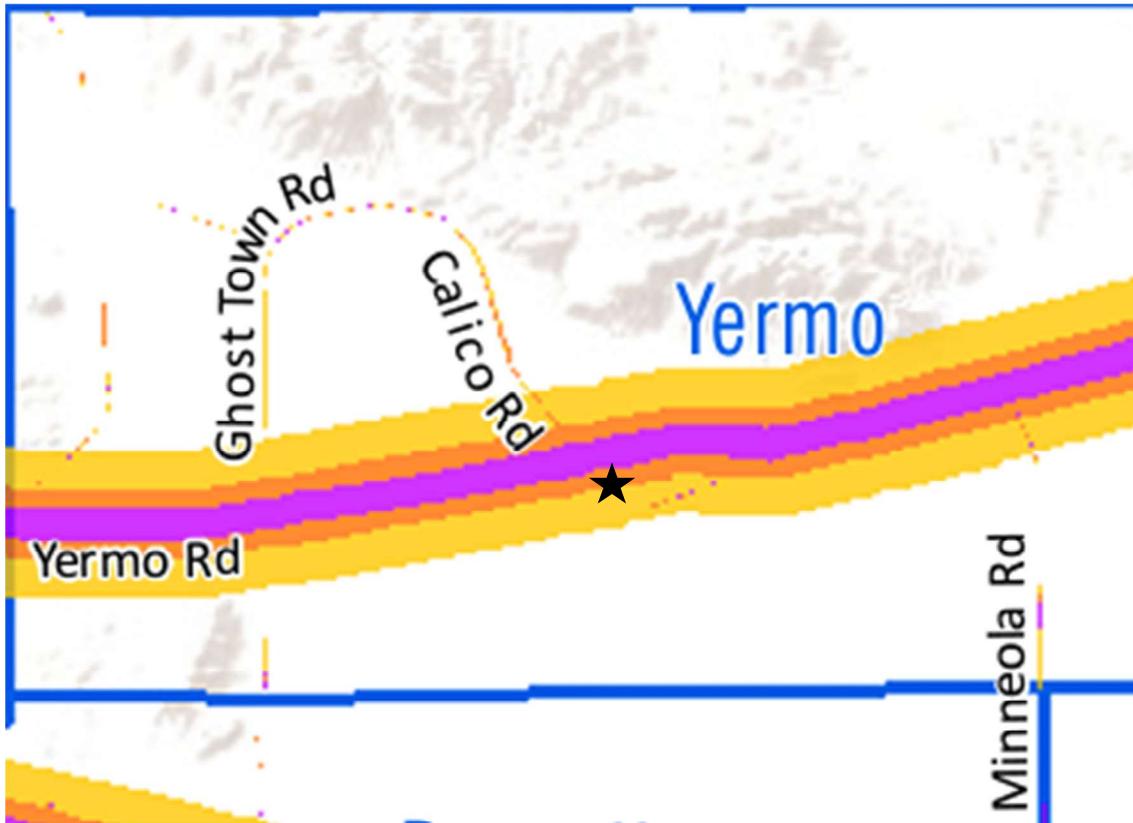
**Table 2 Existing Noise Contours**

| <b>Roadway</b> | <b>Segment</b>   | <b>CNEL @ 100' from Centerline</b> |
|----------------|------------------|------------------------------------|
| Calico Road    | Calico Road/I-15 | 60-65 dBA                          |

*\* Data source: County of San Bernadino General Plan Noise Contour Map*

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**Policy Map HZ-7B Existing Noise Contours | North Desert Region, Victor Valley & Barstow From 7/2/2020**



Existing Noise Contour

- 70 dBA CNEL
- 65 dBA CNEL
- 60 dBA CNEL

★ Proposed Project Site

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## **4.2 SENSITIVE RECEPTORS**

Sensitive receptors, single-family residences to the south are located within areas that could be potentially impacted by noise generated by the proposed project (See Figure 4). However, the project will implement the construction of a block wall, landscaping and building will be setback from the property line to cut down on potential noise once construction is complete. Current land uses located within the area that are sensitive to intrusive noise include residential uses (particularly those in the vicinity of the 15 Freeway and the Union Pacific Railroad), schools, hospitals, churches, and parks. According to the County of San Bernardino General Plan 2022, the noise standards state that residential uses are normally unacceptable in areas where the ambient noise levels exceed 70 dB CNEL; and residential uses are conditionally acceptable in areas where the ambient noise level ranges between 55-70 dB CNEL. Schools, libraries, churches, hospitals, and nursing homes are treated as noise-sensitive land uses requiring acoustical studies within areas exceeding 70 dB CNEL (City of Moorpark General Plan).

Project-related noise sources could potentially come from on-site parking that serves as loading/unloading areas. No other significant noise sources, such as public outdoor PA systems, were noted at the conceptual site plan. The on-site parking is primarily located off Spring street to the east and the floodway to the south which will also shield noise from vehicles from the surrounding single family residential communities.

### **4.2.1.1 Proposed Construction Noise**

All construction activity would be conducted in accordance with the permissible hours of construction as stated in the County of San Bernadino Municipal Code (Code). Notwithstanding compliance with the Code, construction noise levels would result in a temporary and intermittent increase in ambient noise levels throughout the duration of the construction period. Construction of the Project would require the use of heavy equipment for paving and building construction. During construction there would be a different mix of equipment operating and noise levels would vary based on the amount of equipment in operation and the location of each activity.

As shown in Table 3, below, typical construction noise can reach 86 dBA Leq when measured at a reference distance of 50 feet from the center of construction activity. These noise levels would diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. For example, a noise level of 84 dBA Leq measured at 50 feet from the noise source to the receptor would reduce to 78 dBA Leq at 100 feet from the source to the receptor, and reduce by another 6 dBA Leq to 72 dBA Leq at 200 feet from the source to the receptor.

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**Table 3 Typical Outdoor Construction Noise Levels**

| <b>Construction Phase</b> | <b>Noise Levels at 50 Feet with Mufflers (dBA Leq)</b> | <b>Noise Levels at 60 Feet with Mufflers (dBA Leq)</b> | <b>Noise Levels at 100 Feet with Mufflers (dBA Leq)</b> | <b>Noise Levels at 200 Feet with Mufflers (dBA Leq)</b> |
|---------------------------|--------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| Ground Clearing           | 82                                                     | 80                                                     | 76                                                      | 70                                                      |
| Excavation, Grading       | 86                                                     | 84                                                     | 80                                                      | 74                                                      |
| Foundations               | 77                                                     | 75                                                     | 71                                                      | 65                                                      |
| Structural                | 83                                                     | 81                                                     | 77                                                      | 71                                                      |
| Finishing                 | 86                                                     | 84                                                     | 80                                                      | 74                                                      |

*Source: United States Environmental Protection Agency, Noise from Construction Equipment and Operations, Building Equipment and Home Appliances, PB 206717, 1971.*

The nearest sensitive receptor that would be subject to construction noise impacts include the single-family residential uses which abut the project site. Construction noise impacts would be mitigated to less than significant levels with implementation of the following mitigation measures.

**Mitigation Measures**

**NOISE-1:** Construction activities shall be scheduled so as to avoid operating several pieces of equipment simultaneously, which causes high noise levels. The Project contractor shall use power construction equipment with state-of-the-art noise shielding and muffling devices to the extent feasible.

**NOISE-2:** Noise and ground borne vibration construction activities whose specific location on the site may be flexible (e.g., operation of compressors and generators, cement mixing, general truck idling) shall be conducted as far as possible from the nearest noise- and vibration-sensitive land uses, and natural and/or manmade barriers (e.g., intervening construction trailers) shall be used to screen propagation of noise from such activities towards these land uses to the maximum extent possible.

**NOISE-3:** A construction site notice shall be provided that includes the job site address, permit number, name and phone number of the contractor and owner or owner’s agent, hours of construction allowed by code, and City telephone numbers where violations can be reported. The notice shall be posted and maintained at the construction site prior to the start of construction and displayed in a location that is readily visible to the public.

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**4.2.1.2 Operational Noise Impacts**

Once operational, the dominant sources of operational noise during project operation would include cars entering and leaving the property on Calico Blvd and Calico Rd, and loading and unloading activities for the drive throughs and commercial buildings. Other potential noise sources would include landscaping maintenance, conversations the parking lot, vehicle doors closing, and car alarms. Activities that typically occur in parking lots can generate noise levels of between 49 dBA (tire squeals) and 74 dBA (car alarms) at 50 feet from the noise source. The project is currently separated from the noise sensitive residential uses to the south of the project site with a six-foot retaining wall spanning the length of the active Tesla Supercharging station (Figure 4). Throughout the rest of the southern property line there is no current retaining wall surrounding the single-family households. Operational noise impacts would be mitigated to less than significant levels with implementation of the following mitigation measures.

**Mitigation Measures**

- NOISE-4:** Expand the existing 6 foot black wall to span the length of the existing single family homes.
- NOISE-5:** Incorporate a vegetation buffer between the existing sensitive uses and the parking lot.
- NOISE-6:** Restrict the parking lot entrance to the northern lot line fronting Calico Blvd.

**Figure 4: Sensitive Noise receptors**



-  Sensitive Noise receptors (Single Family Homes)
-  Existing 6 Foot Block Wall



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## **5.0 CONCLUSION**

Overall, the project noise levels would be in compliance with the County of San Bernadino Municipal Code and the Noise Element of the General Plan. Construction of the Project would not involve blasting operations, pile drivers, or large-scale demolition. City noise standards limits construction hours. As a standard condition of approval, all onsite construction equipment would have properly operating mufflers and the applicant would utilize the quietest equipment available. Compliance with these construction measures would limit surrounding exposure to construction noise to less than significant levels. Furthermore, incorporating a 6-foot block wall, a vegetation buffer and restricting access to only the northern property line would reduce the operation noise impacts. These conclusions and recommendations are based on the most up-to-date, Project-related information available.

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## **6.0 REFERENCES**

Public San Bernardino County Map Viewer

<https://sbcountry.maps.arcgis.com/apps/MapSeries/index.html?appid=f5a50c44766b4c36a3ae014497aa430d>

County of San Bernadino General Plan.

<https://lus.sbcountry.gov/planning-home/general-plan/>

County of San Bernadino Municipal Code.

[https://codelibrary.amlegal.com/codes/sanbernardino/latest/sanbernecty\\_ca/0-0-0-166578](https://codelibrary.amlegal.com/codes/sanbernardino/latest/sanbernecty_ca/0-0-0-166578)