Initial Study/Mitigated Negative Declaration

Alta Cuvee Mixed Use Project

APPENDIX H
NOISE AND VIBRATION IMPACTS ASSESSMENT

Technical Memorandum

TO: AECOM
c/o Kathalyn Tung, AICP

FROM: Terry A. Hayes Associates Inc.

DATE: August 13, 2021

RE: Noise and Vibration Impacts Assessment for the Alta Cuvee Mixed Use Project

SUMMARY

The purpose of this Technical Memorandum is to evaluate potential noise and vibration impacts in accordance with California Environmental Quality Act (CEQA) requirements for the Alta Cuvee Mixed Use Project (proposed project). The proposed Project would not result in a significant noise or vibration impact in the context of the Appendix G Environmental Checklist criteria of the CEQA Guidelines during construction or operational activities.

PROJECT DESCRIPTION

The proposed Project involves the construction of an apartment community with two four-story, 260-unit buildings located at 12901-12939 Foothill Boulevard in the City of Rancho Cucamonga. The Project site is bound by Foothill Boulevard, a vacant lot, and condominiums to the north; Etiwanda Avenue and a shopping center to the west; and residential single-family homes to the south and east. The 5.56-acre vacant and undeveloped site is comprised of two parcels (Assessor's Parcel Numbers (APN) 0229-311-14 and 0229-311-15). **Figures 1** and **2** show the Regional Location and the Project Location, respectively. **Figure 3** illustrates the Site Plan.

The proposed Project would include two four-story buildings with 259 apartments units and one live-work units. The center of the west building would have a courtyard with a pool and spa, and the center of the east building would have a courtyard. The proposed Project would also include commercial space totaling 3,339 square feet. Vehicular access to the Project site would be provided off Etiwanda Avenue and along eastbound Foothill Boulevard. Both locations would provide access to the surface parking area and to the south-facing entrance/exit of the subterranean garage. The proposed Project would provide 465 total parking spaces: 200 surface parking spaces and 265 garage parking spaces. The proposed Project would also construct an 11-foot wide and 62-foot long bus bay on eastbound Foothill Boulevard to accommodate the Omnitrans Transit Agency's bus transit Route 66 and other potential future bus service.

Figure 1: Regional Location

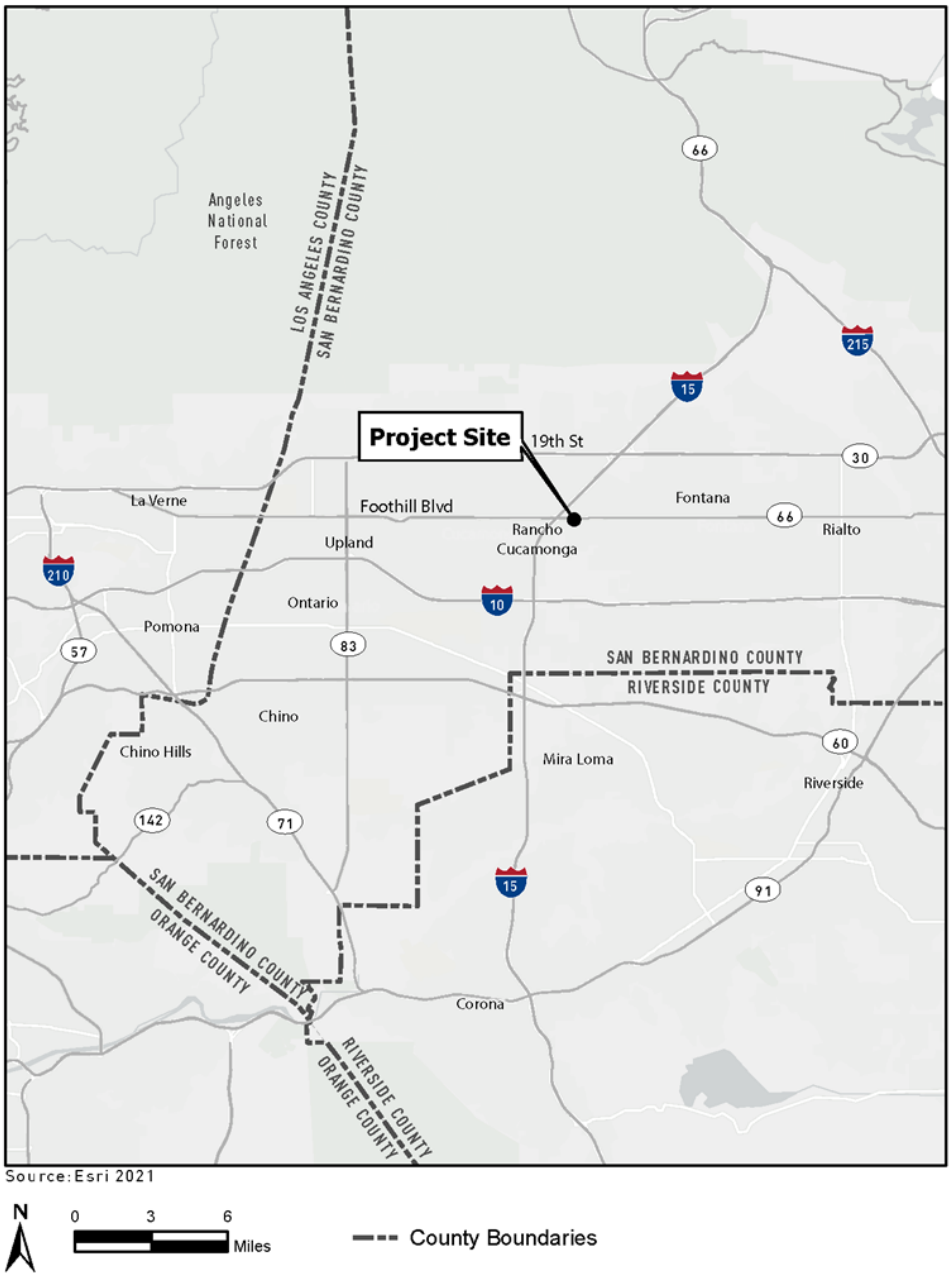
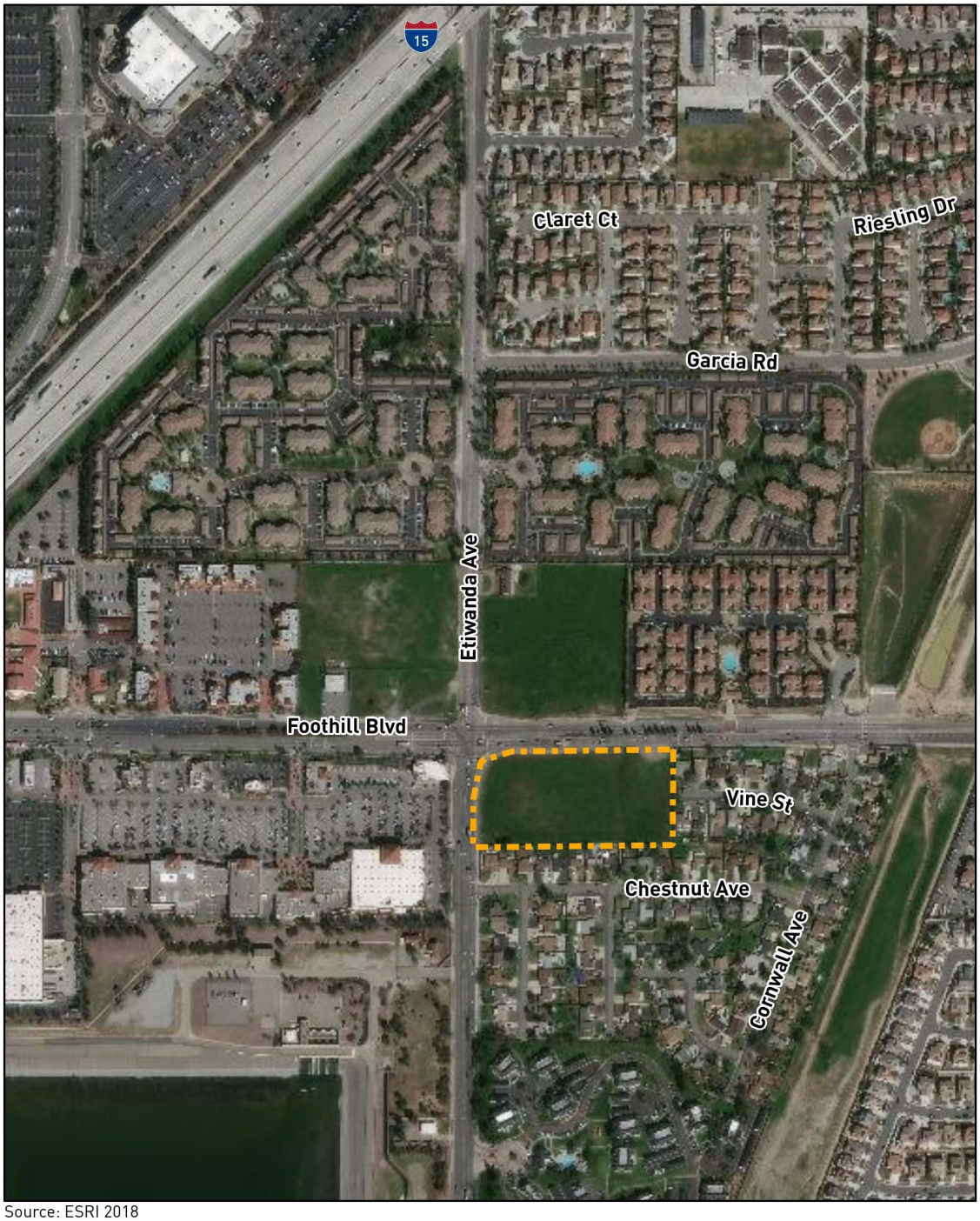


Figure 2: Project Location



Source: ESRI 2018

N

0 400 800 Feet

Project Site

Figure 3: Site Plan

Construction of the proposed Project is anticipated to begin in March 2022 and take approximately 24 months to complete, concluding in early 2024. Construction activities would occur Monday through Saturday from 7:00 a.m. to 7:00 p.m. The construction period would include excavation and grading activities, installation of building foundations and utilities, and installation of landscaping and hardscape elements. Approximately, 52,010 cubic yards of material would be excavated as part of the proposed Project of which approximately 31,770 cubic yards would be hauled away from the Project site. Approximately 20,240 cubic yards of material would remain on the Project site to be used as backfill.

NOISE AND VIBRATION FUNDAMENTALS

Noise

The following noise and vibration information is summarized from the California Department of Transportation (Caltrans) guidance.[1] Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a hearing organ, such as a human ear. Noise is defined as loud, unexpected, or annoying sound. The standard unit of measurement for noise is the decibel (dB). The human ear is not equally sensitive to sound at all frequencies. The A-weighted scale, abbreviated dBA, reflects the normal hearing sensitivity range of the human ear. On this scale, the range of human hearing extends from approximately 3 to 140 dBA.

The noise analysis discusses sound levels in terms of Equivalent Noise Level (L_{eq}) and Community Noise Equivalent Level (CNEL). L_{eq} is the average noise level on an energy basis for any specific time period. Thus, the L_{eq} for one hour is the energy average noise level during the hour. The average noise level is based on the energy content (acoustic energy) of the sound. L_{eq} can be thought of as the level of a continuous noise which has the same energy content as the fluctuating noise level. The equivalent noise level is expressed in units of dBA. CNEL is an average sound level during a 24-hour period. CNEL is a noise measurement scale, which accounts for noise source, distance, single-event duration, single-event occurrence, frequency, and time of day. Due to the lower background noise level, human reaction to sound between 7:00 p.m. and 10:00 p.m. is perceived as if the sound were actually 5 dBA higher than if it occurred from 7:00 a.m. to 7:00 p.m. From 10:00 p.m. to 7:00 a.m., humans perceive sound as if it were 10 dBA higher. Hence, the CNEL is obtained by adding an additional 5 dBA to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and 10 dBA to sound levels in the night from 10:00 p.m. to 7:00 a.m. Because CNEL accounts for human sensitivity to sound, CNEL is always a higher value than the actual 24-hour average sound level.

Noise levels decrease as the distance from the noise source to the receiver increases. Noise generated by a stationary noise source, or "point source," decreases by approximately 6 dBA over hard surfaces (e.g., reflective surfaces such as parking lots or smooth bodies of water) and 7.5 dBA over soft surfaces (e.g., absorptive surfaces such as soft dirt, grass, or scattered bushes and trees) for each doubling of the distance. For example, if a noise source produces a noise level of 89 dBA at a reference distance of 50 feet, then the noise level is 83 dBA at a distance of 100 feet from the noise source and 77 dBA at a distance of 200 feet. Noise generated by a mobile source decreases by approximately 3 dBA over hard surfaces and 4.8 dBA over soft surfaces for each doubling of the distance. Generally, noise is most audible when the source is in a direct line-of-sight of the receiver. Barriers, such as walls, berms, or buildings that break the line-of-sight between the source and the receiver greatly reduce noise levels from the source, since sound can only reach the receiver by bending over the top of the barrier. However, if a barrier is not sufficiently high or long to break the line-of-sight from the source to the receiver, its effectiveness is greatly reduced.

[1]Caltrans, *Technical Noise Supplement*, September 2013.

Studies have shown that the smallest perceptible change in sound level for a person with normal hearing sensitivity is approximately 3 dBA. A change of at least 5 dBA would be noticeable and may evoke a community reaction. A 10-dBA increase is subjectively heard as a doubling in loudness and would likely cause a negative community reaction.

Health Effects of Noise[2]

The most obvious negative effect of noise is physical damage such as hearing loss. Other obvious negative effects are the interference of noise with certain activities, such as sleeping and conversation, while less obvious are the stress effects of noise.

Hearing Damage. A person exposed to high noise levels can suffer hearing damage, either gradual or traumatic. Sustained exposure to moderately high noise levels over a period of time can cause gradual hearing loss. It starts out as a temporary hearing loss, such as immediately after a loud rock concert. The hearing usually restores itself within a few hours after exposure, although not quite to its pre-exposure level. This is also called a temporary threshold shift. Although the permanent deterioration may be negligible, it will become significant after many repetitions of the exposure. At that time, it is considered permanent hearing damage. The primary cause of permanent hearing damage is daily exposure to industrial noise.

Short, sudden exposure to an extremely high noise level, such as a gunshot or explosion at very close range, can cause a traumatic hearing loss, which is very sudden and can be permanent. Occupational exposure to noise is controlled at the federal level by Occupational Safety and Health Administration and at the state level by the state level by the California Division of Safety and Health. The maximum allowable noise exposure over an eight hours period is a level of 90 dBA. For each halving of the exposure time, the maximum noise level is allowed to increase 5 dBA. Therefore, the maximum allowable noise exposure (100 percent) is 90 dBA for eight hours, 95 dBA for four hours, 100 dBA for two hours, 105 dBA for one hour, 110 dBA for 30 minutes, and 115 dBA for 15 minutes.

Stress-Related Diseases. Noise can cause stress in humans and may be responsible for stress-related diseases, such as hypertension, anxiety, and heart disease. Although noise is probably not the sole culprit of these diseases, it can be a contributor. The degree to which noise contributes to stress-related diseases depends on noise frequencies, their bandwidths, noise levels, and time patterns. In general, higher frequencies, pure tones, and fluctuating noise levels tend to be more stressful than lower frequencies, broadband, and constant-level noise.

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. In contrast to noise, vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of vibration are trains, buses on rough roads, and construction activities, such as rock blasting, pile driving, and the operation of heavy earth-moving equipment. High levels of vibration may cause physical personal injury or damage to buildings. In addition, high levels of vibration may damage fragile buildings or interfere with equipment that is highly sensitive to vibration (e.g., electron microscopes). [3]

[2]Caltrans, *Technical Noise Supplement*, *Page 2-59 to 2-62*, *Negative Effects on Humans*, September 2013.

[3]FTA, *Transit Noise and Vibration Impact Assessment*, *Page 112*, *Section 5.2: Sources of Transit Ground-borne Vibration and Noise*, September 2018.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings and is usually measured in inches per second. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS. The VdB acts to compress the range of numbers required to describe vibration.[4]

Health Effects of Vibration

Ground-borne vibration levels rarely affect human health. Instead, most people consider ground-borne vibration to be an annoyance that can affect concentration or disturb sleep. Although responses to vibration differ, 65 Vdb is the approximate threshold of perception for many people. The approximate dividing line between barely and distinctly perceptible is 75 Vdb and 85 Vdb is typically only acceptable if there are an infrequent number of events per day.[5]

REGULATORY FRAMEWORK

Federal

Noise. The Noise Control Act of 1972 established programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In 1981, the United States Environmental Protection Agency (USEPA) determined that subjective issues such as noise would be better addressed at local levels of government, thereby allowing more individualized control for specific issues by designated federal, state, and local government agencies. Consequently, in 1982, responsibilities for regulating noise control policies were transferred to specific federal agencies, and state and local governments. However, noise control guidelines and regulations contained in the USEPA rulings in prior years remain in place. No federal noise regulations are directly applicable to the proposed Project.

Vibration. The Federal Transit Administration (FTA) has published guidance that may be used to assess the potential for vibration effects. For damage, the impact criteria are established based on the structural foundation of the potentially impacted building. Site visits indicate that the buildings near the Project site are constructed with engineer concrete or reinforced concrete and steel. Vibration levels that exceed a PPV of 0.3 inches per second could potentially cause damage.[6]

State

Noise. The State of California has adopted noise standards in areas of regulation not preempted by the federal government. State standards regulate noise levels of motor vehicles, sound transmission through buildings, occupational noise control, and noise insulation. State regulations governing noise levels generated by individual motor vehicles and occupational noise control are not applicable to planning efforts, nor are these areas typically subject to CEQA analysis.

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[4]FTA, *Transit Noise and Vibration Impact Assessment*, September 2018.

[5]FTA, *Transit Noise and Vibration Impact Assessment*, *Page 120*, *Table 5-5: Human Response to Different Levels of Ground-Borne Vibration and Noise*, September 2018.

[6]FTA, *Transit Noise and Vibration Impact Assessment*, *Page 186*, *Table 7-5: Construction Vibration Damage Criteria*, September 2018.

State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research. The purpose of the Noise Element is to limit the exposure of the community to excessive noise levels. In addition, CEQA requires that all known environmental effects of a project be analyzed, including the potential environmental noise impacts.

The State of California's noise insulation standards are codified in the California Code of Regulations, Title 24, Building Standards Administrative Code, Part 2, and the California Building Code. These noise standards are applied to new construction in California for controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are developed near major transportation noise sources, and where such noise sources create an exterior noise level of 60 dBA CNEL or higher. Acoustical studies that accompany building plans for noise-sensitive land uses must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new residential buildings, schools, and hospitals, the acceptable interior noise limit for new construction is 45 dBA CNEL.

Vibration. There are no State standards applicable to Project-related vibration.

Local

Noise. The City has established policies and regulations concerning the generation and control of noise that could adversely affect its citizens and noise-sensitive land uses. The City is planning to adopt an Public Health and Safety Element of the General Plan, which includes a noise chapter to minimize noise impacts on the community and to coordinate with surrounding jurisdictions and other entities regarding noise control.[7] The noise chapter identifies noise-sensitive land uses and establishes compatibility guidelines for land use and noise. In addition, the noise chapter identifies goals and policies to minimize the impacts of excessive noise levels throughout the community. The noise-related Public Health and Safety Element goals and policies shown **Table 1** are applicable to the Project:

[7] City of Rancho Cucamonga General Plan, *Public Health and Safety Element*, May 19, 2010.

TABLE 1: CITY OF RANCHO CUCAGMONA NOISE GOALS AND POLICIES	
Goal/Policy	**Description**
Goals PS-13	Minimize the impacts of excessive noise levels throughout the community and adopt appropriate noise level requirements for land uses
Policy 13.1	Consider the compatibility of proposed land uses with the noise environment when preparing or revising community and/or specific plans and when reviewing development proposals. The contour map depicting future noise levels (Figure PS-10) should be used by the City as a guide to land use/noise compatibility.
Policy PS-13.2	Consider noise impacts as part of the development review process, particularly the location of parking, ingress/egress/loading, and refuse collection areas relative to surrounding residential development and other noise-sensitive land uses.
Policy 13.3	Consider the use of noise barriers or walls to reduce noise levels generated by ground transportation noise sources and industrial sources.
Policy PS-13.4	Require that acceptable noise levels are maintained near residences, schools, health care facilities, religious institutions, and other noise sensitive uses in accordance with the Development Code and noise standards contained in the General Plan.
Policy PS-13.5	Limit the hours of operation at noise generating sources that are adjacent to noise-sensitive uses, wherever practical.
Policy PS-13.6	Implement appropriate standard construction noise controls for all construction projects.
Policy 13.7	Require all exterior noise sources (construction operations, air compressors, pumps, fans, and leaf blowers) to use available noise suppression devices and techniques to bring exterior noise levels down to acceptable levels.
Policy PS-13.9	Provide, as appropriate, funding to monitor noise levels and investigate noise complaints.
Policy PS-13.10	Provide education to the community at large about the importance of maintaining a healthy noise environment, and identify ways residents can assist in noise abatement efforts.
Policy PS-13.11	Continue to work with the surrounding communities to allow for compliance with Rancho Cucamonga's land use and noise compatibility goals and objectives at the City's boundaries.
Goal PS-14	Minimize the impacts of transportation-related noise.
Policy PS-14.1	Consult with Caltrans and other regional agencies to minimize the impact of transportation-related noise, including noise associated with freeways, major arterials, and rail lines.
Policy 14.2	Require development that is, or will be, affected by railroad noise to include appropriate measures to minimize adverse noise effects on residents and businesses.
SOURCE: City of Rancho Cucamonga General Plan, *Public Health and Safety Element*, May 19, 2010.	

The noise compatibility criteria identified in the Public Health and Safety Element provide the City with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels. Figure PS-8 Noise Compatibility Matrix of the General Plan describes categories of compatibility and not specific noise standards. The proposed Project includes multi-family residential land use which is considered normally acceptable with exterior noise levels of up to 65 dBA CNEL, and considered conditionally acceptable with exterior noise levels approaching 70 dBA CNEL. For conditionally acceptable exterior noise levels, new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and the needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

The City has established provisions within the Rancho Cucamonga Municipal Code (RCMC) to control excessive noise generated within the City. Section 17.66.050 of the RCMC is the Noise Ordinance for the City. Regarding construction activities, the Rancho Cucamonga Development Code establishes permitted hours of activities and noise level limits. Per Section 17.66.050(D)(4)(a) of the Code, noise sources associated with, or vibration created by, construction, repair, remodeling, or grading of any real property or during authorized seismic surveys, are allowed provided said activities:

a. When adjacent to a residential land use, school, church or similar type of use, the noise generating activity does not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a national holiday, and provided that noise levels created do not exceed the base noise level standard of 65 dBA when measured at the adjacent property line.

b. When adjacent to a commercial or industrial use, the noise generating activity does not take place between the hours of 10:00 p.m. and 6:00 a.m. on weekdays, including Saturday and Sunday, and provided noise levels created do not exceed the standards of 70 dBA at the adjacent property line.

Regarding permanent noise-generating activities, the Code establishes exterior noise standards to control unnecessary, excessive, and annoying noise and vibration in the city. Standards relevant to the CEQA analysis are provided in the following discussion. Section 17.66.050 (F) of the Code includes exterior and interior noise standards for residential uses, which are shown in **Table 2**.

TABLE 2: RESIDENTIAL NOISE LIMITS

Location of Measurement	Maximum Allowable	
	10:00 p.m. to 7:00 a.m.	7:00 a.m. to 10:00 p.m.
Exterior	60 dBA	65 dBA
Interior	45 dBA	50 dBA

SOURCE: TAHA, 2020.

These are the noise limits when measured at the adjacent residential property line (exterior) or within a neighboring home (interior). It is unlawful for these standards to be exceeded for a cumulative period of not more than 15 minutes in any one hour, plus five dBA for a cumulative period of not more than ten minutes in any one hour, plus 14 dBA for a cumulative period of not more than five minutes in any one hour, or plus 15 dBA at any time. If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient noise level can be determined, each of the noise limits above shall be reduced five dBA for noise consisting of impulse or simple tone noise.

Vibration. Section 17.66.070 of the RCMC includes vibration standards. Part D states that vibration from temporary construction or demolition activities are exempt from the standards described in Section 17.66.070. For permanent vibration sources, the Code states that vibrations that may be considered a public nuisance or hazard on any adjacent property shall be cushioned or isolated to prevent generation of vibrations. The standards are presented in acceleration (of gravity (g)) at a given frequency (cycles per second) as measured at the property line of adjacent land uses. At a frequency of 50 cycles per second, the vibration standard is 0.002g. Vibrations that occur at frequencies above 50 cycles per second shall not exceed 0.001g. Single-impulse periodic vibrations may not exceed 0.01g when they occur in intervals averaging greater than five minutes.

EXISTING CONDITIONS

The Project site is surrounded by residential and commercial land uses. Single-family residences are located adjacent to the Project site to the south and east and to the north across Foothill Boulevard. Commercial uses are located to the west across Etiwanda Avenue. Existing noise levels are dominated by traffic on Foothill Boulevard and Etiwanda Avenue. In addition, Interstate 15 freeway is located approximately 1,800 feet northwest of the Project site at the nearest point and the Auto Club Speedway is located approximately 1.3 miles to the southeast. The existing noise levels were monitored on Wednesday October 7, 2020 from 9:30 to 11:30 in 15-minute increments along major arterial roads such as Foothill Boulevard and residential streets such as Chestnut Avenue. This time of day represents a typical construction time without the added noise source of peak hour traffic. Measurements were taken during the COVID-19 pandemic during a Statewide stay at home order. Based on observations of traffic data in other areas of Southern California, the majority of the reduction in vehicle trips related to COVID-19 primarily occurred in the a.m. and p.m. peak hour periods. Midday traffic volumes have been observed to only be moderately reduced compared to the pre-pandemic era. Traffic volumes on local residential streets are likely the same as the pre-pandemic era. Noise measurements were taken during the off-peak hour midday period and are representative of existing conditions in the Project area. Furthermore, the measured noise levels are consistent with noise levels monitored during the pre-pandemic era for similar noise environments. Monitored noise levels ranged from 52.5 to 70.8 dBA $L_{eq.}$ The monitoring locations are shown in Figure 4 and monitored noise levels are shown in Table 1.

TABLE 1: EXISTING AMBIENT NOISE LEVELS

Noise Measurement Site (Figure 4)	Noise Monitoring Location	Noise Level (dBA, L_{eq})
1	Residence (8011 Etiwanda Ave.)	67.7
2	Residence (Foothill Blvd.)	70.8
3	Residence (13015 Vine St.)	52.5
4	Residence (12985 Chestnut Ave.)	55.6
5	Commercial (Etiwanda Ave.)	68.8

SOURCE: TAHA, 2020.

Figure 4: Noise Monitoring Locations

Source: TAHA, 2020.

SENSITIVE RECEPTORS

Noise- and vibration-sensitive land uses are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Residences, schools, hospitals, guest lodging, libraries, and some passive recreation areas would each be considered noise- and vibration-sensitive and may warrant unique measures for protection from intruding noise. Sensitive receptors within 500 feet of the Project site have been identified and are shown in **Figure 4** and include:

- Residences located adjacent to the south and east;
- Residences located approximately 180 feet to the south;
- Residences located approximately 190 feet to the north;
- Residences located approximately 200 feet to the east;
- Residences located approximately 330 feet to the southwest;
- Residences located approximately 420 feet to the northeast;
- Residences located approximately 470 feet to the north;
- Residences located approximately 500 feet to the south and east; and
- Single-family residence located approximately 540 feet to the north.

In addition to the noise sensitive receptors identified above, Section 17.66.050 (D)(4)(b) of the Rancho Cucamonga Municipal Code also includes a consideration for commercial uses related to construction noise. Commercial uses within 500 feet of the proposed Project have been identified and are shown in **Figure 4** and include:

- Commercial uses located approximately 120 feet to the west; and
- Commercial uses located approximately 500 feet to the northwest.

SIGNIFICANCE THRESHOLDS

This assessment has considered the potential of the project to result in significant environmental impacts related to noise or vibration in the context of the Appendix G Environmental Checklist criteria of the CEQA Statute and Guidelines. Implementation of the proposed Project may result in a significant environmental impact related to noise and vibration if it would:

a) Result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

b) Result in the generation of excessive ground-borne vibration or ground-borne noise levels; and/or

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

Noise

In accordance with City standards, the proposed Project would result in a significant noise impact if:

- Construction noise levels at a residential land use, school, church or similar type of use exceed 65 dBA when measured at the adjacent property line between the hours of 7:00 a.m. and 8:00 p.m. on weekdays, including Saturday, or at any time on Sunday or a national holiday;
- Construction noise levels at a commercial or industrial use exceed 70 dBA when measured at the adjacent property line between the hours of 6:00 a.m. and 10:00 p.m. on weekdays, including Saturday and Sunday;

- Operational noise levels at the exterior of nearby residential land uses exceed 65 dBA from 7:00 a.m. to 10:00 p.m. and 60 dBA from 10:00 p.m. to 7:00 a.m. Section 17.66.050 of the Code includes adjustments for various types of noise that may be taken into consideration, as previously discussed in this Technical Memorandum; and/or
- Operational noise levels at the interior of nearby residential land uses exceed 50 dBA from 7:00 a.m. to 10:00 p.m. and 45 dBA from 10:00 p.m. to 7:00 a.m. Section 17.66.050 of the Code includes adjustments for various types of noise that may be taken into consideration, as previously discussed in this Technical Memorandum.

- Operational mobile noise levels would result in an incremental increase of 3 dBA L_{eq} above the ambient noise level, which is considered a perceptible noise increase.[8] This threshold is appropriate when mobile noise levels already exceed City standards under existing and future no project conditions.

- Haul truck noise level would increase existing ambient noise levels by plus five dBA for a cumulative period of more than ten minutes in any one hour, consistent with Section 17.66.050 of the Code.

Vibration

The City has adopted vibration standards related to permanent activities, although temporary construction vibration is exempt from the standard. The City permanent vibration standard of 0.001g must be converted to RMS velocities since the human body responds to the average vibration amplitude. The applicable RMS is 0.12 inches per second. For construction, the FTA impact criterion for building damage is used to determine significance in lieu of a quantitative City standard. The proposed Project would result in a significant vibration impact if:

- Construction activities would generate vibration levels that would exceed 0.3 inches per second at off-site structures; and/or
- Operational activities would generate vibration levels that would exceed 0.12 inches per second at adjacent properties.

METHODOLOGY

The noise and vibration analysis considers both construction and operational sources. Noise levels associated with typical construction equipment were obtained from the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM).[9] This model predicts noise from construction based on a compilation of empirical data and the application of acoustical propagation formulas. Maximum equipment noise levels were adjusted based on anticipated percent of use. Combined construction activity noise levels were estimated by combining anticipated equipment for each activity using RCNM. The projected noise level during the construction period at receptors was calculated by (1) making a distance adjustment to the construction source sound level and (2) logarithmically adding the adjusted construction noise source level to the ambient noise level. According to Caltrans guidance, air temperature and humidity affect molecular absorption differently depending on the frequency spectrum and can vary significantly over long distances in a complex manner. Molecular absorption in air also reduces noise levels with distance. According to Caltrans, this process only accounts for about 1 dBA per 1,000 feet, which is an inaudible and negligible

[8] Caltrans, *Technical Noise Supplement, Page 2-45, Table 2-10: Relationship between Noise Level Change, Factor Change in Relative Energy, and Perceived Change*, September 2013.

[9] FHWA, *Roadway Construction Noise Model*, Version 1.1, August 2008.

difference in noise levels. Noise levels have been estimated using a decrease of 6 dBA over hard surfaces for each doubling of the distance. The methodology and formulas obtained from the Caltrans Technical Noise Supplement can be viewed below.

(1) Noise Distance Attenuation Formula: $dBA_2 = dBA_1 + 20 \times LOG_{10} (D_1/D_2)$

Where:

dBA_1 = Noise level at the reference distance of 50 feet

dBA_2 = Noise level at the receptor

D_1 = Reference distance (50 feet)

D_2 = Distance from source to receptor (measured distance)

(2) Logarithmic Noise Level Addition Formula: Nc = 10 x LOG10 ((10^(N1/10)) + (10^(N2/10)))

Where:

Nc = Combined noise level

N1 = Noise level one

N2 = Noise level two

Vibration levels were estimated using example vibration levels and propagation formulas provided by FTA.[10] Vibration damage is assessed using Formula (3).

(3) Vibration Damage Attenuation Formula: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

Where:

PPV_{equip} = Peak particles velocity in inches per second of the equipment adjusted for distance

PPV_{ref} = Reference vibration level in inches per second at 25 feet

D = Distance from the equipment to the receptor in feet

Operational stationary noise assessed includes mechanical equipment such as heating, ventilation, and air conditioning (HVAC) equipment, courtyard noise, and parking noise. Operational mobile noise was assessed using the FHWA Traffic Noise Model Version 3.0 (TNM 3.0). TNM 3.0 is a computer model which incorporates acoustical algorithms to model roadway noise. Key inputs to the traffic noise model include roadway widths, traffic mix, and speed. Noise levels were modeled for Existing (2020) conditions; Opening Year (2023) No Project conditions; Opening Year (2023) Plus Project conditions; Future (2040) No Project conditions, and Future (2040) Plus Project conditions. Operational noise at rooftop patios was assessed assuming conversational noise would be the primary noise source.

Parking noise was assessed using guidance provided by the FTA Transit Noise and Vibration Impact Assessment Manual. A reference noise level of 56.4 dBA L_{eq} at 50 feet was calculated using the reference noise level for 1,000 space parking structure. The reference noise level was adjusted per the expected average number of trips per hour for the proposed Project using formula (4).

[10]FTA, *Transit Noise and Vibration Impact Assessment*, September 2018.

(4) Parking Noise Formula: Parking Noise = Parking Noise Level$_{ref}$ + 10 x LOG (N_a/1,000)

Where:

Parking Noise Level$_{ref}$ = Reference Parking Noise Level

N_a = Number of average hourly trips

IMPACT ASSESSMENT

a) Would the proposed Project result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

The impact analysis is predicated on the location of noise- and vibration-sensitive land uses and the existing setting. Sensitive receptors are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. They typically include residences, schools, hospitals, guest lodging, libraries, and some passive recreation areas. The Project area is primarily located adjacent to residential land uses, although commercial and uses are located west of the Project site.

Construction

Less-Than-Significant Impact with Mitigation. The proposed Project would be constructed in a similar manner as other urban infill projects located in the City. A mix of typical construction equipment would be used to clear the development site, excavate the subterranean parking level, and construct the structures. Specific construction equipment has not been identified at this point in the approval process. It is assumed that the proposed Project would use standard pieces of equipment such as backhoes, loaders, compressors, and trucks. Pile driving would not be required to set the foundations. Construction noise levels were calculated using the FHWA RCNM. **Table 2** summarizes noise levels produced by construction equipment that is commonly used for urban infill projects. Noise levels would fluctuate depending on equipment type, horsepower, and atmospheric conditions, among other factors. Construction equipment is expected to generate noise levels ranging from approximately 70.3 dBA to 82.6 dBA L_{eq} at a distance of 50 feet, and noise produced by construction equipment would be reduced over distance at a rate of about 6 dB per doubling of distance.

TABLE 2: CONSTRUCTION EQUIPMENT NOISE LEVEL RANGES	
Construction Equipment	**Noise Levels at 50 feet (dBA, L_{eq})**
Backhoe	73.6
Compactor	76.2
Compressor (air)	73.7
Concrete Mixer Truck	74.8
Concrete Saw	82.6
Excavator	76.7
Flat Bed Truck	70.3
Front End Loader	75.1
Generator	77.6
Gradall (forklift)	79.4
Grader	81.0
Paver	74.2
Pickup Truck	71.0
Roller	73.0
Scraper	79.6
SOURCE: FHWA, *RCNM Version 1.1*, 2008.	

Table 3 takes into account that multiple pieces of construction equipment would be operating simultaneously and presents the combined noise level produced by such activity. When considered as an entire construction process with multiple pieces of equipment operating at once, Project-related construction activity (i.e., ground clearing and site preparation) would generate noise levels between 84 and 89 dBA L_{eq} at 50 feet.

TABLE 3: TYPICAL OUTDOOR CONSTRUCTION NOISE LEVELS	
Construction Method	**Noise Level at 50 feet (dBA, L_{eq})**
Ground Clearing	84
Site Preparation	89
Foundations	78
Structural	85
Finishing	89
SOURCE: USEPA, *Noise from Construction Equipment and Operations, Building Equipment and Home Appliances*, PB 206717, 1971.	

Daytime construction noise is not typically a concern for human health and is a common occurrence within the urban environment. The impact analysis is based on the construction time limits in the RCMC including the allowable hours of hours of construction and the base level noise standard of 65 dBA for residential uses and 70 dBA for commercial uses measured at the property line. The construction noise standards are interpreted as an hourly L_{eq} noise level as this would represent what sensitive receptors would experience during a typical construction hour. Construction would occur Monday through Friday from 7:00 a.m. to 5:00 p.m. and would comply with the allowable hours of construction in the RCMC (7:00 a.m. to 8:00 p.m.) As shown in **Table 4**, construction noise levels would exceed the residential and commercial construction noise standards at the majority of sensitive receptors. Therefore, without mitigation, impacts related to construction noise would be significant.

TABLE 4: CONSTRUCTION NOISE LEVELS - UNMITIGATED

Sensitive Receptors	Distance (Feet)	Intervening Building /a/	Maximum Noise Level (dBA, L_{eq})	Threshold (dBA, L_{eq})	Exceed Threshold ?
Residences adjacent to the south and east	50	0.0	89.0	65.0	Yes
Residences to the south	180	0.0	77.9	65.0	Yes
Residences to the north	190	4.5	72.9	65.0	Yes
Residences to the east	200	4.5	72.5	65.0	Yes
Residence to the southwest	330	4.5	68.1	65.0	Yes
Residences to the northeast	420	4.5	66.0	65.0	Yes
Residences to the north	470	7.5	62.0	65.0	No
Residences to the south and east	500	7.5	61.5	65.0	No
Single-family residences to the north	540	0.0	68.3	65.0	No
Commercial use to the west	120	0.0	81.4	70.0	Yes
Commercial use to the northwest	500	0.0	69.0	70.0	Yes

/a/ Includes a reduction of 4.5 dBA for the first intervening row of buildings and 1.5 dBA for each subsequent row.
SOURCE: TAHA, 2021.

The proposed Project would be required to comply with the Mitigation Measures **N-1** through **N-6**, which are measures to control construction noise levels, including installing engine mufflers and noise blanket barriers. These mitigation measures would reduce noise levels associated with individual pieces of equipment and combined construction noise levels. For example, Mitigation Measure **N-1** would reduce heavy-duty equipment noise levels by at least 5 dBA by reducing engine noise.[11] Mitigation Measure **N-2** would reduce ground-level construction noise by 10 dBA to 20 dBA for ground-level receptors. For instance, temporary noise barriers produced by Echo Barrier are listed as capable of reducing noise be 10 to 20 dBA.[12] Although difficult to quantify, Mitigation Measures **N-3** through **N-6** would also help control noise levels. **Table 5** shows mitigated noise levels associated construction activities. Noise in this table was estimated for the site preparation phase of construction. Mitigation Measures **N-1** through **N-6** would reduce construction noise levels at off-site receptors to below the 65 dBA residential thresholds and the 70 dBA commercial use threshold. Therefore, with mitigation, impacts related to on-site construction noise would be less-than-significant.

[11] USEPA, *Noise from Construction Equipment and Operation*s, *Building Equipment and Home Appliances*, *Page* 3, PB 206717, 1971

[12] Acoustical Surfaces Inc., *Echo Barrier*, available at: acousticalsurfaces.com.

TABLE 5: CONSTRUCTION NOISE LEVELS - MITIGATED

Sensitive Receptors	Distance (Feet)	Unmitigated Nosie Level (dBA, L_{eq})	Mitigation /a/	Mitigated Noise Level (dBA, L_{eq})	Threshold (dBA, L_{eq})	Exceed Threshold ?
Residences adjacent to the south and east	50	89.0	25	64.0	65.0	No
Residences to the south	180	77.9	25	52.9	65.0	No
Residences to the north	190	72.9	15	57.9	65.0	No
Residences to the east	200	72.5	25	47.5	65.0	No
Residence to the southwest	330	68.1	15	53.1	65.0	No
Residences to the northeast	420	66.0	15	51.0	65.0	No
Residences to the north	470	62.0	15	47.0	65.0	No
Residences to the south and east	500	61.5	25	36.5	65.0	No
Single-family residences to the north	540	68.3	15	53.3	65.0	No
Commercial use to the west	120	81.4	15	66.4	70.0	No
Commercial use to the northwest	500	69.0	15	54.0	70.0	No

/a/ Includes a reduction of 5 dBA for equipment mufflers. A 10 dBA reduction has been applied for temporary construction noise barriers along the northern and western property lines. A 20 dBA reduction for temporary construction noise barriers along the southern and eastern property lines. Mitigation measures are additive and presented as a total combined noise reduction.
SOURCE: TAHA, 2021.

Haul Truck Noise

Haul trucks associated with construction activity would potentially increase noise levels along the haul route. Haul truck noise levels would be considered significant if existing ambient noise levels increase by plus five dBA for a cumulative period of more than ten minutes in any one hour per Section 17.066.050 (C)(1)(b) of the RCMC. The anticipated haul route is from Foothill Boulevard to the Interstate 15 freeway. Haul trucks could possibly exit along Etiwanda Avenue and turn left onto Foothill Boulevard to return to the Interstate 15 freeway. The greatest number of hourly haul truck trips would occur during the excavation phase, which would require approximately 48 daily truck round trips (96 one-way trips) or 12 haul trucks per hour during the AM Peak Hour. Incremental increases in noise levels were estimated using TNM by adding haul truck volumes to Existing (2020) conditions along Foothill Boulevard and Etiwanda Avenue. Existing traffic volumes were obtained from the Alta Cuvee Mixed Use Project Traffic Impact Study prepared by Fehr and Peers.[13] As shown in **Table 6**, the addition of 12 haul truck trips per hour during the AM Peak Hour would result in a maximum incremental increase of 0.4 dBA. Although haul truck pass-by noise may result in temporary increases in noise, the hourly increase would be less than 5 dBA. Therefore, the proposed Project would result in a less-than-significant impact related to haul truck noise.

[13]Fehr and Peers, *Alta Cuvee Mixed Use Project Traffic Impact Study*, October 2020.

TABLE 6: HAUL TRUCK NOISE ANALYSIS

Roadway Segment	Noise Level (dBA, L_{eq})		
	Existing (2020)	Existing (2020) Plus Haul Trucks	Increase
Foothill Blvd. between Etiwanda Ave. and Illex St.	70.1	70.2	0.1
Foothills Blvd. between Sacred Heart Pl. and Etiwanda Ave.	71.5	71.9	0.4
Etiwanda Ave. between Arrow Route and Foothill Blvd.	67.8	68.1	0.3

SOURCE: TAHA, 2021.

Operations

Less-Than-Significant Impact. Stationary noise sources related to long-term operations include mechanical equipment, courtyard activity, parking activity, and automobiles. The commercial space would likely include retail uses or other typical urban commercial uses and would not include other sources of noise. Considered together, the individual sources have limited potential to generate permanent noise beyond the property line. There is no potential for the proposed Project to increase noise levels that would exceed the exterior and interior noise standards listed in Section 17.66.050 of the RCMC. The proposed Project would not result in a long-term and permanent noise impact.

Heating, Ventilation, and Air Conditioning (HVAC) Noise

Mechanical equipment such as HVAC equipment would be designed to be located within an enclosure. Mechanical equipment typically generates noise levels of approximately 83 dBA at 1 foot and approximately 50 dBA at 50 feet.[14] In addition, mechanical equipment would be located on rooftops, screened from view as much as possible. Interruption of the line-of-sight of a noise source is a key factor in reducing noise levels. The interior noise level at the sensitive receptor was calculated by taking a 20 dB reduction for a light frame building with standard windows.[15] As shown in **Table 7**, HVAC noise would not exceed the residential exterior standards of 65 dBA from 7:00 a.m. to 10:00 p.m., 60 dBA from 10:00 p.m. to 7:00 a.m. or the interior standards of 50 dBA from 7:00 a.m. to 10:00 p.m. and 45 dBA from 10:00 p.m. to 7:00 a.m. Therefore, impacts related to mechanical equipment noise would be less-than- significant.

[14]Daikin Air Intelligence, *Base Efficient Air Conditioner Packaged Rooftop Unit DBC Commercial 7.5 – 12.5 Nominal Tons*, available at https://budgetheating.com/v/vspfiles/downloadables/DBC%20Series%207.5-12.5%20Tons%20Technical%20Specifications.pdf.

[15]Federal Highway Administration, *Noise Measurement Handbook – Final Report*, *Table 6-1: Building Noise Reduction Factors*, June 1, 2018.

TABLE 7: HVAC NOISE ANALYSIS			
Sensitive Receptor	**Distance (Feet) /a/**	**Exterior HVAC Noise Level (dBA, L_{eq})**	**Interior HVAC Noise Level (dBA, L_{eq}) /b/**
Residences adjacent to the east	120	42.4	22.4
Residences adjacent to the south	125	42.0	22.0
/a/ Distance is the diagonal distance from source to receiver /b/ A reduction of 20 dB was taken for a light frame building with standard windows. **SOURCE:** TAHA, 2021.			

Courtyard Noise

The proposed Project would include two courtyards, one of which would include a pool and spa. Primary source of noise related to these uses would be conversational noise and recreational noise, such as people jumping in pools. The recreational features would be entirely enclosed within the Project site and would not have a direct line-of-sight to any off-site sensitive uses. Therefore, impacts related to the potential for recreational noise to be audible off the Project site would be less than significant.

Parking Noise

The proposed Project would include on-site parking with 265 subterranean parking spaces and 200 second level parking spaces. Vehicular access to the Project site would be provided off Etiwanda Avenue and along eastbound Foothill Boulevard. Both locations would provide access to the surface parking area and to the south-facing entrance/exit of the subterranean garage. Sources of noise would include engines accelerating, doors slamming, car alarms, and people talking. Subterranean parking activity would not generate noise at the street level and would not audibly increase the noise levels at nearby land uses. Parking activity noise was calculated based upon a reference noise level of 56.4 dBA L_{eq} at 50 feet for a 1,000 parking space parking garage.[16] The noise level was adjusted using guidance provided by the Federal Transit Administration Transit Noise and Vibration Impact Assessment guidance and a maximum peak hour volume of 123 trips per hour, as estimated for the proposed Project. The resultant noise level at 50 feet would be approximately 47.3 dBA L_{eq}. The nearest residences are located approximately 50 feet to the south and east. Therefore, parking noise would not exceed the residential exterior standards of 65 dBA from 7:00 a.m. to 10:00 p.m., 60 dBA from 10:00 p.m. to 7:00 a.m. or the interior standards of 50 dBA from 7:00 a.m. to 10:00 p.m. and 45 dBA from 10:00 p.m. to 7:00 a.m. Therefore, the proposed Project would result in a less-than-significant impact related to parking noise.

Mobile Noise

Another potential source of project noise is mobile noise associated with resident trips. The proposed Project would generate 1,503 new daily vehicle trips, including 97 AM Peak Hour trips and 123 PM Peak Hour trips. Operational mobile noise was assessed using the FHWA Traffic Noise Model Version 3.0 (TNM 3.0). The analysis was based on full build-out of the proposed Project, which has the highest potential for noise impact because of the traffic volume. Traffic volumes were obtained from the Alta Cuvee Mixed Use Project Traffic Impact Study prepared by Fehr and Peers.[17] An analysis of Opening Year (2023) No Project

[16]Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, *Page 45 Table 4-13: Source Reference Levels at 50 ft from Center of Site Stationary Source*s, September 2018.

[17]Fehr and Peers, *Alta Cuvee Mixed Use Project Traffic Impact Study*, October 2020.

conditions and Opening Year (2023) Plus Project conditions is summarized in **Table 8**. The analysis of Future (2040) No Project conditions and Future Plus Project (2040) conditions is summarized in **Table 9**.

TABLE 8: MOBILE NOISE LEVELS OPENING YEAR (2023)

Roadway Segment	Noise Level (dBA, L_{eq})			
	Existing (2020)	Opening Year No Project (2023)	Opening Year Plus Project (2023)	Increase
Etiwanda Ave. between Foothill Blvd. and Garcia Dr.	69.6	69.7	69.7	0.0
Foothill Blvd. between Etiwanda Ave. and Ilex St.	70.1	71.6	71.6	0.0
Foothill Blvd. between Sacred Heart Pl. and Etiwanda Ave.	71.5	71.8	71.8	0.0
Etiwanda Ave. between Arrow Route and Foothill Blvd.	67.8	67.9	68.0	0.1

SOURCE: TAHA, 2021.

Existing, Opening Year (2023) No Project, and Future Year (2040) No Project traffic noise levels already exceed the daytime residential standard of 65 dBA L_{eq}. Thus, an incremental increase of 3 dBA L_{eq} is considered the threshold of significance for mobile noise, as this would result in a perceptible increase in noise. Under the Opening Year (2023) No Project versus Opening Year (2023) Plus Project scenario, the greatest Project-related noise increase would be 0.1 dBA L_{eq} and would occur along Etiwanda Avenue between Arrow Route and Foothill Boulevard. Under the Future No Project (2040) versus Future Plus Project (2040) scenario, the greatest Project-related noise increase would be 0.2 dBA L_{eq} and would occur along Etiwanda Avenue between Arrow Route and Foothill Boulevard. The roadway noise increase attributed to the Project would be less than 1-dBA L_{eq} at all analyzed segments. Therefore, the proposed Project would result in a less-than-significant impact related to mobile noise levels.

TABLE 9: MOBILE NOISE LEVELS FUTURE YEAR (2040)

Roadway Segment	Noise Level (dBA, L_{eq})			
	Existing (2020)	Future Year No Project (2040)	Future Year Plus Project (2040)	Increase
Etiwanda Ave. between Foothill Blvd. and Garcia Dr.	69.6	69.9	69.9	0.0
Foothill Blvd. between Etiwanda Ave. and Ilex St.	70.1	72.4	72.4	0.0
Foothill Blvd. between Sacred Heart Pl. and Etiwanda Ave.	71.5	72.7	72.8	0.1
Etiwanda Ave. between Arrow Route and Foothill Blvd.	67.8	68.1	68.3	0.2

SOURCE: TAHA, 2021.

Mitigation Measures

N-1 The construction contractor shall ensure that power construction equipment (including combustion or electric engines), fixed or mobile, shall be equipped with noise shielding and muffling devices (consistent with manufacturers' standards) during the entirety of construction of the proposed

Project. The combination of muffling devices and noise shielding shall be capable of reducing noise by at least 5 dBA from non-muffled and shielded noise levels. Prior to initiation of construction the contractor shall demonstrate to the city that equipment is properly muffled, shielded and maintained. All equipment shall be properly maintained to assure that no additional noise, due to worn or improperly maintained parts, would be generated.

N-2 The construction contractor shall ensure that barriers, such as, but not limited to, plywood structures or flexible sound control curtains extending eight feet in height shall be erected around entire perimeter of the Project site to minimize the amount of noise during construction on the nearby noise-sensitive uses located offsite. Noise barriers along the northern and western property lines shall be capable of reducing construction noise levels by at least 10 decibels in order to satisfy the residential daytime noise standard of 65 dBA L_{eq} and commercial daytime standard of 70 dBA L_{eq}.. Noise barriers along the southern and eastern property lines shall be capable of reducing noise levels by at least 20 decibels in order to satisfy the residential daytime noise standard of 65 dBA L_{eq} and commercial daytime standard of 70 dBA L_{eq}. Noise measurements shall be measured weekly by the contractor or an acoustical professional during the entirety of project construction to ensure the construction noise standards would not be exceeded.

N-3 The construction contractor shall ensure that project construction shall not include the use of driven (impact) pile systems.

N-4 When construction parameters permit (e.g., equipment capable of producing required torque, horsepower etc.), the construction contractor shall use on-site electrical sources to power equipment rather than diesel generators.

N-5 The construction contractor shall ensure that noise and vibration construction activities whose specific location on the Project site may be flexible (e.g., operation of compressors and generators) shall be conducted as far away as possible (dependent on the requirement of construction work being conducted) from the nearest 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. The construction contractor shall locate construction staging areas away from noise-sensitive uses.

N-6 The construction contractor shall establish a "noise disturbance coordinator". The disturbance coordinator shall be responsible for responding to local complaints about construction noise. The disturbance coordinator shall determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and shall be required to implement reasonable measures such that the complaint is resolved. All notices that are sent to residential units within 500 feet of the construction site and all signs posted at the construction site shall list the telephone number for the disturbance coordinator.

b) Would the proposed Project result in generation of excessive ground-borne vibration or ground-borne noise levels?

Construction

Less-Than-Significant Impact. Construction activity can generate varying degrees of vibration, depending on the procedure and equipment. Equipment movements generate vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of a construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration

levels, to low rumbling sounds and perceptible vibration at moderate levels, and to slight damage at the highest levels. In most cases, the primary concern regarding construction vibration relates to damage to structures.

Vibration levels for various types of construction equipment with an average source level reported in terms of velocity are shown in **Table 10**. Based on visual characteristics of adjacent structures (e.g., age), the adjacent buildings are assumed to be constructed of non-engineered timber and masonry. According to the FTA guidance, these buildings can withstand up to 0.2 inches per second without experiencing damage.[18] The greatest vibration level of equipment that would be utilized during project construction would be best represented by a large bulldozer, which would generate a vibration level of 0.089 inches per second at 25 feet.[19] Structures adjacent to the development site would typically be at least 40 feet from the construction activity, although residences to the east would be as close as 10 feet. As shown in **Table 11**, the vibration damage threshold of 0.2 inches per second would be exceeded at the residences adjacent to the east whenever a large bulldozer or similar equipment would be operated within 14 feet of the residential structures (as measured from the property line of the Project site to the nearest residential structure. Large bulldozers are defined by Caterpillar as weighing approximately 100,000 pounds or more.[20] Mitigation Measure **N7** would prohibit equipment with an operating weight over 100,000 pounds, such as a large bulldozer, from operating within 14 feet of nearby residences along the eastern property of the Project site. As shown in **Table 12**, the use of smaller pieces of equipment, such as small bulldozer would reduce construction vibration levels to below the 0.2 inches per second threshold. Therefore, with mitigation, impacts related to on-site construction vibration would be less-than-significant.

TABLE 10: TYPICAL OUTDOOR CONSTRUCTION VIBRATION LEVELS

Equipment	PPV at 25 feet (Inches/Second)
Jackhammer	0.035
Large Bulldozer	0.089
Loaded Trucks	0.076
Small Bulldozer	0.003

SOURCE: FTA, *Transit Noise and Vibration Impact Assessment*, September 2018.

TABLE 11: VIBRATION LEVELS AT NEARBY STRUCTURES - UNMITIGATED

Structure	Distance (feet)	Reference PPV at 25 feet (Inches/Second)	PPV at Structure (Inches/Second)	Exceed 0.2 PPV Thresholds (Inches/Second)?
Residences adjacent to the east	10	0.089	0.352	Yes
Residences adjacent to the south	40	0.089	0.044	No

SOURCE: FTA, *Transit Noise and Vibration Impact Assessment*, September 2018.

[18]FTA, *Transit Noise and Vibration Impact Assessment*, *Page 186, Table 7-5: Construction Vibration Damage Criteria*, September 2018.

[19]FTA, *Transit Noise and Vibration Impact Assessment*, *Page 184, Table 7-4: Vibration Source Levels for Construction Equipment*, September 2018.

[20]Caterpillar, *Large Bulldozers*, available at https://www.cat.com/en_US/products/new/equipment/dozers/large-dozers.html, access June 22, 2021.

TABLE 12: VIBRATION LEVELS AT NEARBY STRUCTURES - MITIGATED				
Structure	Distance (feet)	Reference PPV at 25 feet (Inches/Second)	PPV at Structure (Inches/Second)	Exceed 0.2 PPV Thresholds (Inches/Second)?
Residences adjacent to the east	10	0.003	0.012	No
Residences adjacent to the south	40	0.003	0.001	No
SOURCE: FTA, *Transit Noise and Vibration Impact Assessment*, September 2018.				

Vibration annoyance is another concern related to construction activity. However, perceptible vibration is not typically a concern for human health and is a common occurrence within the urban environment. Special uses such as research facilities, recording studios, and concerts halls would be potentially impacted by construction vibration annoyance due to the presences of sensitive equipment. No special uses have been identified in the Project area. It likely that construction-related vibration would be perceptible at adjacent residences, particularly as equipment travels near the property line. The intermittent vibration annoyance exposure is not considered significant for this Project as the exposure would short-term and within the City's allowable hours of construction. Therefore, the proposed Project would result in a less-than-significant impact related to vibration annoyance.

In addition to on-site construction activities, construction trucks travelling on the roadway network have the potential to generate low levels of vibration. Rubber-tired vehicles, including trucks, rarely generate perceptible vibration unless there is an irregularity or bump in the road that causes the vibration.[21] It is not anticipated that Project-related trucks would generate perceptible vibration adjacent to the roadway network. Therefore, no impact would occur related to off-site construction vibration.

Operations

No Impact. The residential development would not include a significant source of permanent vibration. Project-related vehicle trips could generate vibration, although similar to the existing condition, roadway vibration from passenger vehicles would not be perceptible outside of the roadway right-of-way. Therefore, no impact would occur related to operational vibration.

Mitigation Measures

N-7 The construction contractor shall limit construction equipment to an operating weight of 100,000 pounds or less when operating within 14 feet of the eastern property boundary of the Project site.

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

No Impact. The Project site is not located within an airport land use plan nor is it located within two miles of a private airstrip or public airport. There is no potential for the proposed Project to expose people working or residing in the area to excessive aircraft noise. Therefore, no impact would occur.

[21]FTA, *Transit Noise and Vibration Impact Assessment*, September 2018.

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Acoustical Surfaces Inc., *Echo Barrier*, available at: acousticalsurfaces.com.

California Office of Noise Control, Department of Health Services.

California Department of Transportation, *Technical Noise Supplement*, September 2013.

Caterpillar, *Large Bulldozers*, available at https://www.cat.com/en_US/products/new/equipment/dozers/large-dozers.html, access June 22, 2021.

Daikin Air Intelligence, *Base Efficient Air Conditioner Packaged Rooftop Unit DBC Commercial 7.5 – 12.5 Nominal Tons*, available at https://budgetheating.com/v/vspfiles/downloadables/DBC%20Series%207.5-12.5%20Tons%20Technical%20Specifications.pdf.

Federal Highway Administration, *Noise Measurement Handbook – Final Report*, *Table 6-1: Building Noise Reduction Factors*, June 1, 2018.

Federal Highway Administration, *Roadway Construction Noise Model*, *Software Version 1.1*, 2008.

Federal Highway Administration, *Traffic Noise Model*, *Software Version 3.0*, 2020.

Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, September 2018.

City of Rancho Cucamonga General Plan, *Public Health and Safety Element*, May 19, 2010.

City of Rancho Cucamonga Municipal Code, *Section 17.66.050 (Noise Ordinance)*.

City of Rancho Cucamonga Municipal Code, *Section 17.66.070 (Vibration Standards)*.

Fehr and Peers, *Alta Cuvee Mixed Use Project Traffic Impact Study*, October 2020.

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

Noise and Vibration Calculations

Noise Formulas

Noise Distance Attenuation

Hard Site

Equation: Ni = No - 20 X (log Di/Do)

Di = distance to receptor (Di>Do)

Ni = attenuated noise level of interest

Do = reference distance

No = reference noise level

Source: (Bolt, Beranek, and Newman, 1971)

Summation of Noise Levels

Equation: Ns=10 x LOG10((10^(N1/10))+(10^(N2/10))+(10^(N3/10))+(10^(N4/10)))

Ns = Noise Level Sum
N1 = Noise Level 1
N2 = Noise Level 2
N3 = Noise Level 3
N4 = Noise Level 4

Source: California Department of Transportation, *Technical Noise Supplement*, 2013

Construction Noise Analysis

On-Site Construction Noise: Resulting Noise Level Increases - Unmitigated

Sensitive Receptor	Distance (feet)	Reference Noise Level (dBA)	Intervening Building	Max Construction Noise (dBA, Leq)	Threshold	Exceed? Threshold
Residences adjacent to the south and east	50	89	0	89.0	65.0	Yes
Residences to the south	180	89	0	77.9	65.0	Yes
Residences to the north	190	89	4.5	72.9	65.0	Yes
Residences to th east	200	89	4.5	72.5	65.0	Yes
Residence to the southwest	330	89	4.5	68.1	65.0	Yes
Residences to the northeast	420	89	4.5	66.0	65.0	Yes
Residences to the north	470	89	7.5	62.0	65.0	No
Residences to the south and east	500	89	7.5	61.5	65.0	No
Single-family residences to the north	540	89	0	68.3	65.0	No
Commericial use to the west	120	89	0	81.4	70.0	Yes
Commercial use to the northwest	500	89	0	69.0	70.0	Yes

On-Site Construction Noise: Resulting Noise Level Increases - Mitigated

Sensitive Receptor	Distance (feet) /a/	Reference Noise Level (dBA)	Intervening Building	Mitigation /a/ /b/	Max Construction Noise (dBA, Leq)	Threshold	Exceed? Threshold
Residences adjacent to the south and east	50	89	0	25	64.0	65.0	Yes
Residences to the south	180	89	0	25	52.9	65.0	Yes
Residences to the north	190	89	4.5	15	57.9	65.0	Yes
Residences to th east	200	89	4.5	25	47.5	65.0	Yes
Residence to the southwest	330	89	4.5	15	53.1	65.0	Yes
Residences to the northeast	420	89	4.5	15	51.0	65.0	Yes
Residences to the north	470	89	7.5	15	47.0	65.0	No
Residences to the south and east	500	89	7.5	25	36.5	65.0	No
Single-family residences to the north	540	89	0	15	53.3	65.0	No
Commericial use to the west	120	89	0	15	66.4	70.0	Yes
Commercial use to the northwest	500	89	0	15	54.0	70.0	Yes

/a/ Includes 5 dBA reduction for mufflers
/b/ Includes 10 dBA or 20 dBA reduction for temporary construction noise barrier

Operational Noise Analysis

HVAC Noise Levels

Sensitive Receptor	Distance (feet) /a/	Reference Noise Level (dBA)	Exterior Noise at Receptor (dBA, Leq)	Interior Noise Level /b/
Residences to the south	125	50.0	42.0	22.0
Residenceces to the east	120	50.0	42.4	22.4

Diagonal Distance				
Residences	Floor	Vertical	Horizontal	Diagonal
South	4th Floor	45	115	123
East	5th Floor	45	110	119

/a/ Distance is the diagonal distance from source to reciever.
/b/ Exterior to interior reduction of 20 dB per Federal Highway Administration, Noise Measurement Handbook – Final Report, Table 6-1: Building Noise Reduction Factors, June 1, 2018.

Reference Noise Level: 83 dBA at 1 foot = 50 dBA at 50 feet
Source Daikin Air Intelligence, *Base Efficient Air Conditioner Packaged Rooftop Unit DBC Commercial 7.5 – 12.5 Nominal Tons* , available at https://budgetheating.com/v/vspfiles/downloadables/DBC%20Series%207.5-12.5%20Tons%20Technical%20Specifications.pdf.

Parking Activity Noise Levels

Sensitive Receptor	Distance (feet) /a/	Reference Noise Level (Sound Exposure Level) at 50 feet (1,000 Parking Space Lot)	Parking Lot Average Number of Cars	Adjusted Parking Noise Level at 50 feet (dBA, Leq)
Residences	50	92.0	123.0	47.3

Parking Lot Noise (dBA, Leq) = Reference Noise Level (Sound Exposure Level) + 10 x LOG (Number of Average Peak Hour Trips/1000)-35.6

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, September 2018.

Vibration Formulas

Vibration PPV Attenuation

Equation: PPVequip = PPVref x (25/D)^1.5
PPV (equip) is the peak particle velocity in in/sec of the equipment adjusted for distance
PPV (ref) is the reference vibration level in in/sec at 25 feet from Table 12-2
D is the distance from the equipment to the receiver.

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, September 2018.

Vibration Damage Analysis

Vibration Velocities for Construction Equipment

Equipment	PPV at 25 Feet (Inches/Second)	VdB at 25 feet (Micro-Inches/Second)
Hoe Ram	0.089	87
Caisson Drilling	0.089	87
Jackhammer	0.035	79
Large Bulldozer	0.089	87
Loaded Trucks	0.076	86
Small Bulldozer	0.003	58

Unmitigated Vibration Levels

Sensitive Receptors	Distance	PPV /a/	Damage Threshold	Exceed Threshold?
Residences to the east	10	0.352	0.2	Yes
Residences to the south	40	0.044	0.2	No
Distance at which threshold exceeded.	14	0.212	0.2	N/A

/a/ Assumes large bulldozer

Mitigated Vibration Levels

Sensitive Receptors	Distance	PPV /a/	Damage Threshold	Exceed Threshold?
Residences to the east	10	0.012	0.2	No
Residences to the south	40	0.001	0.2	No
Distance at which threshold exceeded.	1	0.375	0.2	N/A

/a/ Small bulldozer per Mitigation Measure N7

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, September 2018.

Traffic Noise Model Runs

REPORT:	**Results: Sound Levels - No Barrier Objects**		
TNM VERSION	3.0.7.60002	REPORT DATE:	14 October 2020
CALCULATED WITH:	3.0.7.60002	CALCULATION DATE:	10/14/2020 10:14:59 AM
CASE:	Alta Cuvee Mixed Use Project_Existing	ORGANIZATION:	Terry A. Hayes Associates Inc.
UNITS:	English	ANALYSIS BY:	Kieran Bartholow
DEFAULT GROUND TYPE:	Pavement	PROJECT/CONTRACT	
ATMOSPHERICS:	68°F, 50%	Average pavement type shall be used unless a state highway agency substantiates the use of a different type with approval FHWA.	
PAVEMENT TYPE(S) USED:	Average		

Receiver				Modeled Traffic Noise Levels				
				LAeq		Increase over Existing		
Name	No.	Nb. R.R.	Existing LAeq	Calc.	Absolute Criterion	Calc.	Relative Criterion	Type of Impact
			dBA	dBA	dBA	dBA	dBA	
Etiwanda Ave. between Foothill Blvd. and Garcia Dr.	1	1	---	69.6	0.0	---	---	Sound Level
Foothill Blvd. between Etiwanda Ave. and Illex St.	2	1	---	70.1	0.0	---	---	Sound Level
Foothill Blvd. between Sacred Heart Pl. and Etiwanda Ave.	3	1	---	71.5	0.0	---	---	Sound Level
Etiwanda Ave. between Arrow Route and Foothill Blvd.	4	1	---	67.8	0.0	---	---	Sound Level

REPORT:	**Results: Sound Levels - No Barrier Objects**		
TNM VERSION	3.0.7.60002	REPORT DATE:	14 October 2020
CALCULATED WITH:	3.0.7.60002	CALCULATION DATE:	10/14/2020 10:17:38 AM
CASE:	Alta Cuvee Mixed Use Project_OpeningYearNoProject	ORGANIZATION:	Terry A. Hayes Associates Inc.
UNITS:	English	ANALYSIS BY:	Kieran Bartholow
DEFAULT GROUND TYPE:	Pavement	PROJECT/CONTRACT	
ATMOSPHERICS:	68°F, 50%	Average pavement type shall be used unless a state highway agency substantiates the use of a different type with approval FHWA.	
PAVEMENT TYPE(S) USED:	Average		

Receiver				Modeled Traffic Noise Levels				
				LAeq		Increase over Existing		
Name	No.	Nb. R.R.	Existing LAeq	Calc.	Absolute Criterion	Calc.	Relative Criterion	Type of Impact
			dBA	dBA	dBA	dBA	dBA	
Etiwanda Ave. between Foothill Blvd. and Garcia Dr.	1	1	---	69.7	0.0	---	---	Sound Level
Foothill Blvd. between Etiwanda Ave. and Illex St.	2	1	---	71.6	0.0	---	---	Sound Level
Foothill Blvd. between Sacred Heart Pl. and Etiwanda Ave.	3	1	---	71.8	0.0	---	---	Sound Level
Etiwanda Ave. between Arrow Route and Foothill Blvd.	4	1	---	67.9	0.0	---	---	Sound Level

REPORT:	**Results: Sound Levels - No Barrier Objects**		
TNM VERSION	3.0.7.60002	REPORT DATE:	9 August 2021
CALCULATED WITH:	3.0.7.60002	CALCULATION DATE:	8/9/2021 4:39:07 PM
CASE:	Alta Cuvee Mixed Use Project_OpeningYearProject	ORGANIZATION:	Terry A. Hayes Associates Inc.
UNITS:	English	ANALYSIS BY:	Kieran Bartholow
DEFAULT GROUND TYPE:	Pavement	PROJECT/CONTRACT	
ATMOSPHERICS:	68°F, 50%	Average pavement type shall be used unless a state highway agency substantiates the use of a different type with approval FHWA.	
PAVEMENT TYPE(S) USED:	Average		

Receiver				Modeled Traffic Noise Levels				
				LAeq		Increase over Existing		
Name	No.	Nb. R.R.	Existing LAeq	Calc.	Absolute Criterion	Calc.	Relative Criterion	Type of Impact
			dBA	dBA	dBA	dBA	dBA	
Etiwanda Ave. between Foothill Blvd. and Garcia Dr.	1	1	---	69.7	0.0	---	---	Sound Level
Foothill Blvd. between Etiwanda Ave. and Illex St.	2	1	---	71.6	0.0	---	---	Sound Level
Foothill Blvd. between Sacred Heart Pl. and Etiwanda Ave.	3	1	---	71.8	0.0	---	---	Sound Level
Etiwanda Ave. between Arrow Route and Foothill Blvd.	4	1	---	68.0	0.0	---	---	Sound Level

REPORT:	**Results: Sound Levels - No Barrier Objects**		
TNM VERSION	3.0.7.60002	REPORT DATE:	14 October 2020
CALCULATED WITH:	3.0.7.60002	CALCULATION DATE:	10/14/2020 11:09:06 AM
CASE:	Alta Cuvee Mixed Use Project_FutureYearNo Project	ORGANIZATION:	Terry A. Hayes Associates Inc.
UNITS:	English	ANALYSIS BY:	Kieran Bartholow
DEFAULT GROUND TYPE:	Pavement	PROJECT/CONTRACT	
ATMOSPHERICS:	68°F, 50%	Average pavement type shall be used unless a state highway agency substantiates the use of a different type with approval FHWA.	
PAVEMENT TYPE(S) USED:	Average		

Receiver				Modeled Traffic Noise Levels				
				LAeq		Increase over Existing		
Name	No.	Nb. R.R.	Existing LAeq	Calc.	Absolute Criterion	Calc.	Relative Criterion	Type of Impact
			dBA	dBA	dBA	dBA	dBA	
Etiwanda Ave. between Foothill Blvd. and Garcia Dr.	1	1	---	69.9	0.0	---	---	Sound Level
Foothill Blvd. between Etiwanda Ave. and Illex St.	2	1	---	72.4	0.0	---	---	Sound Level
Foothill Blvd. between Sacred Heart Pl. and Etiwanda Ave.	3	1	---	72.7	0.0	---	---	Sound Level
Etiwanda Ave. between Arrow Route and Foothill Blvd.	4	1	---	68.1	0.0	---	---	Sound Level

REPORT:	**Results: Sound Levels - No Barrier Objects**		
TNM VERSION	3.0.7.60002	REPORT DATE:	9 August 2021
CALCULATED WITH:	3.0.7.60002	CALCULATION DATE:	8/9/2021 5:02:43 PM
CASE:	Alta Cuvee Mixed Use Project_FutureYearProject	ORGANIZATION:	Terry A. Hayes Associates Inc.
UNITS:	English	ANALYSIS BY:	Kieran Bartholow
DEFAULT GROUND TYPE:	Pavement	PROJECT/CONTRACT	
ATMOSPHERICS:	68°F, 50%	Average pavement type shall be used unless a state highway agency substantiates the use of a different type with approval FHWA.	
PAVEMENT TYPE(S) USED:	Average		

Receiver				Modeled Traffic Noise Levels				
				LAeq		Increase over Existing		
Name	No.	Nb. R.R.	Existing LAeq	Calc.	Absolute Criterion	Calc.	Relative Criterion	Type of Impact
			dBA	dBA	dBA	dBA	dBA	
Etiwanda Ave. between Foothill Blvd. and Garcia Dr.	1	1	---	69.9	0.0	---	---	Sound Level
Foothill Blvd. between Etiwanda Ave. and Illex St.	2	1	---	72.4	0.0	---	---	Sound Level
Foothill Blvd. between Sacred Heart Pl. and Etiwanda Ave.	3	1	---	72.8	0.0	---	---	Sound Level
Etiwanda Ave. between Arrow Route and Foothill Blvd.	4	1	---	68.3	0.0	---	---	Sound Level

REPORT:	**Results: Sound Levels - No Barrier Objects**		
TNM VERSION	3.0.7.60002	REPORT DATE:	14 October 2020
CALCULATED WITH:	3.0.7.60002	CALCULATION DATE:	10/14/2020 12:55:33 PM
CASE:	Alta Cuvee Mixed Use_Haul Trucks	ORGANIZATION:	Terry A. Hayes Associates Inc.
UNITS:	English	ANALYSIS BY:	Kieran Bartholow
DEFAULT GROUND TYPE:	Pavement	PROJECT/CONTRACT	
ATMOSPHERICS:	68°F, 50%	Average pavement type shall be used unless a state highway agency substantiates the use of a different type with approval FHWA.	
PAVEMENT TYPE(S) USED:	Average		

Receiver				Modeled Traffic Noise Levels				
				LAeq		Increase over Existing		
Name	No.	Nb. R.R.	Existing LAeq	Calc.	Absolute Criterion	Calc.	Relative Criterion	Type of Impact
			dBA	dBA	dBA	dBA	dBA	
Etiwanda Ave. between Foothill Blvd. and Garcia Dr.	1	1	---	69.6	0.0	---	---	Sound Level
Foothill Blvd. between Etiwanda Ave. and Illex St.	2	1	---	70.2	0.0	---	---	Sound Level
Foothill Blvd. between Sacred Heart Pl. and Etiwanda Ave.	3	1	---	71.9	0.0	---	---	Sound Level
Etiwanda Ave. between Arrow Route and Foothill Blvd.	4	1	---	68.1	0.0	---	---	Sound Level

Noise Monitoring Reports

Noise Monitoring Site 1 (8011 Etiwanda Avenue)

Alta Cuvee Mixed Use_Site 1

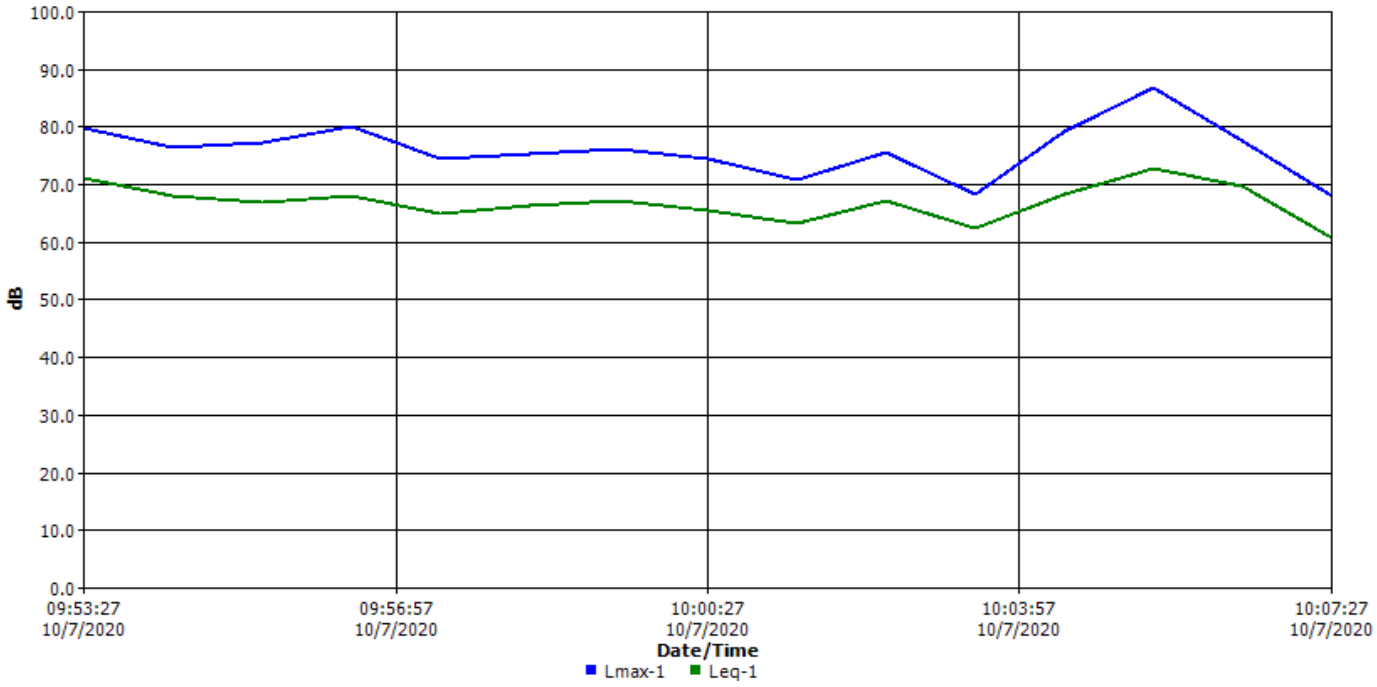
Information Panel

Name	Alta Cuvee Mixed Use_Site 1
Start Time	Wednesday, October 07, 2020 09:52:27
Stop Time	Wednesday, October 07, 2020 10:07:32
Device Model Type	SoundPro DL
Comments	

General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	67.7 dB	Exchange Rate	1	3 dB
Weighting	1	A	Response	1	SLOW
Bandwidth	1	OFF	Exchange Rate	2	3 dB
Weighting	2	A	Response	2	SLOW

Logged Data Chart



Logged Data Table

Timestamp	Lmax-1	Leq-1
10/7/2020 9:53:27 AM	79.6	71.1
10/7/2020 9:54:27 AM	76.3	67.8
10/7/2020 9:55:27 AM	77.3	66.7
10/7/2020 9:56:27 AM	79.9	67.8
10/7/2020 9:57:27 AM	74.4	64.9
10/7/2020 9:58:27 AM	75.2	66.3
10/7/2020 9:59:27 AM	76.1	67.0
10/7/2020 10:00:27 AM	74.3	65.4
10/7/2020 10:01:27 AM	70.6	63.2
10/7/2020 10:02:27 AM	75.5	67.0
10/7/2020 10:03:27 AM	68.2	62.4
10/7/2020 10:04:27 AM	79.1	68.1
10/7/2020 10:05:27 AM	86.8	72.6
10/7/2020 10:06:27 AM	77.4	69.7
10/7/2020 10:07:27 AM	67.9	60.7

Noise Monitoring Site 2 (Foothill Boulevard)

Alta Cuvee Mixed Use_Site 2

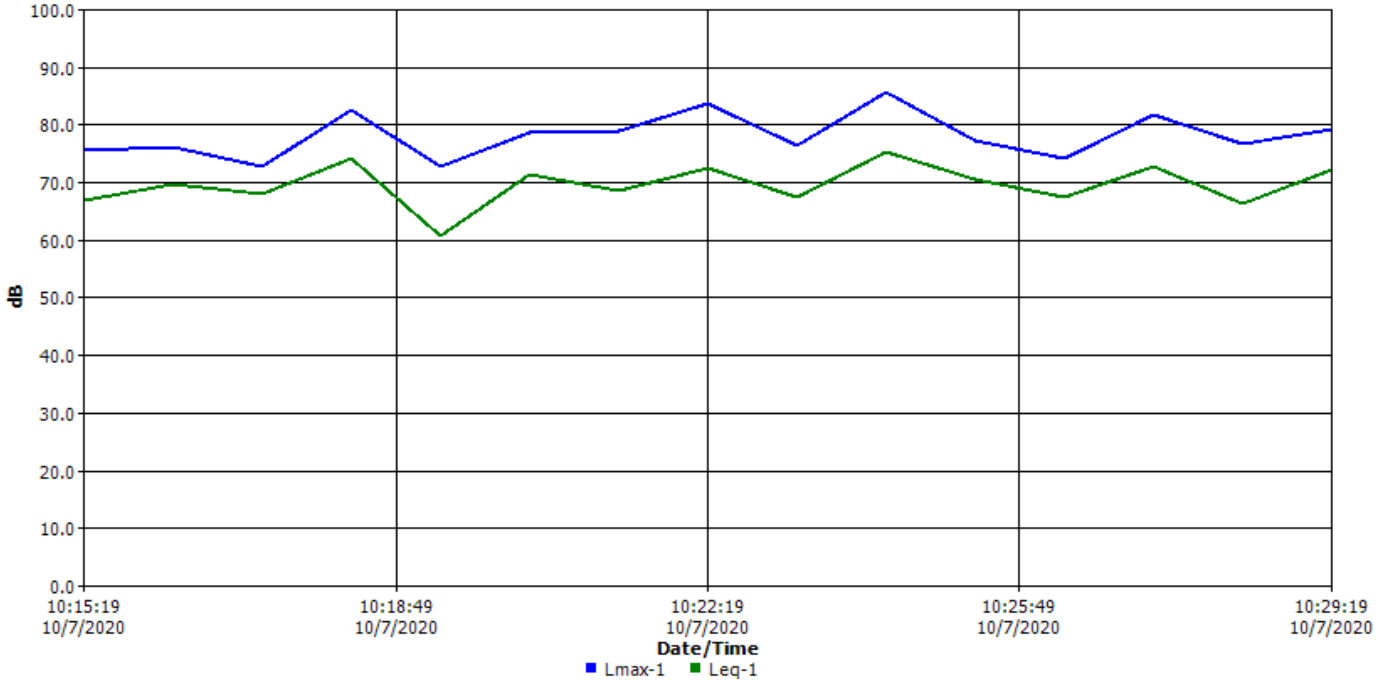
Information Panel

Name	Alta Cuvee Mixed Use_Site 2
Start Time	Wednesday, October 07, 2020 10:14:19
Stop Time	Wednesday, October 07, 2020 10:29:19
Device Model Type	SoundPro DL
Comments	

General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	70.7 dB	Exchange Rate	1	3 dB
Weighting	1	A	Response	1	SLOW
Bandwidth	1	OFF	Exchange Rate	2	3 dB
Weighting	2	A	Response	2	SLOW

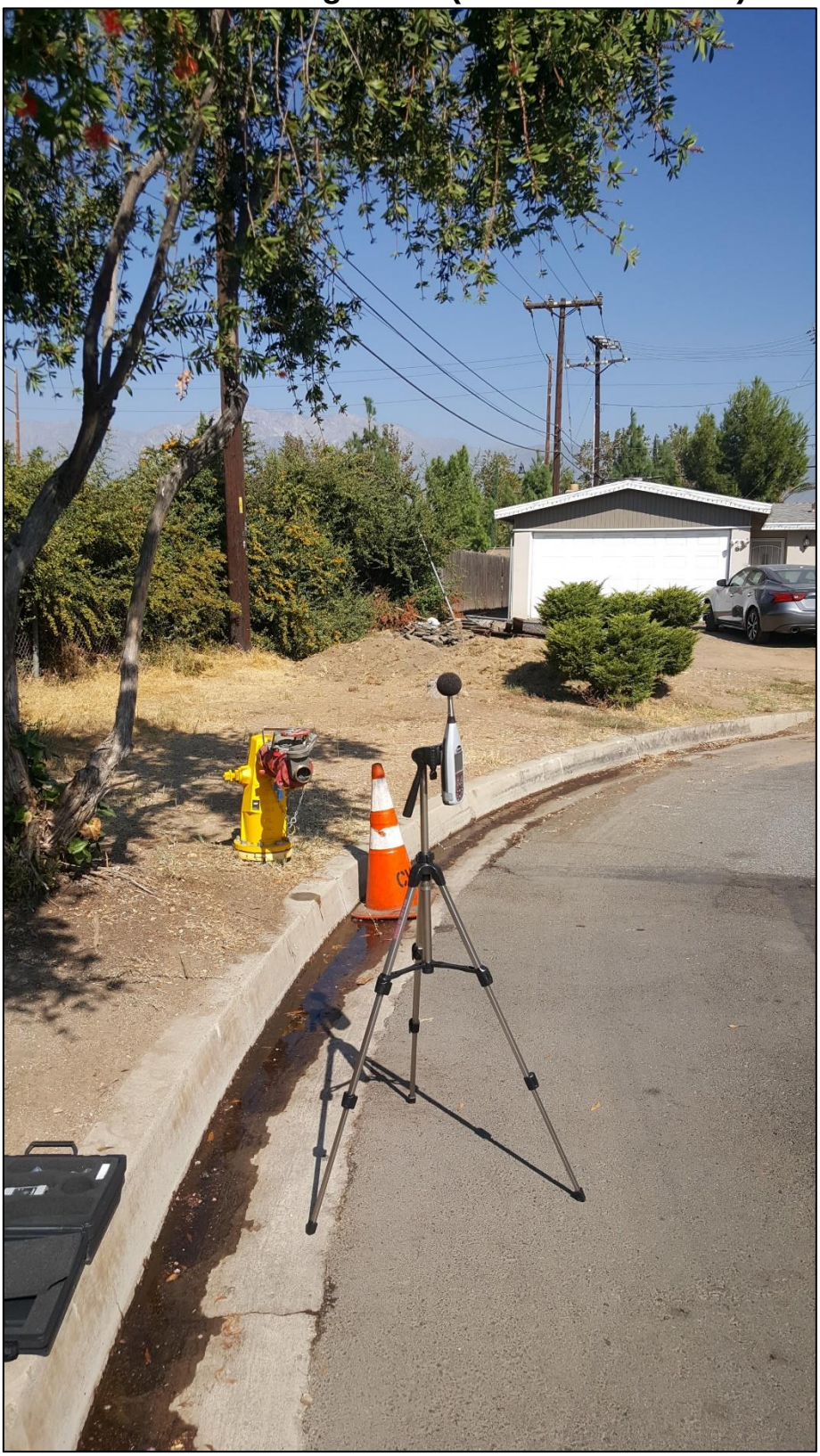
Logged Data Chart



Logged Data Table

Timestamp	Lmax-1	Leq-1
10/7/2020 10:15:19 AM	75.5	66.7
10/7/2020 10:16:19 AM	76.0	69.5
10/7/2020 10:17:19 AM	72.6	67.8
10/7/2020 10:18:19 AM	82.6	74.1
10/7/2020 10:19:19 AM	72.6	60.6
10/7/2020 10:20:19 AM	78.7	71.4
10/7/2020 10:21:19 AM	78.9	68.4
10/7/2020 10:22:19 AM	83.6	72.5
10/7/2020 10:23:19 AM	76.3	67.4
10/7/2020 10:24:19 AM	85.7	75.2
10/7/2020 10:25:19 AM	77.1	70.4
10/7/2020 10:26:19 AM	74.2	67.3
10/7/2020 10:27:19 AM	81.7	72.8
10/7/2020 10:28:19 AM	76.5	66.2
10/7/2020 10:29:19 AM	79.1	72.1

Noise Monitoring Site 3 (13015 Vine Street)



Alta Cuvee Mixed Use_Site 3

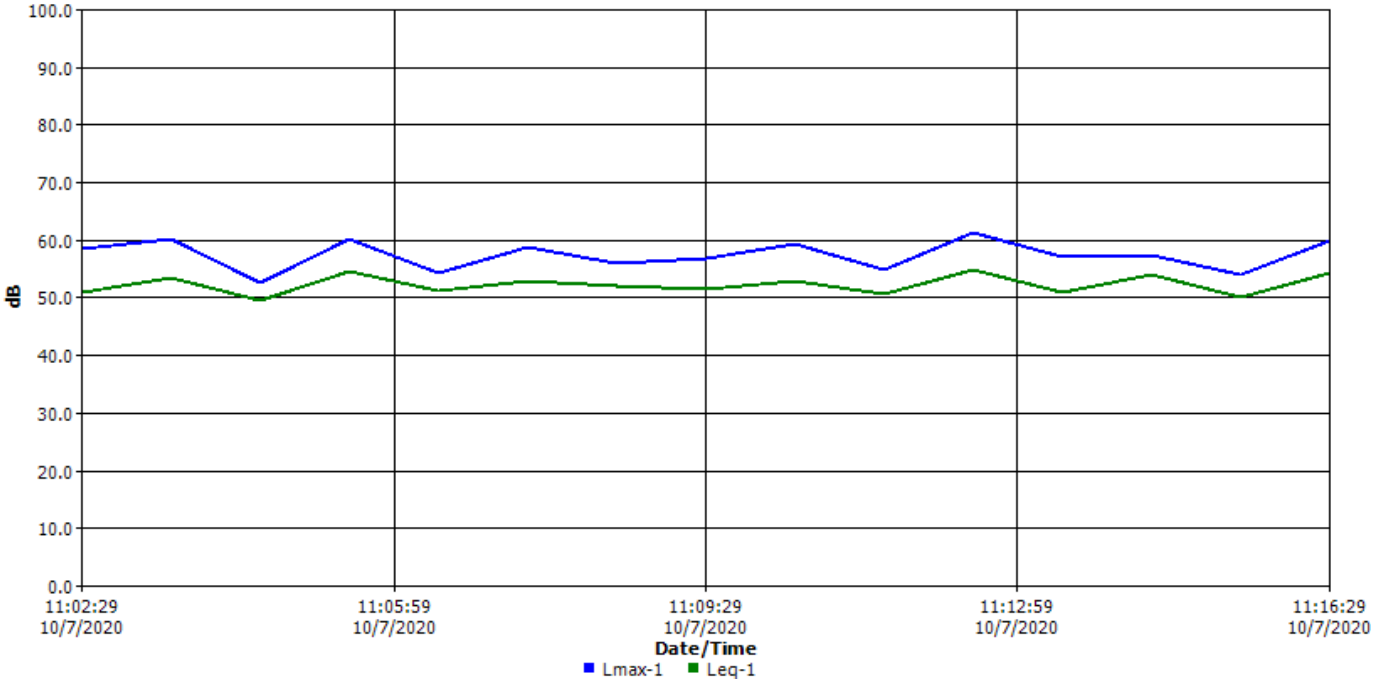
Information Panel

Name	Alta Cuvee Mixed Use_Site 3
Start Time	Wednesday, October 07, 2020 11:01:29
Stop Time	Wednesday, October 07, 2020 11:16:29
Device Model Type	SoundPro DL
Comments	

General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	52.4 dB	Exchange Rate	1	3 dB
Weighting	1	A	Response	1	SLOW
Bandwidth	1	OFF	Exchange Rate	2	3 dB
Weighting	2	A	Response	2	SLOW

Logged Data Chart



Logged Data Table

Timestamp	Lmax-1	Leq-1
10/7/2020 11:02:29 AM	58.5	50.9
10/7/2020 11:03:29 AM	60.1	53.4
10/7/2020 11:04:29 AM	52.4	49.3
10/7/2020 11:05:29 AM	60.0	54.5
10/7/2020 11:06:29 AM	54.3	51.2
10/7/2020 11:07:29 AM	58.7	52.7
10/7/2020 11:08:29 AM	56.0	52.1
10/7/2020 11:09:29 AM	56.7	51.5
10/7/2020 11:10:29 AM	59.2	52.8
10/7/2020 11:11:29 AM	54.9	50.7
10/7/2020 11:12:29 AM	61.3	54.7
10/7/2020 11:13:29 AM	57.1	50.8
10/7/2020 11:14:29 AM	57.2	53.8
10/7/2020 11:15:29 AM	53.8	50.1
10/7/2020 11:16:29 AM	59.9	54.3

Noise Monitoring Site 4 (12985 Chestnut Avenue)

Alta Cuvee Mixed Use_Site 4

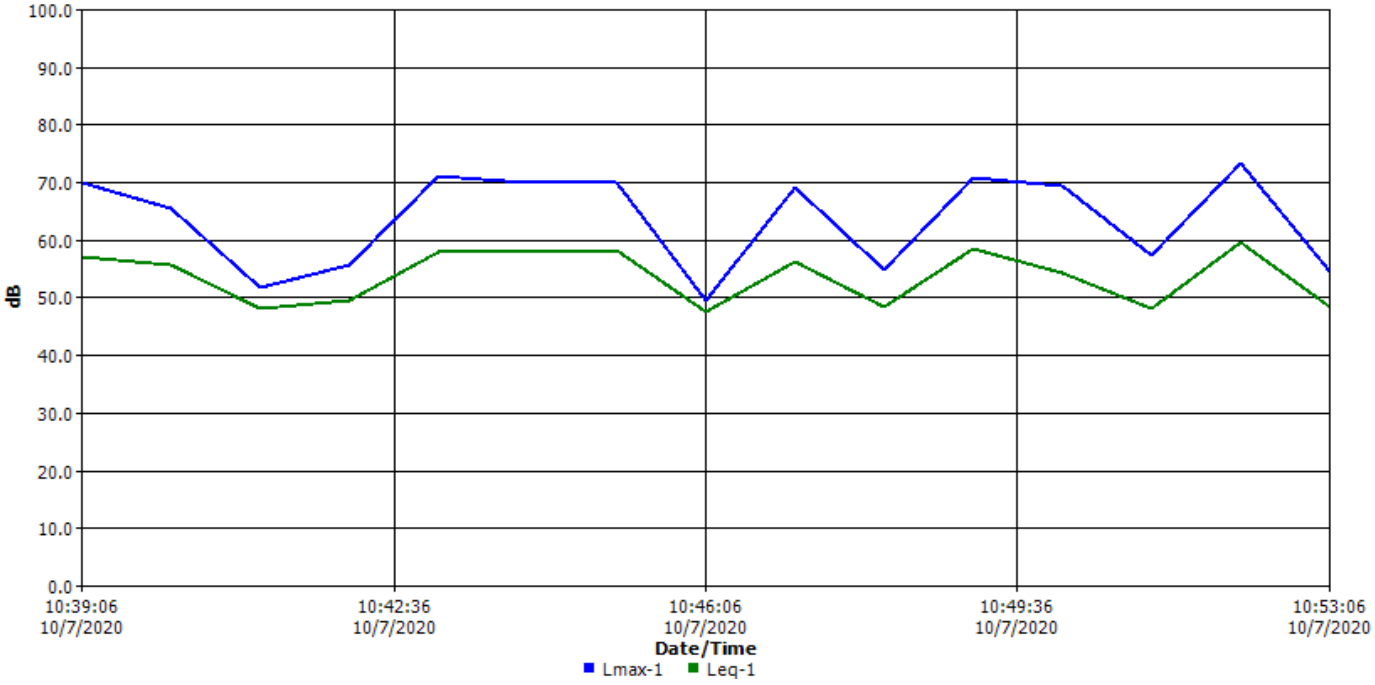
Information Panel

Name	Alta Cuvee Mixed Use_SIte 4
Start Time	Wednesday, October 07, 2020 10:38:06
Stop Time	Wednesday, October 07, 2020 10:53:06
Device Model Type	SoundPro DL
Comments	

General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	55.5 dB	Exchange Rate	1	3 dB
Weighting	1	A	Response	1	SLOW
Bandwidth	1	OFF	Exchange Rate	2	3 dB
Weighting	2	A	Response	2	SLOW

Logged Data Chart



Logged Data Table

Timestamp	Lmax-1	Leq-1
10/7/2020 10:39:06 AM	70.0	57.1
10/7/2020 10:40:06 AM	65.5	55.7
10/7/2020 10:41:06 AM	51.7	48.1
10/7/2020 10:42:06 AM	55.6	49.4
10/7/2020 10:43:06 AM	71.0	57.8
10/7/2020 10:44:06 AM	69.8	57.9
10/7/2020 10:45:06 AM	69.8	58.2
10/7/2020 10:46:06 AM	49.5	47.4
10/7/2020 10:47:06 AM	69.0	56.3
10/7/2020 10:48:06 AM	54.9	48.2
10/7/2020 10:49:06 AM	70.7	58.5
10/7/2020 10:50:06 AM	69.2	54.1
10/7/2020 10:51:06 AM	57.4	48.1
10/7/2020 10:52:06 AM	73.2	59.5
10/7/2020 10:53:06 AM	54.5	48.2

Noise Monitoring Site 5 (Etiwanda Avenue)

Alta Cuvee Mixed Use_Site 5

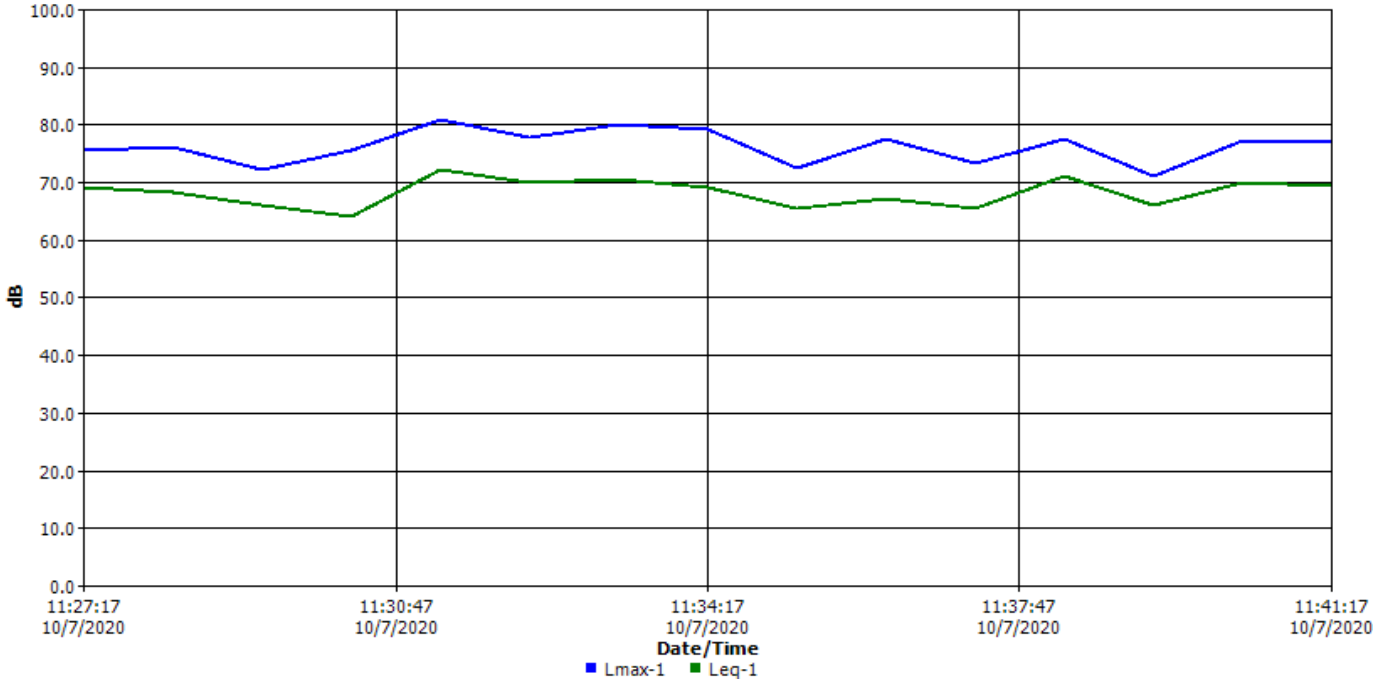
Information Panel

Name	Alta Cuvee Mixed Use_Site 5
Start Time	Wednesday, October 07, 2020 11:26:17
Stop Time	Wednesday, October 07, 2020 11:41:17
Device Model Type	SoundPro DL
Comments	

General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	68.7 dB	Exchange Rate	1	3 dB
Weighting	1	A	Response	1	SLOW
Bandwidth	1	OFF	Exchange Rate	2	3 dB
Weighting	2	A	Response	2	SLOW

Logged Data Chart



Logged Data Table

Timestamp	Lmax-1	Leq-1
10/7/2020 11:27:17 AM	75.6	69.1
10/7/2020 11:28:17 AM	76.0	68.1
10/7/2020 11:29:17 AM	72.1	66.0
10/7/2020 11:30:17 AM	75.4	64.1
10/7/2020 11:31:17 AM	80.8	72.2
10/7/2020 11:32:17 AM	77.7	69.9
10/7/2020 11:33:17 AM	80.1	70.5
10/7/2020 11:34:17 AM	79.1	69.0
10/7/2020 11:35:17 AM	72.4	65.3
10/7/2020 11:36:17 AM	77.4	67.1
10/7/2020 11:37:17 AM	73.2	65.5
10/7/2020 11:38:17 AM	77.5	71.0
10/7/2020 11:39:17 AM	71.0	66.0
10/7/2020 11:40:17 AM	77.1	70.0
10/7/2020 11:41:17 AM	77.0	69.2