Appendix H:
Noise Supporting Information

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Memorandum

Date: June 17, 2024

To: Kelley Rutchena, Land Acquisition and Development Manager

From: Philip Ault, Director of Noise and Air Quality, FirstCarbon Solutions

Subject: Noise Impacts Analysis for the Proposed Glider Residential Project, City of San José, Santa Clara County, California

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At the request of TTLC Management, Inc. (project applicant), FirstCarbon Solutions (FCS), prepared this memorandum to summarize the findings of the Draft Environmental Impact Report (EIR) prepared for the proposed Glider Residential Project (proposed project). The project site is located at 511 Cozy Drive (Assessor's Parcel Number [APN] 689-08-001) in the City of San José (City), in Santa Clara County, California. The project site encompasses approximately 9.51 acres and is currently developed with the former Glider Elementary School, which was closed and put up for sale in 2018. The project site is bordered by single-family residences on the north, south, east, and west. The project site is adjacent to Glider Drive on the east and Cozy Drive on the south. Recommended measures to avoid or minimize potential project-related impacts to sensitive receptors in the project vicinity are included in this memorandum as appropriate.

PROJECT UNDERSTANDING

The former Glider Elementary School currently exists on the project site and consists of six buildings, surface parking, recreational fields, and cement/asphalt recreation areas for students. The school has been vacated since 2018. The proposed project would include demolition of the existing school and the development of 64 single-family residential lots and eight duplexes, for a total of 80 residential units. The corresponding density would be 8.4 density units per acre (du/ac). The existing parcel would be reconfigured into 80 residential lots, as well as an open space and park parcel of approximately 0.68 acre and 2.09 acres of public right-of way. The proposed project would construct two internal streets (Street A and Street B) to provide internal circulation within the site.

The project site is designated Public/Quasi-Public (PQP) under the Envision San José 2040 General Plan, and is zoned Single-Family Residential (R-1-8).

NOISE AND VIBRATION FUNDAMENTALS

Noise Fundamentals

Noise is generally defined as unwanted sound. Sound becomes unwanted when it interferes with normal activities, causes physiological harm, or interferes with communication, work, rest, recreation, and sleep. The vibration of sound pressure waves in the air produces sound. Sound pressure levels are used to measure the intensity of sound and are described in terms of decibels. The decibel (dB) is a logarithmic unit, which expresses the ratio of the sound pressure level being measured to a standard reference level. The 0 point on the dB scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Changes of 3 dB or less are only perceptible in laboratory environments. Audible increases in noise levels generally refer to a change of 3 dB or more, as this level has been found to be barely perceptible to the human ear in outdoor environments. Only audible changes in existing ambient or background noise levels are considered potentially significant.

An increase of 10 dB represents a 10-fold increase in acoustic energy, while 20 dB is 100 times more intense, and 30 dB is 1,000 times more intense. Each 10-dB increase in sound level is perceived as approximately a doubling of loudness. Sound intensity is normally measured through the A-weighted sound level. A-weighted decibels (dBA) approximate the subjective response of the human ear to a broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies that are audible to the human ear.

Noise Descriptors

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound, including during sensitive times of the day and night. The predominant rating scales in the State of California are equivalent sound level (L_{eq}), Community Noise Equivalent Level (CNEL), and L_{dn} that are based on dBA. The L_{eq} is the total sound energy of time varying noise over a sample period. The CNEL is the time varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). The L_{dn} is similar to the CNEL scale, but without the adjustment for events occurring during the evening relaxation hours. CNEL and L_{dn} measurements are typically within 1 dBA of each other and are normally exchangeable. These additions are made to the sound levels at these times because there is a decrease in the ambient noise levels during the evening and nighttime hours, which creates an increased sensitivity to sounds. For this reason, sound is perceived to be louder in the evening and nighttime hours as compared with daytime hours, and is weighted accordingly. Many cities rely on the CNEL noise standard to assess transportation-related impacts on noise-sensitive land uses.

Characteristics of Groundborne Vibration

Groundborne vibration consists of rapidly fluctuating motion through a solid medium, specifically the ground, which has an average motion of zero and in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Several different methods are used to quantify vibration amplitude such as the maximum instantaneous peak in the vibrations velocity, which is known as the peak particle velocity (PPV) or the root mean square (rms) amplitude of the vibration velocity. Construction activities, such as blasting, pile driving and operating heavy earthmoving equipment, are common sources of groundborne vibration. Construction vibration impacts on building structures are generally assessed in terms of PPV.

As vibration waves propagate from a source, the vibration energy decreases in a logarithmic nature and the vibration levels typically decrease by 6 VdB per doubling of the distance from the vibration source. As stated above, this drop-off rate can vary greatly depending on the soil type, but it has been shown to be effective enough for screening purposes to identify potential vibration impacts that may need to be studied through actual field tests.

Regulatory Setting

Federal Regulations

United States Environmental Protection Agency

In 1972, Congress enacted the Noise Control Act.[1] This Act authorized the United States Environmental Protection Agency (EPA) to publish descriptive data on the effects of noise and establish levels of sound "requisite to protect the public welfare with an adequate margin of safety." These levels are separated into health (hearing loss levels) and welfare (annoyance levels) categories, as shown in Table 1. The EPA cautions that these identified levels are not standards because they do not take into account the cost or feasibility of the levels.

For protection against hearing loss, 96 percent of the population would be protected if sound levels are less than or equal to an $L_{eq(24)}$ of 70 dBA. The "(24)" signifies an L_{eq} duration of 24 hours. The EPA activity and interference guidelines are designed to ensure reliable speech communication at about 5 feet in the outdoor environment. For outdoor and indoor environments, interference with activity and annoyance should not occur if levels are below 55 dBA and 45 dBA, respectively.

[1] United States Environmental Protection Agency (EPA). 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. Website: https://nepis.epa.gov/Exe/ZyPDF.cgi/2000L3LN.PDF?Dockey=2000L3LN.PDF. Accessed June 17, 2024.

Table 1: Summary of EPA-Recommended Noise Levels to Protect Public Welfare

Effect	Level	Area
Hearing loss	$L_{eq}(24) \leq 70$ dB	All areas.
Outdoor activity interference and annoyance	$L_{dn} \leq 55$ dB	Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use.
	$L_{eq}(24) \leq 55$ dB	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor activity interference and annoyance	$L_{eq} \leq 45$ dB	Indoor residential areas.
	$L_{eq}(24) \leq 45$ dB	Other indoor areas with human activities such as schools, etc.

Notes:
(24) signifies an L_{eq} duration of 24 hours.
dB = decibel
Source: United States Environmental Protection Agency (EPA). 1978. Protective Noise Levels, EPA 550/9-79-100. November.

Federal Transit Administration

The Federal Transit Administration (FTA) has established industry-accepted standards for vibration impact criteria and impact assessment. These guidelines are published in its Transit Noise and Vibration Impact Assessment Manual.[2] The FTA Guidelines include thresholds for construction vibration impacts for various structural categories as shown in Table 2.

Table 2: Federal Transit Administration Construction Vibration Impact Criteria

Building Category	PPV (in/sec)	Approximate VdB
I. Reinforced—Concrete, Steel or Timber (no plaster)	0.5	102
II. Engineered Concrete and Masonry (no plaster)	0.3	98
III. Nonengineered Timber and Masonry Buildings	0.2	94
IV. Buildings Extremely Susceptible to Vibration Damage	0.12	90

Notes:
VdB = velocity in decibels
PPV = peak particle velocity
in/sec = inch per second
Source: Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September.

[2] Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September.

State Regulations

The State of California has established regulations that help prevent adverse impacts to occupants of buildings located near noise sources. Referred to as the "State Noise Insulation Standard," it requires buildings to meet performance standards through design and/or building materials that would offset any noise source in the vicinity of the receptor. State regulations include requirements for the construction of new hotels, motels, apartment houses, and dwellings other than detached single-family dwellings that are intended to limit the extent of noise transmitted into habitable spaces. These requirements are found in the California Code of Regulations, Title 24 (known as the Building Standards Administrative Code), Part 2 (known as the California Building Standards Code [CBC]), Appendix Chapter 12, Section 1206.4. For limiting noise transmitted between adjacent dwelling units, the noise insulation standards specify the extent to which walls, doors, and floor-ceiling assemblies must block or absorb sound. For limiting noise from exterior noise sources, the noise insulation standards set an interior standard of 45 dBA CNEL in any habitable room with all doors and windows closed.

The State has also established land use compatibility guidelines for determining acceptable noise levels for specified land uses. The City of San José has adopted and modified those guidelines as described below.

Assembly Bill (AB) 1307 went into effect January 1, 2024. This bill clarifies that "for residential projects, the effects of noise generated by project occupants and their guests on human beings is not a significant effect on the environment." Therefore, this analysis does not address potential noise impacts from future occupants and their guests on sensitive receptors in the project vicinity.

Local Regulations

The project site is located within the City of San José and this analysis was performed using the City's noise regulations. The City of San José addresses noise in the Noise Element of the Envision San José 2040 General Planand in the City of San José Municipal Code.[3,4]

Envision San José 2040 General Plan

The following are the noise goals and policies established by the Envision San José 2040 General Plan that are applicable to the proposed project:

Envision San José 2040 General Plan Relevant Noise and Vibration Policies

Policies	Description
Policy EC-1.1	Locate new development in areas where noise levels are appropriate for the proposed uses. Consider federal, State and City noise standards and guidelines as a part of new development review.

[3] City of San José. Envision San José 2040 General Plan. Amended 2024. Website: https://www.sanjoseca.gov/home/showpublisheddocument/22359/637928744399330000. Accessed June 17 , 2024.

[4] City of San José. San José Municipal Code. Code of Ordinances. 2024. Website: https://library.municode.com/ca/san_jose/codes/code_of_ordinances. Accessed June 17, 2024.

Envision San José 2040 General Plan Relevant Noise and Vibration Policies

Policies	Description
Policy EC-1.2	Minimize the noise impacts of new development on land uses sensitive to increased noise levels by limiting noise generation and by requiring use of noise attenuation measures such as acoustical enclosures and sound barriers, where feasible. The City considers significant noise impacts to occur if a project would: • Cause the Day-Night Average Sound Level (Ldn) at noise-sensitive receptors to increase by five A-weighted decibel (dBA) Ldn or more where the noise levels would remain "Normally Acceptable"; or • Cause the Ldn at noise-sensitive receptors to increase by three dBA Ldn or more where noise levels would equal or exceed the "Normally Acceptable" level.
Policy EC-1.7	Require construction operations within San José to use best available noise suppression devices and techniques and limit construction hours near residential uses per the City's Municipal Code. The City considers significant construction noise impacts to occur if a project located within 500 feet of residential uses or 200 feet of commercial or office uses would: • Involve substantial noise generating activities (such as building demolition, grading, excavation, pile driving, use of impact equipment, or building framing) continuing for more than 12 months. For such large or complex projects, a construction noise logistics plan that specifies hours of construction, noise, and vibration minimization measures, posting or notification of construction schedules, and designation of a noise disturbance coordinator who would respond to neighborhood complaints will be required to be in place prior to the start of construction and implemented during construction to reduce noise impacts on neighboring residents and other uses.
Policy EC-1.9	Require noise studies for land use proposals where known or suspected loud intermittent noise sources occur which may impact adjacent existing or planned land uses. For new residential development affected by noise from heavy rail, light rail, BART, or other single-event noise sources, implement mitigation so that recurring maximum instantaneous noise levels do not exceed 50 dBA L_{max} in bedrooms and 55 dBA L_{max} in other rooms.
Policy EC-2.1	Near light and heavy rail lines or other sources of groundborne vibration, minimize vibration impacts on people, residences, and businesses through the use of setbacks and/or structural design features that reduce vibration to levels at or below the guidelines of the Federal Transit Administration. Require new development within 100 feet of rail lines to demonstrate prior to project approval that vibration experienced by residents and vibration sensitive uses would not exceed these guidelines.
Policy EC-2.3	Require new development to minimize vibration impacts to adjacent uses during demolition and construction. For sensitive historic structures, a vibration limit of 0.08 in/sec (peak particle velocity) PPV will be used to minimize the potential for cosmetic damage to a building. A vibration limit of 0.20 in/sec PPV will be used to minimize the potential for cosmetic damage at buildings of normal conventional construction.

The City's land use compatibility standards are shown in Table 3.

Table 3: Land Use Compatibility Guidelines for Community Noise in San José

Exterior Noise Exposure (L_{dn} in Decibels (DBA))											
Land Use Category	55	60		65		70		75		80	
1. Residential, Hotels and Motels, Hospitals and Residential Care[1]											
2. Outdoor Sports and Recreation, Neighborhood Parks and Playgrounds											
3. Schools, Libraries, Museums, Meeting Halls, Churches											
4. Office Buildings, Business Commercial, and Professional Offices											
5. Sports Arena, Outdoor Spectator Sports											
6. Public and Quasi-Public Auditoriums, Concert Halls, Amphitheaters											

Key:

	Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
	Conditionally Acceptable: Specified land use may be permitted only after detailed analysis of the noise reduction requirements and needed noise insulation features included in the design.
	Unacceptable: New construction or development should generally not be undertaken because mitigation is usually not feasible to comply with noise element policies.

Note:
[1] Noise mitigation to reduce interior noise levels pursuant to Policy EC-1.1 is required.
Source: City of San José. 2024. Envision San José 2040 General Plan, Noise Element. November 1.

City of San José Municipal Code

Municipal Code Section 20.100.450 restricts construction hours within 500 feet of a residential unit to occur only between 7:00 a.m. to 7:00 p.m. Monday through Friday, unless otherwise expressly allowed in a Development Permit or other planning approval. No construction activities are permitted on the weekends at sites within 500 feet of a residence. The Municipal Code does not establish quantitative noise limits for demolition or construction activities occurring in the City.

Municipal Code section 20.30.700 establishes a noise performance standard for combined noise generated on a project site as measured at any receiving property line. The ordinance limits noise levels to 55 dBA maximum noise/sound level (L_{max}) at any residential property line and 60 dBA L_{max} at commercial property lines, unless otherwise expressly allowed in a Development Permit or other planning approval. The City further prohibits activity on any site that causes ground vibration that is perceptible without instruments at the property line of the site.

Existing Noise Conditions

The project site is bordered by single-family residences on the north, south, east, and west. The existing noise environment in the project vicinity was documented through ambient noise monitoring. Three short-term noise measurements (15 minutes each) were taken on Thursday, January 11, 2024. The short-term noise measurements were taken between 11:00 a.m. and 12:00 p.m., during the midday peak noise hour. These measurements provide a baseline for existing noise conditions in the project vicinity.

The short-term noise measurements taken at the project site are summarized in Table 4. The noise measurements indicate that daytime ambient noise levels range from 43.8 dBA to 52.9 dBA L_{eq}. The noise monitoring survey sheet and sound level meter results are provided in Attachment A.

Table 4: Existing Ambient Noise Levels in the Project Vicinity

Site Location	Location Description	dBA	Primary Noise Sources
ST-1	Approximately 15 feet off Glider Drive, at entrance of former school's drop-off zone, east side of project boundary.	49.4 L_{eq}	Traffic on local roadways
ST-2	At SE corner of Suisse Drive and Driver Drive Intersection.	52.9 L_{eq}	Traffic on local roadways
ST-3	Approximately 15 feet from Cozy Drive, 30-40 feet west of Glider Drive, and 40 feet east of Cozy Court and Cozy Drive.	43.8 L_{eq}	Traffic on local roadways

Notes:
dBA = A-weighted decibel
L_{eq} = equivalent sound level
Source: FirstCarbon Solutions (FCS). 2024.

Thresholds Of Significance and Impact Analysis

Thresholds of Significance

According to the California Environmental Quality Act (CEQA) Guidelines updated Appendix G, to determine whether impacts related to noise and vibration are significant environmental effects, the following questions should be evaluated.

Would the proposed project:

a) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?
b) Generate 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?
c) Generate excessive groundborne vibration or groundborne noise levels?

d) 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, would the project expose people residing or working in the project area to excessive noise levels?

Question a), above, is contained in the Land Use and Planning section of CEQA Guidelines updated Appendix G. It is included here in order to address potential project conflict with the City's noise land use compatibility policies.

Noise Levels That Would Conflict with Any Land Use Plan, Policy, or Regulation

A significant impact would occur if the proposed multi-family residential land use development would be exposed to transportation noise levels in excess of applicable land use compatibility standards. The City considers environments with ambient noise levels of up to 60 dBA Day/Night Noise Level (DNL) to be "normally acceptable" for new residential land use development. Additionally, according to General Plan Policy EC-1.1, interior noise levels for all habitable rooms of the proposed multi-family residential development must not exceed 45 dBA DNL.

As noted in the Existing Noise Conditions discussion above, the documented daytime average noise levels on the project site ranged from 43.8 dBA to 52.9 dBA L_{eq}. Assuming even the highest noise measurement averaged over a 24-hour period would result in 59 dBA DNL. Therefore, these existing ambient noise levels are within the City's "normally acceptable" range for new residential land use development (below 60 dBA DNL).

Therefore, the proposed project would not conflict with the City's normally acceptable land use compatibility standard for this type of land use development. Therefore, implementation of the proposed project would not result in a conflict with applicable land use compatibility standards, and this impact would be less than significant.

Substantial Noise Increase in Excess of Standards

A significant impact would occur if the proposed project would generate a substantial temporary or permanent increase in ambient noise levels in the project vicinity in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

Construction Noise Impacts

Short-term Construction Impacts

For purposes of this analysis, a significant impact would occur if construction activities would result in a substantial temporary increase in ambient noise levels outside of the City's permissible hours for construction that would result in annoyance or sleep disturbance of nearby sensitive receptors. The City's permissible hours for construction activity are between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday. No construction is permitted on Saturdays, Sundays, or federal holidays.

While the City of San José does not establish noise level thresholds for construction activities, this analysis uses the noise limits established by the FTA to identify the potential for impacts due to substantial temporary construction noise. The FTA identifies construction noise limits in the Transit Noise and Vibration Impact Assessment Manual.[5] During daytime hours, an exterior threshold of 80 dBA L_{eq} shall be enforced at residential land uses, 85 dBA L_{eq} at commercial land uses and 90 dBA L_{eq} at industrial land uses.

Construction-related Traffic Noise

Noise impacts from construction activities associated with the proposed project would be a function of the noise generated by construction equipment, equipment location, sensitivity of nearby land uses, and the timing and duration of the construction activities. One type of short-term noise impacts that could occur during project construction would result from the increase in traffic flow on local streets, associated with the transport of workers, equipment, and materials to and from the project site.

The transport of workers and construction equipment and materials to the project site would incrementally increase noise levels on access roads leading to the site. Because workers and construction equipment would use existing routes, noise from passing trucks would be similar to existing vehicle-generated noise on these local roadways. Typically, a doubling of the Average Daily Traffic (ADT) hourly volumes on a roadway segment is required in order to result in an increase of 3 dBA in traffic noise levels, which, as discussed in the characteristics of nose discussion above, is the lowest change that can be perceptible to the human ear in outdoor environments. Project-related construction trips would not double the daily traffic volumes along any roadway segment in the project vicinity. For this reason, short-term intermittent noise from construction trips would be minor when averaged over a 24-hour time period and would not result in a perceptible increase in daily traffic noise levels in the project vicinity. Therefore, short-term construction-related noise impacts associated with the transportation of workers and equipment to the project site would be less than significant.

Construction Equipment Operational Noise

The second type of short-term noise impact is related to noise generated during construction on the project site. Construction is completed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on the site and, therefore, the noise levels surrounding the site as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full-power operation followed by 3 or 4 minutes at lower power settings. Impact equipment, such as impact pile drivers, are not expected to be used during construction of this project.

The loudest phase of construction is typically the site preparation and grading phase, as that is when the loudest pieces of heavy construction equipment would operate. For example, the maximum noise level

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[5] Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September.

generated by each scraper is assumed to be 85 dBA L_{max} at 50 feet from this equipment. Each bulldozer would also generate 85 dBA L_{max} at 50 feet. The maximum noise level generated by graders is approximately 85 dBA L_{max} at 50 feet.

A conservative but reasonable assumption is that this equipment would operate simultaneously and continuously over at least a 1-hour period in the vicinity of the closest existing residential receptors, but would move linearly over the project site as they perform their earthmoving operations, spending a relatively short amount of time adjacent to any one receptor. A characteristic of sound is that each doubling of sound sources with equal strength increases a sound level by 3 dBA. Assuming that each piece of construction equipment operates at some distance from the other equipment, a reasonable worst-case combined noise level during this phase of construction would be 90 dBA L_{max} at a distance of 50 feet from the acoustic center of a construction area. The acoustical center reference is used because construction equipment must operate at some distance from one another on a project site, and the combined noise level as measured at a point equidistant from the sources (acoustic center) would be the worst-case maximum noise level. These operations would be expected to result in a reasonable worst-case hourly average of 86 dBA L_{eq} at a distance of 50 feet from the acoustic center of a construction area. These reasonable worst-case construction noise levels would only occur during the site preparation phase of development.

The closest noise-sensitive receptors to the proposed project site are single-family residences located directly north of the project site. The closest residence would be located approximately 50 feet from the acoustic center of construction activity where multiple pieces of heavy construction equipment would potentially operate at the project site. Additionally, there is a wooden fence in front of the closest noise-sensitive receptor that is approximately 6 feet tall that would provide a minimum 3 dBA reduction. At this distance, worst-case construction noise levels could have an hourly average of up to 78 dBA L_{eq}, at the façade of the nearest single-family residential home. This reasonable worst-case hourly average is below the FTA noise threshold criteria of 80 dBA L_{eq} for receiving residential land uses, and the impact would be considered less than significant.

It should also be noted that these noise levels would be temporary, only occurring during the site preparation phase when construction equipment operates adjacent to the project boundaries. The proposed project would also comply with the City's Standard Permit Conditions (SPCs), which are outlined below, including the restriction to limit such activity to daytime hours, further reducing construction noise impacts.

Therefore, project construction noise impacts would be less than significant without mitigation.

Standard Permit Conditions

In compliance with the City of San José's Standard Permit Conditions, implementation of the following is required to reduce potential construction period noise impacts:

Construction

Construction-related Noise

Noise minimization measures include, but are not limited to, the following:

- Pile Driving is prohibited.
- Limit construction to the hours of 7:00 a.m. to 7:00 p.m. Monday through Friday for any on-site or off-site work within 500 feet of any residential unit. Construction outside of these hours may be approved through a Development Permit based on a site-specific "construction noise mitigation plan" and a finding by the Director of Planning, Building and Code Enforcement that the construction noise mitigation plan is adequate to prevent noise disturbance of affected residential use.
- Construct solid plywood fences around ground level construction sites adjacent to operational businesses, residences, or other noise-sensitive land uses.
- Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.
- Prohibit unnecessary idling of internal combustion engines.
- Locate stationary noise-generating equipment such as air compressors or portable power generators as far as possible from sensitive receptors. Construct temporary noise barriers to screen stationary noise-generating equipment when located near adjoining sensitive land uses.
- Utilize "quiet" air compressors and other stationary noise sources where technology exists.
- Control noise from construction workers' radios to a point where they are not audible at existing residences bordering the project site.
- Notify all adjacent business, residences, and other noise-sensitive land uses of the construction schedule, in writing, and provide a written schedule of "noisy" construction activities to the adjacent land uses and nearby residences.
- If complaints are received or excessive noise levels cannot be reduced using the measures above, erect a temporary noise control blanket barrier along surrounding building façades that face the construction sites.
- Designate a "disturbance coordinator" who shall be responsible for responding to any complaints about construction noise. The disturbance coordinator shall determine the cause of the noise complaint (e.g., bad muffler, etc.) and shall require that reasonable measures be implemented to correct the problem. Conspicuously post a telephone number for the disturbance coordinator at the construction site and include it in the notice sent to neighbors regarding the construction schedule.

Mobile Source Operational Noise Impacts

A significant impact would occur if project-generated traffic would result in a substantial increase in ambient noise levels compared with those that would exist without the project. The City considers a significant noise impact to occur if a project would cause the DNL at noise-sensitive receptors to increase by 5 dBA DNL or more where the noise levels would remain “normally acceptable”; or where it would cause the DNL at noise-sensitive receptors to increase by 3 dBA DNL or more where noise levels would equal or exceed the “normally acceptable” level.

Typically, a doubling of the traffic volumes on a roadway segment is required in order to result in a 3 dBA increase in traffic noise levels. The calculated PM peak-hour traffic volumes under background no project and background plus project conditions are shown below in Table 5. The roadway segment traffic volumes are based on the intersection turning volume data from the traffic study prepared for the project by TJKM transportation consultants. The data shows that the proposed project would not double traffic volumes on any of these primary access roadway segments and therefore would not result in a 3 dBA increase in traffic noise levels in the project vicinity. Analyzing the AM peak-hour or the average daily trips shows the same results. Therefore, implementation of the proposed project would not result in a substantial increase in traffic noise levels compared with traffic noise levels existing without the project, and project traffic noise impact would be less than significant.

Table 5: Roadway Segment PM Peak-hour Traffic Volumes

Receptor	Background No Project Conditions	Background Plus Project Conditions	Double Traffic Volumes (Yes/No)?	Significant Noise Increase Expected?
Snell Avenue–Santa Teresa Boulevard to Suisse Drive	842	871	No	No
Suisse Drive–Snell Avenue to Cozy Drive	112	141	No	No
Dunn Avenue–Santa Teresa Boulevard to Suisse Drive	241	277	No	No
Source: TJKM. 2024. Glider Residential Project Traffic Impact Study. June.				

Stationary Source Operational Noise Impacts

A significant impact would occur if operational noise levels generated by stationary noise sources at the proposed project site would result in a substantial permanent increase in ambient noise levels in excess of any of the noise performance thresholds established by the City of San José. The Municipal Code limits operational noise levels to 55 dBA L_{max} as measured at any receiving residential property.

The primary new stationary noise source associated with implementation of the project would be the new mechanical ventilation systems associated with the proposed residential uses. Potential impacts associated with this new noise source are analyzed below.

Mechanical Equipment Operations

At the time of this analysis, details were not available pertaining to proposed mechanical ventilation systems for the project; therefore, a reference noise level for typical mechanical ventilation systems was used. Noise levels from typical residential mechanical ventilation equipment range from 50 dBA to 70 dBA L_{eq} at a distance of approximately 5 feet.

Proposed mechanical ventilation systems could be located as close as approximately 30 feet from the nearest receiving residential property. At this distance, noise generated by the combined operation of multiple mechanical ventilation units could potentially reach up to 49 dBA L_{eq} at the nearest off-site residential receptors. These operational noise levels would not exceed the City's noise performance threshold of 55 dBA L_{max} as measured at the nearest residential property. The calculation spreadsheet with the detailed modeling assumptions is included in Attachment A.

In addition, these operational noise levels would not exceed existing daytime ambient noise levels on the project site, which are documented as ranging up to 52.9 dBA L_{eq}.

Therefore, mechanical ventilation system operational noise levels would not result in a substantial permanent increase in noise levels in excess of established standards or in excess of existing ambient noise levels. The impact of mechanical ventilation equipment operational noise levels on sensitive off-site receptors would be less than significant.

Groundborne Vibration/Noise Levels

In extreme cases, excessive groundborne vibration has the potential to cause structural damage to buildings. Common sources of groundborne vibration include construction activities such as blasting, pile driving, and operating heavy earthmoving equipment. In general, if groundborne vibration levels do not exceed levels considered perceptible, then groundborne noise levels would not be perceptible in most interior environments. Therefore, this analysis focuses on determining exceedances of groundborne vibration levels.

Short-term Construction Vibration Impacts

A significant impact would occur if the proposed project would generate excessive groundborne vibration or groundborne noise levels. According to Policy EC-2.3 of the City's General Plan, a vibration limit of 0.08 inch per second (in/sec) PPV shall be used to minimize the potential for cosmetic damage to sensitive historical structures, and a vibration limit of 0.20 in/sec PPV shall be used to minimize damage at buildings of normal conventional construction.

Of the variety of equipment used during construction, the small vibratory rollers anticipated to be used in the site preparation phase of construction would produce the greatest groundborne vibration levels. Small vibratory rollers produce groundborne vibration levels ranging up to 0.101 in/sec PPV at 25 feet from the operating equipment.

The nearest off-site structure is a single-family home located north of the project site, approximately 100 feet from the nearest construction footprint where small vibratory rollers would potentially operate. At this distance, groundborne vibration levels could range up to 0.12 PPV from operation of a small vibratory roller. This is well below the FTA's Construction Vibration Impact Criteria[6] of 0.2 in/sec PPV for this type of structure, a building of nonengineered timber and masonry construction.

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[6] Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September.

Therefore, construction-related groundborne vibration would not continually disturb adjacent properties or impact the general public's health, comfort, and convenience, nor would these vibration levels exceed the FTA's Construction Vibration Impact Criteria as measured at the nearest receiving structures in the project vicinity. Project construction-related groundborne vibration impacts would be less than significant.

Operational Vibration Impacts

A significant impact would occur if the proposed project would generate excessive groundborne vibration or groundborne noise levels. The City of San José Municipal Code states there shall be no activity on any site that causes ground vibration that is perceptible without instruments at the property line of the site.

Implementation of the proposed project would not include any permanent sources that would expose persons in the project vicinity to groundborne vibration levels that could be noticeable without instruments at the lot line of the project. In addition, there are no existing significant permanent sources of groundborne vibration in the project vicinity. Therefore, project operations would not generate excessive groundborne vibration levels or expose proposed uses to excessive groundborne vibration levels, and groundborne vibration impacts would be less than significant.

Excessive Noise Levels from Airport Activity

A significant impact would occur if the proposed project would expose people residing or working in the project area to excessive noise levels for a project located within the vicinity of a private airstrip or an Airport Land Use Compatibility Plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport.

The project site is not within 2 miles of any airstrip or airport land use plan. Therefore, implementation of the proposed project would not expose persons residing or working in the project vicinity to noise levels from airport activity that would be in excess of normally acceptable standards for residential land use development, and there would be no project impact associated with airport noise.

CONCLUSION

Based on the project understanding described above, the proposed project would result in less than significant noise and vibration impacts from construction and operational activities. Please feel free to contact Phil Ault (559.930.6191 or pault@fcs-intl.com) should you have any questions.

Sincerely,

Philip Ault, Director of Noise and Air Quality
FirstCarbon Solutions
2999 Oak Road, Suite 250
Walnut Creek, CA 94597

Attachment A: Noise Measurement and Modeling Data

FIRSTCARBON SOLUTIONS
FCS INTERNATIONAL, INC.

Attachment A:
Noise Measurement and Modeling Data

Mobile Construction Activity Noise Calculation

Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements							
	Reference (dBA) 50 ft		Usage	Distance to	Ground	Shielding	Calculated (dBA)		
Equipment Description	Lmax	Quantity	factor[1]	Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
Grader	85	1	40	50	1	3	82.0	78.0	63395727.7
Front End Loader	80	1	40	75	1	3	73.5	67.7	5939996.843
Backhoe	80	1	40	75	1	3	73.5	67.7	5939996.843
						Lmax[4]	82	Leq	79

ge of time activity occurs each hour
ınd terrain between project site and receptor.
; due to terrain or structures
ːd Lmax is the Loudest value.

8-Hour Average Calculation as Equipment Operates Across the Site in a Single Day						
Distance from equipment to property line		Time	Hourly Leq	Leq'	0.1*Leq	antiLog
	Night	12:00 AM	0.0	10.0	1	10
		1:00 AM	0.0	10.0	1	10
		2:00 AM	0.0	10.0	1	10
		3:00 AM	0.0	10.0	1	10
		4:00 AM	0.0	10.0	1	10
		5:00 AM	0.0	10.0	1	10
		6:00 AM	0.0	10.0	1	10
	Day	7:00 AM	0.0	0.0	0	1
Closest location shown above		8:00 AM	78.8	78.8	7.876654926	75275721.38
75-feet		9:00 AM	74.9	74.9	7.486627574	30663913
125-feet		10:00 AM	68.2	68.2	6.821081325	6623405.209
175-feet		11:00 AM	63.8	63.8	6.382697218	2413777.408
		12:00 PM	0.0	0.0	0	1
225-feet		1:00 PM	60.6	60.6	6.05526381	1135700.482
275-feet		2:00 PM	57.9	57.9	5.793813283	622032.7957
325-feet		3:00 PM	55.8	55.8	5.576161281	376843.7192
375-feet		4:00 PM	53.9	53.9	5.389717561	245311.304
		5:00 PM	0.0	0.0	0	1
		6:00 PM	0.0	0.0	0	1
		7:00 PM	0.0	0.0	0	1
		8:00 PM	0.0	0.0	0	1
		9:00 PM	0.0	0.0	0	1
	Night	10:00 PM	0.0	10.0	1	10
		11:00 PM	0.0	10.0	1	10
				Sum		117356802.3
				Sum/8		14669600.29
				Log10(Sum/8)		7.166418281
				10*Log10(Sum/8)		71.66418281
				8 Hour Average		72

Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
	Reference (dBA) 50 ft	Quantity	Usage factor[1]	Distance to Receptor	Ground Effect[2]	Shielding (dBA)[3]	lculated (dBA)		Energy
Equipment Description	Lmax						Lmax	Leq	
Grader	85	1	40	75	1	3	78.5	72.7	18783919.32
Front End Loader	80	1	40	75	1	3	73.5	67.7	5939996.843
Backhoe	80	1	40	75	1	3	73.5	67.7	5939996.843
						Lmax[4]	78	Leq	75

Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
	Reference (dBA) 50 ft	Quantity	Usage factor[1]	Distance to Receptor	Ground Effect[2]	Shielding (dBA)[3]	lculated (dBA)		Energy
Equipment Description	Lmax						Lmax	Leq	
Grader	85	1	40	125	1	3	74.0	66.1	4057326.573
Front End Loader	80	1	40	125	1	3	69.0	61.1	1283039.318
Backhoe	80	1	40	125	1	3	69.0	61.1	1283039.318
						Lmax[4]	74	Leq	68

Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements							
	Reference (dBA) 50 ft	Quantity	Usage factor[1]	Distance to Receptor	Ground Effect[2]	Shielding (dBA)[3]	lculated (dBA)		Energy
Equipment Description	Lmax						Lmax	Leq	
Grader	85	1	40	175	1	3	71.1	61.7	1478617.556
Front End Loader	80	1	40	175	1	3	66.1	56.7	467579.9264
Backhoe	80	1	40	175	1	3	66.1	56.7	467579.9264
						Lmax[4]	71	Leq	64

Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
	Reference (dBA) 50 ft	Quantity	Usage factor[1]	Distance to Receptor	Ground Effect[2]	Shielding (dBA)[3]	lculated (dBA)		Energy
Equipment Description	Lmax						Lmax	Leq	
Grader	85	1	40	225	1	3	68.9	58.4	695700.7155
Front End Loader	80	1	40	225	1	3	63.9	53.4	219999.8831
Backhoe	80	1	40	225	1	3	63.9	53.4	219999.8831
						Lmax[4]	69	Leq	61

Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
	Reference (dBA) 50 ft	Quantity	Usage factor[1]	Distance to Receptor	Ground Effect[2]	Shielding (dBA)[3]	lculated (dBA)		Energy
Equipment Description	Lmax						Lmax	Leq	
Grader	85	1	40	275	1	3	67.2	55.8	381041.1883
Front End Loader	80	1	40	275	1	3	62.2	50.8	120495.8037
Backhoe	80	1	40	275	1	3	62.2	50.8	120495.8037
						Lmax[4]	67	Leq	58

Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
	Reference (dBA) 50 ft	Quantity	Usage factor[1]	Distance to Receptor	Ground Effect[2]	Shielding (dBA)[3]	lculated (dBA)		Energy
Equipment Description	Lmax						Lmax	Leq	
Grader	85	1	40	325	1	3	65.7	53.6	230844.7071
Front End Loader	80	1	40	325	1	3	60.7	48.6	72999.50604
Backhoe	80	1	40	325	1	3	60.7	48.6	72999.50604
						Lmax[4]	66	Leq	56

Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
	Reference (dBA) 50 ft	Quantity	Usage factor[1]	Distance to Receptor	Ground Effect[2]	Shielding (dBA)[3]	lculated (dBA)		Energy
Equipment Description	Lmax						Lmax	Leq	
Grader	85	1	40	375	1	3	64.5	51.8	150271.3545
Front End Loader	80	1	40	375	1	3	59.5	46.8	47519.97474
Backhoe	80	1	40	375	1	3	59.5	46.8	47519.97474
						Lmax[4]	64	Leq	54

Mechanical Equipment Noise Calculation

Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
	Reference (dBA) 5 ft		Usage	Distance to	Ground	Shielding	Calculated (dBA)		
Equipment Description	**Lmax**	**Quantity**	**factor[1]**	**Receptor**	**Effect[2]**	**(dBA)[3]**	**Lmax**	**Leq**	**Energy**
Residential grade mechanical ventilation equipment	70	1	100	30	0.5	3	51.4	47.5	56835.78648
Residential grade mechanical ventilation equipment	70	1	100	50	0.5	6	44.0	39.0	7943.282347
Residential grade mechanical ventilation equipment	70	1	100	50	0.5	6	44.0	39.0	7943.282347
Residential grade mechanical ventilation equipment	70	1	100	100	0.5	9	35.0	28.5	703.7606998
Residential grade mechanical ventilation equipment	70	1	100	100	0.5	9	35.0	28.5	703.7606998
Residential grade mechanical ventilation equipment	70	1	100	150	0.5	12	28.5	21.1	127.9961372
Residential grade mechanical ventilation equipment	70	1	100	150	0.5	12	28.5	21.1	127.9961372
								Leq	**49**

Notes:
[1] Percentage of time activity occurs each hour
[2] Soft ground terrain between project site and receptor.
[3] Shielding due to shielding for intervening solid wood fences
[4] Calculated Lmax is the Loudest value.

Parking Lot Activity Noise Calculation

Receiving residential property line									
	Reference (dBA) 50 ft						Calculated (dBA)		
Equipment Description	Lmax	Quantity	Usage factor[1]	Distance to Receptor	Ground Effect[2]	Shielding (dBA)[3]	Lmax	Leq	Energy
parking lot activity	70	5	1	120	1	3	59.4	42.6	18127.43177
parking lot activity	70	6	1	150	1	6	54.5	37.5	5581.969848
parking lot activity	70	6	1	170	1	6	53.4	35.8	3834.550832
						Lmax[4]	59	Leq	44

Notes:
[1] Percentage of time activity occurs each hour
[2] Soft ground terrain between project site and receptor.
[3] Shielding due to terrain or structures
[4] Calculated Lmax is the Loudest value.