4.7 NOISE

This section analyzes the proposed Fire Station 10 Project's temporary noise impacts associated with construction activity and long-term noise impacts associated with operation.

4.7.1 Existing Setting

Sound Characteristics and Measurement

Noise is generally defined as unhealthful sound levels or unwanted sound that substantially interferes with normal activities or otherwise diminishes the quality of the environment. Noise is usually measured as sound level on a logarithmic decibel (dB) scale. Long-term exposure to higher noise levels (i.e., continuous, involuntary exposure for many hours per day over a long period of time) may affect human health through sleep deprivation, nervous conditions, etc. Relevant scientific literature indicates that prolonged exposure to elevated sound levels could increase the risk of certain health conditions, including hypertension and other cardiovascular conditions. Therefore, in the context of an analysis of potential noise impacts, significant noise impacts are primarily associated with the potential for constant exposure to higher noise levels, such as high interior noise levels during sleeping hours. Exposure to ongoing high noise levels in exterior living areas would typically involve shorter exposure times, and higher noise levels may not represent a significant environmental impact. In addition, residences are usually insulated and typical construction since the 1970s can reduce interior noise levels substantially.

Noise has three properties that can be described and measured: *magnitude*, *frequency* and *duration*. The *magnitude* of variations in air pressure associated with a sound wave results in the quality commonly referred to as "loudness." This property is typically measured in the dB scale. *Frequency* refers to the number of times per second the object producing the sound vibrates, or oscillates. *Duration* refers to the length of time for any given noise exposure.

Since environmental noise at any location is usually fluctuating from quiet one moment to loud the next, it is necessary to describe a noise level over time. The most common approach to describe varying noise levels is to define the Equivalent Noise Level (Leq) for a specified period of time. The Leq is a single value that represents the total sound energy of a time-varying noise. Leq is defined as the continuous steady-state noise level that would have the same total acoustical energy as the real fluctuating noise measured during the same time duration. Although Leq can be measured or computed for any duration, it is typically specified for one hour (Leq[h]) or 24 hours (Leq[24h]). Leq values and the other noise metrics described below are expressed as decibels on the "A" weighted frequency scale (dBA). The A-weighted frequency filter de-emphasizes the very low and very high frequency components of sound in a manner similar to the frequency response of human hearing.

Noise within California communities is evaluated in terms of the Community Noise Equivalent Level (CNEL) metric. CNEL is the same as a 24-hour Leq except that 5 dBA is added to levels measured during the evening hours (7:00 p.m. to 10:00 p.m.) and 10 dBA to levels measured during the nighttime hours (10:00 p.m. to 7:00 a.m.). These penalties account for the increased community noise sensitivity during the evening and nighttime. A similar scale is the Day-Night Average Noise Level (Ldn), which includes a penalty of 10 dBA for the nighttime period only. Results of CNEL and Ldn generally agree to within 1 dBA. Most California noise ordinances specify levels using the CNEL metric, while most Federal laws use the Leq metric.

Different sources and types of noise can affect communities in different ways. Ambient noise refers to background noise. It is the composite of noise from all sources that impact a given location and represents the normally existing noise environment at a particular place. Ambient noise levels are measured using weighted noise measurement systems, such as CNEL. Nuisance noise refers to sounds that are intentionally created, but are of relatively short duration.

Table 4.7-1 identifies noise levels associated with some common indoor and outdoor activities and settings. This table also indicates the subjective human judgments of noise levels, specifically the perception of noise levels doubling or being halved. For reference purposes, a baseline noise level of 70 dB is described as moderately loud. Humans perceive an increase of 10 dB as a doubling of loudness, while an increase of 30 dB corresponds with an eight-fold increase in perceived loudness.

Table 4.7-1. Sound Levels of Typical Noise Sources and Noise Environments

Noise Source (at a given distance)	A-Weighted Sound Level Scale (dBA)
Commercial Jet Takeoff (200 feet)	120
Pile Driver (50 feet)	110
Emergency Vehicle Siren (100 feet)	100
Power Lawn Mower (3 feet)	
Motorcycle (25 feet)	90
Prop. Plane Flyover (1,000 feet)	
Garbage Disposal (3 feet)	80
Passenger Car, 65 mph (25 feet)	70
Vacuum Cleaner (3 feet)	
Normal Conversation (5 feet)	60
Air Conditioning Unit (100 feet)	
Light Traffic (100 feet)	50

Source: Branch & Beland 1970.

Characteristics of Vibration

Vibration is sound radiated through the ground. The vibration of floors and walls may cause perceptible vibration, rattling of items such as windows or dishes on shelves, or a rumble noise. The rumble is the noise radiated from the motion of the room surfaces. In essence, the room surfaces act like a giant loudspeaker causing what is called ground-borne noise. Ground-borne vibration is almost never annoying to people who are outdoors. Although the motion of the ground may be perceived, without the effects associated with the shaking of a building, the motion does not provoke the same adverse human reaction. In addition, the rumble noise that usually accompanies the building vibration is perceptible only inside buildings.

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 and is typically expressed in units of inches per second (in/sec). The PPV is most frequently used to describe vibration impacts to buildings. 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 decibel notation acts to compress the range of numbers required to describe vibration (Federal Transit Administration 2006). Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration.

Noise Sources

The northerly boundary of the Project site is located approximately 250 feet south of the U.S. 101 mainline and 35 feet south of the Union Pacific Railroad (UPRR) tracks and north of Hollister Avenue. The Project site is also in an area characterized primarily by residential and recreational development. Consequently, noise sources affecting noise levels on-site and in the Project site vicinity include traffic noise, railroad noise, and noise associated with recreational activity on the Sandpiper Golf Club.

Current Noise Levels

The Noise Element of the Goleta General Plan shows the northern half of the Project site as being within the 65 dBA CNEL noise contour for U.S. 101 and the remainder of the Project site as being within the 60 dBA CNEL noise contour. The Noise Element also shows the northern part of the Project site as within the 70 dBA CNEL noise contour for the railroad, the central part of the Project site as within the 65 dBA CNEL noise contour, and the southern part of the Project site as within the 60 dBA CNEL noise contour.

The Project site is located approximately 2.8 miles west of the Santa Barbara Municipal Airport and is located outside of the airport's noise exposure range (Santa Barbara County Airport Land Use Commission & SBCAG 2012).

Sensitive Noise Receptors

The City of Goleta General Plan Noise Element defines sensitive receptors as users or uses that are interrupted (rather than merely annoyed) by relatively low levels of noise and include residential neighborhoods, schools, libraries, hospitals and rest homes, auditoriums, certain open space areas, and public assembly places. The multi-family Hideaway Townhouses located directly adjacent to the Project site, as well as the Sandpiper Golf Club located to the south, are considered to be sensitive noise receptors under the City's General Plan/Coastal Land Use Plan.

4.7.2 Regulatory Setting

Federal

Federal Noise Control Act (1972). Public Law 92-574 regulates noise emissions from operation of all construction equipment and facilities; establishes noise emission standards for construction equipment and other categories of equipment; and provides standards for the testing, inspection, and monitoring of such equipment. This Act gives states and municipalities primary responsibility for noise control.

State

State of California's Guidelines for the Preparation and Content of Noise Element of the General Plan (1987). These guidelines reference land use compatibility standards for community noise environments as developed by the California Department of Health Services, Office of Noise Control. Sound levels up to 60 Ldn or CNEL are determined to be normally acceptable for low density, single-family, duplex, and mobile home residential land uses. Sound levels up to 70 Ldn or CNEL are considered conditionally acceptable (where new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design).

California Noise Control Act (1973). This Act declares that excessive noise is a serious hazard to the public health and welfare, and established the now defunct Office of Noise Control, which had the responsibility to set standards for noise exposure in cooperation with local governments or the California Legislature. The California Office of Noise Control land use compatibility guidelines defined a 70 dBA CNEL noise level as the upper limit of "normally acceptable" noise levels for sensitive uses such as schools, libraries, hospitals, nursing homes, churches, parks, offices, and commercial and professional businesses. Although the Office of Noise Control is defunct, its guidelines still apply under the Act.

California Building Standards Code (Title 24). Title 24 of the California Code of Regulations includes sound transmission control requirements that establish uniform minimum noise insulation performance standards for new hotels, motels,

dormitories, apartment houses, and dwellings other than detached single-family units. Specifically, Title 24 states that interior noise levels attributable to exterior sources shall not exceed 45 dBA CNEL in any habitable room of new dwellings. Dwellings are to be designed so that interior noise levels would meet this standard for at least ten years from the time of building permit application.

Local

City of Goleta General Plan/Coastal Land Use Plan Noise Element (2006). The General Plan Noise Element defines sensitive receptors as users or types of uses that are interrupted (rather than merely annoyed) by relatively low levels of noise. These include: residential neighborhoods, schools, libraries, hospitals and rest homes, auditoriums, certain open space areas, and public assembly places.

The Noise Element of the Goleta General Plan establishes noise standards for various land use categories based on the U.S. Department of Housing and Urban Development Guidelines and standards from the California Office of Noise Control. The City recommends 50-60 dBA as the "normally acceptable" range and 60-65 dBA as the "conditionally acceptable" range for multi-family residential uses. According to the Goleta General Plan, multi-family residences within the "normally acceptable range" are deemed satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements. Development of multi-family residences within the "conditionally acceptable" range should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Table 4.7-2 shows the noise and land use compatibility criteria in the City's Noise Element.

The following are City General Plan Noise Element policies which would apply to the Project:

- Noise Element Policy NE 1.1 requires mitigation for development that would subject proposed land uses to noise levels that exceed the acceptable levels shown in Table 4.7-2.

- Noise Element Policy NE 1.2 requires new development in areas over 60 dBA CNEL to include mitigation measures to reduce interior noise levels to 45 dBA CNEL or less. The Noise Element also restricts construction activities near or adjacent to residential buildings and other sensitive receptors to the hours of 8:00 AM to 5:00 PM Monday through Friday and 7:00 AM to 4:00 PM Monday through Friday for construction in nonresidential areas (Policy NE 6.4).

- Noise Element Policy NE 6.5 requires noise mitigation for construction equipment.

Table 4.7-2. Goleta Noise and Land Use Compatibility Criteria

Land Use Category	Community Noise Exposure (Ldn or CNEL, dBA)			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential – low density	50-60	60-65	65-75	75-85+
Residential – multi-family	50-60	60-65	65-75	75-85+
Transient Lodging – motels and hotels	50-65	65-70	70-80	80-85+
Schools, libraries, churches, hospitals, and nursing homes	50-60	60-65	65-80	80-85+
Auditoriums, concert halls and amphitheaters	NA	50-65	NA	65-85+
Sports arenas and outdoor spectator sports	NA	50-70	NA	70-85+
Playgrounds and neighborhood parks	50-70	NA	70-75	75-85+
Golf courses, riding stables, water recreation, and cemeteries	50-70	NA	70-80	80-85+
Office Building, business commercial, and professional	50-67.5	67.5-75	75-85+	NA
Industrial, manufacturing, utilities, and agriculture	50-70	70-75	75-85+	NA

Notes:
Normally Acceptable: Specific 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: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or conditioning, will normally suffice.
Normally Unacceptable: New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise construction requirements shall be made and needed noise insulation measures shall be included in the design.
Clearly Unacceptable: New construction or development should generally not be undertaken.
NA: Not Applicable.
Source: Table 9-2, City of Goleta Noise Element; City of Goleta 2006.

City of Goleta Municipal Code (GMC). GMC Chapter 9.09 regulates noise in the City. The purpose of the Chapter is to preserve public peace and comfort of citizens of Goleta from unwarranted noise and disturbances. The GMC prohibits loud and unreasonable noise between the hours of 10:00 PM and 7:00 AM Sunday through

Thursday and between 12:00 midnight and 7:00 AM Friday and Saturday. Loud and unreasonable noise is defined as sound which is clearly discernible at a distance of 100 feet from the property line of the property upon which it is broadcast or sound which is above 60 dBA at the edge of the property line upon which the sounds is broadcast. The City does not have any code requirements related to noise from construction activities but the GMC noise regulations would apply to construction noise.

4.7.3 Impact Analysis

Methodology and Significance Thresholds

CEQA Guidelines Appendix G. In accordance with Appendix G of the 2017 CEQA Guidelines, impacts would be potentially significant if the proposed project would result in:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Exposure of persons to or generation of excessive ground-borne vibration or groundborne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- For a project located within 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, exposure of people residing or working in the project area to excessive noise levels; or
- For a project within the vicinity of private airstrip, would the project expose people residing or working the project area to excessive noise levels.

City of Goleta Environmental Thresholds and Guideline Manual. Pursuant to the City's Environmental Thresholds and Guidelines Manual, impacts would be significant if the proposed project would result in:

- Noise levels in excess of 65 dBA CNEL that could affect sensitive receptors;
- Exposure to outdoor noise levels in excess of 65 dBA CNEL and/or exposure to interior noise levels in excess of 45 dBA CNEL.
- A substantial increase in ambient noise levels for noise-sensitive receptors generally presumed to be an increase to 65 dBA CNEL or more; or a

substantial increase in ambient noise levels for noise-sensitive receptors that is less than 65 dBA CNEL, as determined on a case-by-case basis; or

- Noise from grading and construction activity proposed within 1,600 feet of sensitive receptors, including schools, residential development, commercial lodging facilities, hospitals, or care facilities.

With respect to traffic noise increases due to project-generated traffic, impacts are considered significant if traffic-generated noise associated with development of the project would result in exposure of sensitive receptors to unacceptable noise levels. The May 2006 FTA document Transit Noise and Vibration Impact Assessment recommendations were used to determine whether or not increases in roadway noise would be considered significant. The allowable noise exposure increase changes with increasing noise exposure, such that lower ambient noise levels have a higher allowable noise exposure increase. Table 4.7-3 shows the significance thresholds for increases in traffic-related noise levels caused by the project. If residential development or other sensitive receptors would be exposed to traffic noise increases exceeding the FTA criteria, impacts would be considered significant.

Table 4.7-3. Significance of Changes in Operational Roadway Noise Exposure

Ldn or Leq in dBA	
Existing Noise Exposure	**Allowable Noise Exposure Increase**
45-50	7
50-55	5
55-60	3
60-65	2
65-75	1
75+	0

Source: Federal Transit Administration 2006.

Noise impacts found to be less than significant in the certified Project Mitigated Negative Declaration are listed in Appendix B.

Project Impacts and Mitigation Measures

Impact NOI-1: Short-term Construction Noise. Construction of the Project would result in the generation of short-term noise levels potentially impacting adjacent sensitive receptors. Though standard mitigation measures would reduce this impact, rotary auger drilling activities would generate significant and unavoidable impacts (Class I).

Construction equipment noise would result in short-term impacts to sensitive noise receptors on Sandpiper Golf Club and on adjacent residents of the Hideaway

Townhouses to the east. The slope stabilization, grading and site preparation phase of the Project would generate the highest construction sound levels due to the operation of heavy equipment. Peak sound levels associated with heavy equipment typically range between 75 and 95 dBA at 50 feet from the source. Typical major sources of noise during the Project's grading and earthwork period and their estimated sound levels at 50 feet are: tractors (75 to 95 dBA), loaders (75 to 85 dBA), compactors (75dBA), trucks (75 to 95 dBA), and backhoes (75 to 95 dBA) (FHWA 2017). While construction would occur during normal workday hours, not all construction equipment would be operated simultaneously. Peak sound levels associated with construction equipment would occur sporadically without the work day.

Rotary auger drilling of 24-inch concrete filler piles and 36-inch reinforced concrete piles associated with construction of the slope stabilization wall on the north Project site boundary would generate noise levels of up to 185 dB measured at 50 feet from the source (FHWA 2017) over the 25 working days to complete this work (Mark Nye, personal communication 2018).

The City's Environmental Thresholds and Guidelines Manual addresses construction noise and identifies typical restrictions to reduce this potential impact. These Guidelines generally consider construction noise impacts to be potentially significant to any residence or sensitive receptor located within 1,600 feet (City of Goleta 2002). Since residential and sensitive land uses occur within a distance of at least 25 feet, and assuming an attenuation of 6 dB noise intensity with doubling of the distance from the source, the Rotary auger drilling noise levels would be over 85 dB. The other non-drilling peak construction-related noise levels at the Project site could reach or exceed 98 dBA. These short-term construction noise levels would exceed 65 dB at the project boundary and would therefore be significant.

Per established City guidelines, given construction noise would exceed 65 dBA for nearby sensitive receptors, construction of the Project shall be limited to weekdays between the hours of 8:00 AM and 5:00 PM only to reduce impacts to sensitive receptors, consistent with mitigation measure N-1(a). However, given Project construction has the potential to expose nearby residential and sensitive receptors to noise levels in excess of 95 dBA during daytime hours, potential impacts from short-term construction noise would be significant.

Mitigation Measures and Residual Impacts

Construction activity associated with the proposed Project would occur within 1,600 feet of sensitive receptors and would therefore potentially generate noise exceeding City Noise Element standards. The following mitigation measures would be required to mitigate construction-related noise.

> **NOI-1(a). Construction Timing.** Pursuant to City of Goleta guidelines, all noise- generating construction activities shall be limited to Monday through

Friday, 8:00 a.m. to 5:00 p.m. Construction shall not be allowed on weekends and state holidays except for extenuating circumstances (in the event of an emergency, for example) on a case by case basis at the discretion of the Director of Planning and Environmental Services. The applicant shall post the allowed hours of operation near the entrance to the site, so that workers on site are aware of this limitation.

> **Plan Requirements and Timing:** Two signs stating these restrictions shall be provided by the applicant and posted on site prior to commencement of construction. Signs shall be a minimum of 24" x 48" in size. The signs shall be in place prior to beginning of and throughout all grading and construction activities. Violations may result in suspension of permits.
>
> **Monitoring:** City staff shall monitor compliance with restrictions on construction hours, and shall investigate and respond to all noncompliance complaints.

NOI-1(b). Temporary Sound Barriers. Temporary noise barriers shall be used and located as needed to block line-of-sight between project construction equipment, particularly soldier wall drilling, and the eastern property boundary (Hideaway Townhouses) to feasibly reduce effects of construction noise on these sensitive receptors.

> **Plan Requirements and Timing:** The sound walls shall be designed by a registered engineer and included on the grading plan, and reviewed and approved by City staff prior to approval of any Land Use Permit for the Project. The measure shall be implemented during construction.
>
> **Monitoring:** City staff shall verify as to plan in the field during construction.

NOI-1(c). Noise Attenuation Measures. The following measures shall be incorporated into grading and building plan specifications to reduce the impact of construction noise:

a) All construction equipment shall have properly maintained sound- control devices, and no equipment shall have an unmuffled exhaust system.

b) The applicant shall ensure that contractors implement appropriate additional noise mitigation measures including but not limited to changing the location of stationary construction equipment, shutting off idling equipment, and installing acoustic barriers around significant sources of stationary construction noise.

Plan Requirements and Timing: All of the above mitigation measures shall be noted on all plans submitted for any Land Use Permit and/or building permit(s).

Monitoring: City staff shall verify compliance prior to any Land Use Permit or building permit(s) issuance as well as conducting periodic field inspections.

Implementation of these standard noise construction mitigation measures would reduce the residual impact on noise. Caltrans (2009) characterizes feasible attenuation of noise by a sound wall to be a reduction of 5 dBA. Therefore, the intensity of rotary drilling activities would remain over 80 dbA, and other standard construction equipment would generate attenuated noise levels of over 90 dbA as experienced by the nearest sensitive receptors, even with the construction of short-term sound walls. Therefore, short-term construction noise would remain a *significant, unavoidable impact* (Class I).

Impact NOI-2: Operational Noise. Long-term noise impacts associated with the Project would incrementally increase the frequency of very short duration peak nuisance noise occurrences for area residents, but would not result in the exceedance of established City noise thresholds.

Daily Fire Station Facility Operations. Operation of the fire station would result in the generation of noise levels above existing site conditions, and which would be perceived by surrounding uses. The proposed station would be occupied and operated on a 24-hour/7-day a week schedule. However, the majority of routine operations at the fire station would occur within the typically defined daytime hours (7:00 AM to 7:00 PM). Noise generating uses at fire stations most typically include vehicle traffic (both firefighters commuting to and from work and fire engines conducting routine operations), and normal operational noise such as facility and equipment maintenance and outdoor communications associated with departmental operations during daylight hours.

A horizontal hose drying rack/table, approximately 3-feet high, in the northeast corner of the site, would have slats along the entire top of the system allowing fire hose to be laid flat on top for drying. The hose would stay stationary during the drying process with no “clanging” of brass couplings producing unwanted noise for the area (Captain Glenn Fidler, SBCFD, personal communication 2018). In addition, since preparation of the 2010 Fire Station #10 Conceptual Site Feasibility/Site Selection Plan Initial Study (Appendix B), on-site fire station noise generating activities have been redesigned westward to reduce potential effects on the Hideaway Townhouses site. For instance, the Communication Tower has been moved westward by 21 feet; the exercise room and fuel station have been moved to the west side of the building; and the trash enclosure doors are not oriented to the south rather than to the east. Based on typical fire station operations and revised site design, the routine daily operations of the proposed fire station would not substantially increase ambient noise levels in the area or exposure

nearby residents or sensitive noise-receptors to exterior noise levels in excess of adopted City standards (i.e., greater than 65 dBA CNEL)., resulting in *adverse, but less than significant* impacts from operation noise (Class III).

Use of Exterior Address Systems. In addition to standard operations, operation of the fire station would likely involve the use of an exterior address (loudspeaker) system that would create new nuisance noise. Use of the exterior loudspeaker system would coincide most with responses to emergency calls, but could include use during training activities. Recent loudspeaker measures taken at the Cate School property in Carpinteria show a reading of 90 dBA at 50 feet (County of Santa Barbara 2016). Similar loudspeaker measurements would result from use of the exterior loudspeaker systems for the Fire Station 10 facility. The loudspeaker would be located adjacent to the apparatus bays, approximately 150 feet west of the residential development to the east. Given the attenuation of sound by 6 dB with doubling of the distance from the source, the loudspeaker noise levels could be experienced at 81 dBA at the property boundary. However, loudspeaker system use would be infrequent. The noise would be restricted to daytime hours described above. The loudspeaker noise would be of a relatively short duration (i.e., generally less than 30 seconds). The magnitude of the noise, while briefly very high in exterior living areas, would be substantially reduced in interior living areas through existing construction. Average long-term noise levels in the neighborhood would not substantially change and the CNEL for the vicinity would not exceed 65 dBA. Therefore, noise levels resulting from this operational aspect of the Project would not result in significant, continuous levels of nuisance noise on adjacent land uses; noise impacts would be *adverse, but less than significant* (Class III).

Operation of Emergency Generator. Further, operation of the proposed station would involve the use of an estimated 150-kilowatt emergency generator. Under the existing 2010 Fire Station #10 Conceptual Site Feasibility/Site Selection Plan Initial Study, use of the emergency power generator was identified as a potentially significant, if not intermittent, impact given the generation of noise levels of 100 dBA measured 3 feet from the source (Appendix B). At a distance of approximately 215 feet from the nearest sensitive receptor at the Sandpiper Golf Club and 315 feet from the residences of the Hideaway Townhomes, noise levels generated by the emergency generator would be approximately 64 dBA and 60 dBA, respectively. Routine inspection and maintenance of the emergency generator would occur compliant with National Fire Protection Association (NFPA) Code 110, *Standard for Emergency and Standby Power Systems,* with monthly testing occurring under load for a 30-minute duration and a more intensive annual test for 2 hours (Todd Jesperson, personal communication 2017). *A*s part of the proposed Project, the proposed emergency generator unit would be completely shielded by a Level 2 sound-attenuated enclosure that would include a roof (see Section 2.5.2).[1] Therefore, it is not anticipated that infrequent and short-duration testing of

[1] Sound level attenuation of a 20 to 150 kW emergency generator with a Level 2 enclosure would result in approximately 72 to 75 dBA at a distance of 7 meters (23 feet). From a distance of 200 feet, use of a Level 2 sound attenuation enclosure would reduce

the fully enclosed emergency generator would expose nearby residents or sensitive noise- receptors to a substantial increase in ambient noise levels in excess of adopted City standards and impacts are considered *adverse, but less than significant* (Class III).

Use of Emergency Sirens. Residents or other sensitive-noise receptors in the immediate vicinity of the proposed fire station would experience periodic exposure to sirens. The potential adverse effects of noise associated with the use of emergency vehicle sirens on the quality of life of nearby residents is often a concern in development of new fire stations. Part of this concern is related to the perception that fire stations would typically respond to many emergencies with multiple emergency vehicles leaving the site daily. Another perception is that emergency sirens are intentionally loud and such loud noise could disrupt quiet residential neighborhoods. These concerns are reflected in scoping comments received by the public which express concern over the effects of noise from sirens, particularly during nighttime hours (Appendix A).

In terms of *magnitude* of noise exposure, a typical siren emits approximately 100 dB at 100 feet (refer to Table 4.7-1 for comparisons of different noise levels). Since a decrease of about 3 dB occur with every doubling of distance from a mobile noise source (City Noise Thresholds), the residences and Sandpiper Golf Club, each within 150 feet of the fire station structure and engine bay, would experience peak short-duration *exterior* noise levels in the 95 to 100 dB range an average of five times per day. It should be noted that typical older residential construction would reduce typical short duration *interior* noise exposure to 75 to 80 dB, while more recent construction, such as the Hideaway Townhouses, or remodeled homes would have reduced interior noise effects.

Because emergency vehicle response is by nature rapid, the *duration* of exposure to these peak noise levels in the 95 to 100 dB range is estimated to last for a maximum of 10 seconds as emergency vehicles pause at the driveway exit, engage the siren and turn onto Hollister Avenue and accelerate rapidly away from the proposed Fire Station 10. Thus, residents of existing nearby homes would be exposed to very short-duration high noise levels for approximately 10 seconds an average of five times per day. Further, the typical practice for emergency vehicle use for the Santa Barbara County Fire Department is to use sirens to break traffic at intersections or warn drivers of the emergency vehicle approach when traffic is congested. Responses to nighttime emergency calls, when nuisance noise is most noticeable, routinely occur without the use of sirens. It should be noted that other homes and residents along Hollister Avenue and other routes used for emergency access would also be exposed to such noise levels, although the *magnitude* and *frequency* of this exposure would vary by distance from the road and proximity to Fire Station 10. The *duration* of such exposure would likely be less than the

sound levels by approximately 19 dB, for a noise level of 53 to 56 dBA at a distance of 200 feet. At a distance of 315 feet for a 150-kW emergency generator, sounds levels would be approximately 52 dB (Cummins Power Generation 2017).

projected 10 seconds for homes near proposed Fire Station 10 as the emergency vehicles would generally be assumed to be passing at full speed, with no time required for turning out of the driveway or accelerating.

A key focus of analysis with regard to noise is the potential for long-term exposure to higher noise levels (i.e., continuous, involuntary exposure for many hours per day over a long period of time) that may adversely affect human health. Because of this emphasis, adopted Federal, State and City regulations and standards typically focus on increases in long-term exposure to ongoing average noise levels rather than infrequent short-duration peak effects (refer to Section 4.7.2). Under these adopted standards, the increase of an average of five emergency vehicle trips per day would not be considered a significant impact because:

1) Average long-term noise levels in the neighborhood would not substantially change and the CNEL for the vicinity would not exceed 65 dBA, the accepted level for exterior noise in adopted City standards as a result of emergency vehicle and siren use at the proposed station;

2) The low *frequency* of siren use (an average of five per day) would not constitute a significant change in the existing noise environment;

3) The relatively short *duration* of the noise events (i.e., generally less than 10 seconds) would not substantially alter the existing noise environment; and

4) The *magnitude* of noise, while briefly very high in exterior living areas, would be substantially reduced in interior living areas through existing construction.

Therefore, noise impacts to residents and other sensitive receptors associated with use of sirens in response to emergencies are considered *adverse, but less than significant* (Class III).

Mitigation Measures and Residual Impacts

As operation-related noise impacts affecting sensitive noise receptors would be less than significant, no mitigation measures would be required. Impacts would be *adverse, but less than significant* (Class III).

Impact NOI-3: Increase in Traffic Noise. Operation of the Project would result in increases in traffic and associated noise. However, associated increases in noise would be negligible and would not result in the exceedance of any adopted thresholds such that impacts would be adverse, but less than significant (Class III).

The proposed Project would incrementally increase traffic in the area, contributing to the area's noise levels. According to the Traffic Analysis, the Project is forecasted to generate 29 average daily trips (ADT), 7 AM peak hour trips and 1 PM peak hour trip (ATE 2017, see Appendix G). Traffic counts in the traffic analysis

show 6,200 ADT along Hollister Avenue east of Cathedral Oaks Road, and 3,200 ADT along Cathedral Oaks Road north of Calle Real. Given the existing traffic volumes, the addition of 20 ADT on Hollister Avenue and 4 ADT on Cathedral Oaks Road, or approximately 8 peak hour trips, would represent an incremental increase in traffic. This is significantly below the 40 percent increase that is estimated to raise noise levels by 2 dBA (Harris Miller & Hanson Inc. 2006). Therefore, the Project- related increases in noise would be negligible and would not exceed established significance thresholds. Noise impacts from operational traffic resulting from the proposed Project would therefore be *adverse, but less than significant* (Class III).

Mitigation Measures and Residual Impacts

As impacts on noise would be less than significant, no mitigation measures would be required. Impacts would be *adverse, but less than significant* (Class III).

4.7.4 Cumulative Impacts

The Region of Influence for evaluating cumulative impacts on noise includes those areas in which related past, present, and reasonably probable projects would have the potential to contribute to increases in ambient noise levels within the area. Therefore, all related projects within the Project vicinity would be within the Region of Influence.

The proposed Project would include the development of approximately 1.21 acres to accommodate a new fire station. Overall, the Project would introduce some changes to ambient noise levels in the Project vicinity, mostly during construction phases of the proposed Project and during daytime operations. While construction phases of this Project may coincide with other projects planned in the vicinity, mitigation measures N-1(a), N-1(b), and N-1(c) would reduce construction-related noise consistent with City regulations. In addition, other projects planned in the vicinity would be subject to similar City regulations for mitigating construction noise. Further, the noise-control measures that have been incorporated into the proposed Project design discussed above under Impact N-2 in Section 4.7.3 would guide development of the proposed Project and would reduce exposure of nearby sensitive noise-receptors and adjoining land uses to operational noise levels. In addition, implementation of mitigation measure N-2 would reduce the Project's potential to generate excessive noise from facility operations. Long-term noise impacts in the Project vicinity would be of low frequency and short-duration in nature; therefore, anticipated long-term noise impacts would be unlikely to contribute to the cumulative effects of other pending and ongoing projects. Implementation of Mitigation Measures N-1(a), N-1(b), N-1(c), and N-2 would feasibly reduce the Project's contribution to cumulative impacts on the noise environment to *less than considerable.*

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