

4.8 NOISE

This section analyzes noise impacts of the proposed Parks Master Plan (Project). This section is based on a review of existing City plans and studies and also draws from the City of Santa Cruz *General Plan 2030* EIR (SCH#2009032007), which was certified on June 26, 2012, regarding background information on regulatory setting. The General Plan EIR is incorporated by reference in accordance with section 15150 of the State CEQA Guidelines. Relevant discussions are summarized in subsection 4.9.1. The General Plan EIR is available for review at the City of Santa Cruz Planning and Community Development Department (809 Center Street, Room 101, Santa Cruz, California) during business hours: Monday through Thursday, 7:30 AM to 12 PM and 1 PM to 3 PM. The General Plan EIR is also available online on the City's website at:

<http://www.cityofsantacruz.com/Home/Components/BusinessDirectory/BusinessDirectory/102/1775>.

Public and agency comments were received during the public scoping period in response to the Notice of Preparation (NOP). No comments were received regarding noise. Public comments received during the public scoping period are included in Appendix A.

4.8.1 Environmental Setting

Regulatory Setting

Federal

No federal laws, regulations, or policies for construction-related or operational noise and vibration apply to the proposed Project.

State

Sections 46000 through 46080 of the California Health and Safety Code, known as the California Noise Control Act of 1973, declare that excessive noise is a serious hazard to the public health and welfare and that exposure to certain levels of noise can result in physiological, psychological, and economic damage. It also identifies a continuous and increasing bombardment of noise in the urban, suburban, and rural areas. The California Noise Control Act declares that the State of California has a responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise. It is the policy of the State to provide an environment for all Californians free from noise that jeopardizes their health or welfare.

The State of California requires each local government entity to implement a noise element as part of its general plan. California Administrative Code, Title 4, presents guidelines for evaluating the compatibility of various land uses as a function of community noise exposure. The State also

establishes minimum noise insulation performance standards for hotels, motels, dormitories, apartment houses and dwellings other than detached single-family dwellings.

Local

Regulations within the City of Santa Cruz Municipal Code include performance standards regarding noise and vibration. Section 24.14 includes performance standards for the control of land uses to enable potential nuisance factors to be measured factually and objectively where possible and to protect the community as a whole from hazards and nuisances which can be prevented by methods of control and elimination. Sections 24.14.220 indicate that no land or building in any district shall be used or occupied in any manner so as to create noise or vibration in such a manner or in an amount as to adversely affect the surrounding area or adjoining premises. Section 24.14.260 establishes the maximum sound level that shall not be exceeded as more than five dBA above the local ambient for residential uses and six dBA for commercial uses. Section 24.14.262 indicates that no vibration (other than from transportation facilities or temporary construction work) shall be permitted which is discernible without instruments at the points of measurement specified in the regulations. Chapter 9.36 regulates “offensive” and disturbing noise, which generally prohibits loud noise between the hours of 10 PM and 8 AM.

Noise and Vibration Fundamentals

Definitions of Noise and Effects of Noise

The following is a brief discussion of fundamental noise concepts and terminology from the General Plan 2030 Draft EIR, which is incorporated by reference. (For details on noise standards, see pages 4.13-3 – 4.13-4.

“Sound” is mechanical energy transmitted by pressure waves in a compressible medium such as air. “Noise” is generally defined as “unwanted or disturbing sound.” Sound becomes unwanted when it either interferes with normal activities such as sleeping, conversation or disrupts or diminishes one’s quality of life.

Loudness is measured in decibels (dB) and is typically expressed in dBA, which approximates human hearing. The human ear can generally perceive noise from 0 to 140 decibels. Sounds as faint as 0 decibels are barely audible, and then only when there are no other sounds. Ordinary conversation is about 60 dB. People can tolerate some noise, but brief exposure to intense sounds of 120 to 140 dB can threaten physical or psychological well-being.

Because of the time-varying nature of environmental sound, there are many descriptors that are used to quantify the sound level. Although one individual descriptor alone does not fully describe a particular noise environment, taken together, they can more accurately represent the noise environment. The maximum instantaneous noise level (Lmax) is often used to identify the loudness of a single event such as a car passing by or an airplane flyover. To express the average noise level

the Leq (equivalent noise level) is used. The Leq can be measured over any length of time but is typically reported for periods of 15 minutes to 1 hour. The background noise level (or residual noise level) is the sound level during the quietest moments. It is usually generated by steady sources such as distant highway traffic. It can be quantified with a descriptor called the L90 which is the sound level exceeded 90 percent of the time (City of Santa Cruz, April 2010, DEIR volume).

To quantify the noise level over a 24-hour period, the Day/Night Average Sound Level (DNL or Ldn) or Community Noise Equivalent Level (CNEL) is used. These descriptors are averages like the Leq except they include a 10 dB penalty during nighttime hours (and a 5 dB penalty during evening hours in the CNEL) to account for peoples increased sensitivity during these hours (City of Santa Cruz, April 2010, DEIR volume). People are generally more sensitive and annoyed by noise occurring during the evening and nighttime hours. The CNEL accounts for the increased noise sensitivity during the evening hours (7 p.m. to 10 p.m.) and nighttime hours (10 p.m. to 7 a.m.).

Examples of typical noise levels for common indoor and outdoor activities are depicted in Table 4.8-1.

TABLE 4.8-1: Typical Sound Levels in the Environment

| Common Outdoor Activities | Noise Level (dB) | Common Indoor Activities |
|--|------------------|--|
| — | 110 | Rock band |
| Jet fly over at 300 meters (1,000 feet) | 100 | — |
| Gas lawn mower at 1 meter (3 feet) | 90 | — |
| Diesel truck at 15 meters (50 feet), at 80 kilometers per hour (50 miles per hour) | 80 | Food blender at 1 meter (3 feet); garbage disposal at 1 meter (3 feet) |
| Noisy urban area, daytime; gas lawn mower at 30 meters (100 feet) | 70 | Vacuum cleaner at 3 meters (10 feet) |
| Commercial area; heavy traffic at 90 meters (300 feet) | 60 | Normal speech at 1 meter (3 feet) |
| Quiet urban, daytime | 50 | Large business office; dishwasher next room |
| Quiet urban, nighttime | 40 | Theater; large conference room (background) |
| Quiet suburban, nighttime | 30 | Library |
| Quiet rural, nighttime | 20 | Bedroom at night; concert hall (background) |
| — | 10 | Broadcast/Recording studio |
| Lowest threshold of human hearing | 0 | Lowest threshold of human hearing |

Source: Caltrans 1998

Groundborne Vibration Fundamentals

Groundborne vibration is a small, rapidly fluctuating motion transmitted through the ground. The strength of groundborne vibration attenuates rapidly over distance through encountered soils and rock strata. Some strata and soil types transmit vibration quite efficiently; other types (primarily sandy soils) do not. Several basic measurement units are commonly used to describe the intensity of ground vibration. The common descriptors used by the California Department of Transportation (Caltrans) and the Federal Transit Administration (FTA) include peak particle velocity (PPV), in units of inches per second (ips). The velocity parameter (instead of acceleration or displacement) best correlates with human perception of vibration. Thus, the response of humans, buildings, and sensitive equipment to vibration is described in this section in terms of the root-mean square velocity level in VdB units relative to 1 microinch per second. As a point of reference, the average person can just barely perceive vibration velocity levels below 70 VdB (typically in the vertical direction). Typical background vibration levels are between 50 and 60 VdB, and the level for minor cosmetic damage to fragile buildings or blasting generally begins at 100 VdB.

Existing Noise Conditions in City of Santa Cruz

The primary noise sources in the City of Santa Cruz are roadway noise, industrial noise, and some specific uses. The noisiest roadways are those with the greatest traffic volumes and highest travel speeds. For example, the highways (State Route 1 and State Route 17) generate noise which affects large areas. The noise from arterials affects the development that is directly adjacent but the effects are significantly reduced beyond the first row of buildings. Examples are Mission Street (State Route 1), Water Street, Soquel Avenue, Ocean Street, Broadway, River Street, Bay Street and Laurel Street. Soundwalls along freeways and highways reduce noise levels at the land uses behind them. Typical noise reductions are in the 5 to 15 dBA range depending on the location of the noise receptor (City of Santa Cruz, April 2012, DEIR volume). Noise levels along highways and major roadways were modeled as part of the General Plan 2030 EIR.

Much of the industrial land use in the City is located north of Highway 1 and west of River Street (State Route 9). Concrete production and distribution is a common noise source in this area. Measurements along Coral Street indicate that the steady noise level from machinery at the Graniterock facility is 65 to 67 dBA at a distance of 185 feet (City of Santa Cruz, April 2012, DEIR volume).

The Santa Cruz Beach Boardwalk is the predominant noise source in the beach area during the summer months. Major noise sources include roller coasters, people screaming and outdoor concerts. Noise measurements conducted for the Beach Area/South of Laurel Master Plan EIR3 indicated that roller coasters generate maximum noise levels (Lmax) of 69 to 78 dBA at the residences and businesses across Beach Street. The DNL along Leibrandt Street was 68 dBA. Along East Cliff Drive, homes on the bluff overlooking the boardwalk, were exposed to an Lmax of 60 to 65 dBA from music at the bandstand and 65 to 70 dBA from the screams of people on the wooden roller coaster (Giant Dipper) (City of Santa Cruz, April 2012, DEIR volume).

4.8.2 Impacts and Mitigation Measures

Thresholds of Significance

In accordance with CEQA; State CEQA Guidelines (including Appendix G); City of Santa Cruz plans, policies, and/or guidelines; and agency and professional standards; a project impact would be considered significant if the project would:

- NOISE-1 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;
- NOISE-2 Generate excessive groundborne vibration or groundborne noise levels; or
- NOISE-3 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.

In environmental noise, a change in noise level of 3 dB is considered just a noticeable difference. A 5 dB change is clearly noticeable, but not dramatic. A 10 dB change is perceived as a halving or doubling in loudness (City of Santa Cruz, April 2012, DEIR volume). For permanent noise increases, an increase of 5 dB is considered significant where existing noise levels are below 60 dBA L_{dn} .

Groundborne vibration information related to construction activities that has been collected by Caltrans (2013) indicates that transient vibrations with a PPV of approximately 0.035 inches per second may be characterized as barely perceptible, and vibration levels of 0.24 inches per second (ips) may be characterized as distinctly perceptible. The threshold of 0.24 inches per second (distinctly perceptible) is used for this project as the significance threshold for the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. For building damage risk with respect to “older residential structures”, Caltrans suggests a threshold of 0.5 ips PPV for “transient” events such as a demolition blast.

Impacts and Mitigation Measures

Areas of No Project Impact

- NOISE-2 *Vibration*. Construction activities associated with projects and improvements recommended in the Parks Master Plan are not expected to create significant sources of groundborne vibration. Most recommended improvements are for minor improvements or addition of amenities to existing parks and facilities within developed areas. Where structural development is recommended for future consideration, potential buildings would be small, e.g., restrooms and storage buildings and in three areas, parking lots. None of the types of improvements or potential expanded uses

would utilize equipment that would result in generation of vibration, such as pile drivers. Therefore, *no* impact would occur.

NOISE-3 *Location near Airports.* The City is not located near an airport or airstrip. Therefore, *no* impact would occur.

Project Impacts

Impact NOISE-1: Increase in Ambient Noise Levels. The proposed Project would not generate a substantial increase in temporary or permanent ambient noise levels. Therefore, this is a *less-than-significant* impact.

Permanent Noise. Parks, open spaces and recreational facilities are located throughout the City. For neighborhood park uses, normally acceptable exterior noise levels are 70 decibels (dB) and conditionally acceptable levels are identified as 65-75 dB. Normally acceptable noise levels are higher for golf courses at 75 dB (City of Santa Cruz, April, 2012, DEIR volume).

Park and recreational facilities are generally located within existing neighborhoods. Open spaces tend to have a quieter ambient noise level and typically support quieter recreational uses, such as walking, hiking and biking. Sports fields often are located in parks in developed neighborhoods, but also are located in natural settings, such as DeLaveaga Park and Harvey West Park.

Generally, park and recreational facilities do not generate substantial noise levels. The recommendations and improvements recommended in the proposed Parks Master Plan are at existing facilities and would not lead to new uses that would result in substantial increases in noise. Implementation of the improvements or uses recommended in the Parks Master Plan is not expected to significantly increase vehicles trips or result in substantial increases in noise levels due to increased traffic.

The Master Plan recommends expanded use at the Audrey Stanley Grove amphitheater at DeLaveaga Park during the off-season. The existing amphitheater capacity is approximately 500 people during the Santa Cruz Shakespeare season. Private events during the off-season are limited to 200 people. No specific changes are identified, but if events are generally held during the day and without amplified music or loud speakers, no significant noise increases would be expected. The environmental review for the outdoor amphitheater concluded no significant noise generation or impacts would result from the Santa Cruz Shakespeare use (City of Santa Cruz, December 2015), and the City has not received complaints from this use.

Expanded uses that are within similar sound levels would not be expected to result in significant impacts. Should concerts or other events with amplified music or speaking be proposed, the expanded use would need to conform to the City's noise regulations. Section 24.14.260 of the City's Municipal Code prohibits noise levels of more than five dBA above the local ambient for residential properties and six dBA for commercial/industrial properties. Therefore, compliance with City

regulations would ensure that sound levels do not result in significant impacts. It is likely that an acoustical study would be needed to confirm that any events with amplified sound systems would not exceed these standards. Development of a small outdoor amphitheater also is recommended at Harvey West Park, and the amphitheater would be small and limited to day use with sound restrictions to ensure compliance with the City's noise ordinance. Therefore, the project would result in a *less-than-significant impact* related to permanent increases in noise levels.

Temporary Construction Noise. Construction noise is a temporary noise source that is generated from a variety of construction activities. These activities can include demolition, hauling of materials, grading, building construction, and construction traffic. Generally, construction equipment can generate noise levels in the range of 70 to 90 dB at a distance of 50 feet. However, construction noise is generally not constant during the daytime hours and stops toward the evening when construction crews complete their daily work.

Short-term noise could occur from construction activities that relate to projects identified in the Parks Master Plan. However, very little new development is proposed, and most recommendations are improvements that would not result in significant increases in noise. There would be a temporary increase in existing noise levels during construction of development projects accommodated by the Parks Master Plan. The proposed project would not directly result in temporary increases in noise due to construction as no projects are proposed as part of the proposed project.

Noise impacts resulting from construction depend on the noise generated by various pieces of construction equipment, the timing and duration of noise-generating activities, and the distance between construction noise sources and noise-sensitive receptors, as well as existing ambient noise levels. Noise generated during construction would vary throughout the construction period and on any given day, depending on the construction phase and the type and amount of equipment used at the construction site. The highest noise levels would be generated during grading of the site, with lower noise levels occurring during building construction and finishing. Overall, construction noise levels would be temporary, be short-term, and fluctuate throughout the construction period. Because construction noise impacts would be temporary, the impact of construction noise would be less than significant. Therefore, temporary increased noise levels during construction of future parks projects and improvements is considered a *less-than-significant impact*.

Mitigation Measures

No mitigation measures are required as a significant impact has not been identified.

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