

This chapter of the EIR evaluates the potential impacts of the Master Plan Update (the Project) related to noise and ground-borne vibration. The chapter describes the existing noise conditions within and near the Project Area, and evaluates the potential for noise and vibration impacts from the Project.

Some of the information presented in this chapter draws from the prior analyses conducted for the 2007 MEIR, the 2012 SEIR and the 2002 BEG EIR. Updated or additional information regarding environmental and Project-related noise conditions was taken from various sources including:

- the General Plan of the City of South San Francisco,
- City of South San Francisco East of 101 Area Plan,
- Draft Transportation Impact Assessment (Fehr & Peers, January 2017) prepared for this EIR
- San Francisco International Airport Noise Exposure Report
- Traffic Noise Impact Analysis (RGD Acoustics, August 2017), **Appendix 14** of this EIR

Environmental Setting

Fundamentals of Environmental Noise

Noise is defined as unwanted sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (dB) with 0 dB corresponding roughly to the threshold of hearing. Decibels and other technical terms are defined in **Table 14-1**.

Most of the sounds that we hear in the environment do not consist of a single frequency, but rather a broad band of frequencies, with each frequency differing in sound level. The intensities of each frequency add together to generate a sound. The method commonly used to quantify environmental sounds consists of evaluating all of the frequencies of a sound in accordance with a weighting that reflects the facts that human hearing is less sensitive at low frequencies and extreme high frequencies than in the frequency mid-range. This is called "A" weighting, and the decibel level so measured is called the A-weighted sound level (dBA). Typical A-weighted levels measured in the environment and in industry are shown in **Table 14-2** for different types of noise.

Table 14-1: Definitions of Acoustical Terms Used in this Report

<u>Term</u>	<u>Definitions</u>
Decibel, dB	A unit describing, the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period. The hourly L_{eq} used for this report is denoted as dBA L_{eq} (h)
L_{max} , L_{min}	The maximum and minimum A-weighted noise level during the measurement period
L01, L10, L50, L90	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, L_{dn} or DNL	The equivalent noise level for a continuous 24-hour period with a 10-decibel penalty imposed during nighttime and morning hours. (10:00 pm to 7:00 am)
Community Noise Equivalent Level, CNEL	CNEL is the equivalent noise level for a continuous 24-hour period with a 5-decibel penalty imposed in the evening (7:00 pm to 10:00 pm) and a 10-decibel penalty imposed during nighttime and morning hours (10:00 pm to 7:00 am).
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Handbook of Acoustical Measurements and Noise Control, Harris, 1998

Table 14-2: Typical Noise Levels in the Environment

<u>Common Outdoor Noise Source</u>	<u>Noise Level (dBA)</u>	<u>Common Indoor Noise Source</u>
	110 dBA	
Jet fly-over at 1,000 feet		
	100 dBA	
Gas lawn mower at 3 feet		
	90 dBA	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80 dBA	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	70 dBA	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60 dBA	
		Large business office
Quiet urban daytime	50 dBA	Dishwasher in next room
		Active office environment
Quiet urban nighttime	40 dBA	Theater, large conference room
Quiet suburban nighttime		
	30 dBA	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20 dBA	
		Broadcast/recording studio
	0 dBA	

Source: Caltrans, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013

Although the A-weighted noise level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of noise from distant sources that creates a relatively steady background noise in which no particular source is identifiable. A single number descriptor called the Leq is widely used to describe the time-varying character of environmental noise. The Leq is the average A-weighted noise level during a given time period.

In determining the daily level of environmental noise, it is important to account for the difference in response of people to daytime and nighttime noises. During the nighttime, the exterior background noises are generally lower than the daytime levels. However, most household noise also decreases at night and exterior noise becomes very noticeable. Further, most people sleep at night and are very sensitive to noise intrusion. To account for human sensitivity to nighttime noise levels, a descriptor, DNL (day/night average sound level), was developed. The DNL divides the 24-hour day into the daytime of 7:00 AM to 10:00 PM and the nighttime of 10:00 PM to 7:00 AM. The nighttime noise level is weighted 10 dB higher than the daytime noise level. The Community Noise Equivalent Level (CNEL) is another 24-hour average that includes both an evening and nighttime weighting.

Effects of Noise on People

The effects of noise on people can be placed into three categories:

- Subjective effects of annoyance, nuisance, dissatisfaction;
- Interference with activities such as speech, sleep, learning; and
- Physiological effects such as hearing loss or sudden startling

Environmental noise typically produces effects in the first two categories. Only workers in industrial plants generally experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation exists in the individual thresholds of annoyance, and different tolerances to noise tend to develop based on an individual's past experiences with noise. Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called "ambient noise" level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- Under controlled conditions in an acoustics laboratory, the trained healthy human ear is able to discern changes in sound levels of 1 dBA;
- Outside these controlled conditions, the trained ear can detect changes of 2 dBA in normal environmental noise;
- It is widely accepted that the average healthy ear, however, can barely perceive changes in the noise level of 3 dBA;
- A change in level of 5 dBA is a readily perceptible increase in noise level; and
- A 10 dBA change is recognized as twice as loud as the original source (Caltrans, 2009).

Fundamentals of Environmental Ground-borne Vibration

Vibration is sound radiated through the ground. The rumbling sound caused by the vibration of room surfaces is called ground-borne noise. The ground motion caused by vibration is measured as particle velocity in inches per second, and, in the U.S., is referenced as vibration decibels (VdB).

The threshold for perception of vibration velocity for humans is approximately 65 VdB. A vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people, or the slamming of doors. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains and traffic on rough roads. If a roadway is smooth, the ground-borne vibration from traffic is rarely perceptible. The range of interest in ground-borne vibration is from approximately 50 VdB, which is the typical background level of vibration velocity, to 100 VdB, which is the general threshold where minor damage can occur to fragile buildings.

The FTA has established criteria for vibration-sensitive research equipment, such as high-powered optical microscopes and electron microscopes. As described in the 2007 MEIR, there are detailed Vibration Criteria for Specialized Research Equipment, presented in **Table 14-3**.

Table 14-3: Vibration Criteria for Specialized Research Equipment

Max VdB	Description of equipment use
90	Distinctly felt vibration. Appropriate to workshops and non-sensitive areas.
84	Felt vibration. Appropriate to offices and non-sensitive areas.
78	Barely felt vibration. Adequate for computer equipment and low-power optical microscopes (up to 20X)
72	Vibration not felt, but ground-borne noise may be audible inside quiet rooms. Suitable for medium-power optical microscopes (100X) and other equipment of low sensitivity
66	Adequate for medium-to-high-power optical microscopes (400X), microbalances, optical balances, and similar specialized equipment
66	Adequate for high-power optical microscopes (1000X), inspection and lithography equipment to 3 micron line widths
54	Appropriate for most lithography and inspection equipment to 1 micron detail size
48	Suitable in most instances for the most demanding equipment, including electron microscopes operating to the limits of their capability.
42	The most demanding criterion for extremely vibration-sensitive equipment

Source: Harris Miller Miller & Hanson, Inc. Transit Noise and Vibration Impact, Final Assessment, 2006

As described in the 2007 MEIR, the human response to different levels of ground-borne vibration falls into three categories:

- Vibration velocity of 65: Approximate threshold of perception for many people
- Vibration velocity of 75: Approximate dividing line between barely perceptible and distinctly perceptible - many people find that transportation-related vibration at this level is unacceptable
- Vibration velocity of 85: Vibration acceptable only if there are an infrequent number of events per day¹

Existing Noise Levels

A Noise Impact Analysis was prepared for this EIR by RGD Acoustics (see **Appendix 14**). The major noise sources affecting the study area are vehicular traffic, railroad, aircraft noise and commercial/ industrial activities. As part of the Noise Impact Analysis, noise measurements were conducted in South San Francisco between April and May 2017 to quantify the existing noise environment. Measurements included nine long-term (24 hours or more) measurements (Location LT-1 to LT-9) and four short-term (15 minute) measurements (Location ST-1 to ST-4). The noise measurement locations are shown in **Figure 14-1**.

¹ Harris Miller & Hanson, Inc. Transit Noise and Vibration Impact, Final Assessment, 2006

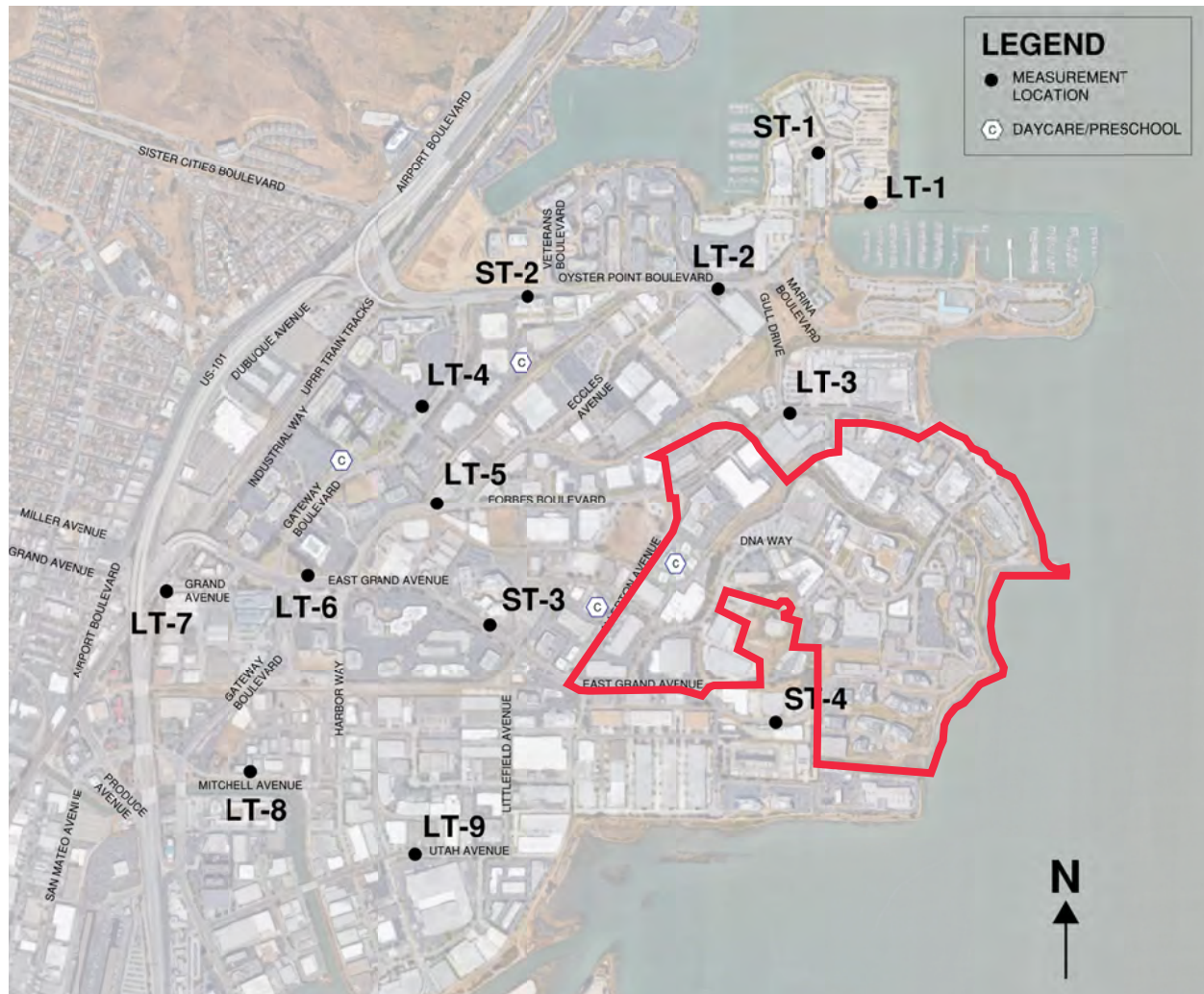


Figure 14-1
Noise Measurement Locations



Source: RGD Acoustics, 2017

Long-term Measurements of Ambient Noise (includes existing traffic)

Long-term noise measurements were made at nine locations in South San Francisco to quantify ambient noise levels. At these locations, monitoring was done using a Larson Davis Sound Level Meter Model 820. Generally, the major noise source at each monitor was traffic on the road where the monitor was located. Additionally, aircraft flyovers were also clearly noticeable and contributed to the overall noise level. The results of long-term measurements are presented in **Table 14-4** and described in more detail in the Noise Study (Appendix 14). Graphs showing the hourly noise levels at each monitoring location are shown in Appendix A of that report.

Table 14-4: Long-term Noise Measurement Results

<u>Weekday</u> <u>CNEL</u>	<u>Date</u>	<u>Average Noisiest Weekday Hour</u>	
		<u>Time</u>	<u>Leq</u>
62	04/27/17 - 04/30/17	4:00 PM – 5:00 PM	61
74	04/25/17 - 04/27/17	8:00 AM – 9:00 AM	72
75	04/27/17 - 04/30/17	8:00 AM – 9:00 AM	71
71	04/30/17 - 05/02/17	12:00 PM – 1:00 PM	70
73	04/25/17 - 04/26/17	4:00 PM – 5:00 PM	75
73	04/27/17 - 05/02/17	11:00 AM – 12:00 PM	71
78	04/30/17 - 05/02/17	7:00 PM to 8:00 PM	75
74	04/27/17 - 05/02/17	12:00 PM to 1:00 PM	73
71	04/25/17 - 04/28/17	7:00 AM to 8:00 AM	69

Source: Traffic Noise Impact Analysis, RGD Associates, August 7, 2017

Short-term Measurements of Ambient Noise (includes existing traffic)

Short-term noise measurements were made at four locations using a Larson Davis Model 824 Sound Level Meter at a height of five feet above ground. The short-term measurements allowed for direct observation of the existing noise environment and non-traffic noise sources can be identified and excluded from the noise readings. Additionally, traffic was classified and counted for comparison with predicted modeling results. The short-term measurement locations are also shown in Figure 14-1 and the measurement results are summarized in **Table 14-5**.

Table 14-5: Short-Term Noise Measurement Results

<u>Site</u>	<u>Location</u>	<u>Date and Time</u>	<u>Leq</u>	<u>L33</u>	<u>CNEL</u>	<u>Lmax</u>
ST-1	On Oyster Point Blvd, 28 feet from center of lane	27 April 2017 1:24 PM – 1:39 PM	61	60	64	Cars: 62 – 68 Trucks: 66 – 72 typ., 76
ST-2	On Oyster Point Blvd between Gateway Blvd and Veterans Blvd	27 April 2017 1:50 PM – 2:05 PM	72	71	75	Cars: 72 – 78 Med Trucks: 76 – 78 Motorcycles: 86 Jets: 71
ST-3	On East Grand Ave, west of Littlefield Ave	2 May 2017 11:20 AM – 11:35 AM	67	67	69	Cars: 68 – 69 Medium Trucks: 67, 77 Heavy Trucks, 76 – 77 Motorcycle: 74
ST-4	On East Grand Ave, east of Haskins Way	27 April 2017 12:22 PM – 12:37 PM	66	64	71	Cars: 64 – 88, typically 70 Medium Trucks: 65 – 76 Heavy Trucks: 74 – 76 Aircraft: 67 - 68

Source: Traffic Noise Impact Analysis, RGD Associates, August 7, 2017

Noise-Sensitive Land Uses

Land uses in South San Francisco East of the 101 Area are primarily offices, commercial and industrial/light industrial uses that are not considered noise sensitive uses. As indicated in the SSF General Plan Noise Element, the land use criteria for noise-impacted industrial areas indicates that a noise level range of less than 75 dBA CNEL is satisfactory for industrial areas, and no special insulation requirements apply.

The South San Francisco General Plan Noise Element defines sensitive land uses as including residences, schools, places of worship and hospitals.² These uses are not present in the East of 101 Area. Childcare centers, including both indoor and outdoor areas, are also considered noise sensitive uses. Existing childcare centers and preschools in the East of 101 Area include the Gateway Child Development Center on Gateway Boulevard and the Early Years Preschool on Allerton Avenue. Genentech also operates their own childcare centers including the Genentech 2nd Generation at 444 Allerton Avenue and the recently opened (as of early 2018) Genentech Cabot 2nd Generation at 342 Allerton.

Although not specifically listed in the Noise Element as noise sensitive land uses, there are several hotels within the East of 101 Area along Gateway Boulevard, Forbes Boulevard, East Grand Avenue, Mitchell Avenue, Airport Boulevard and South Airport Boulevard. Most of these hotels are located in proximity to the 101 freeway on- and off-ramps for the convenience of their customers, also placing them in locations subject to substantial traffic noise from the freeway and adjacent arterial roadways. Noise reduction and insulation features are typically included in the design of these near-freeway hotels.

² South San Francisco General Plan, Noise Element, page 9-2

Regulatory Setting

Federal

The Federal Aviation Administration (FAA) 14 CFR Part 150: Airport Noise Compatibility Planning requires airports to develop two primary planning reports. The first is a Noise Exposure Map that contains detailed information regarding existing and 5-year future airport/aircraft noise exposure patterns. The second is a Noise Compatibility Program Report that includes descriptions and an evaluation of noise abatement and noise mitigation options/programs applicable to an airport. SFO issued an updated Noise Exposure Map in 2014. It is currently in the processing of updating its Noise Compatibility Plan.

Comprehensive Airport Land Use Compatibility Plan for SFO (2012)

The Comprehensive Airport Land Use Compatibility Plan for the Environs of San Francisco International Airport (ALUCP) is used by the City/County Association of Governments of San Mateo County (C/CAG) to promote compatibility between the San Francisco International Airport (SFO) and surrounding land uses. The ALUCP compatibility criteria, as derived from the Federal Aviation Administration (FAA), are used to safeguard the general welfare of the public. The Project Area is entirely within the SFO Airport Influence Area (AIA) and as such, the compatibility criteria contained within the ALUCP are applicable to land use plans and development within the Project Area.

The ALUCP establishes boundaries within which noise compatibility policies apply. These boundaries depict “noise impact areas” or noise compatibility zones, defined by noise contours at the 65 dB CNEL, 70 dB CNEL and 75 dB CNEL contours. Noise compatibility policies apply to each noise impact area or contour. Commercial uses (e.g., offices and business) or industrial and manufacturing uses and related structures are considered compatible without restrictions within all of these noise impact areas.

State

California Noise Control Act of 1973

The California Noise Control Act of 1973, California Health and Safety Code Sections 46000 through 46080, finds 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 finds that there is a continuous and increasing bombardment of noise in 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.

California Noise Insulation Standards (California Code of Regulations, Title 24)

Title 24 establishes an interior noise standard of 45 dBA for multifamily residential structures and requires noise insulation of new multifamily dwellings constructed within a 60-dBA noise contour (OPR 2003).

California Department of Health Services Guidelines

The California Department of Health Services has published guidelines for the preparation of General Plan Noise Elements that outlines recommendations to minimize the exposure of community residents to excessive noise, including noise compatibility standards. These guidelines apply to ambient noise levels rather than individual noise sources. The guidelines also provide adjustment factors that may be used in order to arrive at noise-acceptability standards that reflect a particular community's sensitivity. The adjustment factor for noisy urban communities near busy roads is -5 dBA CNEL, which means that measured noise levels would be reduced by 5 dBA CNEL before comparison to the noise compatibility guidelines. The adjustment factors indicate that noise compatibility guidelines 5 dBA CNEL higher than recommended (see **Table 14-6**) are appropriate in certain urban communities due to existing high noise levels.

Table 14-6: California Recommended Noise Compatibility Guidelines

Land Use Category	<u>Normally Acceptable</u>	<u>Conditionally Acceptable</u>	<u>Normally Unacceptable</u>	<u>Clearly Unacceptable</u>
Residential-Single family, Duplex, Mobile Home	50-60	55-70	70-75	75-85
Residential-Multifamily	50-65	60-70	70-75	75-85
Transient Lodging, Motels, Hotels	50-65	60-70	70-80	80-85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50-70	60-70	70-80	80-85
Auditoriums, Concert Halls, Amphitheaters	NA	50-70	NA	65-85
Sports Arena, Outdoor Spectator Sports	NA	5-75	NA	70-85
Playgrounds, Neighborhood Parks	50-70	NA	67-75	72-85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50-75	NA	70-80	NA
Office Buildings, Business Commercial, Professional	50-70	67-77	75-85	NA
Industrial, Manufacturing, Utilities, Agriculture	50-75	70-80	80-85	NA

Source:

California Governor's Office of Planning and Research, State of California General Plan Guidelines (2003), Appendix C (Guidelines for the Preparation and Content of the Noise Element of the General Plan)

NORMALLY ACCEPTABLE- Specified land use is satisfactory, based upon the assumption that 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 included in the design.

NORMALLY UNACCEPTABLE- New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made with noise insulation features included in the design.

CLEARLY UNACCEPTABLE- New construction or development clearly should not be undertaken.

Local

Each local government's goals, objectives and policies for noise control are established by the Noise Element of the General Plan and by specific noise ordinances passed by the City. The Project Area is within the East of 101 Area, for which a specific plan was first adopted in 1994 and updated in February 2016.³

City of South San Francisco General Plan Noise Element

The Noise Element of the City's General Plan identifies sources of noise in the City and provides objectives and policies that ensure that noise from various sources would not create an unacceptable noise environment. The Noise Element is intended to achieve and maintain compatibility of land uses with acceptable environmental noise levels.

³ City Council Resolution No. 18-2016, adopted February 10, 2016 made changes to the Land Use section of the East of 101 Area Plan (Plan), revising the Plan pertaining to legal conforming uses and the Planning Sub-Areas element to ensure policy consistency with the General Plan, the Downtown Station Area Specific Plan, and the Transit Office/Research and Development Core Zoning District

ALUC Noise Standards and Related Requirements

The SFO Land Use Plan establishes a 65 dB CNEL contour as the noise impact boundary for SFO. Local plans, policy actions or development activities that affect areas within that boundary must receive Airport Land Use Commission (ALUC) approval or have a finding of overriding consideration prior to local permit issuance. To assist this process, the ALUC has established noise/land use compatibility standards as the basis of plan review (see **Table 14-7**). The City also applies these standards in its review of development applications located within the 65 dB CNEL boundary. The Project Area is not within the 65 dB CNEL boundary.

Table 14-7: City of South San Francisco Land Use Criteria for Airport Noise-Impacted Areas

<u>Land Use</u>	<u>Exterior CNEL Range</u>	<u>General Land Use Criteria</u>
Residential	Less than 65 dBA	Satisfactory, no special insulation requirements
	65 to 70	Development requires analysis of noise reduction requirements and noise insulation as needed
	Over 70	Development should not be undertaken
Commercial	Less than 70	Satisfactory, no special insulation requirements
	70-80	Development requires analysis of noise reduction requirements and noise insulation as needed
	Over 80	Airport-related development only; special noise insulation should be provided
Industrial	Less than 75	Satisfactory, no special insulation requirements
	75 to 85	Development requires analysis of noise reduction requirements and noise insulation as needed
	Over 85	Airport-related development only; special noise insulation should be provided
Open	Less than 75	Satisfactory, no special insulation requirements
	Over 75	Avoid uses involving concentrations of people or animals

Source: City of South San Francisco General Plan Noise Element, 1999

City of South San Francisco Municipal Code

Operations

The SSF Municipal Code Section 8.32.030 defines the maximum permissible sound levels at various land use zoning districts within the city. It is unlawful for any person to operate or cause to be operated any source of sound at any location within the city, or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level when measured on any other property to exceed the limits as specified in **Table 14-8**. The noise level standards as specified in this table are for a cumulative period of more than thirty minutes in any hour, and a graded scale allowing for increased noise levels over shorter durations is provided. This ordinance applies to stationary sources of noise, and does not pertain to project-generated traffic noise.

Table 14-8: Receiver Site Noise Level Standards, City of South San Francisco

<u>Land Use Category</u>	<u>Time Period</u>	<u>Noise Level (dB)</u>
R-E, R-1 and R-2 zones or any single-family or duplex residential in a specific plan district	10 p.m.—7 a.m.	50
	7 a.m.—10 p.m.	60
R-3 and D-C zones or any multiple-family residential or mixed residential/commercial in any specific plan district	10 p.m.—7 a.m.	55
	7 a.m.—10 p.m.	60
C-1, P-C, Gateway and Oyster Point Marina specific plan districts or any commercial use in any specific plan district	10 p.m.—7 a.m.	60
	7 a.m.—10 p.m.	65
M-1, P-1	Anytime	70

Source: SSF Municipal Code, Table 8.32.040, as adapted from The Model Community Noise Control Ordinance, Office of Noise Control, California Department of Health

If the measured ambient noise level for any area is higher than these standards, then the ambient shall be the base noise level standard for purposes of the cumulative period of more than thirty minutes in any hour.

Construction

Under Section 8.32.050(d) of the SSFMC, construction activities are limited to between the hours of 8:00 AM to 8:00 PM on weekdays, 9:00 AM to 8:00 PM on Saturdays, and 10:00 AM to 6:00 PM on Sundays and holidays. Construction noise that occurs during these hours is allowed if the project meets at least one of the following noise limitations:

- No individual piece of equipment shall produce a noise level exceeding 90 dB at a distance of twenty-five feet. If the device is housed within a structure or trailer on the property, the measurement shall be made outside the structure at a distance as close to twenty-five feet from the equipment as possible.
- The noise level at any point outside of the property plane of the project shall not exceed 90 dB.

City of South San Francisco East of 101 Area Plan

The East of 101 Area Plan Noise Element establishes policies to provide acceptable noise levels for anticipate land uses. These policies have been used to set criteria for the control of noise generated by individual aircraft flyover noise and for average noise levels. The purpose of these criteria is to reduce the potential effects of noise on people, including sleep disturbance, reduced physical and mental performance, annoyance, and interference with speech communication. The East of 101 Area Plan identifies the Project Area as commercial development, and requires that for commercial land uses such as industrial, office, and retail, the interior calculated hourly noise levels during the daytime should not exceed 45 dBA Leq and instantaneous maximum noise levels should not exceed 60 dBA. The Noise Element also establishes a policy to ensure that new development be designed so that the average noise level does not exceed a Leq of 60 dBA at the nearest open space or recreational area.

Impacts and Mitigation Measures

Thresholds of Significance

Based on the CEQA Guidelines, the Project would have a significant environmental impact if it were to:

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
2. Generate excessive ground-borne vibration or ground-borne noise levels
3. Expose people residing or working in the project site to excessive noise levels from a project located in the vicinity of a private airstrip or 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

These CEQA Guidelines do not provide a quantitative measurement to define excessive or substantial. Therefore, the following quantifiable thresholds were used to evaluate the significance of impacts, based on applicable regulations, ordinances and policies:

Construction

Chapter 8.32 of the City's Municipal Code establishes criteria for construction noise. Construction activities authorized by a valid city permit shall be allowed on weekdays between the hours of eight a.m. and eight p.m., on Saturdays between the hours of nine a.m. and eight p.m., and on Sundays and holidays between the hours of ten a.m. and six p.m., or at such other hours as may be authorized by the permit, if they meet at least one of the following noise limitations:

- No individual piece of equipment shall produce a noise level exceeding 90 dB at a distance of 25 feet. If the device is housed within a structure or trailer on the property, the measurement shall be made outside the structure at a distance as close to twenty-five feet from the equipment as possible.
- The noise level at any point outside of the property plane of the project shall not exceed 90 dB

Operational Noise and Noise Exposure

SSF Municipal Code Section 8.32.030 defines the maximum permissible sound levels that can be generated by a land use. Maximum permissible sound levels from a project are determined by the land use category of the receiving property.

- For receiving properties that are within a Commercial (C-1), Professional Commercial (P-C), Gateway and Oyster Point Marina Specific Plan Districts, or any commercial use in any specific plan district (i.e., within the Genentech Master Plan zoning district), the maximum permissible receiving noise level is 65 dBA during the period from 7 AM to 10 PM, and 60 dBA from 10 PM to 7 AM,
- For receiving properties that are within an Industrial zoning district (M-1 or P-1), the maximum permissible receiving noise level is 70 dBA at any time.
- The Noise Element also establishes a policy to ensure that new development be designed so that its average level of noise generation does not exceed 60 dBA Leq at the nearest open space or recreational area.

Traffic Noise

In general, an increase of 3 dBA in traffic noise is considered just noticeable, a change of 5 dBA in traffic noise is clearly noticeable and a change of 10 dBA in traffic noise is perceived as a doubling.⁴ This EIR applies the following thresholds of significance for traffic-related noise increases:

- A Project-generated increase of 3 dBA, if the resulting traffic noise would meet or exceed the normally acceptable range (65 dBA CNEL) at a noise-sensitive land use (i.e., childcare)

⁴ Traffic Noise Impact Analysis, prepared by RGD Acoustics, August 1, 2017

- A project-generated increase of 5 dBA, if the resulting traffic noise would remain below the normally acceptable range at a noise-sensitive land uses
- A Project-generated increase of greater than 1 dBA to a cumulative traffic noise increase of 3 dBA or more, and where cumulative traffic noise levels would be above the normally acceptable range at a noise-sensitive land use
- A Project-generated increase of greater than 1 dBA to a cumulative traffic noise increase of 5 dBA or more, and where cumulative traffic noise levels would be remain within the normally acceptable range at a noise-sensitive land use

Construction Vibrations

The following criteria are applied in this analysis for identifying potentially significant construction-period vibration impacts:

- Generation of construction-related groundborne vibration levels exceeding the “strongly perceptible” level of 0.1 in/sec peak particle velocity (PPV) at off-site sensitive receptors (i.e., at residences, schools, childcare centers, etc.)
- Generation of construction-related groundborne vibration levels exceeding the modern industrial/commercial buildings damage standard of 0.5 in/sec PPV at on-site or off-site structures (i.e., structural damage)

Construction Noise

Noise 1: Construction activities pursuant to the Project could generate a substantial temporary increase in ambient noise levels in the vicinity of the project in excess of noise levels that exceed the noise standards established in SSFMC Section 8.32.030. (**Significant and Unavoidable**)

Construction noise concerns pertain primarily to construction projects located in close proximity to sensitive land uses (e.g., childcare facilities) or to other existing buildings (on or off-site) where employees could be adversely affected by construction noise.

Construction noise impacts are largely a function of the construction equipment used, the location and sensitivity of nearby land uses, and the timing and duration of noise-generating activities. Construction noise levels for individual developments pursuant to the Project would vary depending on construction phase, equipment type and duration of use, distance between noise sources and receptors, and the presence or absence of barriers between noise sources and receptors. **Table 14-9** displays the maximum noise levels (L_{max}) for typical construction equipment, measured at 50 feet from the source.

Table 14-9: Typical Construction Equipment Maximum Noise Levels, Lmax

<u>Type of Equipment</u>	<u>Specification Maximum Sound Levels for Analysis (dBA at 50 feet)</u>	<u>Type of Equipment</u>	<u>Specification Maximum Sound Levels for Analysis (dBA at 50 feet)</u>
Pickup Truck	55	Excavators	85
Pumps	77	Graders	85
Air Compressors	80	Jackhammers	85
Backhoe	80	Man Lift	85
Front-End Loaders	80	Paver	85
Portable Generators	82	Pneumatic Tools	85
Dump Truck	84	Rollers	85
Tractors	84	Scrapers	85
Auger Drill Rig	85	Concrete/Industrial Saws	90
Concrete Mixer Truck	85	Impact Pile Driver	95
Cranes	85	Vibratory Pile Driver	95
Dozers	85		

Source: FHWA, 2006

According to the numeric thresholds used in this EIR (as derived from Chapter 8.32 of the City's Municipal Code), construction noise that is generated during allowed construction hours is not considered significant if that construction activity either would not exceed 90 dB at 25 feet, or would not exceed 90 dB at any point outside the property. Most of the types of construction equipment likely to be used for Project-related construction would not generate more than 90 dB at 25 feet. However, certain types of construction activity (e.g., concrete mixer trucks, excavators and graders, jackhammers, etc.) that generate 85 dB or more at a distance of 50 feet, could generate noise that exceeds 90 dB at a distance of 25 feet (assuming a standard practice increment of approximately 6 dB increase at one-half the distance from the source), or could potentially exceed 90 dB at a nearby property line.

On-Campus Effects

Internally to the Campus, Genentech operates childcare facilities that are considered noise-sensitive land uses, and other existing Genentech labs and office could potentially be affected by future construction noise. Although technically not considered a CEQA impact (an effect of the Project on the Project is not considered an effect on the "environment"), Genentech recognizes the potential adverse effects that could occur to their own facilities. As has been Genentech's practice, Genentech will continue to prepare and implement Noise Attenuation and Logistics Plans for any new construction that is located in close proximity to an existing Genentech building, demonstrating consistency with all applicable OSHA requirements for safe workspaces, and any other private Genentech-based noise standards for a healthy workplace.⁵

⁵ As an example, Genentech's Logistics Plan for the B40 project in the South Campus (which involves a structure that connects two existing buildings) included relocation of all employees located in those portions of existing buildings that were adjacent to the construction activity, to less sensitive spaces in these or other buildings. The initial phase of new construction included application of protective barriers along existing building facades to protect buildings from damage. These temporary barriers, applied directly to the exterior of both existing buildings, included noise and vibration attenuation materials that were sufficient to achieve applicable OSHA standards for acceptable noise and vibration levels in the affected office work environment. With implementation of these noise and vibration barriers, construction-period noise impacts were reduced to

Off-Campus Effects

There are relatively few Opportunity Sites identified in the Master Plan Update that are located adjacent to non-Genentech owned or controlled properties. However, there are some Opportunity Sites along the outer edges of the Campus and adjacent to separately owned properties. Depending on the precise location of new development relative to property lines, construction noise at these select Opportunity Sites could potentially exceed 90 dB at an adjacent property line. These types of construction-period noise impacts would be considered significant.

Mitigation Measures

All noise-generating construction activities pursuant to the Project would comply with limits on weekday and weekend hours, as set forth in the SSF Municipal Code Section 8.32.050. Additionally, the following mitigation measures are recommended for construction activity within the Project Area that is within 50 feet of an adjacent off-site property, and where construction noise may exceed the 90-dB limit of the SSF Municipal Code.

Mitigation Measure Noise 1A - Construction Period BMPs: The Project applicant shall require, by contract specifications, that best management practices (BMPs) for construction activity be implemented by contractors to reduce construction noise levels:

- a) Two weeks prior to the commencement of construction, notification must be provided to surrounding land uses disclosing the construction schedule, including the various types of activities that would be occurring throughout the duration of the construction period.
- b) Maintain all construction equipment to minimize noise emissions. All construction equipment shall be equipped with mufflers and sound control devices (e.g., intake silencers and noise shrouds) that are in good condition and appropriate for the equipment.
- c) Place stationary noise- and vibration-generating construction equipment away from sensitive uses where feasible.
- d) Construction staging areas and operation of earthmoving and or other noise-generating or vibration-generating equipment should be located as far away from noise sensitive sites as possible.
- e) Unnecessary idling of internal combustion engines should be strictly prohibited.
- f) Schedule high noise-producing activities during times when they would be least likely to interfere with the noise-sensitive activities of the adjacent land uses, when possible.
- g) For any new development pursuant to the Project that may require deep foundations, consider the use of augured-cast-in-place piles or drilled shafts, rather than use of impact or vibratory pile drivers.
- h) Implement noise attenuation measures to the extent feasible, which many include, but are not limited to, noise barriers or noise blankets
- i) The construction contractor shall provide the name and telephone number of an on-site construction liaison. If construction noise is found to be intrusive to surrounding properties (i.e., if complaints are received), the construction liaison shall investigate the source of the noise and require that reasonable measures be implemented to correct the problem.

acceptable levels.

Mitigation Measure Noise 1B - Truck Routes: The Project applicant shall require, by contract specifications, that heavily loaded trucks used during construction be routed away from noise-sensitive and vibration-sensitive uses to the extent possible.

Resulting Level of Significance

With implementation of a Genentech Noise Attenuation and Logistics Plan, construction-period noise effects on Genentech's own on-Campus buildings would meet applicable OSHA requirements for safe workplaces and other private Genentech-based noise standards for healthy workplaces. With implementation of construction-period BMPs per Mitigation Measures Noise 1A and 1B, most adverse effects on adjacent and separately-owned properties resulting from construction activity pursuant to the Project would be reduced to a level of less than significant (i.e., below 90 dBA at adjacent property lines).

However, there are certain potential future construction sites (or Opportunity Sites) that are near adjacent properties and where details about the placement of new structures and associated construction activities are not currently known. It is possible that construction noise generated at these locations, near adjacent property lines, could exceed the 90-dB limits of the SSF Noise Ordinance. Even with implementation of construction-period BMPs, these noise levels could exceed 90 dB at the property line. The details of such future construction projects are not and cannot be known at this time, and the effectiveness of construction-period BMPs cannot be demonstrated with certainty without such details. Construction noise is typically not considered significant if its duration is for a period of less than one year. Construction noise is temporary and episodic in nature, and mitigation measures presented above include all reasonable and feasible methods to reduce construction noise effects. However, since the details of such construction activity at each Opportunity Site cannot be known in advance, this impact is conservatively considered **significant and unavoidable**.

Operational Noise

Noise 2: Operational activities associated with the Project would not generate a substantial 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. (**Less than Significant**)

The Project will include new operational-based noise sources. Typical noise sources such as those currently located within the Campus include industrial-type land uses, parking garages, roof-mounted HVAC systems and landscape maintenance. Such activities typically generate noise levels of approximately 60 dBA to 70 dBA Lmax at 50 feet. However, none of these new operational noise sources can be precisely located nor have they been designed at this time. Additionally, the Project potentially may include other less-typical operational noise sources such as a new electrical sub-station, potentially a new combined heat and power (CHP) plant, and potentially a new facility designed to capture treated wastewater from the City's disposal pipeline to the Bay, provide additional on-site treatment and use this treated effluent in its industrial applications. None of these potential new noise sources have been precisely located or designed, nor are they certain to be implemented. Calculations of specific noise levels generated by these future and potential operational uses on surrounding uses cannot be made at this time.

According to the City's Municipal Code, the maximum permissible operational noise levels generated from new development pursuant to the Project are determined by the land use category of the receiving property. The maximum L50 noise standards (the A-weighted noise level that is exceeded 50% of the time, or an average of 30 minutes during a measured hour) for the land uses within and adjacent to the Project site are:⁶

⁶ From Table 8.32.030 of the SSF Municipal Code (see also Table 14-8, above)

- Business and Technology Park (BTP), conservatively assumed the equivalent of Commercial or Specific Plan districts – 65 dB from 7:00 AM to 10:00 PM, and 60 dB from 10:00 PM to 7:00 AM, and
- Mixed Industrial – 70 dB at all times.
- New development shall be designed so that the average noise level resulting from the new development does not exceed Leq of 60 dBA at the nearest open space or recreational area. This East of 101 Area Plan policy (Policy NO-4) seeks to ensure that noise levels of industrial uses do not affect open space and recreation areas including the Bay Trail and shoreline amenities
- If the existing ambient noise environment at a receiver site is higher than the applicable land use noise standard, then the ambient noise level is the noise standard.

Ambient noise levels throughout the Project site and on surrounding properties vary depending on their location relative to roadway noises, industrial operations and other existing noise sources. Long-term noise measurements conducted for this EIR found ambient noise levels of 65 to 70 dB at and near the Project site.

Regulatory Requirements

The SSF General Plan includes relevant policies intended to reduce the effects of exterior noise on interior locations within new buildings. These policies apply to new buildings pursuant to the Project, as well as new buildings on potential adjacent receiver sites:

General Plan Policy 9-I-5: Require that applicants for new noise-sensitive development in areas subject to noise generators producing noise levels greater than 65 dB CNEL obtain the services of a professional acoustical engineer to provide a technical analysis and design of mitigation measures.

General Plan Policy 9-I-6: Where site conditions permit, require noise buffering for all noise-sensitive development subject to noise generators producing noise levels greater than 65 dB CNEL. This noise attenuation method should avoid the use of visible sound walls, where practical.

In addition, policies of the East of 101 Area Plan would apply to new development under the Master Plan Update. These policies set performance standards to minimize the transfer of exterior noise to interior spaces:

NO-2: Office and retail developments in the East of 101 Area shall be designed so that the calculated hourly average noise levels during the daytime do not exceed Leq of 45 dBA, and instantaneous maximum noise levels do not exceed 60 dBA.

NO-3: Noise sensitive portions of industrial buildings shall meet the noise requirements for offices in Policy NO-2.

Compliance with these General Plan policies will reduce the effects of ambient noise levels on new development pursuant to the Project, but do not address new operational noise sources.

Mitigation Measures

Mitigation Measure Noise 2: Mechanical and Industrial Equipment Noise Reduction Requirements: The project applicant shall analyze or provide documentation of future exterior mechanical or industrial equipment to determine if the equipment would exceed applicable operational noise standards. If so, noise control measures must be provided to meet the City's requirements. Typical noise control measures include barriers, enclosures, silencers and acoustical louvers at vent openings. Prior to issuance of any building permits, the project applicant shall submit a report verifying that noise levels generated by project mechanical equipment are no greater than applicable noise standards at receiving properties.

Resulting Level of Significance

With the implementation of Mitigation Measure Noise-2, new industrial or mechanical operational noise impacts associated with the Project would be reduced to a less than significant level.

Construction-Period Ground-Borne Vibration

Noise 3: Construction activities pursuant to the Project would not generate excessive ground-borne vibration, but could adversely affect vibration-sensitive equipment and persons within the Project Area. **(Less than Significant with Mitigation)**

One concern for new construction projects developed pursuant to the Project are those construction activities conducted in close proximity to existing off-Campus buildings where non-Genentech buildings and/or employees could be affected by vibration from heavy construction equipment. Another potential concern is construction activities conducted in close proximity to existing on-Campus Genentech buildings, where current buildings or employees could be affected by vibration from heavy construction equipment. Each individual campus includes Opportunity Sites that are in close proximity to other existing on- and off-Campus buildings.

Given the rate at which vibration waves attenuate through the soil as they travel towards potential receptors, the most intensely vibratory pieces of construction equipment - vibratory rollers - would not exceed the identified human annoyance threshold of 0.1 inches per second unless it were operating as close as 41 feet from a sensitive vibration receptor (e.g., a daycare facility). It would not exceed the building damage threshold of 0.5 inches per second unless it was operating as close as 14 feet from another building (see **Table 14-10**). All other typical pieces of construction equipment would produce less-than-significant impacts when they are operated more than 23 feet from a sensitive vibration receptor or more than 8 feet away from a building.

Table 14-10: Typical Construction Equipment Vibration Levels

<u>Construction Equipment or Activity</u>	<u>PPV at 25 feet (in/sec)</u>	<u>Distance at which construction equipment or activity exceeds vibration criteria (ft)</u>	
		<u>Annoyance Threshold (0.1 in/sec PPV)</u>	<u>Building Damage Threshold (0.5 in/sec)</u>
Clam shovel drop	0.202	40	14
Vibratory roller	0.210	41	14
Hoe ram	0.089	23	8
Large bulldozer	0.089	23	8
Caisson drilling ¹	0.089	23	8
Loaded trucks	0.076	21	7
Jackhammer	0.035	12	4
Small bulldozer	0.003	2	1

Note: New development pursuant to the Project may include deep foundations consisting of augured-cast-in-place piles, or drilled shafts. For the purposes of noise analysis, these activities are considered similar to caisson drilling.

On-Campus Effects

As noted above, an effect of the Project on the Project is not technically not an effect on the “environment”, and not technically considered a CEQA impact. However, it is possible that Genentech’s own vibration-sensitive uses (i.e., their two childcare centers on Allerton Avenue) could be as close as 41 feet from a new development project pursuant to the Master Plan Update, and could be exposed to vibration levels that would exceed sensitive receptor “annoyance” thresholds. Additionally, Genentech’s own buildings could be as close as 14 feet from an Opportunity Site for new development pursuant to the Master Plan Update. Construction equipment used by new development projects pursuant to the Project could potentially generate vibration levels at the existing Genentech buildings that would exceed building safety thresholds. As has been Genentech’s practice, Genentech will continue to prepare and implement Noise Attenuation and Logistics Plans for new development that is in close proximity to another existing Genentech building, demonstrating consistency with all applicable OSHA requirements for safe workspaces, and any other private Genentech-based noise standards for a healthy workplace.

Off-Campus Effects

There are no off-site vibration-sensitive receptors (i.e., childcare facilities) within 41 feet of any of the Master Plan Update’s identified Opportunity Sites, and construction vibrations would not exceed the annoyance threshold for any sensitive uses. The nearest off-site sensitive receptor for construction vibration is the Early Years Preschool, separated from the Campus by Allerton Avenue and its setback from that road (at approximately 150 feet from the Campus boundary). Construction equipment used by new development projects pursuant to the Project would not generate vibration levels that would exceed the annoyance threshold at this nearest sensitive receptor, and no off-Campus impacts would occur.

No off-Campus, non-Genentech buildings are expected to be as close as 14 feet from a substantial vibratory construction operation, and no off-site impacts related to building damage are anticipated.

Mitigation Measures

In order to further reduce the potential for building damage impacts from construction vibration to off-Campus buildings, the following mitigation measures are recommended:

Mitigation Measure Noise 3A - Pre-Construction Survey: Prior to the commencement of ground clearing activities, the project applicant shall verify that:

- a) no heavy construction activity that may generate a PPV of more than 0.10 inches/second at 25 feet would occur within 10 feet of an adjacent, non-Genentech building, and that
- b) no heavy construction activity that may generate a PPV of more than 0.20 inches/second at 25 feet would occur within 20 feet of an adjacent, non-Genentech building
- c) If no such construction activity would occur within these specified distances from an adjacent, off-site building, then construction activities would not exceed the building damage threshold, and construction may begin with no further action required for vibration effects.

Mitigation Measure 3B – Changes to Construction Plans: If heavy construction activity is proposed at distances closer to an adjacent, non-Genentech building than those distances prescribed in Mitigation Measure Noise 3A, such that vibration impacts may result in damage to an adjacent building, the project applicant shall adjust the construction plan such that it would not generate vibration levels at the adjacent building that exceed the building damage threshold of 0.50 inches per second PPV.

Additionally, the following construction-period noise mitigation measures would also apply:

Mitigation Measure Noise 1A - Construction Period BMPs (see above)

Mitigation Measure Noise 1B - Truck Routes (see above)Resulting Level of Significance

With implementation of these mitigation measures, potentially significant damage to adjacent buildings would be reduced to a less-than-significant level.

Operational Ground-Borne Vibration

Noise 4: Operational activities pursuant to the Project would not generate excessive ground-borne vibration, and would not adversely affect vibration-sensitive equipment or persons within the Project Area.
(Less than Significant)

Upon completion of construction, no operational uses associated with the Project would generate a permanent source of ground-borne vibration. Future sources of ground-borne vibration from operation of the Project would come from routine truck trips for maintenance or other service. As such, implementation of the Project would not expose persons within the Project vicinity to excessive ground-borne vibration levels. The impact would be less than significant.

Mitigation Measures

No mitigation is required.

Substantial Permanent Increase in Ambient Traffic Noise

Noise 5: Traffic generated by the Project would result in increased traffic volumes that would increase local ambient traffic noise levels by greater than 3 dBA CNEL at locations that would also meet or exceed 65 dBA CNEL, but the Project's increased traffic noise would not adversely affect existing noise-sensitive receptors. **(Less than Significant)**

An analysis of expected noise resulting from vehicle traffic as predicted under Existing and with-Project conditions was conducted to determine whether increased vehicle trips attributable to the Project would result in significant increases in ambient noise levels. The increase in traffic noise due to Project-generated traffic was calculated using the Federal Highway Administration's Traffic Noise Model (TNM 2.5), as applied to traffic volumes as estimated in this EIR. The noise model takes into account the expected vehicle class, speed, road surface and distance, and calculates a noise level (Leq) based on peak-hour traffic. The CNEL value of this peak hour traffic was determined based on the difference between the peak-hour Leq, and the CNEL measured at the nearest monitoring location.

Increases in traffic noise in the Project Area vicinity are shown in **Table 14-11**. The noise levels are referenced to a distance of 100 feet from the roadway centerline. Increases of more than 3.0 dBA are shown in **bold**.

Table 14-11: Traffic Noise Levels, Existing and With Project

<u>Roadway</u>	<u>CNEL at 100 feet from Roadway Centerline (dBA)</u>		
	<u>Existing</u>	<u>Existing + Project</u>	<u>Increase</u>
Airport Blvd			
North of Sister Cities Blvd	76.5	76.8	0.3
Sister Cities Blvd to Miller Ave	77.8	77.9	0.1
Miller Ave to Grand Ave	78.0	78.3	0.3
Grand Ave to San Mateo Ave	74.4	74.9	0.5
Sister Cities Blvd west of Airport Blvd	70.8	71.3	0.5
Oyster Point Blvd			
US 101 to Gateway Blvd	75.6	76.1	0.5
Gateway Blvd to Veterans Blvd	71.2	72.3	1.1
Veterans Blvd to Eccles Ave	71.0	72.8	1.7
Eccles Ave to Gull Drive	70.3	72.2	2.0
east of Gull Drive	67.1	67.1	0
Gull Drive	68.0	70.8	2.8
Forbes Blvd			
east of Gull Drive	66.4	68.4	2.0
Gull Drive to Allerton Ave	63.5	66.5	3.0
Allerton Ave to East Grand Ave.	63.7	65.9	2.2
Eccles Ave (Oyster Pt Blvd to Forbes)	62.6	62.6	0
Gateway Blvd			
Oyster Pt Blvd to E. Grand Ave.	67.3	68.6	1.3
E. Grand Ave to Mitchell Ave.	70.8	72.1	1.3
Grand Ave			
West of Airport Blvd	67.5	68.0	0.5
Industrial Way to East Grand Ave	75.0	75.7	0.7
East Grand Avenue			
west of Gateway	71.9	74.5	2.6
Gateway Blvd to Forbes Blvd	72.9	76.3	3.4
Forbes Blvd to Allerton Ave	72.4	75.7	3.3
Allerton Ave to DNA Way	72.1	75.5	3.4
East of DNA Way	69.7	73.1	3.4
DNA Way (E. Grand to Forbes)	69.0	72.1	3.1
Harbor Way (E. Grand to Utah Ave)	67.5	67.5	0
Allerton Ave (E. Grand to Forbes Blvd)	65.6	67.3	1.7
Produce Ave (south of San Mateo Ave)	76.5	77.5	1.0
San Mateo Ave (Airport Blvd to So. Airport Blvd)	67.1	67.1	0

Table 14-11: Traffic Noise Levels, Existing and With Project

<u>Roadway</u>	<u>CNEL at 100 feet from Roadway Centerline (dBA)</u>		
	<u>Existing</u>	<u>Existing + Project</u>	<u>Increase</u>
Mitchell Ave			
Airport Blvd to Gateway Blvd	70.1	71.3	1.2
East of Gateway Blvd	66.7	66.7	0
South Airport Blvd			
Mitchell Ave to Utah Ave	73.7	74.6	0.9
South of Utah Ave	73.2	73.7	0.5
Utah Ave (East of S. Airport Blvd)	71.1	71.9	0.8

Source: RGD Associates, August 7, 2017

As shown in Table 14-11, two roadways are expected to experience traffic noise increases of 3 dBA or more over existing conditions, when traffic generated by the Project is added. These roadways are East Grand Avenue from US 101 to east of DNA Way, and Forbes Boulevard from Gull Drive to Allerton Avenue. Those roadway segments that are affected by Project-generated traffic noise greater than 3 dBA CNEL will also experience roadway noise of greater than 65 dBA. However, both of these roadways are located in the commercial/industrial area of East of 101, where the majority of land uses are not considered to be noise-sensitive uses (the Noise Element specifically lists residences, schools, churches and hospitals as being noise-sensitive). Therefore, other than potential effects on existing childcare facilities within the East of 101 Area (discussed below), the Project's increase in traffic noise would not adversely affect sensitive land uses. No other roadway segments in the Project vicinity would experience increased traffic-related noise above the 3.0 dBA CNEL threshold with the addition of Project-generated traffic.

Traffic noise generated by the Project would add more than 3 dB CNEL to current noise levels along East Grand Avenue between Highway 101 and Forbes Boulevard, near several existing hotels. Hotels are not listed in the General Plan as a noise-sensitive land use. Several other considerations regarding traffic noise also indicate that increased traffic noise effects on hotels would not be significant:

- These hotels are already subject to noise levels in the range of 70 to 80 dBA, primarily from adjacent freeway traffic. The Project's increase in traffic noise of approximately 3 dBA on East Grand Avenue would be a barely perceptible change over the existing freeway noise-dominated environment.
- Most of the Project's traffic noise would occur during peak-hour commute periods, not during nighttime hours when most hotel guests would be sleeping.
- Noise reduction and insulation features are typically included in the design of hotels located near freeways.

For these reasons, the effect of traffic noise on hotels is not considered significant.

Effects on Noise Sensitive Receptors

Table 14-12 shows the increase in Project-generated traffic noise at those few noise-sensitive land uses (childcare centers and preschools) in the East of 101 Area. As demonstrated, these existing noise-sensitive land uses are currently exposed to traffic noise exceeding 60 dBA, but the increased traffic noise attributable to the Project would not increase the existing noise levels at these sensitive receptors by 3 dBA or more.

Although the noise model predicts that DNA Way through the Project Area will receive more than a 3 dBA increase in traffic noise, the models used to predict traffic and traffic noise do not have the locational accuracy to account for the Master Plan Update's parking program. The parking program seeks to locate new parking facilities at the periphery of the Campus, such that only limited through-traffic would use DNA Way throughout the day. Based on this parking strategy, it is unlikely that DNA Way will actually carry Project-generated traffic levels that would generate an increase of 3 dBA CNEL or more over existing conditions.

Table 14-12: Traffic Noise Levels With and Without Project (at Noise-Sensitive Receptors)

<u>Receiver</u>	<u>CNEL at Receiver (dBA)</u>		
	<u>Existing</u>	<u>Existing + Project</u>	<u>Increase</u>
Gateway Child Development Center	68.5	69.8	1.3
Early Years Preschool (371 Allerton Ave)	67.2	69.0	1.8
Genentech's 2nd Generation (444 Allerton Ave)	67.2	69.0	1.8*
Genentech's Cabot 2nd Generation (342 Allerton)	67.2	69.0	1.8*

Source: RGD Associates, August 7, 2017, updated via email June 13, 2018.

*Increase in noise is based on data for Allerton Avenue. The receiver is also exposed to traffic noise from DNA Way. However, as indicated above, DNA Way is unlikely to receive Project-generated traffic levels that would generate an increase of 3 dBA CNEL or more.

Mitigation Measures

None needed. The Project's increase in traffic noise would not adversely affect any noise-sensitive land use (i.e., residences, schools, churches or hospitals), and the impact is considered less than significant.

Excessive Noise Due to Location within an Airport Land Use Plan

Noise 6: The Project would not expose people working in the Project Area to excessive noise levels due to proximity to airport-related noise sources. **(No impact)**

The Project Area is not near a private airstrip, but is entirely within the SFO Airport Influence Area (AIA) and as such, the compatibility criteria contained within the ALUCP are applicable to land use plans and development within the Project Area. The ALUCP establishes boundaries within which noise compatibility policies apply. These boundaries depict "noise impact areas" or noise compatibility zones, defined by noise contours at the 65 dB CNEL, 70 dB CNEL and 75 dB CNEL contours. Noise compatibility policies apply to each noise impact area or contour. Commercial uses (e.g., offices and business) or industrial and manufacturing uses and related structures are considered compatible without restrictions within all of these noise impact areas.

As shown in the Land Use chapter of this EIR (Figure 13-1), the Project Area is not located within any of the ALUCP-identified noise impact areas. Thus, the ALUCP's noise exposure criteria do not apply to the Project and would not restrict proposed land uses, and the Project is consistent with the ALUCP noise criteria. No impact would occur.

Mitigation Measures

No mitigation measures are required.

Cumulative Traffic Noise

Cumulative Noise 7: The Project, in combination with other current and foreseeable future cumulative development in the East of 101 Area will result in increased local traffic volumes that would increase ambient noise levels in the East of 101 area by greater than 3 dBA CNEL. There are no noise-sensitive land uses identified along these roadways that would be adversely affected by the cumulative increase in traffic noise. (**Less than Significant**)

Cumulative traffic from new development will increase traffic noise throughout much of the East of 101 Area (see **Table 14-13**), particularly on:

- Oyster Point Boulevard
- Gull Drive
- Forbes Boulevard
- Eccles Avenue
- Gateway Boulevard
- Grand Avenue
- East Grand Avenue
- Harbor Way, and
- Mitchell Avenue

Table 14-13: Impact of Increased Traffic Noise Due to Project and Cumulative Growth

<u>Roadway</u>	<u>Cumulative Traffic Noise Increase Assessment</u>			
	<u>Cumulative Increase over Existing (dBA)</u>	<u>Threshold (dBA)</u>	<u>Project Contribution (dBA)</u>	<u>Project Contribution > 1 dBA?</u>
Airport Blvd				
North of Sister Cities Blvd	2.0	3	0.2	N
Sister Cities Blvd to Miller Ave	1.2	3	0.1	N
Miller Ave to Grand Ave	1.4	3	0.2	N
Grand Ave to San Mateo Ave	1.4	3	0.3	N
Sister Cities Blvd west of Airport	0.1	3	0.5	N
Oyster Point Blvd				
US 101 to Gateway Blvd	2.2	3	0.3	N
Gateway Blvd to Veterans Blvd	2.9	3	0.5	N
Veterans Blvd to Eccles Ave	3.4	3	1.0	N
Eccles Ave to Gull Drive	3.6	3	1.1	Y
east of Gull Drive	4.6	3	0	N
Gull Drive	3.3	3	1.8	Y
Forbes Blvd				
east of Gull Drive	2.7	5	1.7	N
Gull Drive to Allerton Ave	3.7	5	1.7	N
Allerton Ave to East Grand Ave.	4.0	5	1.0	N
Eccles Ave (Oyster Pt to Forbes)	3.5	5	0	N
Gateway Blvd				
Oyster Pt Blvd to E. Grand Ave.	3.8	3	0.5	N
E. Grand Ave to Mitchell Ave.	3.0	3	0.8	N
Grand Ave				
West of Airport Blvd	4.2	3	0.2	N
Industrial Way to E. Grand Ave	1.9	3	0.6	N
East Grand Avenue				
west of Gateway	3.6	3	1.5	Y
Gateway Blvd to Forbes Blvd	4.3	3	2.6	Y
Forbes Blvd to Allerton Ave	4.0	3	2.6	Y
Allerton Ave to DNA Way	3.9	3	3.0	Y
East of DNA Way	4.9	3	2.1	Y
Grandview Dr. (E. Grand to Forbes)	2.0	3	4.3	N
Harbor Way (E. Grand to Utah Ave)	3.8	3	0	N
Allerton Ave (E. Grand to Forbes Blvd)	1.8	3	1.7	N

Table 14-13: Impact of Increased Traffic Noise Due to Project and Cumulative Growth

Cumulative Traffic Noise Increase Assessment				
Roadway	Cumulative Increase over Existing (dBA)	Threshold (dBA)	Project Contribution (dBA)	Project Contribution > 1 dBA?
Produce Ave (south of San Mateo Ave)	2.8	3	0.5	N
San Mateo Ave (Airport Blvd to So. Airport Blvd)	1.4	5	0	N
Mitchell Ave				
Airport Blvd to Gateway Blvd	3.7	3	0.6	N
East of Gateway Blvd	1.5	3	0	N
South Airport Blvd				
Mitchell Ave to Utah Ave	2.3	3	0.4	N
South of Utah Ave	1.6	3	0.4	N
Utah Ave (East of S. Airport Blvd)	0.7	3	0.4	N

Source: RGD Associates, August 7, 2017.

Cumulative traffic noise along these roadways is projected to increase by as much as 4.9 dBA over existing traffic noise levels (as shown in Table 14-13). The increase in traffic noise would exceed 3 dBA CNEL or more along several roadway segments. However, the Project would not generate a significant contribution to cumulative traffic noise throughout most of the East of 101 Area, with the exceptions of Oyster Point Boulevard, Gull Drive and East Grand Avenue. At these limited locations, the Project's contribution to the cumulative increase in traffic noise is 1 dBA or greater. There are no identified noise-sensitive land uses (other than existing childcare and preschool facilities) along these roadways. Thus, cumulative traffic noise impacts on noise-sensitive land uses are considered less than significant, and the Project's increase of 1 dBA or more to these cumulative noise levels is not considered a significant contribution.

Mitigation Measures

None needed