5.12 NOISE

This section describes the potential noise effects that would be caused by implementation of the General Plan Update Project (Project or proposed Project). Information used to prepare this section is based upon the *Noise Impact Analysis for City of Yorba Linda General Plan Update* (May 2016, Ambient Air Quality and Noise Consulting). The report is summarized below and included as Appendix E to this Program EIR.

5.12.1 Regulatory Setting

Federal

U.S. Department of Transportation Federal Transit Administration

The U.S. Department of Transportation Federal Transit Administration (FTA) has recommended noise criteria related to traffic-generated noise. Recommendations contained in the May 2006 Transit Noise and Vibration Impact Assessment prepared by FTA can be used as guidance to determine whether or not a change in traffic would result in a substantial permanent increase in noise. Under the FTA standards, the allowable noise exposure increase is reduced with increasing ambient existing noise exposure, such that higher ambient noise levels have a lower allowable noise exposure increase. **Table 5.12-1, Significance of Changes in Operational Roadway Noise Exposure** shows the significance thresholds for increases in traffic-related noise levels. These standards are applicable to project-impacts on existing sensitive receptors.

Table 5.12-1
Significance of Changes in Operational Roadway Noise Exposure

Existing Noise Exposure (dBA Ldn or Leq)	Allowable Noise Exposure Increase (dBA Ldn or Leq)
45-50	7
50-55	5
55-60	3
60-65	2
65-74	1
75+	0

Source: Ambient Air Quality and Noise Consulting, 2016.

The FTA also recommends vibration impact thresholds to determine whether groundborne vibration would be "excessive." According to FTA, groundborne vibration impact criteria for residential receptors are 72 vibration decibels (Vdb) for frequent events, 75 Vdb for occasional events, and 80 Vdb for infrequent events (FTA, 2006). The FTA recommends an 80 Vdb threshold for infrequent events at residences and buildings where people normally sleep and 83 Vdb threshold at institutional buildings with primarily daytime uses. In terms of groundborne vibration impacts on structures, the FTA states that groundborne vibration levels in excess of 100 Vdb would damage fragile buildings and levels in excess of 95 Vdb would damage extremely fragile historic buildings. The threshold for this project is 80 Vdb for infrequent events at residences and buildings where people normally sleep.

Occupational Health and Safety Act

Under the Occupational Safety and Health Act of 1970 (29 U.S.C. § 651 et seq.), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) adopted regulations (29 CFR § 1910.95) designed to protect workers against the effects of occupational noise exposure. These regulations list limits on noise exposure levels as a function of the amount of time during which the worker is exposed. The regulations further specify requirements for a hearing conservation program (§ 1910.95(c)), a monitoring program (§ 1910.95(d)), an audiometric testing program (§ 1910.95(g)), and hearing protection (§ 1910.95(i)). There are no federal laws governing community noise.

Department of Housing and Urban Development

The Federal Department of Housing and Urban Development (HUD) guidelines for the acceptability of residential land uses are set forth in the Code of Federal Regulations, Title 24, Part 51, "Environmental Criteria and Standards." These guidelines identify a noise exposure of 65 dBA L_{dn}, or less, as acceptable. Exterior noise levels of 65 to 75 dBA L_{dn} are considered normally acceptable, provided appropriate sound attenuation is provided to reduce interior noise levels to within acceptable levels. Exterior noise levels above 75 dBA L_{dn} are considered unacceptable. The goal of the interior noise levels for residential, hotel, and hospital/nursing home uses is 45 dBA L_{dn}. These guidelines apply only to new construction supported by HUD grants and are not binding upon local communities.

State of California

California Building Code

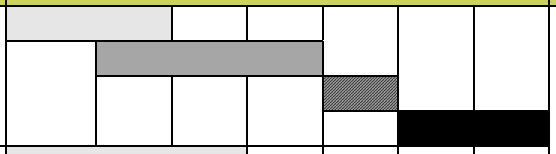
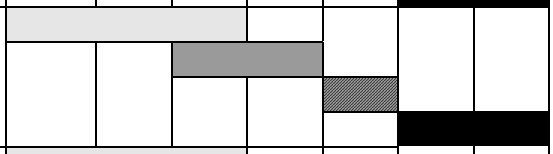
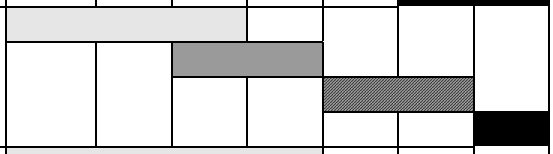
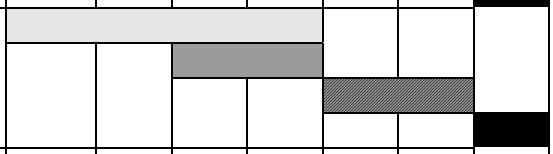
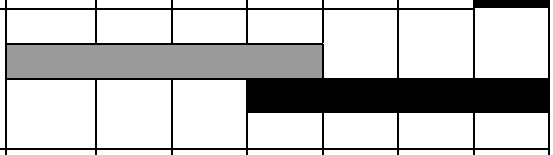
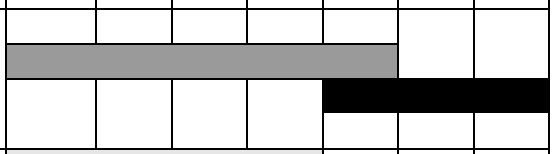
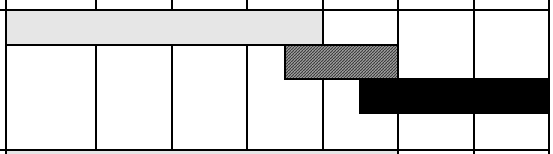
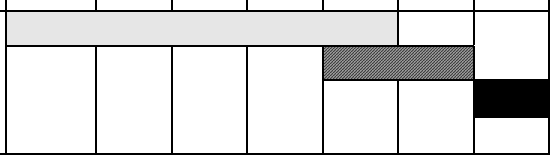
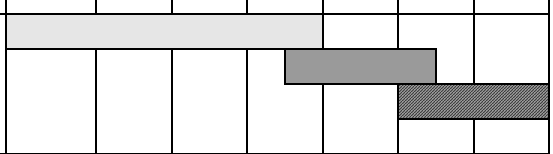
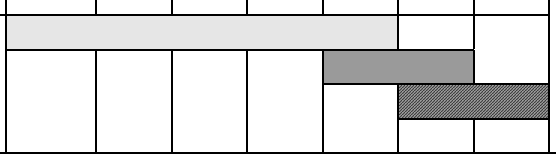
Title 24 of the California Code of Regulations contains standards for allowable interior noise levels associated with exterior noise sources. The standards apply to new hotels, motels, dormitories, apartment houses, and dwellings other than detached single-family residences. The standards state that the interior noise level attributable to exterior sources shall not exceed 45 dBA CNEL in any habitable room. Proposed multi-family residential structures to be located where the CNEL exceeds 60 dBA require an acoustical analysis showing that the proposed building design would achieve the prescribed allowable interior noise standard.

State of California General Plan Guidelines

The *State of California General Plan Guidelines*, published by the Governor's Office of Planning and Research (OPR), provides guidance for the acceptability of projects within specific noise environments. Based on these guidelines, residential uses, churches, libraries, and hospitals are "normally unacceptable" in areas where the exterior noise level exceeds 70 dBA CNEL and "conditionally acceptable" within exterior noise environments between 60 and 70 dBA CNEL. Noise levels up to 60 dBA CNEL are considered "normally acceptable". The goal of these noise standards is to allow for a "normally acceptable" interior noise level of 45 dBA CNEL. For instance, assuming an average exterior-to-interior noise reduction of 15 dBA (with windows partially open), an exterior noise level of 60 dBA CNEL or less would achieve an interior noise level of 45 dBA CNEL. Higher exterior noise levels may be allowed when noise-reduction measures are incorporated to achieve acceptable interior noise levels. Within "conditionally acceptable" exterior noise environments, conventional construction with incorporation of fresh air circulation systems sufficient to allow windows to remain closed would normally suffice. Compliance with current building code requirements and with windows closed, exterior-to-interior noise reductions typically average approximately 25 dBA or more. The State notes that these guidelines can be modified to reflect

communities' sensitivities to noise. Adjustment factors may also be used to reflect the noise control goals of the community, including a community's sensitivity to noise and assessment of the relative importance of noise pollution. The State recommended noise criteria for land use compatibility are summarized in **Table 5.12-2, State of California Land Use Compatibility Noise Criteria**.

Table 5.12-2
State of California Land Use Compatibility Noise Criteria

Land Use Category	Community Noise Exposure (L_{dn} or CNEL, dBA) 55 60 65 70 75 80	Interpretation
Residential – Low Density Single Family, Duplex, Mobile Homes		Normally Acceptable Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
Residential – Multiple Family		
Transient Lodging – Motels, Hotels		Conditionally Acceptable New construction or development should be undertaken only after a detailed analysis of noise reduction requirements and needed noise insulation features included in the design. Conventional construction with closed windows and fresh air supply systems or air conditioning will normally suffice.
Schools, Libraries, Churches, Hospitals, Nursing Homes		
Auditoriums, Concert Halls, Amphitheaters		
Sports Arena, Outdoor Spectator Sports		Normally Unacceptable New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
Playgrounds, Neighborhood Parks		
Golf Courses, Riding Stables, Water Recreation, Cemeteries		Clearly Unacceptable New construction or development should generally not be undertaken
Office Buildings, Business Commercial and Professional		
Industrial, Manufacturing, Utilities, Agriculture		

Regional and Local

City of Yorba Linda General Plan Noise Element

The Noise Element of the *City of Yorba Linda General Plan* (1993) includes noise standards intended to ensure compatibility of proposed land uses within exterior noise environments and that noise levels at adjacent land uses do not exceed acceptable levels. These standards are also designed to protect existing land uses, including transportation and industry, from encroaching urban uses. The City's exterior and interior noise standards for General Plan land use designations are summarized in **Table 5.12-3, General Plan Land Use Noise Standards**.

Table 5.12-3
General Plan Land Use Noise Standards

Land Use	Interior Noise Standard	Exterior Noise Standard
Residential, including public institutions and hospitals	45	65
Neighborhood Commercial	--	70
General Commercial	--	
Office Commercial	50	70
Light Industrial/Business Park	55	75
Open Space	--	70[1]

1. Where quiet is a basis for use.
Source: Ambient Air Quality and Noise Consulting 2016.

City of Yorba Linda Municipal Code

The City of Yorba Linda Municipal Code (YLMC) (Title 8, Health & Safety, Chapter 8.32, Noise Control) includes various provisions intended to protect community residents from prolonged unnecessary, excessive, and annoying sound levels that are detrimental to the public health, welfare, and safety, or are contrary to the public interest. Examples of noise sources subject to the YLMC include, but are not limited to, industrial and commercial machinery and equipment, pumps, fans, compressors, generators, air conditioners and refrigeration equipment. Section 8.32.060 of the City's Noise Ordinance establishes exterior noise standards for noise-sensitive land uses, which include residential areas, hospitals, schools, and churches. These exterior noise standards are summarized in **Table 5.12-4, Municipal Code Exterior Noise Standards**. In addition, Section 8.32.070 establishes interior noise standards for residential uses, which are summarized in **Table 5.12-5, Municipal Code Interior Noise Standards for Residential Uses**.

Table 5.12-4 Municipal Code Exterior Noise Standards	
Time Period	**Noise Standard (dBA)**
7:00 AM – 10:00 PM	55
10:00 PM – 7:00 AM	50
The following exterior standards shall not exceed: 1. The noise standard for a cumulative period of more than thirty minutes in any hour; 2. The noise standard plus five dB(A) for a cumulative period of more than fifteen minutes in any hour; 3. The noise standard plus ten dB(A) for a cumulative period of more than five minutes in any hour; 4. The noise standard plus fifteen dB(A) for a cumulative period of more than one minute in any hour; or 5. The noise standard plus twenty dB(A) for any period of time. In the event the ambient noise level exceeds any of the five noise limit categories stated in subsection B of this section, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. Furthermore, the maximum permissible noise level shall never exceed the maximum ambient noise level. Each of the noise limits specified in this section shall be reduced by five dB(A) for impact or simple tone noises or for noises consisting of speech or music. Source: Ambient Air Quality and Noise Consulting 2016.	

Table 5.12-5 Municipal Code Interior Noise Standards for Residential Uses	
Time Period	**Noise Standard (dBA)**
10:00 PM – 7:00 AM	45
The following interior standards shall not exceed: 1. 45 dB(A) for a cumulative period of more than five minutes in any hour; 2. 50 dB(A) for a cumulative period of more than one minute in any hour; or 3. 55 dB(A) for any period of time. In the event that the ambient noise level exceeds any of the above three noise limit categories, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. Furthermore, the maximum permissible noise level shall never exceed the maximum ambient noise level. Source: Ambient Air Quality and Noise Consulting 2016.	

Noise sources associated with construction-related activities are typically exempt provided the activities do not take place between the hours of 8:00 PM and 7:00 AM on weekdays, including Saturday, or at any time on Sunday or federal holidays. Various other activities are also exempt, including, but not limited to, school entertainment and athletic events, mobile sources associated with agricultural activities, and emergency response activities.

5.12.2 Environmental Setting

Noise

Noise is generally defined as sound that is loud, disagreeable, or unexpected. Sound is mechanical energy transmitted in the form of a wave because of a disturbance or vibration. Sound levels are described in terms of both amplitude and frequency.

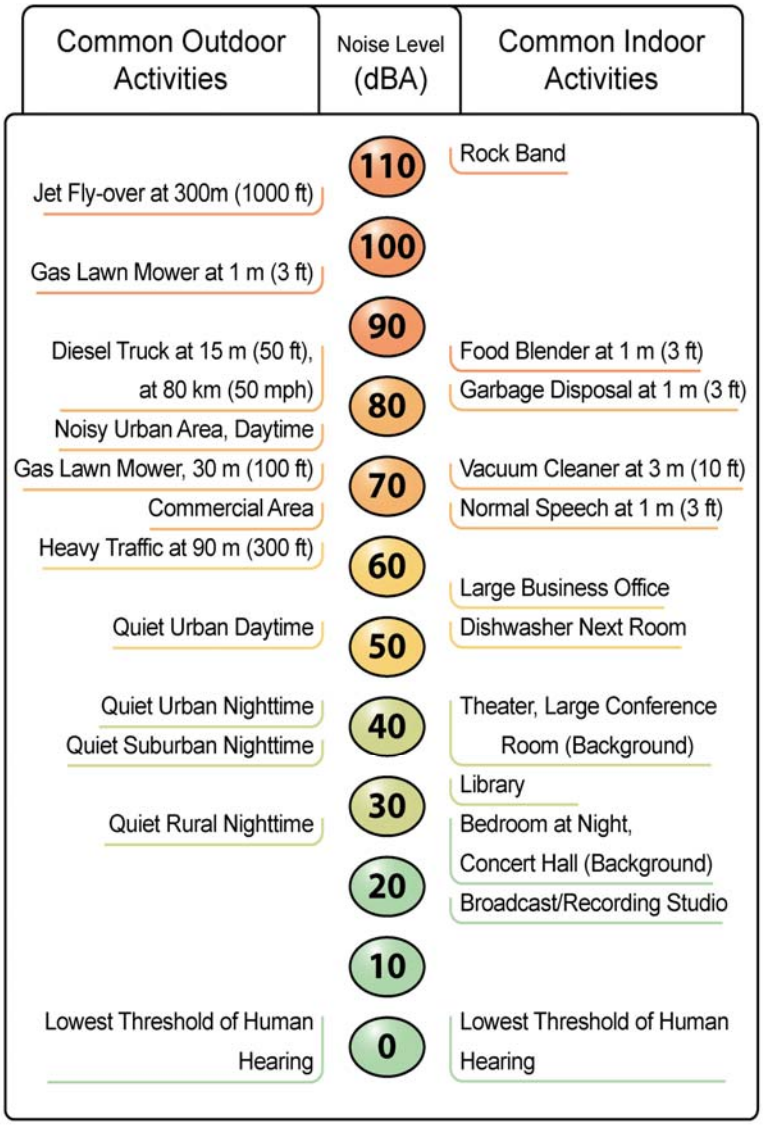
Amplitude

Amplitude is defined as the difference between ambient air pressure and the peak pressure of the sound wave. Amplitude is measured in decibels (dB) on a logarithmic scale. For example, a 65 dB source of sound, such as a truck, when joined by another 65 dB source results in a sound amplitude of 68 dB, not 130 dB

(i.e., doubling the source strength increases the sound pressure by 3 dB). Amplitude is interpreted by the ear as corresponding to different degrees of loudness. Laboratory measurements correlate a 10 dB increase in amplitude with a perceived doubling of loudness and establish a 3 dB change in amplitude as the minimum audible difference perceptible to the average person.

Frequency

The frequency of a sound is defined as the number of fluctuations of the pressure wave per second. The unit of frequency is the Hertz (Hz). One Hz equals one cycle per second. The human ear is not equally sensitive to sound of different frequencies. For instance, the human ear is more sensitive to sound in the higher portion of this range than in the lower and sound waves below 16 Hz or above 20,000 Hz cannot be heard at all. To approximate the sensitivity of the human ear to changes in frequency, environmental sound is usually measured in what is referred to as "A-weighted decibels" (dBA). On this scale, the normal range of human hearing extends from about 10 dBA to about 140 dBA. Common community noise sources and associated noise levels, in dBA, are depicted in **Figure 5.12-1, Common Noise Levels**.



Addition of Decibels

Because decibels are logarithmic units, sound levels cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dB increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one automobile produces a sound level of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB; rather, they would combine to produce 73 dB. Under the decibel scale, three sources of equal loudness together would produce an increase of 5 dB.

Sound Propagation and Attenuation

Geometric Spreading

Noise sources are generally characterized as either a localized source (i.e., point source) or a line source. Examples of point sources include construction equipment, vehicle horns, alarms, and amplified sound systems. Examples of a line sources include trains and on-road vehicular traffic. Sound from a point source propagates uniformly outward in a spherical pattern.

For a point source, sound levels generally decrease (attenuate) at a rate of approximately 6 decibels for each doubling of distance from the source, depending on ground surface characteristics. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver), no excess ground attenuation is assumed. Parking lots and bodies of water are examples of hard surfaces which generally attenuate at this rate. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver, such as soft dirt, grass, or scattered bushes and trees), an excess ground-attenuation value of 1.5 decibels per doubling of distance is normally assumed. When soft surfaces are present, the excess ground attenuation for soft surfaces generally results in an overall attenuation rate of approximately 7.5 decibels per doubling of distance from the point source.

On-road vehicle traffic consists of several localized noise sources on a defined path, and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels for line sources attenuate at a rate of approximately 3 decibels for each doubling of distance for hard sites and approximately 4.5 decibels per doubling of distance for soft sites.

Atmospheric Effects

Receptors located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) from the highway due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects.

Shielding by Natural or Human-Made Features

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often

constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in minimum 5 dB of noise reduction. Taller barriers provide increased noise reduction.

Noise reductions afforded by building construction can vary depending on construction materials and techniques. Standard construction practices typically provide approximately 15 dBA exterior-to-interior noise reductions for building facades, with windows open, and approximately 20-25 dBA, with windows closed. With compliance with current building construction and insulation requirements, exterior-to-interior noise reductions typically average approximately 25 dBA. The absorptive characteristics of interior rooms, such as carpeted floors, draperies and furniture, can result in further reductions in interior noise.

Human Response to Noise

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases. The acceptability of noise and the threat to public well-being are the basis for land use planning policies preventing exposure to excessive community noise levels.

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and habituation to noise over differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted: the so-called "ambient" environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged. Regarding increases in A-weighted noise levels, knowledge of the following relationships will be helpful in understanding this analysis:

- Except in carefully controlled laboratory experiments, a change of 1 dB cannot be perceived by humans;
- Outside of the laboratory, a 3-dB change is considered a just-perceivable difference;
- A change in level of at least 5 dB is required before any noticeable change in community response would be expected. An increase of 5 dB is typically considered substantial;
- A 10-dB change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

A limitation of using a single noise-level increase value to evaluate noise impacts, as discussed above, is that it fails to account for pre-development noise conditions. With this in mind, the Federal Interagency Committee on Noise (FICON) developed guidance to be used for the assessment of project-generated increases in noise levels that take into account the ambient noise level. The FICON recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts,

these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (i.e., CNEL, L_{dn}). FICON-recommended noise evaluation criteria are summarized in **Table 5.12-6, Federal Interagency Committee on Noise Recommended Criteria for Evaluation of Increases in Ambient Noise Levels**.

Table 5.12-6
Federal Interagency Committee on Noise
Recommended Criteria for Evaluation of Increases in Ambient Noise Levels

Ambient Noise Level Without Project	Increase Required for Significant Impact
< 60 dB	5.0 dB, or greater
60-65 dB	3.0 dB, or greater
> 65 dB	1.5 dB, or greater

Source: Ambient Air Quality and Noise Consulting 2016.

As depicted in the table, an increase in the traffic noise level of 5.0, or greater would typically be considered to result in increased levels of annoyance where existing ambient noise levels are less than 60 dB. Within areas where the ambient noise level ranges from 60 to 65 dB, increased levels of annoyance would be anticipated at increases of 3 dB, or greater. Increases of 1.5 dB or greater could result in increased levels of annoyance in areas where the ambient noise level exceeds 65 dB. The rationale for the FICON-recommended criteria is that as ambient noise levels increase, a smaller increase in noise resulting from a project is sufficient to cause significant increases in annoyance. These criteria are commonly applied for analysis of environmental noise impacts.

Noise-Sensitive Land Uses

Noise-sensitive land uses are generally considered to include those uses that would result in noise exposure that could cause health-related risks to individuals. Places where quiet is essential are also considered noise-sensitive uses. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Other land uses such as libraries, places of worship, and recreation areas are also considered noise-sensitive land uses.

Existing Noise Environment

Short-term (10-minute) noise level measurements were conducted on May 3, 2016 to document and measure the existing noise environment at various locations throughout the City. Measurement locations were selected near major noise sources located in the vicinity of proposed Focus Areas and other locations within the community.

Measured daytime noise levels along area roadways ranged from approximately 46 to 72 dBA L_{eq}. In general, nighttime noise levels are typically 5 to 10 dB lower than daytime noise levels. Ambient noise levels are largely influenced by vehicular traffic on area roadways. Areas located near the southern boundary of the Planning Area, including the Fairlynn County Island and East Gateway Focus Areas, are also influenced by rail traffic along the Burlington Northern Santa Fe (BNSF) Railroad, which generally extends in an east-west north of SR-91. To a lesser extent, aircraft overflights and other stationary and area noise sources within the community, including construction activities, also contribute to the ambient noise environment. Ambient noise measurement locations and corresponding measured values (i.e., L_{eq} and L_{max}) are summarized in **Table 5.12-7, Summary of Ambient Noise Levels**. Noise measurement

locations are depicted in **Figure 5.12-2, Noise Measurement Locations and General Plan Update Focus Areas**.

Table 5.12-7
Summary of Ambient Noise Levels

Location[1]		Monitoring Period	Primary Noise Sources	Noise Levels (dBA)	
				L_{eq}	L_{max}
1	16901 Imperial Hwy., approximately 69 feet from road centerline.	0550-0600	Vehicle Traffic	71.5	80.5
2	17465 Imperial Hwy., approximately 75 feet from road centerline.	0610-0620	Vehicle Traffic	70.7	82.2
3	18431 Yorba Linda Blvd. approximately 70 feet from road centerline.	0630-0640	Vehicle Traffic	64.6	75.2
4	19601 Yorba Linda Blvd. approximately 50 feet from road centerline.	0650-0700	Vehicle Traffic	71.3	74.2
5	22699 Oakcrest Cir., approximately 200 feet from SR-91 centerline.	0720-0730	Vehicle Traffic	66.3	69.4
6	22611 Oakcrest Cir., approximately 200 feet from SR-91 centerline.	0735-0745	Vehicle Traffic	63.8	74.6
7	19751 Esperanza Rd., approximately 75 feet from road centerline.	0800-0815	Vehicle Traffic	67.4	83.4
		0815-0830	Vehicle Traffic	68.6	83.4
8	3650 San Antonio Rd., at road terminus.	0848-0858	Vehicle Traffic, Freight Train	45.9	53.3
9	19900 Bastachury Rd., approximately 47 feet from road centerline.	0920-0930	Vehicle Traffic	66.8	76.2
10	Village Center Dr., approximately 62 feet from road centerline.	0945-0955	Vehicle Traffic	64.8	79.0
11	Fairmont Blvd., approximately 80 feet from road centerline.	1015-1025	Vehicle Traffic	63.4	78.3

Noise measurements were conducted on May 3, 2016 using a Larson Davis Model 820 Type I sound level meter.
1. Measurement locations are depicted in Figure 5.12-2.
Source: Ambient Air Quality and Noise Consulting, 2016.

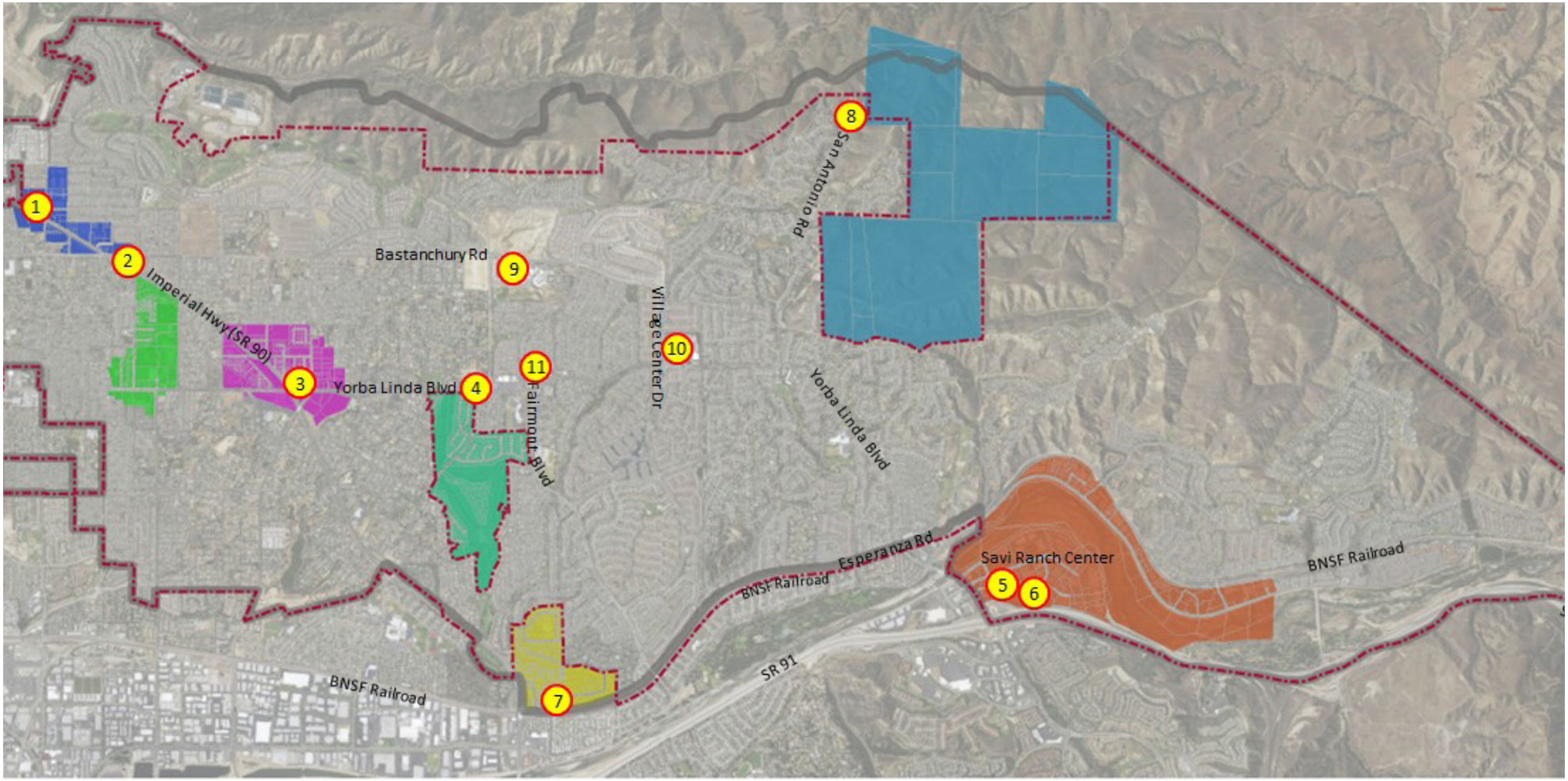


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Figure 5.12-2
Noise Measurement Locations and General Plan Update Focus Areas

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Noise Sources

Surface Transportation Sources

Roadway Vehicular Traffic

As discussed earlier in this section, noise from vehicular traffic on area roadways is a primarily source of ambient noise in the City. Major sources of noise include SR-91, Imperial Highway, and Yorba Linda Boulevard.

Traffic noise levels were calculated using the Federal Highway Administration (FHWA) Roadway Noise Prediction Model (FHWA RD-77-108) based on average-daily traffic (ADT) volumes obtained from the traffic analysis prepared for the General Plan Update. Predicted traffic noise levels and distances to projected traffic noise contours for major roadways are summarized in **Table 5.12-8, Existing Roadway Traffic Noise Levels and Contour Distances**. It is important to note that traffic noise contours do not include attenuation or shielding provided by intervening structures. Based on the modeling conducted, existing traffic noise levels along area roadways range from approximately 57 to 74 dBA CNEL at 50 feet from the near-travel-lane centerline. Existing traffic noise levels at 50 feet from the near-travel-lane centerline of SR-91 are approximately 80 dBA CNEL.

Table 5.12-8
Existing Roadway Traffic Noise Levels & Contour Distances

Roadway Segment	ADT Volumes	CNEL at 50 ft. from Near-travel-lane Centerline	Distance to CNEL Contour (Feet from Road Centerline)		
			70	65	60
Imperial Hwy., Rose Dr. to Valley View Ave.	46,164	72.1	121	249	529
Imperial Hwy., Valley View Ave. to Yorba Linda Blvd.	37,561	71.3	108	218	462
Imperial Hwy., Yorba Linda Blvd. to Kellogg Dr.	36,406	73.4	137	288	615
Imperial Hwy., Kellogg Dr. to Orangethorpe Ave.	41,316	74.0	149	312	669
Bastanchury Rd., Rose Dr. to Imperial Hwy.	14,271	65.7	WR	81	168
Bastanchury Rd., Imperial Hwy. to Lakeview Ave.	14,167	66.1	WR	79	167
Bastanchury Rd., Lakeview Ave. to Fairmont Blvd.	15,393	67.3	WR	102	214
Bastanchury Rd., Fairmont Blvd. to Village Center Dr.	9,478	65.6	WR	74	155
Yorba Linda Blvd., Rose Dr. to Valley View Ave.	22,077	67.6	WR	106	224
Yorba Linda Blvd., Valley View Ave. to Imperial Hwy.	20,125	66.4	WR	104	212
Yorba Linda Blvd., Lakeview Ave. to Fairmont Blvd.	25,360	68.2	58	116	246
Yorba Linda Blvd., Fairmont Blvd. to Village Center Dr.	18,649	66.8	WR	96	201
Yorba Linda Blvd., Village Center Dr. to Paseo de Las Palomas	22,121	67.6	WR	106	225
Yorba Linda Blvd., Paseo de Las Palomas to New River Rd.	23,610	67.8	56	111	234
Buena Vista Ave., Rose Dr. to Richfield Rd.	7,784	64.3	WR	67	137
Buena Vista Ave., Richfield Rd. to Lakeview Ave.	6,030	63.2	WR	58	117
Esperanza Rd., Fairmont Blvd. to Paseo del Prado	10,200	66.6	WR	93	195
Esperanza Rd., Paseo del Prado to New River Rd.	7,903	65.5	WR	79	165
Rose Dr., Imperial Hwy. to Bastanchury Rd.	14,570	65.7	WR	82	171
Rose Dr., Bastanchury Rd. to Yorba Linda Blvd.	16,924	66.4	WR	90	188
Rose Dr., Yorba Linda Blvd. to Buena Vista Ave.	19,237	67.0	WR	97	205
Valley View Ave., Bastanchury Rd. to Yorba Linda Blvd.	8,182	63.7	WR	56	117
Richfield Rd., Yorba Linda Blvd. to Buena Vista Ave.	9,238	65.0	WR	74	154

Table 5.12-8 Existing Roadway Traffic Noise Levels & Contour Distances					
Roadway Segment	ADT Volumes	CNEL at 50 ft. from Near-travel-lane Centerline	Distance to CNEL Contour (Feet from Road Centerline)		
			70	65	60
Lakeview Ave., Bastanchury Rd. to Yorba Linda Blvd.	9,947	64.5	WR	64	132
Lakeview Ave., Yorba Linda Blvd. to Buena Vista Ave.	13,189	64.3	WR	62	129
Lakeview Ave., South of Buena Vista Ave.	11,443	64.7	WR	71	146
Kellogg Dr., Yorba Linda Blvd. to Imperial Hwy.	10,091	64.2	WR	66	134
Fairmont Blvd., Village Center Dr. to Bastanchury Rd.	8,111	64.5	WR	69	141
Fairmont Blvd., Bastanchury Rd. to Yorba Linda Blvd.	9,093	65.0	WR	74	152
Fairmont Blvd., Yorba Linda Blvd. to Paseo de Las Palomas	10,053	64.1	WR	67	134
Fairmont Blvd., Paseo de Las Palomas to Village Center Dr.	8,537	63.4	WR	60	121
Fairmont Blvd., Village Center Dr. to Fairmont Connector	15,611	65.3	WR	90	180
Village Center Dr., Fairmont Blvd. to Yorba Linda Blvd.	12,465	65.1	WR	75	154
Village Center Dr., Yorba Linda Blvd. to Paseo de Las Palomas	5,329	61.4	WR	WR	90
Village Center Dr., Paseo de Las Palomas to Fairmont Blvd.	7,661	63.0	WR	57	113
Yorba Ranch Rd., Yorba Linda Blvd. to Esperanza Rd.	1,729	56.6	WR	WR	WR
SR-91, West of Yorba Linda Boulevard	260,000	80.0	497	1,057	2,272
SR-91, East of Yorba Linda Boulevard	238,000	79.7	469	997	2,142
Traffic noise levels for area roadways were calculated based on data obtained from the traffic analysis prepared for this project. Traffic volumes for State Route 91 derived from Orange County Transportation Authority's Traffic Flow Maps available at website url: http://www.octa.net/pdf/2013trafficflow.pdf. Predicted noise contours do not include shielding by intervening structures. Source: Ambient Air Quality and Noise Consulting, 2016.					

Railroad Traffic

The BNSF Railroad main line is generally located along the City's southern boundary. Approximately 60 freight trains travel along this corridor over a 24-hour period. The number of freight trains and hours of operation can vary depending on market demands. Approximately 25 Metrolink and two Amtrak trains also use this rail corridor on a daily basis. Approximately 76 percent of passenger train traffic along this corridor occurs during the daytime hours, between 7:00 AM and 10:00 PM. As a result, average-daily noise levels along this rail corridor are largely dominated by freight trains.

Existing train noise levels and distance to noise contours are summarized in **Table 5.12-9, Existing Railroad Traffic Noise Levels**. As depicted, average-daily noise levels along the railroad corridor can reach levels of approximately 70 dBA CNEL at approximately 160 feet from the rail corridor centerline. Train noise events can also be a source of intermittent noise including noise generated by locomotive engines, wheel squeal, and warning horns. These instantaneous noise events can contribute to increased levels of annoyance to occupants of nearby noise-sensitive land uses. To partially mitigate noise produced by trains on surrounding land uses, a barrier has been constructed along the Esperanza Road between Yorba Linda Boulevard at the eastern extent to the City's western boundary near Echo Hill Lane. However, the proposed Fairlynn County Island and East Gateway Focus Areas are largely unshielded from train noise.

Table 5.12-9 Existing Railroad Traffic Noise Levels					
Train Type	Number of Trains/Day	CNEL at 100 feet from Rail Corridor Centerline	Distance to CNEL Contours (feet) from Rail Corridor Centerline		
			70	65	60
BNSF Freight	60	73	160	340	740
Amtrak Passenger	2	53			
Metrolink Passenger	25	64			
BNSF freight trains and Amtrak passenger trains distributed equally over a 24-hour period. Metro passenger trains assumes a total of 6 trains during the nighttime hours (10:00 PM-7:00 AM) and 19 trains during the daytime hours (7:00 AM-10:00 PM) based on current schedules for the Inland Empire-OC and 91-Perris Valley lines. Predicted noise contours do not include shielding by intervening structures. Source: Ambient Air Quality and Noise Consulting, 2016.					

Aircraft Overflights

There are no airports or airfields within the Planning Area. The nearest airports include the City of Fullerton's Municipal Airport, located approximately 7 miles to the west, the LA/Ontario International Airport located approximately 12 miles to the northeast, and the El Monte Airport located approximately 16 miles to the northwest. The Riverside Municipal Airport is located approximately 17 miles to the east.

The Planning Area is not located within the noise contours of these airports. As a result, aircraft operations do not contribute substantially to the average-daily noise environment within the Planning Area. However, although no airports or airfields are located in the Planning Area, noise generated by aircraft overflights may be noticeable, particularly during the quieter nighttime hours. In addition, helicopter overflights may also contribute to intermittent increases in ambient noise levels. Intermittent noise events associated with aircraft overflight may result in increases in annoyance and potential sleep disruption to occupants of nearby residences.

Stationary Sources

Stationary-source noise control focuses on two goals: (1) preventing the introduction of new noise-producing uses in noise-sensitive areas; and (2) preventing encroachment of noise-sensitive uses upon existing noise-producing facilities. The first goal can be achieved by applying noise performance standards to proposed new noise producing uses. The second goal can be met by requiring that new noise-sensitive uses near noise-producing facilities include measures to ensure compliance with noise performance standards. Each of these goals stresses the importance of avoiding the location of new uses that may be incompatible with adjoining uses.

Within the Planning Area, non-transportation noise sources are predominantly associated with commercial and light industrial activities. Depending on the type of operation, noise sources associated with commercial and industrial activities may include mechanical equipment, loading and unloading of vehicles and trucks, as well as amplified or unamplified communications. To a lesser extent, stationary sources of noise may also include common building or home mechanical equipment, such as air conditioners, ventilation systems, or pool pumps. These noise sources can be continuous or intermittent and may contain tonal components that are annoying to individuals who live nearby. For instance, backup alarms are often considered nuisance noise sources, but may not occur frequently enough to be considered incompatible with noise-sensitive land uses. Noise generated by stationary sources are often

directional and can vary depending on various factors, including site conditions, distance from source, shielding provided by intervening terrain and structures, and ground attenuation rates.

Construction Activities

Construction noise typically occurs intermittently and varies depending upon the nature or phase (e.g., demolition/land clearing, grading and excavation, erection) of construction. Noise generated by construction equipment, including pile drivers, material handling equipment, pavers, jackhammers, and portable generators, can result in intermittent and prolonged increases in ambient noise levels. Although construction noise impacts are generally short-term, they can result in increased levels of annoyance to occupants of nearby residential dwellings. Noise-generating construction activities are currently regulated through implementation of the City's Noise Control Ordinance, which generally limits these activities to the less noise-sensitive daytime hours.

5.12.3 Significance Threshold Criteria

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

NOI-1 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.

NOI-2 Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.

NOI-3 A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

NOI-4 A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

NOI-5 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, would the project expose people residing or working in the project area to excessive noise levels.

NOI-6 For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.

5.12.4 Impacts and Mitigation Measures

A combination of use of existing literature and general application of accepted noise thresholds was used to determine the impact of ambient noise levels resulting from and on development within the General Plan Planning Area. Short-term and long-term impacts associated with transportation and non-transportation noise sources were qualitatively assessed based on potential increases in ambient noise levels anticipated to occur at noise-sensitive land uses. Traffic noise levels along major area roadways were estimated using the FHWA Highway Traffic Noise Prediction model (FHWA-RD-77-108.) The FHWA modeling was based upon the Calveno noise-emission factors for automobiles and medium-duty and heavy-duty trucks. Input data used in the model included average-daily traffic volumes, day/night percentages of automobiles and medium and heavy trucks, vehicle speeds, ground attenuation factors, roadway widths, and ground elevation data. Traffic volumes for major roadway segments within the

Planning Area were derived from the Traffic Impact Study prepared for the Yorba Linda General Plan Update. Projected year 2035 traffic noise levels were also quantified for nearby segments of SR-91 based on projected increases in traffic obtained from Orange County Transportation Authority (OCTA).

Predicted train noise levels and corresponding distances to noise contours for the BNSF railroad corridor were calculated in accordance with the Federal Transit Administration's *Transit Noise and Vibration Impact Assessment* guidance. Train noise levels were quantified for both freight and passenger trains, including BNSF freight, Amtrak and Metrolink passenger trains. Predicted train volumes and operational data were obtained from BNSF staff, as well as, current Amtrak and Metrolink schedules and time tables. Projected future 2035 train volumes for this corridor were derived from the Southern California Association of Government's report entitled: *On the Move. Southern California Delivers the Goods. Comprehensive Regional Goods Movement Plan and Implementation Strategy. Final Report (2013)*.

Impact 5.12-1: Construction activities associated with the proposed General Plan Update could result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project and could result in exposure of persons to or generation of noise levels in excess of standards established in the General Plan and Noise Ordinance. [Thresholds NOI-1 & NOI-4]

Impact Analysis

While the Planning Area is generally fully developed, some parcels are still vacant or underdeveloped and have the potential for enhanced or further development. For purposes of this General Plan Update, these areas have been designated Focus Areas. The locations of the proposed Focus Areas are identified in Section 3.0, Project Description. Development may also occur in other areas of the City associated with redevelopment of existing developed sites as well as new construction on undeveloped sites.

Construction noise typically occurs intermittently and varies depending upon the nature or phase (e.g., demolition/land clearing, grading and excavation, erection) of construction. Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. Temporary increases in ambient noise levels, particularly during the nighttime hours, could result in increased levels of annoyance and potential sleep disruption. Although noise ranges were found to be similar for all construction phases, the grading phase tends to involve the most equipment and resulted in slightly higher average-hourly noise levels. Typical noise levels for individual pieces of construction equipment and distances to predicted noise contours are summarized in **Table 5.12-10, Typical Construction Equipment Noise**. As depicted, individual equipment noise levels typically range from approximately 74 to 88 dBA L_{eq} at 50 feet. Typical operating cycles may involve two minutes of full power, followed by three or four minutes at lower settings. Intermittent noise levels can range from approximately 77 to 95 dBA L_{max}, the loudest of which include the use of pile drivers and impact devices (e.g., hoe rams, impact hammers).

Assuming a construction noise level of 88 dBA L_{eq} and an average attenuation rate of 6 dBA per doubling of distance from the source, construction activities located within approximately 1,330 feet of noise-sensitive receptors could reach levels of approximately 60 dBA L_{eq}. Depending on distances from nearby noise-sensitive land uses and the specific construction activities conducted, construction activities may result in temporary and periodic increases in ambient noise levels at nearby receptors. Of particular concern, are activities that occur during the evening and nighttime hours. Construction activities that occur during these more noise-sensitive hours may result in increased levels of annoyance and potential

sleep disruption to occupants of nearby noise-sensitive land uses (e.g., residential dwellings, schools). As a result, because such increases could result in a substantial temporary or periodic increase in ambient noise levels in the vicinity of a future development project above levels existing without the project and could result in exposure of persons to or generation of noise levels in excess of standards established in General Plan and the Noise Ordinance, this impact is considered potentially significant.

Table 5.12-10
Typical Construction Equipment Noise

Equipment	Typical Noise Level (dBA) 50 feet from Source		Distance to Noise Contours (feet, dBA L_{eq})		
	L_{max}	L_{eq}	70 dBA	65 dBA	60 dBA
Air Compressor	80	76	105	187	334
Auger/Rock Drill	85	78	133	236	420
Backhoe/Front End Loader	80	76	105	187	334
Blasting	94	74	83	149	265
Boring Hydraulic Jack/Power Unit	80	77	118	210	374
Compactor (Ground)	80	73	74	133	236
Concrete Batch Plant	83	75	94	167	297
Concrete Mixer Truck	85	81	187	334	594
Concrete Mixer (Vibratory)	80	73	74	133	236
Concrete Pump Truck	82	75	94	167	297
Concrete Saw	90	83	236	420	748
Crane	85	77	118	210	374
Dozer/Grader/Excavator/Scraper	85	81	187	334	594
Drill Rig Truck	84	77	118	210	374
Generator	82	79	149	265	472
Gradall	85	81	187	334	594
Hydraulic Break Ram	90	80	167	297	529
Jack Hammer	85	78	133	236	420
Impact Hammer/Hoe Ram (Mounted)	90	83	236	420	748
Pavement Scarifier/Roller	85	78	133	236	420
Paver	85	82	210	374	667
Pile Driver (Impact/Vibratory)	95	88	420	748	1,330
Pneumatic Tools	85	82	210	374	667
Pumps	77	74	83	149	265
Truck (Dump/Flat Bed)	84	80	167	297	529

Source: Ambient Air Quality and Noise Consulting, 2016.

Proposed General Plan Update Goals and Policies

Goal N-3 – Mitigate noise impacts from non-transportation sources.

Policy N-3.1 - Ensure compliance with standards and procedures for mitigating construction-related activities that introduce excessive noise levels.

Goal N-4 – Project approvals that include conditions to mitigate noise impacts.

Policy N-4.1 - Consider noise impacts in the siting, design, and construction of new development to minimize noise impacts.

Mitigation Measures

None required.

Level of Significance After Mitigation

Less than significant impact.

Impact 5.12-2: The proposed General Plan Update could result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project and could result in exposure of persons to or generation of noise levels in excess of the City's noise standards. This impact would be considered potentially significant. [Threshold NOI-1 & NOI-3]

Impact Analysis

Roadway Traffic

Major noise sources in the planning area consist predominantly of vehicle traffic on area roadways. Major roadway segments in the City include but are not limited to Imperial Highway, Yorba Linda Boulevard, Bastanchury Road, Lakeview Avenue, Fairmont Boulevard, and Rose Drive. Traffic noise levels were estimated using the FHWA Highway Traffic Noise Prediction model (FHWA-RD-77-108) for existing and future cumulative (Year 2035) conditions. Predicted future cumulative traffic noise levels and distances to projected noise contours are summarized in **Tables 5.12-11, Traffic Noise Levels and Contour Distances Year 2035 with General Plan Buildout**. It is important to note that predicted noise contours are approximate and do not take into account shielding or reflection of noise due to intervening terrain or structures. As a result, predicted noise contours should be considered to represent bands of similar noise exposure along roadway segments, rather than absolute lines of demarcation. Although these noise contours are not considered site-specific, they are useful for determining potential land use conflicts. Predicted increases in future cumulative traffic noise levels, in comparison to existing traffic noise levels, are summarized in **Table 5.12-12, Traffic Noise Levels Existing Compared to Year 2035 with General Plan Update Buildout**.

Under future cumulative conditions with buildout of the General Plan Update and in comparison to existing conditions (Table 5.12-12), the General Plan Update would contribute to significant increases in traffic noise levels along segments of Yorba Linda Boulevard, Imperial Highway, Bastanchury Road, Fairmont Boulevard, and Esperanza Road (Refer to Table 5.12-12). In addition, development of future land uses within the proposed Focus Areas would likely occur along major roadways. Depending on the type of land uses proposed, distances from area roadways, and site conditions, future development could be exposed to traffic noise levels in excess of the City's current noise standards for land use compatibility (refer to Table 5.12-3). As a result, exposure to vehicular traffic noise on area roadways would be considered a potentially significant impact.

Table 5.12-11
Traffic Noise Levels & Contour Distances
Year 2035 with General Plan Buildout

Roadway Segment	ADT Volumes	CNEL at 50 ft. from Near-travel-lane Centerline	Distance to CNEL Contour (Feet from Road Centerline)		
			70	65	60
Imperial Hwy., Rose Dr. to Valley View Ave.	64,268	73.6	148	308	659
Imperial Hwy., Valley View Ave. to Yorba Linda Blvd.	56,876	73.1	137	285	608
Imperial Hwy., Yorba Linda Blvd. to Kellogg Dr.	41,577	74.0	149	314	672
Imperial Hwy., Kellogg Dr. to Orangethorpe Ave.	48,167	74.7	164	346	741
Bastanchury Rd., Rose Dr. to Imperial Hwy.	21,434	67.4	WR	104	220
Bastanchury Rd., Imperial Hwy. to Lakeview Ave.	15,653	66.1	WR	86	179
Bastanchury Rd., Lakeview Ave. to Fairmont Blvd.	17,008	67.7	WR	108	229
Bastanchury Rd., Fairmont Blvd. to Village Center Dr.	10,472	65.6	WR	80	167
Yorba Linda Blvd., Rose Dr. to Valley View Ave.	33,449	68.6	73	141	296
Yorba Linda Blvd., Valley View Ave. to Imperial Hwy.	29,143	68.0	68	130	270
Yorba Linda Blvd., Lakeview Ave. to Fairmont Blvd.	48,844	70.2	89	179	380
Yorba Linda Blvd., Fairmont Blvd. to Village Center Dr.	44,893	70.6	81	168	359
Yorba Linda Blvd, Village Ctr. to Paseo de Las Palomas	49,365	71.0	86	179	382
Yorba Linda Blvd., Paseo de Las Palomas to New River Rd.	46,930	70.8	83	173	369
Buena Vista Ave., Rose Dr. to Richfield Rd.	7,904	64.4	WR	68	139
Buena Vista Ave., Richfield Rd. to Lakeview Ave.	6,663	63.6	WR	62	124
Esperanza Rd., Fairmont Blvd. to Paseo del Prado	28,341	71.1	86	179	383
Esperanza Rd., Paseo del Prado to New River Rd.	24,911	70.5	79	164	351
Rose Dr., Imperial Hwy. to Bastanchury Rd.	20,638	66.5	WR	105	216
Rose Dr., Bastanchury Rd. to Yorba Linda Blvd.	20,336	66.5	WR	104	214
Rose Dr., Yorba Linda Blvd. to Buena Vista Ave.	30,079	68.2	69	132	276
Valley View Ave., Bastanchury Rd. to Yorba Linda Blvd.	11,702	65.2	WR	70	147
Richfield Rd., Yorba Linda Blvd. to Buena Vista Ave.	11,538	66.0	WR	85	177
Lakeview Ave., Bastanchury Rd. to Yorba Linda Blvd.	15,435	66.4	WR	84	177
Lakeview Ave., Yorba Linda Blvd. to Buena Vista Ave.	16,789	65.4	WR	72	151
Lakeview Ave., South of Buena Vista Ave.	12,923	65.2	WR	76	158
Kellogg Dr., Yorba Linda Blvd. to Imperial Hwy.	11,393	64.7	WR	71	145
Fairmont Blvd., Village Center Dr. to Bastanchury Rd.	9,911	65.3	WR	78	161
Fairmont Blvd., Bastanchury Rd. to Yorba Linda Blvd.	10,613	65.6	WR	81	168
Fairmont Blvd., Yorba Linda Blvd. to Paseo de Las Palomas	14,093	65.6	WR	80	167
Fairmont Blvd., Paseo de Las Palomas to Village Center	14,347	65.7	WR	81	169
Fairmont Blvd., Village Center Dr. to Fairmont Connector	26,231	67.6	65	121	252
Village Center Dr., Fairmont Blvd. to Yorba Linda Blvd.	12,865	65.2	WR	76	157
Village Center Dr., Yorba Linda Blvd. to Paseo de Las Palomas	6,009	61.9	WR	WR	97
Village Center Dr., Paseo de Las Palomas to Fairmont	10,661	64.4	WR	68	139
Yorba Ranch Rd., Yorba Linda Blvd. to Esperanza Rd.	2,321	57.8	WR	WR	WR
SR-91, West of Yorba Linda Boulevard	420,000	82.1	679	1,453	3,125
SR-91, East of Yorba Linda Boulevard	383,000	81.7	639	1,367	2,940

Source: Ambient Air Quality and Noise Consulting, 2016.

Table 5.12-12
Traffic Noise Levels
Existing Compared to Year 2035 with General Plan Update Buildout

Roadway Segment	CNEL at 50 ft. from Near-travel-lane Centerline			Potentially Significant?[1]
	Existing Conditions	General Plan Buildout	Increase	
Imperial Hwy., Rose Dr. to Valley View Ave.	72.1	73.6	1.5	**Yes**
Imperial Hwy., Valley View Ave. to Yorba Linda Blvd.	71.3	73.1	1.8	**Yes**
Imperial Hwy., Yorba Linda Blvd. to Kellogg Dr.	73.4	74.0	0.6	No
Imperial Hwy., Kellogg Dr. to Orangethorpe Ave.	74.0	74.7	0.7	No
Bastanchury Rd., Rose Dr. to Imperial Hwy.	65.7	67.4	1.7	**Yes**
Bastanchury Rd., Imperial Hwy. to Lakeview Ave.	66.1	66.1	0	No
Bastanchury Rd., Lakeview Ave. to Fairmont Blvd.	67.3	67.7	0.4	No
Bastanchury Rd., Fairmont Blvd. to Village Center Dr.	65.6	65.6	0	No
Yorba Linda Blvd., Rose Dr. to Valley View Ave.	67.6	68.6	1	No
Yorba Linda Blvd., Valley View Ave. to Imperial Hwy.	66.4	68.0	1.6	**Yes**
Yorba Linda Blvd., Lakeview Ave. to Fairmont Blvd.	68.2	70.2	2	**Yes**
Yorba Linda Blvd., Fairmont Blvd. to Village Center Dr.	66.8	70.6	3.8	**Yes**
Yorba Linda, Village Center to Paseo de Las Palomas	67.6	71.0	3.4	**Yes**
Yorba Linda Blvd., Paseo de Las Palomas to New River	67.8	70.8	3	**Yes**
Buena Vista Ave., Rose Dr. to Richfield Rd.	64.3	64.4	0.1	No
Buena Vista Ave., Richfield Rd. to Lakeview Ave.	63.2	63.6	0.4	No
Esperanza Rd., Fairmont Blvd. to Paseo del Prado	66.6	71.1	4.5	**Yes**
Esperanza Rd., Paseo del Prado to New River Rd.	65.5	70.5	5	**Yes**
Rose Dr., Imperial Hwy. to Bastanchury Rd.	65.7	66.5	0.8	No
Rose Dr., Bastanchury Rd. to Yorba Linda Blvd.	66.4	66.5	0.1	No
Rose Dr., Yorba Linda Blvd. to Buena Vista Ave.	67.0	68.2	1.2	No
Valley View Ave., Bastanchury Rd. to Yorba Linda Blvd.	63.7	65.2	1.5	No
Richfield Rd., Yorba Linda Blvd. to Buena Vista Ave.	65.0	66.0	1	No
Lakeview Ave., Bastanchury Rd. to Yorba Linda Blvd.	64.5	66.4	1.9	No
Lakeview Ave., Yorba Linda Blvd. to Buena Vista Ave.	64.3	65.4	1.1	No
Lakeview Ave., South of Buena Vista Ave.	64.7	65.2	0.5	No
Kellogg Dr., Yorba Linda Blvd. to Imperial Hwy.	64.2	64.7	0.5	No
Fairmont Blvd., Village Center Dr. to Bastanchury Rd.	64.5	65.3	0.8	No
Fairmont Blvd., Bastanchury Rd. to Yorba Linda Blvd.	65.0	65.6	0.6	No
Fairmont Blvd., Yorba Linda to Paseo de Las Palomas	64.1	65.6	1.5	No
Fairmont Blvd, Paseo de Las Palomas to Village Center	63.4	65.7	2.3	**Yes**
Fairmont Blvd., Village Center to Fairmont Connector	65.3	67.6	2.3	**Yes**
Village Center Dr., Fairmont Blvd. to Yorba Linda Blvd.	65.1	65.2	0.1	No
Village Center Dr., Yorba Linda Blvd. to Paseo de Las Palomas	61.4	61.9	0.5	No
Village Center Dr., Paseo de Las Palomas to Fairmont	63.0	64.4	1.4	No
Yorba Ranch Rd., Yorba Linda Blvd. to Esperanza Rd.	56.6	57.8	1.2	No

Traffic noise levels were calculated based on traffic volumes derived from the traffic analysis (Kimley-Horn 2016).
Significant increases are based on the following thresholds: 5.0, or greater, where the existing noise level is less than 60 dBA; 3.0, or greater, where the existing noise level is 60-65 dBA; 1.5, or greater, where the existing noise level is greater than 65 dBA
Source: Ambient Air Quality and Noise Consulting, 2016.

Railroad Traffic

The BNSF Railroad main line is generally located along the Planning Area's southern boundary. Approximately 60 freight trains and 27 passenger trains currently travel along this rail corridor on a daily basis. By 2035, freight trains traveling long this corridor are projected to increase to approximately 99 per day and passenger trains are projected to increase to approximately 42 trains per day (SCAG 2013).

Forecasted future train noise levels and corresponding distance to projected noise contours are summarized in **Table 5.12-13, Future Railroad Traffic Noise Levels**. As depicted, train noise levels are projected to reach levels of approximately 70 dBA CNEL at approximately 215 feet from the rail corridor centerline. Although the proposed General Plan Update would not result in an increase in train traffic, the development of future land uses, particularly those located within the Fairlynn County Island and East Gateway Focus Areas, could be exposed to train noise levels in excess of the City's noise standards for land use compatibility (Table 5.12-3). Train noise events can also be a source of intermittent noise, including noise generated by locomotive engines, wheel squeal, and warning horns. These instantaneous noise events can contribute to increased levels of annoyance to occupants of nearby noise-sensitive land uses. Therefore, exposure to railroad traffic noise levels is considered a potentially significant impact.

Table 5.12-13
Future Railroad Traffic Noise Levels

Number of Passenger Trains/Day	Number of Freight Trains/Day	CNEL at 100 feet from Rail Corridor Centerline	Distance to CNEL Contours (feet) from Rail Corridor Centerline		
			70	65	60
42	99	75	215	465	995

BNSF freight trains and Amtrak passenger trains distributed equally over a 24-hour period.
Passenger trains assumes 76 percent of train travel would occur during the daytime hours (7:00 AM-10:00 PM) based on current schedules for Metrolink Inland Empire-OC and 91-Perris Valley lines.
Predicted noise contours do not include shielding by intervening structures.
Source: Ambient Air Quality and Noise Consulting, 2016.

Implementation of the proposed General Plan Update policies would reduce potential transportation noise impacts. Future development projects would be required to analyze project-related noise impacts and incorporate necessary noise-reduction measures. Noise-reduction measures typically implemented to reduce traffic noise include increased insulation, setbacks, and construction of sound barriers. Additional policies have been proposed to promote alternative means of transportation and to limit heavy truck traffic to designated truck routes, which would help to reduce transportation-related noise levels along area roadways. Implementation of these policies and actions will help to reduce impacts associated with future development. However, it is important to note that the YLMC noise standards, as noted in proposed General Plan Policy N-1.1, are intended to apply predominantly to non-transportation noise sources. The proposed General Plan Update Noise Element does not identify noise standards applicable to transportation noise sources that are typically used for determination of land use compatibility. Implementation of Mitigation Measure NOI-1 would further ensure the compatibility of future land uses within noise environments influenced by transportation noise sources.

Mitigation Measure NOI-1 sets the noise standards identified in **Table 5.12-14, Maximum Allowable Nosie Exposure for Transportation Noise Sources** which have been adapted from the State of California General Plan Guidelines for land use compatibility (refer to Table 5.12-2) and are generally consistent with the City's current noise standards, as identified in the *1993 City of Yorba Linda General Plan Noise Element*.

However, for some land uses with operations that are limited primarily to the daytime hours, such as schools and office buildings, the application of an average-daily noise standard may not provide adequate protection with regard to activity interference. For these land uses, an average-hourly interior noise level standard is recommended. Furthermore, in locations that are exposed to railroad noise, which would include the proposed Fairlynn County Island and East Gateway Focus Areas, the recommended interior noise standard should be reduced to account for the increased potential for sleep disruption commonly associated with railroad activities and related noise events. With implementation of the proposed General Plan Update policies and Mitigation Measure NOI-1, this impact would be considered less than significant.

Table 5.12-14
Maximum Allowable Noise Exposure for Transportation Noise Sources

Land Use	Interior Occupied Spaces (dBA)		Outdoor Activity Areas (dBA)[1]
	CNEL	L_{eq}[6]	
Residential	45[4]		65[2,3]
Convalescent Care Facilities, Hospitals	45[4]		70[2,3]
Transient Lodging	45		65[2,3]
Schools, Libraries, Museums and Places of Worship	--	45	--
Playgrounds, Neighborhood Parks	--		70[5]
Office Buildings	--	45	70[3]
Commercial Retail & Light Industrial	--		75

1. To be applied at outdoor activity areas. Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied at the property line of the receiving land use.
2. Where it is not possible to reduce exterior noise levels to 65 dBA CNEL, or less, an exterior noise level of 70 dBA CNEL may be allowed provided that an acoustical analysis has been prepared for the project to identify available exterior noise-reduction measures to be incorporated and interior noise levels are in compliance with this table.
3. Where outdoor activity areas are not included in the project design, only the interior noise level standard shall apply.
4. In locations where railroad noise is the predominant noise source, the interior noise standard for residential land uses shall be reduced by 5 dB to account for the increased potential for sleep disruption to building occupants.
5. Where quiet is a basis for use.
6. This standard is intended to apply to land uses with operational hours predominantly during the daytime hours. The interior noise standard applies to a typical worst-case hour during the period of use.

Source: Ambient Air Quality and Noise Consulting, 2016.

Proposed General Plan Update Goals and Policies

Goal N-1 – Indoor and outdoor living areas that are adequately protected from excessive transportation noise impacts.

Policy N-1.1 - Ensure existing transportation noise sources comply with the City's noise ordinance.

Policy N-1.2 - Consider appropriate technologies to mitigate excessive noise levels where necessary or where feasible.

Policy N-1.3 - Ensure noise mitigation measures are clearly articulated and implemented prior to the approval of new roadway projects.

Policy N-1.4 - Ensure potentially excessive noise generators provide for the highest feasible level of noise mitigation and compliance with local, state, and federal noise standards.

Policy N-1.5 - Promote alternative transportation modes such as walking, bicycling, equestrian transportation, and transit to contribute to reducing or minimizing potential noise impacts.

Goal N-2 – Noise and land use compatibility.

Policy N-2.1 - Ensure compliance with the City's established noise thresholds for various land uses.

Policy N-2.2 - Ensure compliance with the City's established noise thresholds for noise sensitive receptors, land uses, and activities.

Policy N-2.3 - Ensure noise producing land uses and activities are designed and located to consider impacts to adjacent uses and activities.

Goal N-4 – Project approvals that include conditions to mitigate noise impacts.

Policy N-4.1 - Consider noise impacts in the siting, design, and construction of new development to minimize noise impacts.

Policy N-4.2 - Consider alternative architectural layouts as a means of meeting noise requirements.

Policy N-4.3 - Consider a combination of noise barriers, landscape berms, and architectural design treatments when needed to mitigate noise impacts.

Policy N-4.5 - Consider measures which alter, prohibit or mitigate noise generating uses through site design.

Goal CR-3 – An efficient circulation system that utilizes transportation system management and demand management strategies.

Policy CR-3.8 - Encourage new development to provide access to transit, bicycle, pedestrians, and other non-vehicular modes of transportation.

Goal CR-6 – An efficient non-motorized transportation system.

Policy CR-6.1 - Promote the development and maintenance, where feasible, of safe and convenient non-motorized transportation and multi-purpose trails throughout the City.

Policy CR-6.4 - Promote existing and new traffic generators to incorporate facilities, such as bicycle racks and storage, into the development.

Goal CR-7 – Adequate facilities for heavy vehicle traffic that balances reduction of environmental impacts.

Policy CR-7.1 - Maintain the City's official truck routes to minimize the impacts of truck traffic on residential neighborhoods and other sensitive land uses.

Policy CR-7.2 - Seek to minimize noise and other impacts of truck traffic, deliveries, and staging in residential and mixed-use neighborhoods.

Mitigation Measures

MM NOI-1 Ensure that future development exposed to transportation noise sources complies with the City's noise standards for determination of land use compatibility. The exterior and interior noise standards identified in Table 5.12-14 are recommended.

Table 5.12-14 Maximum Allowable Noise Exposure for Transportation Noise Sources			
Land Use	Interior Occupied Spaces (dBA)		Outdoor Activity Areas (dBA)[1]
	CNEL	L_{eq}[6]	
Residential	45[4]		65[2,3]
Convalescent Care Facilities, Hospitals	45[4]		70[2,3]
Transient Lodging	45		65[2,3]
Schools, Libraries, Museums and Places of Worship	--	45	--
Playgrounds, Neighborhood Parks	--		70[5]
Office Buildings	--	45	70[3]
Commercial Retail & Light Industrial	--		75

1. To be applied at outdoor activity areas. Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied at the property line of the receiving land use.
2. Where it is not possible to reduce exterior noise levels to 65 dBA CNEL, or less, an exterior noise level of 70 dBA CNEL may be allowed provided that an acoustical analysis has been prepared for the project to identify available exterior noise-reduction measures to be incorporated and interior noise levels are in compliance with this table.
3. Where outdoor activity areas are not included in the project design, only the interior noise level standard shall apply.
4. In locations where railroad noise is the predominant noise source, the interior noise standard for residential land uses shall be reduced by 5 dB to account for the increased potential for sleep disruption to building occupants.
5. Where quiet is a basis for use.
6. This standard is intended to apply to land uses with operational hours predominantly during the daytime hours. The interior noise standard applies to a typical worst-case hour during the period of use.

Source: Ambient Air Quality and Noise Consulting, 2016.

Level of Significance After Mitigation

Less than significant impact.

Impact 5.12-3: Future development associated with the proposed General Plan Update could result in new noise-sensitive land uses encroaching upon existing or proposed stationary noise sources or new stationary noise sources encroaching upon existing or proposed noise-sensitive land uses. This could result in a substantial permanent increase in ambient noise levels in the project vicinity above existing levels or could 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 of applicable standards of other agencies. As a result, this impact is considered potentially significant. [Threshold NOI-1 & NOI-3]

Impact Analysis

Implementation of the proposed General Plan Update could result in the future development of land uses that may generate noise levels in excess of City noise standards. Such land uses typically include commercial, industrial, institutional (public schools), and recreational uses. In addition, new noise-sensitive land uses could be located in areas of existing stationary noise sources. Exposure of noise-sensitive land uses to non-transportation noise levels could result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project and could 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 of applicable standards of other agencies. As a result, exposure to non-transportation noise would be considered potentially significant impact.

Implementation of proposed General Plan Update policies would reduce noise associated with new non-transportation noise sources and the placement of new noise-sensitive land uses over which the City

has jurisdiction (e.g., commercial and industrial sites, residential uses). With implementation of the proposed General Plan Update policies, this impact would be considered less than significant.

Proposed General Plan Goals and Policies

Goal N-3 – Mitigate noise impacts from non-transportation sources.

Policy N-3.2 - Promote coordination among City agencies involved in noise abatement.

Goal N-4 – Project approvals that include conditions to mitigate noise impacts.

Policy N-4.1 - Consider noise impacts in the siting, design, and construction of new development to minimize noise impacts.

Policy N-4.2 - Consider alternative architectural layouts as a means of meeting noise requirements.

Policy N-4.3 - Consider a combination of noise barriers, landscape berms, and architectural design treatments when needed to mitigate noise impacts.

Policy N-4.5 - Consider measures which alter, prohibit or mitigate noise generating uses through site design.

Goal LU-3 – Land use compatibility.

Policy LU-3.4 - Support the review of uses characterized by high levels of noise, nighttime patronage, and safety concerns by local law enforcement to prevent impact on adjacent residences, schools, religious facilities and similar sensitive uses.

Goal CR-7 – Adequate facilities for heavy vehicle traffic that balances reduction of environmental impacts.

Policy CR-7.2 - Seek to minimize noise and other impacts of truck traffic, deliveries, and staging in residential and mixed-use neighborhoods.

Mitigation Measures

None required.

Level of Significance After Mitigation

Less than significant impact.

Impact 5.12-4: The proposed General Plan Update could result in exposure of persons to or generation of excessive groundborne vibration levels. [Threshold NOI-2]

Impact Analysis

The effects of ground vibration can vary from no perceptible effects at the lowest levels, low rumbling sounds and detectable vibrations at moderate levels, and slight damage to nearby structures at the highest levels. At the highest levels of vibration, damage to structures is primarily architectural (e.g., loosening and cracking of plaster or stucco coatings) and rarely results in structural damage. The effects of ground vibration are influenced by the duration of the vibration and the distance from the vibration source.

There are no federal, State, or local regulatory standards for vibration. However, various criteria have been established to assist in the evaluation of vibration impacts. For instance, the California Department of Transportation (Caltrans) has developed vibration criteria based on human perception and structural damage risks. For most structures, Caltrans considers a peak-particle velocity (ppv) threshold of 0.2 inch per second (in/sec) to be the level at which architectural damage (i.e., minor cracking of plaster walls and ceilings) to normal structures may occur. Below 0.10 in/sec there is "virtually no risk of 'architectural' damage to normal buildings." Damage to historic or ancient buildings could occur at levels of 0.08 in/sec ppv. In terms of human annoyance, continuous vibrations in excess of 0.1 in/sec ppv are identified by Caltrans as the minimum level perceptible level for ground vibration. Short periods of ground vibration in excess of 0.2 in/sec ppv can be expected to result in increased levels of annoyance to people within buildings (Caltrans, 2002).

Groundborne vibration sources located within the Planning Area that could potentially affect future development would be primarily associated with construction activities. With the exception of pavement breaking and pile driving, construction activities and related equipment typically generate groundborne vibration levels of less than 0.2 in/sec, which is the architectural damage risk threshold recommended by Caltrans. Based on Caltrans measurement data, use of off-road tractors, dozers, earthmovers, and haul trucks generates groundborne vibration levels of less than 0.10 in/sec, or one half of the architectural damage risk level, at 10 feet. The highest vibration level associated with a pavement breaker was 2.88 in/sec at 10 feet. During pile driving, vibration levels near the source depend mainly on the soil's penetration resistance as well as the type of pile driver used. Impact pile drivers tend to generate higher vibration levels than vibratory or drilled piles. Groundborne vibration levels of pile drivers can range from approximately 0.17 to 1.5 in/sec ppv. Caltrans indicates that the distance to the 0.2 in/sec ppv criterion for pile driving activities would occur at a distance of approximately 50 feet. However, as with construction-generated noise levels, pile driving can result in a high potential for human annoyance from vibrations, and pile-driving activities are typically considered as potentially significant if these activities are performed within 200 feet of occupied structures (Caltrans, 2002). As a result, short-term exposure to vibration levels would be considered a potentially significant impact.

Due to the short-term nature of construction vibrations, the intermittent frequency of construction vibrations, and the required compliance with the City's hourly restrictions related to construction activities, construction vibration level increases will not result in exposure of persons to or generation of excessive groundborne vibration that would result in a significant increase in annoyance. By restricting the hours of construction to avoid vibrations during times when it could potentially be more of a nuisance, the impact of new construction vibration is reduced to a less than significant level through the application of the General Plan Update's policies. In addition, individual development projects would be subject to site-specific environmental review, which would necessitate identification of site-specific mitigation in the event that significant impacts are identified.

Proposed General Plan Update Goals and Policies

Goal N-3 – Mitigate noise impacts from non-transportation sources.

> Policy N-3.1 - Ensure compliance with standards and procedures for mitigating construction-related activities that introduce excessive noise levels.

Goal LU-3 – Land use compatibility.

Policy LU-3.4 - Support the review of uses characterized by high levels of noise, nighttime patronage, and safety concerns by local law enforcement to prevent impact on adjacent residences, schools, religious facilities and similar sensitive uses.

Goal CR-7 – Adequate facilities for heavy vehicle traffic that balances reduction of environmental impacts.

Policy CR-7.2 - Seek to minimize noise and other impacts of truck traffic, deliveries, and staging in residential and mixed-use neighborhoods.

Mitigation Measures

None required.

Level of Significance After Mitigation

Less than significant.

Impact 5.12-5: The proposed General Plan Update would not expose people residing or working in the project area to excessive noise levels for a project located within the vicinity of a public or private airport. [Thresholds NOI-5 and NOI-6]

Impact Analysis

The Planning Area is not located within an airport land use plan area or within two miles of a public or private use airport. Implementation of the proposed General Plan Update would not expose people residing or working in the project area to excessive noise levels. As a result, no impact is anticipated to occur with regard to the exposure of sensitive receptors to aircraft noise levels.

Proposed General Plan Update Goals and Policies

Please refer to the General Plan Update goals and policies identified in this section.

Mitigation Measures

None required.

Level of Significance After Mitigation

No impact.

5.12.5 Cumulative Impacts

Cumulative Short-Term Construction Noise and Vibration Impacts

While the Planning Area is predominately developed, some parcels are still vacant, or underdeveloped and have the potential for enhanced or further development. For purposes of this General Plan Update, these areas have been designated Focus Areas (Figure 5.12-2). Development may also occur in other areas of the Planning Area associated with redevelopment of existing developed sites as well as new construction on undeveloped sites. However, no development projects are associated with the General Plan Update and would be subject to project-specific analysis. Because construction activities associated with development projects tend to be localized and of limited duration and intensity, construction-generated noise and vibration levels are not anticipated to contribute substantially to the cumulative environment at any given location. In addition, construction activities would be subject to compliance

with the YLMC requirements and would typically be limited to between the less noise-sensitive daytime hours of 7:00 AM to 8:00 PM. For these reasons, the General Plan Update's contribution to cumulative short-term noise or vibration exposure would be considered a less than significant impact.

Cumulative Long-Term Operational Noise Impacts

As discussed above, the ambient noise environment is influenced primarily by vehicle traffic on area roadways. The cumulative noise setting is, therefore, predominantly associated with vehicle traffic generated by buildout of the proposed General Plan Update. Development in surrounding communities may also contribute to traffic noise levels along some roadway segments. Cumulative development would alter the intensity of land uses in the region and increase housing, employment, shopping, and recreational opportunities. Such development would result in new noise generators and noise-sensitive land uses and potentially increase land use conflicts and hazards associated with noise.

Roadway Traffic

As identified in Table 5.12-12, implementation of the proposed General Plan Update, in combination with anticipated growth by the year 2035, would result in projected increases in traffic noise levels along some major roadway segments. Under future cumulative conditions with buildout of the General Plan Update and in comparison to existing conditions, the General Plan Update would contribute to significant increases in traffic noise levels along segments of Yorba Linda Boulevard, Imperial Highway, Bastanchury Road, Fairmont Boulevard, and Esperanza Road.

Furthermore, development of future land uses could potentially occur proximate to major roadways, which may exceed applicable noise standards. Therefore, noise impacts are considered potentially cumulatively considerable.

Implementation of the proposed General Plan Update policies, as identified in Impact 5.12-2, would reduce potential transportation noise impacts. Future development projects would be required to analyze project-related noise impacts and incorporate necessary noise-reduction measures sufficient to achieve the applicable noise standards of the City's Noise Element. Implementation of these policies would help to reduce impacts associated with proposed future development. With implementation of the proposed General Plan Update policies and recommended mitigation measure, this impact would be considered less than significant.

Non-Transportation Sources

Development of future land uses associated with implementation of the proposed General Plan Update are not anticipated to include the installation of major non-transportation sources of noise. In addition, no major non-transportation noise sources have been identified in the City that contribute substantially to the ambient noise environment, particularly within or near the proposed Focus Areas. Furthermore, non-transportation noise sources would be subject to compliance with the City's noise control ordinance, which establishes acceptable noise levels for the purpose of minimizing potential impacts to nearby land uses. For these reasons, the project's contribution to cumulative non-transportation source noise exposure would be considered to have a less than significant impact.

5.12.6 Significant Unavoidable Impacts

No significant unavoidable impacts are identified.

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