the future of southern california

Murrieta

General Plan Update

Section 5.7:

Noise

5.7 NOISE

The purpose of this section is to summarize the existing noise conditions within the City of Murrieta. Information in this section was obtained from the *City of Murrieta Municipal Code* (Municipal Code). For the purposes of mobile source noise modeling and contour distribution, traffic information contained in the *Traffic Impact Analysis* (Draft January 2011, Final September 2011), prepared by Iteris was utilized; refer to Appendix C, Traffic Impact Analysis. Appendix E, Noise Data, includes data to support this analysis is this section.

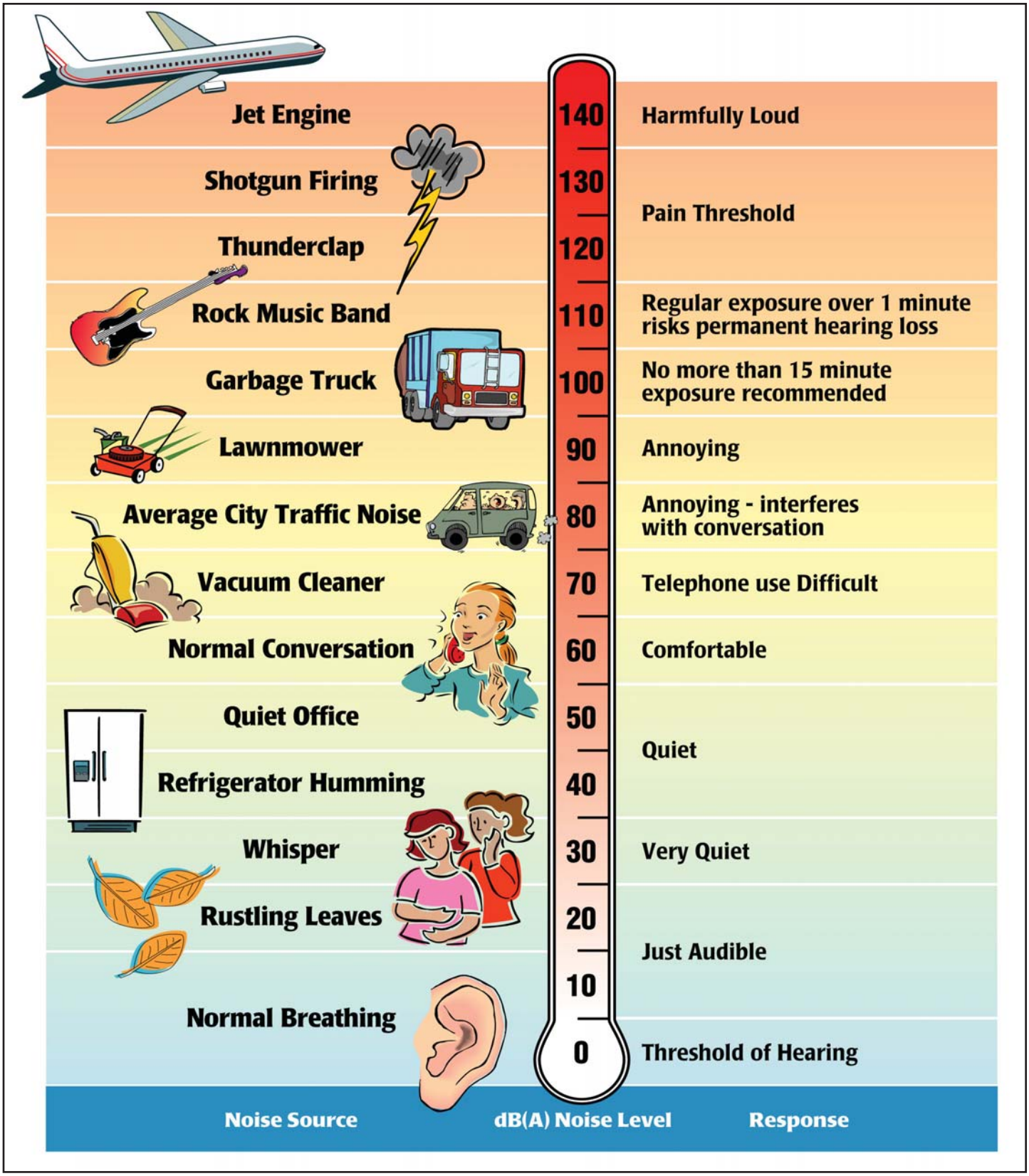
5.7.1 REGULATORY SETTING

Sound is described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

The perceived loudness of sound is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and should be approximated by the A-waited sound levels (expressed as dBA) and the way the human ear perceives noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment.

Community noise is commonly described in terms of the "ambient" nose level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (Leq), which corresponds to a steady-state A-weighted sound level containing the same total energy as a time-varying signal over a given time period (usually one hour). The Leq is the foundation of the composite noise descriptor, Ldn, and shows very good correlation with community response to noise.

Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dBA higher than another is judged to be twice as loud and 20 dBA higher four times as loud, and so forth. Everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud). Examples of various sound levels in different environments are illustrated on *Exhibit 5.7-1*, *Sound Levels and Human Response*.



Source: Melville C. Branch and R. Dale Beland, *Outdoor Noise in the Metropolitan Environment*, 1970.
Environmental Protection Agency, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (EPA/ONAC 550/9-74-004), March 1974.

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Sound Levels and Human Response

Exhibit 5.7-1

Many methods have been developed for evaluating community noise to account for, among other things:

- The variation of noise levels over time;
- The influence of periodic individual loud events; and
- The community response to changes in the community noise environment.

Numerous methods have been developed to measure sound over a period of time; refer to *Table 5.7-1*, *Noise Descriptors*.

Table 5.7-1
Noise Descriptors

Term	Definition
Decibel (dB)	The unit for measuring the volume of sound equal to 10 times the logarithm (base 10) of the ratio of the pressure of a measured sound to a reference pressure (20 micropascals).
A-Weighted Decibel (dBA)	A sound measurement scale that adjusts the pressure of individual frequencies according to human sensitivities. The scale accounts for the fact that the region of highest sensitivity for the human ear is between 2,000 and 4,000 cycles per second (hertz).
Equivalent Sound Level (L_{eq})	The sound level containing the same total energy as a time varying signal over a given time period. The L_{eq} is the value that expresses the time averaged total energy of a fluctuating sound level.
Maximum Sound Level (L_{max})	The highest individual sound level (dBA) occurring over a given time period.
Minimum Sound Level (L_{min})	The lowest individual sound level (dBA) occurring over a given time period.
Community Noise Equivalent Level (CNEL)	A rating of community noise exposure to all sources of sound that differentiates between daytime, evening, and nighttime noise exposure. These adjustments are +5 dBA for the evening, 7:00 PM to 10:00 PM, and +10 dBA for the night, 10:00 PM to 7:00 AM
Day/Night Average (L_{dn})	The L_{dn} is a measure of the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency (EPA) for developing criteria for the evaluation of community noise exposure. It is based on a measure of the average noise level over a given time period called the L_{eq}. The L_{dn} is calculated by averaging the L_{eq}'s for each hour of the day at a given location after penalizing the "sleeping hours" (defined as 10:00 PM to 7:00 AM), by 10 dBA to account for the increased sensitivity of people to noises that occur at night.
Exceedance Level (L_n)	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% (L_{01}, L_{10}, L_{50}, L_{90}, respectively) of the time during the measurement period.
Source: Cyril M. Harris, *Handbook of Noise Control*, dated 1979.	

It is difficult to specify noise levels that are generally acceptable to everyone; what is annoying to one person may be unnoticed by another. Standards may be based on documented complaints in response to documented noise levels, or based on studies of the ability of people to sleep, talk, or work under various noise conditions. Standards usually address the needs of most of the general population. This section summarizes the laws, ordinances, regulations, and standards that are applicable to the proposed project. Regulatory requirements related to environmental noise are typically promulgated at the local level. However, Federal and State agencies provide standards and guidelines to the local jurisdictions.

FEDERAL

The Federal Noise Control Act of 1972 established programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In 1981, the U.S. Environmental Protection Agency (U.S. EPA) administrators determined that subjective issues such as noise would be better addressed at more local levels of government, thereby allowing more individualized control for specific issues by designated Federal, State, and local government agencies. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to specific federal agencies, and state and local governments. However, noise control guidelines and regulations contained in the U.S. EPA rulings in prior years remain in place. No Federal noise regulations are directly applicable to the proposed project.

STATE

The State of California has adopted noise standards in areas of regulation not preempted by the federal government. State standards regulate noise levels of motor vehicles, sound transmission through buildings, occupational noise control, and noise insulation. State regulations governing noise levels generated by individual motor vehicles (i.e., the *California Vehicle Code*) and those governing occupational noise control (i.e., Occupational Safety and Health Administration) are not applicable to planning efforts nor are these areas typically subject to CEQA analysis. Thus, these regulatory guidelines are not included in this analysis. The following is State of California and state agency regulation that has been deemed applicable to this project.

Title 24

In 1974, the California Commission on Housing and Community Development adopted noise insulation standards for residential buildings (*CCR Title 24*, Part 2, Chapter 12, Section 1207.11.2). *Title 24* establishes standards for interior room noise attributable to outside noise sources. *Title 24* also specifies that acoustical studies should be prepared whenever a residential building or structure is proposed to be located in areas with exterior noise levels 60 dB Ldn or greater. The acoustical analysis must show that the building has been designed to limit intruding noise to an interior level not exceeding 45 dB Ldn for any habitable room.

Governor's Office of Planning and Research

The State of California General Plan Guidelines, published by the State Governor's Office of Planning and Research (OPR), provides guidance for the acceptability of specific land use types within areas of specific noise exposure. *Table 5.7-2*, *Land Use Compatibility for Community Noise Environments*, presents guidelines for determining acceptable and unacceptable community noise exposure limits for various land use categories. The guidelines also present adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution. OPR guidelines are advisory in nature. Local jurisdictions, including the City of Murrieta, have the responsibility to set specific noise standards based on local conditions.

Table 5.7-2
Land Use Compatibility for Community Noise Environments

Land Use Category	Community Noise Exposure (CNEL)			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential-Low Density, Single-Family, Duplex, Mobile Homes	50 - 60	55 - 70	70 – 75	75 – 85
Residential – Multiple Family	50 – 65	60 – 70	70 – 75	70 – 85
Transient Lodging – Motel, 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 Arenas, Outdoor Spectator Sports	NA	50 – 75	NA	70 – 85
Playgrounds, Neighborhood Parks	50 – 70	NA	67.5 – 77.5	72.5 – 85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 – 70	NA	70 – 80	80 – 85
Office Buildings, Business Commercial and Professional	50 – 70	67.5 – 77.5	75 – 85	NA
Industrial, Manufacturing, Utilities, Agriculture	50 – 75	70 – 80	75 – 85	NA

CNEL = community noise equivalent level; NA = not applicable

NORMALLY ACCEPTABLE: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

CONDITIONALLY ACCEPTABLE: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features have been included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.

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

CLEARLY UNACCEPTABLE: New construction or development should generally not be undertaken.

Source: Office of Planning and Research, California, *General Plan Guidelines,* October 2003.

LOCAL

City of Murrieta Noise Element

The State of California has mandated that local governments prepare a noise element as part of their general plans. The Noise Element of the proposed General Plan 2035 will be the guiding document for the City's noise policy and contains various goals and accompanying policies and objectives designed to protect residents and businesses from excessive and persistent noise intrusions. The Noise Element will describe the existing noise environment, goals and policies, as well as State noise regulations and airport land use guidelines for noise compatibility.

City of Murrieta Development Code

The City of Murrieta's regulations with respect to noise are included in Chapter 16.30 of the *Development Code*, also known as the *Noise Ordinance*. Construction-related and operational noise restrictions are discussed below:

Construction Noise. Section 16.30.130 of the City of Murrieta *Noise Ordinance* regulates construction noise. The *Noise Ordinance* prohibits noise generated by construction activities between the hours of 7:00 PM and 7:00 AM and on Sundays and holidays. Construction activities shall not be conducted in a manner that the maximum noise levels at the affected structures will not exceed those listed in *Table 5.7-3*, *City of Murrieta Construction Noise Standards*.

Table 5.7-3
City of Murrieta Construction Noise Standards

	Single-Family Residential	Multi-Family Residential	Commercial
Mobile Equipment			
Daily, except Sundays and holidays, 7:00 AM to 8:00 PM	75 dBA	80 dBA	85 dBA
Daily, except Sundays and holidays, 8:00 PM to 7:00 AM	60 dBA	64 dBA	70 dBA
Stationary Equipment			
Daily, except Sundays and holidays, 7:00 AM to 8:00 PM	60 dBA	65 dBA	70 dBA
Daily, except Sundays and holidays, 8:00 PM to 7:00 AM	50 dBA	55 dBA	60 dBA
Source: City of Murrieta, *City of Murrieta Development Code Section 16.30.130*.			

Operational Noise. Within the City of Murrieta, the *Noise Ordinance* governs operational noise generated between two properties and does not regulate noise from transportation sources, such as traffic, aircraft, and railways. Section 16.30.090 of the *Noise Ordinance* establishes the exterior noise standards for all receptor properties within a designated noise zone. The City's exterior noise level limits between properties are presented in *Table 5.7-4*, *City of Murrieta Exterior and Interior Noise Limits*.

Table 5.7-4
City of Murrieta Exterior and Interior Noise Limits

Noise Zone	Land Use (Receptor Property)	Time Period	Allowed Exterior Noise Level (dBA)
Exterior Noise Limits			
I	Noise-sensitive area	Anytime	45
II	Residential properties	10:00 PM to 7:00 AM	45
		7:00 AM to 10:00 PM	50
	Residential properties within 500 feet of a kennel(s)	7:00 AM to 10:00 PM	70
III	Commercial properties	10:00 PM to 7:00 AM	55
		7:00 AM to 10:00 PM	60
IV	Industrial properties	Anytime	70
Interior Noise Limits			
All noise zones	Multi-family residential	10:00 PM to 7:00 AM	40
		7:00 AM to 10:00 PM	45

Source: City of Murrieta, *City of Murrieta Development Code Section 16.30.090*.

Section 16.30.090(B) of the *Development Code* further restricts noise levels. Section 16.30.090(B) states, in part:

> *No person shall 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 a person that causes the noise level, when measured on any other property to exceed the following exterior noise standards:*
>
> > *Standard No. 1 shall be the exterior noise level which shall not be exceeded for a cumulative period of more than thirty (30) minutes in any hour. Standard No. 1 may be the applicable noise level from Table 3-6 above.*
> >
> > *Standard No. 2 shall be the exterior noise level which shall not be exceeded for a cumulative period of more than fifteen (15) minutes in any hour. Standard No. 2 shall be the applicable noise level from Table 3-6 above, plus five dB.*

Standard No. 3 shall be the exterior noise level which shall not be exceeded for a cumulative period of more than five minutes in any hour. Standard No. 3 shall be the applicable noise level from Table 3-6 above plus ten dB.

Standard No. 4 shall be the exterior noise level which shall not be exceeded for a cumulative period of more than one minute in any hour. Standard No. 4 shall be the applicable noise level from Table 3-6 above plus fifteen (15) dB.

Standard No. 5 shall be the exterior noise level which shall not be exceeded for any period of time. Standard No. 5 shall be the applicable noise level from Table 3-6 above plus twenty (20) dB.

Section 16.30.100 sets forth interior noise levels limits for multi-family residential properties, as stated in *Table 5.7-4*. Section 16.30.100 states, in part:

> No person shall operate or cause to be operated within a residential unit any source of sound, or allow the creation of any noise, that causes the noise level when measured inside a neighboring receiving residential unit to exceed the following standards:
>
> > Standard No. 1. The applicable interior noise level for cumulative period of more than five minutes in any hour;
> >
> > Standard No. 2. The applicable interior noise level plus five dB for a cumulative period of more than one minute in any hour; or
> >
> > Standard No. 3. The applicable interior noise level plus ten dB for any period of time.

5.7.2 ENVIRONMENTAL SETTING

Human response to sound is highly individualized. Annoyance is the most common issue regarding community noise. The percentage of people claiming to be annoyed by noise generally increases with the environmental sound level. However, many factors also influence people's response to noise. The factors can include the character of the noise, the variability of the sound level, the presence of tones or impulses, and the time of day of the occurrence. Additionally, non-acoustical factors, such as the person's opinion of the noise source, the ability to adapt to the noise, the attitude towards the source and those associated with it, and the predictability of the noise, all influence people's response. As such, response to noise varies widely from one person to another and with any particular noise, individual responses will range from "not annoyed" to "highly annoyed."

When the noise level of an activity rises above 70 dBA, the chance of receiving a complaint is possible, and as the noise level rises, dissatisfaction among the public steadily increases. However, an individual's reaction to a particular noise depends on many factors, such as the

source of the sound, its loudness relative to the background noise, and the time of day. The reaction to noise can also be highly subjective; the perceived effect of a particular noise can vary widely among individuals in a community.

The effects of noise are often only transitory, but adverse effects can be cumulative with prolonged or repeated exposure. The effects of noise on the community can be organized into six broad categories:

1. Noise-Induced Hearing Loss
2. Interference with Communication
3. Effects of Noise on Sleep
4. Effects on Performance and Behavior
5. Extra-Auditory Health Effects
6. Annoyance

Noise-Induced Hearing Loss. Although it often causes discomfort and sometimes pain, noise-induced hearing loss usually takes years to develop. Noise-induced hearing loss can impair the quality of life through a reduction in the ability to hear important sounds and to communicate with family and friends. Hearing loss is one of the most obvious and easily quantified effects of excessive exposure to noise. While the loss may be temporary at first, it could become permanent after continued exposure. When combined with hearing loss associated with aging, the amount of hearing loss directly caused by the environment is difficult to quantify. Although the major cause of noise-induced hearing loss is occupational, substantial damage can be caused by non-occupational sources. According to the United States Public Health Service, nearly ten million of the estimated 21 million Americans with hearing impairments owe their losses to noise exposure.

Interference with Communication. Noise can mask important sounds and disrupt communication between individuals in a variety of settings. This process can cause anything from a slight irritation to a serious safety hazard, depending on the circumstance. Noise can disrupt face-to-face communication and telephone communication, and the enjoyment of music and television in the home. It can also disrupt effective communication between teachers and pupils in schools, and can cause fatigue and vocal strain in those who need to communicate in spite of the noise. Interference with communication has proved to be one of the most important components of noise-related annoyance.

Effects of Noise on Sleep. Noise-induced sleep interference is one of the critical components of community annoyance. Sound level, frequency distribution, duration, repetition, and variability can make it difficult to fall asleep and may cause momentary shifts in the natural sleep pattern, or level of sleep. It can produce short-term adverse effects on mood changes and job performance, with the possibility of more serious effects on health if it continues over long periods. Noise can cause adverse effects on task performance and behavior at work, and non-occupational and social settings. These effects are the subject of some controversy, since the presence and degree of

effects depends on a variety of intervening variables. Most research in this area has focused mainly on occupational settings, where noise levels must be sufficiently high and the task sufficiently complex for effects on performance to occur.

Effects on Performance and Behavior. Recent research indicates that more moderate noise levels can produce disruptive after-effects, commonly manifested as a reduced tolerance for frustration, increased anxiety, decreased incidence of "helping" behavior, and increased incidence of "hostile" behavior.

Extra-Auditory Health Effects. Noise has been implicated in the development or exacerbation of a variety of health problems, ranging from hypertension to psychosis. As with other categories, quantifying these effects is difficult due to the amount of variables that need to be considered in each situation. As a biological stressor, noise can influence the entire physiological system. Most effects seem to be transitory, but with continued exposure some effects have been shown to be chronic in laboratory animals.

Annoyance. Annoyance can be viewed as the expression of negative feelings resulting from interference with activities, as well as the disruption of one's peace of mind and the enjoyment of one's environment. Field evaluations of community annoyance are useful for predicting the consequences of planned actions involving highways, airports, road traffic, railroads, or other noise sources. The consequences of noise-induced annoyance are privately held dissatisfaction, publicly expressed complaints to authorities, and potential adverse health effects, as discussed above. In a study conducted by the United States Department of Transportation, the effects of annoyance to the community were quantified. In areas where noise levels were consistently above 60 dBA CNEL, approximately nine percent of the community is highly annoyed. When levels exceed 65 dBA CNEL, that percentage rises to 15 percent. Although evidence for the various effects of noise have differing levels of certainty, it is clear that noise can affect human health. Most of the effects are, to a varying degree, stress related.

SOURCES OF NOISE

Mobile Sources

FREEWAYS AND STREETS

The roadways within the City that generate the most traffic noise from vehicle and truck traffic include the major north-south trending I-15 and I-215 due to higher traffic volumes and vehicle speeds than other roadways. Major east-west arterials that generate significant noise include Jefferson Avenue and Washington Avenue. Major north-south arterials generating traffic noise include Clinton Keith Road, Kalmia Street/California Oaks Road, and Murrieta Hot Springs Road.

Vehicular noise along major roadways was modeled to estimate existing noise levels from mobile traffic. The existing and future roadway noise levels were projected using the FHWA Traffic Noise Prediction Model (RD-77-108), together with several roadway and site parameters. The FHWA model is based upon reference energy mean emission levels (REMELS) for automobiles, medium trucks (two axles) and heavy trucks (three or more axles), with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. To predict CNEL values, it is necessary to determine the hourly distribution of traffic for a typical day and adjust the traffic volume input data to yield an equivalent hourly traffic volume. The California Vehicle Noise (Calveno) traffic noise emission curves are used as recommended by the California Department of Transportation (Caltrans) to more accurately calculate noise levels generated by traffic in California.

Traffic volumes used in the FHWA model were obtained from Iteris (January 2011). These traffic inputs determine the projected impact of vehicular traffic noise and include the roadway cross-section (e.g., number of lanes), roadway width, average daily traffic (ADT), vehicle travel speed, percentages of automobile and truck traffic, roadway grade, angle of view, and site conditions (hard or soft). The model does not account for ambient noise levels (i.e., noise from adjacent land uses) or topographical differences between the roadway and adjacent land uses. *Exhibit 5.7-2*, *Existing Roadway Noise Contours* and *Table 5.7-5*, *Existing Roadway Noise Levels*, indicates the location of the 60-, 65-, and 70-CNEL noise contours associated with vehicular traffic along local roadways as modeled with the FHWA computer model.

Table 5.7-5
Existing Roadway Noise Levels

Roadway Segment	Existing				
	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)		
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour
Clinton Keith Road					
Southwest City Limits to Calle del Oso Oro	9,100	63.9	283	90	28
Calle del Oso Oro to Grand Avenue	11,100	65.9	448	142	45
Grand Avenue to Nutmeg Street	19,000	67.0	591	187	59
Nutmeg Street to Murrieta Oaks Road	27,300	68.6	848	268	85
Murrieta Oaks Road to I-215	27,040	68.6	842	266	84
I-215 to Antelope Road	5,281	58.9	91	29	9
Antelope Road to Meadowlark Road/Whitewood Lane	13,000	62.9	224	71	22
Calle del Oso Oro					
Clinton Keith Road to Calle Cipres	4,200	59.3	98	31	10
Calle Cipres to Washington Avenue	11,400	63.7	267	85	27
Nutmeg Street					
Washington Avenue to Adams Avenue	5,900	60.9	138	44	14

Table 5.7-5 [continued]
Existing Roadway Noise Levels

Roadway Segment	Existing				
	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)		
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour
Adams Street to Jefferson Avenue	5,900	60.8	138	44	14
Jefferson Avenue to Jackson Avenue	9,300	62.8	218	69	22
Jackson Avenue to Clinton Keith Road	10,900	64.7	339	107	34
Lemon Street					
Washington Avenue to Adams Avenue	3,300	58.7	77	24	8
Adams Avenue to Jefferson Avenue	4,200	59.7	98	31	10
Kalmia Street					
Hayes Avenue to Washington Avenue	1,500	55.2	35	11	4
Washington Avenue to Adams Avenue	15,400	66.3	479	151	48
Adams Avenue to Jefferson Avenue	20,600	67.6	640	202	64
Jefferson Avenue to Madison Avenue	25,500	68.3	793	251	79
Madison Avenue to I-15	35,300	69.7	1,098	347	110
California Oaks Road					
I-15 to Monroe Avenue	29,500	68.8	918	290	92
Monroe Avenue to Jackson Avenue	29,200	68.7	908	287	91
Jackson Avenue to Hancock	24,900	67.0	584	185	58
Hancock to Clinton Keith Road	15,100	66.1	470	149	47
Ivy Street					
Hayes Street to Washington Avenue	900	48.7	8	2	1
Washington Avenue to Adams Avenue	8,900	63.9	277	88	28
Adams Avenue to Jefferson Avenue	9,500	64.2	295	93	30
Jefferson Avenue to Madison Avenue	11,300	64.8	351	111	35
Los Alamos Road					
Madison Avenue to Lincoln Avenue	10,400	64.5	324	102	32
Lincoln Avenue to Hancock Avenue	19,000	67.0	591	187	59
Hancock Avenue to I-215	19,200	67.1	597	189	60
I-215 to Whitewood Lane	23,000	66.6	538	170	54
Whitewood Lane to Ruth Ellen Way	3,800	59.3	89	28	9
Murrieta Hot Springs Road					
Jefferson Avenue to Madison Avenue	18,285	67.1	568	180	57
Madison Avenue to I-15	42,600	70.2	1,325	419	132
I-15 to I-215	65,100	71.9	2,022	639	202
I-215 to Alta Murrieta Drive	74,500	72.9	2,315	732	231
Alta Murrieta Drive to Jackson Avenue	48,000	71.0	1,492	472	149
Jackson Avenue to Whitewood Road	43,263	70.5	1,347	426	135
Whitewood Road to Margarita Road	51,200	71.3	1,591	503	159
Margarita Road to Eastern City Limits	40,000	70.2	1,244	393	124

Table 5.7-5 [continued]
Existing Roadway Noise Levels

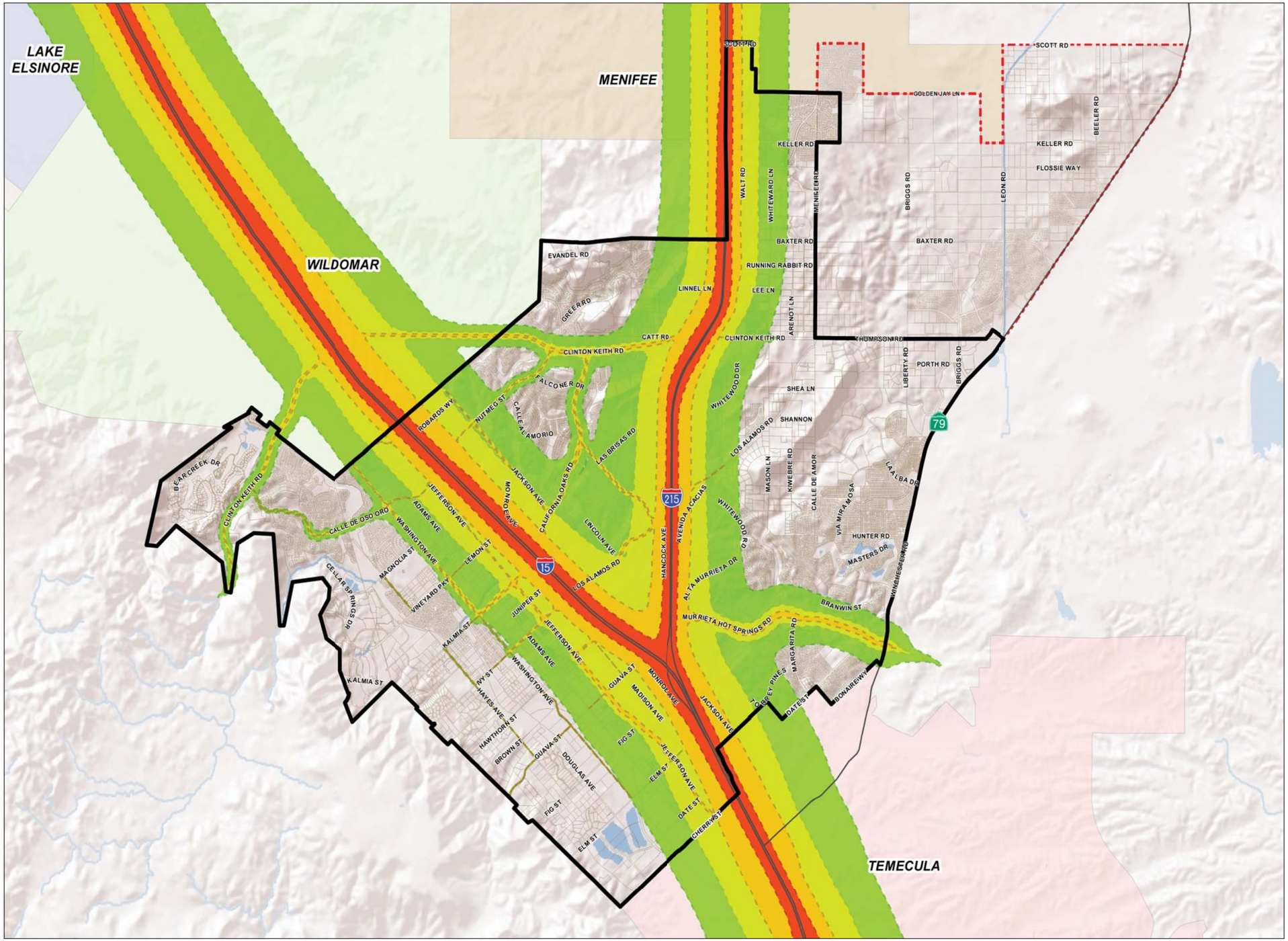
Roadway Segment	Existing				
	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)		
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour
Guava Street					
West of Hayes Avenue	500	49.2	9	3	1
Hayes Avenue to Douglas Avenue	700	50.5	12	4	1
Douglas Avenue to Washington Avenue	1,200	53.0	21	7	2
Adams Avenue to Jefferson Avenue	2,100	55.4	36	11	4
Jefferson Avenue to Madison Avenue	3,100	57.1	53	17	5
Madison Avenue to Monroe Avenue	200	45.2	3	1	0
Elm Street					
Adams Avenue to Madison Avenue	2,500	55.9	43	14	4
Hayes Avenue					
Nighthawk Way to Vineyard Parkway	1,900	54.8	33	10	3
Kalmia Street to Ivy Street	1,900	56.3	45	14	4
Ivy Street to Hawthorne Street	1,300	50.3	11	4	1
Hawthorne Street to Guava Street	700	50.5	12	4	1
Washington Avenue					
North of Calle del Oso Oro	10,000	63.2	234	74	23
Calle del Oso Oro to Nighthawk Way/Magnolia Street	14,300	64.8	335	106	34
Nighthawk Way/Magnolia Street to Vineyard Parkway	12,600	64.2	295	93	30
Vineyard Parkway to Kalmia Street	20,800	66.2	488	154	49
Kalmia Street to Ivy Street	8,300	58.3	71	23	7
Ivy Street to Hawthorne Street	1,400	53.6	24	8	2
South of Hawthorne Street	1,300	53.3	22	7	2
Jefferson Avenue					
North of Nutmeg Street	10,000	64.7	311	98	31
Nutmeg Street to Magnolia Street	9,000	62.8	211	67	21
Magnolia Street to Lemon Street	10,000	64.6	311	98	31
Lemon Street to Kalmia Street	11,200	65.0	348	110	35
Kalmia Street to Ivy Street	17,900	66.8	557	176	56
Ivy Street to Murrieta Hot Springs Road	12,000	65.1	373	118	37
Murrieta Hot Springs Road to Guava Street	27,800	68.7	864	273	86
Guava Street to Fig Street	28,000	69.9	1,131	358	113
Fig Street to Elm Street	29,000	70.1	1,172	371	117
South of Elm Street	20,736	67.4	644	204	64
Madison Avenue					
Kalmia Street to Ivy Street/Los Alamos Road	14,914	67.1	602	190	60
Ivy Street/Los Alamos Road to Murrieta Hot Springs Road	24,100	68.1	749	237	75

Table 5.7-5 [continued]
Existing Roadway Noise Levels

Roadway Segment	Existing				
	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)		
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour
Murrieta Hot Springs Road to Guava Street	3,400	54.5	29	9	3
Jackson Avenue					
North of Nutmeg Street	7,100	61.7	167	53	17
Nutmeg Street to Monroe Avenue	14,900	64.9	349	110	35
Monroe Avenue to California Oaks Road	14,900	64.8	349	110	35
Hancock Avenue					
California Oaks Road to Las Brisas Road	14,700	64.7	345	109	34
Las Brisas Road to Los Alamos Road	19,550	66.0	458	145	46
Los Alamos Road to Murrieta Hot Springs Road	19,500	66.0	457	144	46
I-15					
City Boundary to Nutmeg Street	124,000	79.0	11,989	3,791	1,199
Nutmeg Street to Kalmia Street	124,000	79.0	11,989	3,791	1,199
Kalmia Street Los Alamos Road	127,000	79.1	12,268	3,879	1,227
Los Alamos Road to I-215	127,000	79.1	12,268	3,879	1,227
I-215 to Cherry Street	186,000	80.8	18,005	5,694	1,801
I-215					
Scott Road to Los Alamos Road	89,000	77.3	7,074	2,237	707
Los Alamos Road to Murrieta Hot Springs Road	91,000	78.3	8,803	2,784	880
Murrieta Hot Springs Road to I-15	83,000	77.9	8,024	2,537	802
ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level					
Source: Traffic noise modeling is based on traffic data provided by Iteris, January 2011.					

As shown in *Table 5.7-5*, the existing noise levels adjacent to City roadways range from a low of 45.2 CNEL along Guava Street from Madison Avenue to Monroe Avenue to a high of 72.9 CNEL along Murrieta Hot Springs Road from I-215 to Alta Murrieta Drive.

Under existing conditions, very few areas (seven segments along Murrieta Hot Springs Road) within the City experience traffic noise levels in excess of 70 CNEL. The 70 dBA contour along these roadway links extends to a maximum of 231 feet from the roadway centerline. However, many of the City's commercial areas experience noise levels in excess of 65 CNEL adjacent to major arterial roadways and freeway rights-of-way. Residences located within this area may experience unacceptable noise levels. It should be noted that these are modeled traffic noise levels, and are not based upon actual site measurements.



LEGEND

- 75 CNEL
- 70 CNEL
- 65 CNEL
- 60 CNEL
- Parcels
- Sphere of Influence
- City Boundary

0 0.5 1
Miles

Source: County of Riverside, City of Murrieta and ESRI - World Shaded Relief.

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Existing Roadway Noise Contours

Exhibit 5.7-2

Back of 11 x 17 Exhibit

Freeways typically result in greater noise levels than other roadways due to higher traffic volumes and vehicle speeds. As depicted on *Exhibit 5.7-2*, I-15 and I-215 both traverse the City and represent a primary source of traffic noise. The following describes the traffic volumes and general characteristics of the freeways within the City.

- ***Interstate 15.*** I-15 is a major regional transportation corridor that serves as the backbone of the transportation system connecting the major urban centers of San Diego County and San Bernardino County, while passing through the western portion of Riverside County. Based on traffic data from Iteris, ADT along the segments of I-15 that pass through Murrieta ranges from approximately 124,000 to 186,000 for both northbound and southbound traffic.

- ***Interstate 215.*** I-215 is a major regional transportation corridor that serves as the backbone of the transportation system connecting western Riverside County to the major urban center of San Bernardino County. Based on traffic data from Iteris, ADT along the segments of I-215 that pass through Murrieta ranges from approximately 83,000 to 91,000 for both northbound and southbound traffic.

AIRCRAFT

Noise exposure contours around airports are determined from the number and type of aircraft using the airport, the magnitude and duration of each fly over, flight paths, and the time of day when flights occur. The Airport Noise Standards contained in Title 4 of the *California Administrative Code* specify that airports shall not permit noise exposures of 65 CNEL or greater to extend into residential or school areas. The State Aeronautics Act specifies 65 dB CNEL as the criterion which airports must meet to protect existing residential communities from unacceptable exterior exposures to aircraft noise. The exterior maximum of 65 CNEL is given as the level deemed acceptable to a reasonable person residing in urban residential areas where houses are of typical California construction and may have windows partially open.

There is one source of air traffic affecting noise levels within the City of Murrieta; the French Valley (Rancho California) Airport, located outside the City's sphere of influence. Aircraft flyovers are heard occasionally in the City; however, the aircraft do not contribute a significant amount of noise heard in the City. The Riverside County Airport Land Use Commission has prepared a *Comprehensive Land Use Plan* for the French Valley Airport (CLUP), which experiences an average of 506 daily operations. The CLUP indicates only a few parcel on the City's eastern boundary close to SR-79 are within the 55 CNEL noise level contour; the remainder of the 55 CNEL noise level contour is located outside of Murrieta's City boundary. The CLUP also designates portions of the City as being located within Compatibility Zones B1, C, D, and E, all of which require certain land use restrictions.

RAILWAYS

There are no railroads traversing the City; therefore, railroad noise does not currently present annoyance within the City. It should be noted that opportunities to pursue future light rail transit and high speed rail are planned for the future of the City, which would create a new source of mobile noise.

Stationary Sources

The most common sources of stationary noise within the City consist of construction activities, and commercial and industrial uses. Commercial and industrial land uses located near residential areas currently generate occasional noise impacts. Residential land uses and areas identified as noise-sensitive must be protected from excessive noise from stationary sources including commercial and industrial centers. These impacts are best controlled through effective land use planning and application of the City's *Noise Ordinance*.

CONSTRUCTION

Construction noise is one of the most common stationary noise sources in the City. The use of pile drivers, drills, trucks, pavers, graders, and a variety of other equipment can result in short, sporadic elevated noise levels. Although construction noise impacts are generally short-term in nature, it can often disturb nearby sensitive uses.

COMMERCIAL

Commercial uses within the City are generally located along the I-15 and I-215 corridors, as well as other major roadways such as Jefferson Avenue, Madison Avenue, and Murrieta Hot Springs Road. The primary noise sources associated with these facilities are caused by delivery trucks, air compressors, generators, outdoor loudspeakers, and gas venting. Residential, institutional, and park uses are located adjacent to several commercial areas of the City. Commercial operations may cause annoyance to these nearby sensitive receptors.

INDUSTRIAL

The primary noise sources associated with these facilities are caused by mechanical equipment, loading and unloading of vehicles and trucks, and amplified communication. Industrial noise is generally limited to the immediate source area and only impacts sensitive receptors if there is an incompatible mix of land uses in the vicinity of the industrial facility. Therefore, proper planning, zoning, and enforcement of the *Noise Ordinance* are important factors in limiting the amount of disturbance to sensitive receptors from industrial noise sources.

SENSITIVE RECEPTORS

Sensitive populations are more susceptible to the effects of noise and air pollution than are the general population. Land uses considered sensitive by the State of California include schools, playgrounds, athletic facilities, hospitals, rest homes, rehabilitation centers, long-term care and mental care facilities. Some jurisdictions also consider day care centers, single-family dwellings, mobile home parks, churches, and libraries to be sensitive to noise. Generally, a sensitive receptor is identified as a location where human populations (especially children, senior citizens, and sick persons) are present, and where there is a reasonable expectation of continuous human exposure to noise.

Land uses less sensitive to noise are business, commercial, and professional developments. Noise receptors categorized as being least sensitive to noise include industrial, manufacturing, utilities, agriculture, natural open space, undeveloped land, parking lots, motorcycle parks, rifle ranges, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals. These types of land uses often generate high noise levels. Moderately sensitive land uses typically include: multi-family dwellings, hotels, motels, dormitories, and outpatient clinics. Current land uses located within the City of Murrieta that are sensitive to intrusive noise include residential uses (particularly those in the vicinity of I-15 and I-215), schools, hospitals (particularly The Golden Triangle Medical Center and Sharp Hospital), churches, and parks.

NOISE MEASUREMENT SITES

Noise measurements were taken throughout the City of Murrieta at 10 locations as illustrated in *Exhibit 5.7-3*, *Noise Measurement Locations*. Based upon the City's development patterns, the City was divided into Acoustical Analysis Zones (AAZ) to identify areas of homogenous acoustical conditions. Aerial imagery with a one-foot pixel resolution was utilized for a visual representation of the City's roadway and land use layout. In addition, the City's existing General Plan/Zoning map and proposed General Plan 2035 Focus Areas maps were utilized to determine the City's existing and proposed patterns of development.

The noise measurement locations were selected as a representative sample of the more urbanized portions of the City in order to identify ambient baseline levels. The noise measurements described in *Table 5.7-6*, *Noise Measurements*, were taken to identify ambient noise exposure in the City.

Noise levels at the selected sensitive receptor sites were measured by RBF Consulting on November 4, 2010, using a Brüel & Kjær model 2250 sound level meter (SLM) equipped with Brüel & Kjær pre-polarized freefield microphone, which meets standards of the American National Standards Institute (ANSI) for general environmental noise measurement instrumentation. Each measurement was for 10 minutes, and the sound meter was calibrated prior to noise monitoring.

Table 5.7-6
Noise Measurements

Site No.	Location	Leq (dBA)	Lmin (dBA)	Lmax (dBA)	Peak (dBA)	Date and Time[1]
1	Corner of Elm Street and Madison Avenue	52.7	41.8	68.5	9.,8	10:47 AM – 10:57 AM
2	Intersection of Arjay Drive and Estate Hill Way	41.9	33.1	57.8	79.0	11:21 AM – 11:31 AM
3	Intersection of Jefferson Avenue and Kalmia Street	58.4	49.6	72.3	102.0	11:52 AM – 12:02 PM
4	Cul-de-sac of Pomerado Court off of Douglas Avenue	51.3	41.9	72.1	89.4	12:16 PM – 12:26 PM
5	Cul-de-sac of Summit Park Center off of Vineyard Knoll Drive	49.9	35.7	71.0	89.9	12:45 PM – 12:55 PM
6	Cul-de-sac of Kilkare Circle off of Boldin Drive	47.8	40.4	64.1	87.7	1:30 PM – 1:40 PM
7	Intersection of Catalina Street and Chateau Drive	51.4	45.4	68.3	92.0	1:56 PM – 2:06 PM
8	Cul-de-sac of Kaelan Court off of Roland Road	47.1	38.7	65.7	94.9	3:10 PM – 3:20 PM
9	Cul-de-sac of Copperleaf Court off of Mimosa Drive	50.4	39.0	68.6	88.9	3:40 PM – 3:50 PM
10	Baxter Road off of Antelope Road (adjacent to Loma Linda Medical Center)	41.6	33.1	60.5	96.7	4:30 PM – 4:40 PM

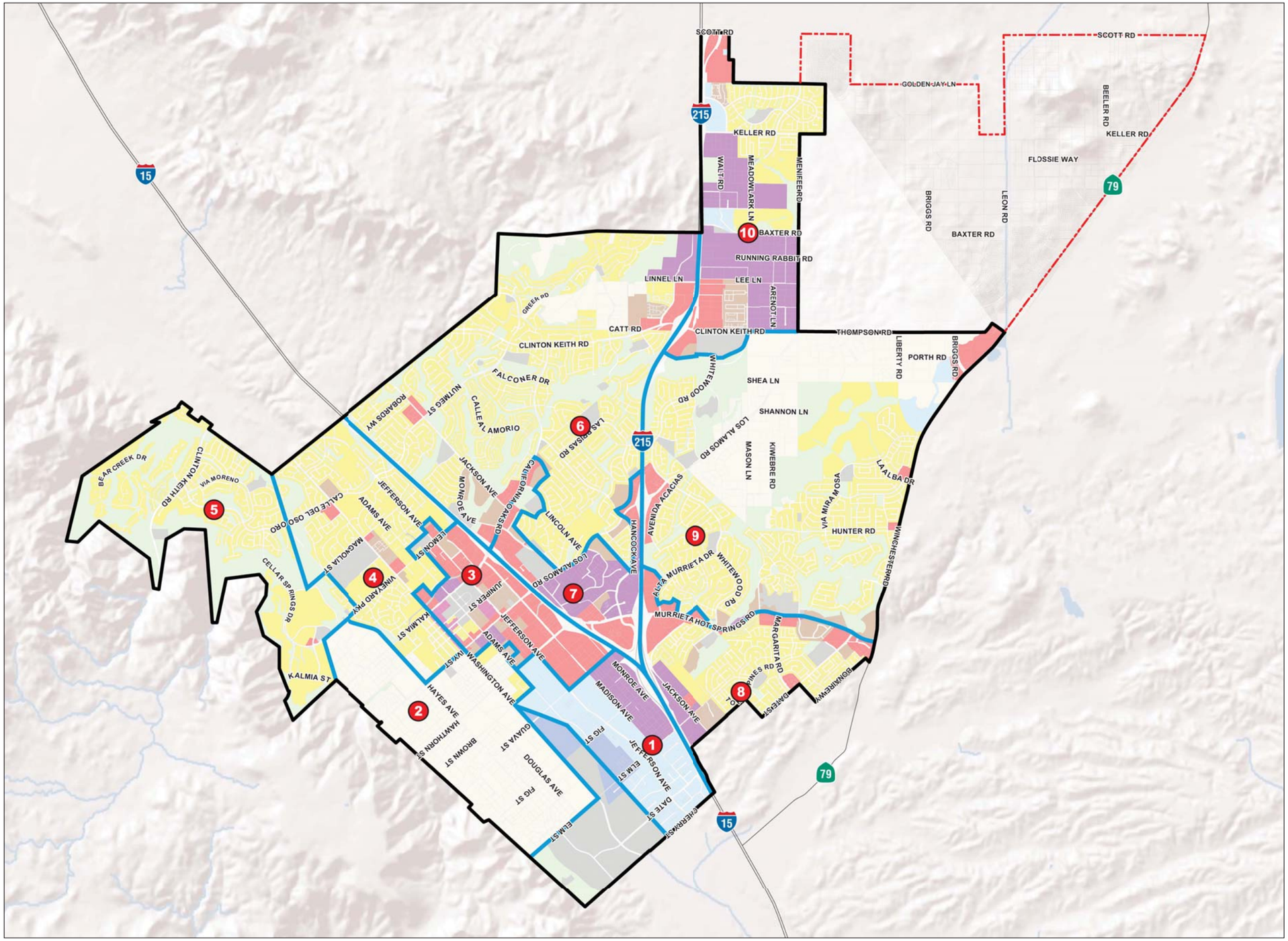
Leq = equivalent sound level; dBA = A-weighted decibel.

1 - Each 10-minute measurement was taken during non-peak traffic hours because free flowing traffic conditions yield higher noise levels, as opposed to rush hour traffic during peak hours when vehicle speeds and heavy truck volumes are low.

Source: RBF Consulting, November 4, 2010.

- ***Measurement Site 1*** was located at the corner of Elm Street and Madison Avenue. Sources of peak noise included vehicular noise from Elm Street, Madison Avenue, I-15, and I-215, an airplane, and truck horn. The noise level monitored at Site 1 was 52.7 dBA.

- ***Measurement Site 2*** was located at the intersection of Arjay Drive and Estate Hill Way. The monitored noise level was 41.9 dBA, with the majority of noise from traffic along Hayes Avenue, two airplanes, and a siren.



LEGEND

- City Limits
- Sphere of Influence
- Acoustical Analysis Zones
- Noise Measurement Location

0 0.5 1
Miles

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Noise Measurement Locations

Exhibit 5.7-3

Back of 11 x 17 Exhibit

- ***Measurement Site 3*** was located at the intersection of Jefferson Avenue and Kalmia Street. The monitored noise level was 58.4 dBA with peak noise from traffic along Jefferson Avenue and Kalmia Street, and vehicles in the City Hall parking lot.

- ***Measurement Site 4*** was located at the cul-de-sac of Pomerado Court off of Douglas Avenue. Sources of peak noise included traffic along Douglas Avenue and an overhead aircraft. The monitored noise level was 51.3 dBA.

- ***Measurement Site 5*** was located at the cul-de-sac of Summit Park Center off of Vineyard Knoll Drive. The monitored noise level was 49.9 dBA. The source of peak noise included traffic along Clinton Keith Road and landscaping activities.

- ***Measurement Site 6*** was located at the cul-de-sac of Kilkare Circle off of Boldin Drive. The monitored noise level was 51.4 dBA. Sources of peak noise were from traffic along Kilkare Circle and three airplanes.

- ***Measurement Site 7*** was located at the intersection of Catalina Street and Chateau Drive. Sources of peak noise included traffic along Catalina Street, I-15, and I-215, and a siren. The monitored noise level was 51.4 dBA.

- ***Measurement Site 8*** was located at the cul-de-sac of Kaelan Court off of Roland Road. Sources of peak noise included a helicopter and an airplane. The monitored noise level was 47.1 dBA.

- ***Measurement Site 9*** was located at the cul-de-sac of Copperleaf Court off of Mimosa Drive. Sources of peak noise included an airplane, trucks, and maintenance activities. The monitored noise level was 50.4 dBA.

- ***Measurement Site 10*** was located along Baxter Road off of Antelope Road, adjacent to the Loma Linda Medical Center. The monitored noise level was 41.6 dBA and peak noise included traffic along I-215 and Antelope Road, and two airplanes.

5.7.3 SIGNIFICANCE THRESHOLD CRITERIA

The issues presented in the Initial Study Environmental Checklist (Appendix G of the *CEQA Guidelines*) have been utilized as thresholds of significance in this Section. Accordingly, noise impacts resulting from the implementation of the proposed General Plan 2035 may be considered significant if they would result in the following:

- Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

- Expose persons to or generate excessive ground-borne vibration or ground-borne noise levels.
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.
- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

CUMULATIVE NOISE EXPOSURE

A project is considered to have a significant noise impact where it causes an adopted noise standard to be exceeded for the project site or for adjacent sensitive receptors. In addition to being concerned about the absolute noise level that might occur when a new source is introduced into an area, it is also important to consider the existing noise environment. In community noise assessments, it is "generally not significant" if no noise-sensitive sites are located within the project vicinity, or if permanent increases in community noise levels associated with implementation of the project would not exceed +3 dB at noise-sensitive locations in the project vicinity.[1] A limitation in using a single value to evaluate an impact related to a noise level increase would be the failure to account for the preexisting ambient noise environment to which a person has become accustomed. Studies assessing the percentage of people highly annoyed by changes in ambient noise levels indicate that when ambient noise levels are low, a greater change is needed to cause a response. As ambient noise levels increase, a lesser change in noise levels is required to elicit significant annoyance. The significance criteria listed in *Table 5.7-7, Significance of Changes in Cumulative Noise Exposure* are based on published guidance from the Federal Interagency Committee on Noise (FICON), the California Department of Transportation (Caltrans), and OPR, and considered to correlate well with human response to permanent changes in ambient noise levels.

[1] California Department of Transportation, *Technical Noise Supplement*, November 2009.

Table 5.7-7
Significance of Changes in Cumulative Noise Exposure

Ambient Noise Level Project (Ldn or CNEL)	Significant Impact Assumed to Occur if the Ambient Noise Level is Increased by:
< 60 dBA	5.0 dBA or more
> 60 dBA	3.0 dBA or more

Source:
California Department of Transportation, *Technical Noise Supplement*, November 2009.
Federal Interagency Committee on Noise, *Federal Agency Review of Selected Airport Noise Analysis Issues*, August 1992.

VIBRATION AND GROUNDBORNE NOISE IMPACTS

Vibration is the periodic oscillation of a medium or object with respect to a given reference point. Sources of vibration include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) and those introduced by human activity (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, (e.g., machinery) or transient in nature (e.g., explosions). Vibration levels can be depicted in terms of amplitude and frequency relative to displacement, velocity, or acceleration. Vibration amplitudes are commonly expressed in peak particle velocity (PPV) or root-mean-square (RMS) vibration velocity. PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is typically used in the monitoring of transient and impact vibration and has been found to correlate well to the stresses experienced by buildings. PPV and RMS vibration velocity are normally described in inches per second (in/sec). Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. The response of the human body to vibration relates well to average vibration amplitude; therefore, vibration impacts on humans are evaluated in terms of RMS vibration velocity. Similar to airborne sound, vibration velocity can be expressed in decibel notation as vibration decibels (VdB). The logarithmic nature of the decibel serves to compress the broad range of numbers required to describe vibration.

CEQA states that the potential for any excessive groundborne noise and vibration levels must be analyzed; however, it does not define the term "excessive" vibration. Numerous public and private organizations and governing bodies have provided guidelines to assist in the analysis of groundborne noise and vibration The City's *Development Code* Section 16.30.130(K) prohibits the operation of any device that creates vibration above the City's established perception threshold of 0.01 in/sec over the range of one to 100 Hertz.

Based on these significance thresholds and criteria, the proposed General Plan 2035's effects have been categorized as either "no impact," a "less than significant impact," or a "potentially significant impact." Mitigation measures are recommended for potentially significant impacts. If a potentially significant impact cannot be reduced to a less than significant level through the application of mitigation, it is categorized as a significant unavoidable impact.

5.7.4 PROJECT IMPACTS AND MITIGATION MEASURES

SHORT-TERM CONSTRUCTION NOISE

■ CONSTRUCTION-RELATED ACTIVITIES ASSOCIATED WITH IMPLEMENTATION OF THE PROPOSED GENERAL PLAN 2035 COULD GENERATE NOISE LEVELS IN EXCESS OF ESTABLISHED STANDARDS.

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: Typical activities associated with construction are a highly noticeable temporary noise source. Noise from construction activities is generated by two primary sources: 1) the transport of workers and equipment to construction sites, and 2) the noise related to active construction equipment. These noise sources can be a nuisance to local residents and businesses or unbearable to sensitive receptors (i.e., residences, hospitals, senior centers, schools, day care facilities, etc.).

While implementation of the proposed General Plan 2035 would not directly result in new development within in the City, it would allow additional development, which would generate noise during construction activities. Although a large portion of the City is developed, approximately 36 percent of the City is currently vacant. Most construction would occur within the five Focus Areas targeted for land use in the proposed General Plan 2035. It is unlikely the City would experience intensive construction activity with implementation of the proposed General Plan 2035. Although the City has construction noise level standards, construction noise levels have not been modeled at this program level of analysis, as the extent and timing of future construction activities within the City are unknown at this time.

Proposed General Plan 2035 Goal N-4 would reduce noise levels from construction activities. Specifically, Policies N-4.1 through N-4.6 would ensure construction activity complies with the City's Noise Ordinance, limit the hours of construction in residential areas on Sundays and holidays, employ construction noise reduction methods when feasible (i.e., shutting off idling equipment, temporary acoustic barriers, staging equipment away from sensitive receptors), require municipal vehicles and equipment to comply with noise standards, and ensure acceptable noise levels in noise-sensitive areas. The City would require each future project to implement the proposed General Plan 2035 policies to reduce construction noise levels. Through the environmental review process for individual projects, additional mitigation may also be required to further reduce construction-related noise impacts to a less than significant level.

Compliance with and/or adherence to the City's *Noise Ordinance* and the proposed General Plan 2035 goals and policies would reduce short-term construction noise impacts to less than significant levels.

Goals and Policies in the Proposed General Plan 2035:

NOISE ELEMENT

Goal N-4 Reduced noise levels from construction activities.

Policies

N-4.1 Regulate construction activities to ensure construction noise complies with the City's Noise Ordinance.

N-4.2 Limit the hours of construction activity in residential areas to reduce intrusive noise in early morning and evening hours and on Sundays and holidays.

N-4.3 Employ construction noise reduction methods to the maximum extent feasible. These measures may include, but not limited to, shutting off idling equipment, installing temporary acoustic barriers around stationary construction noise sources, maximizing the distance between construction equipment staging areas and occupied sensitive receptor areas, and use of electric air compressors and similar power tools, rather than diesel equipment.

N-4.4 Encourage municipal vehicles and noise-generating mechanical equipment purchased or used by the City to comply with noise standards specified in the City's Municipal Code, or other applicable codes.

N-4.5 Allow exceedance of noise standards on a case-by-case basis for special circumstances including emergency situations, special events, and expedited development projects.

N-4.6 Ensure acceptable noise levels are maintained near schools, hospitals, convalescent homes, churches, and other noise-sensitive areas.

Mitigation Measures: No mitigation measures beyond the goals and policies identified in the proposed General Plan 2035 and adherence to the City's Noise Ordinance are required.

Level of Significance After Mitigation: Not Applicable.

- **CONSTRUCTION-RELATED ACTIVITIES ASSOCIATED WITH IMPLEMENTATION OF THE PROPOSED GENERAL PLAN 2035 COULD GENERATE OR EXPOSE PERSONS OR STRUCTURES TO EXCESSIVE GROUNDBORNE VIBRATION.**

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: Project construction can generate varying degrees of groundborne vibration, depending on the construction procedure and the construction equipment used. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of a construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. Groundborne vibrations from construction activities rarely reach levels that damage structures.

The types of construction vibration impact include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 25 feet. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. Construction activities that may occur as a result of implementing the proposed General Plan 2035 have the potential to generate low levels of groundborne vibration. *Table 5.7-8*, *Typical Vibration Levels For Construction Equipment*, identifies various vibration velocity levels for types of construction equipment that would operate within the City during construction.

Table 5.7-8
Typical Vibration Levels For Construction Equipment

Equipment	Approximate ground velocity in decibels at 25 feet (inches/second)	Approximate ground velocity in decibels at 50 feet (inches/second)
Pile Driver (impact)	104	98
Large Bulldozer	87	81
Loaded Trucks	86	80
Jackhammer	79	73
Small Bulldozer	58	52
Notes: Root mean square amplitude ground velocity in decibels (VdB) referenced to 1 micro-inch/second.		
Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006.		

Similar to noise, groundborne vibration would attenuate at a rate of approximately 6 VdB per doubling of distance. The groundborne vibration generated during construction activities would primarily impact existing sensitive uses that are located adjacent to or within the vicinity of specific projects. Based upon the information provided in *Table 5.7-8*, vibration levels could reach up to 87 VdB for typical construction activities (and up to 104 VdB if pile driving activities were to occur) at sensitive uses located within 25 feet of construction. For sensitive uses that are located at or within 25 feet of potential project construction sites, sensitive receptors

at these locations may experience vibration levels during construction activities that exceed the FTA's vibration impact threshold of 85 VdB for human annoyance. The City's *Development Code* Section 16.30.130(K) prohibits the operation of any device that creates vibration above the City's established perception threshold of 0.01 inches/second over the range of one to 100 Hertz. Proposed General Plan 2035 Policies N-4.2 and N-4.3 also assist in the reduction of vibration impacts by limiting the hours of construction activity in residential areas and employing noise reduction methods that would also reduce vibration impacts to surrounding uses during construction.

With adherence to the City's *Noise Ordinance*, proposed General Plan 2035 goals and policies, and Mitigation Measure NOI-1, programmatic-level construction vibration impacts would be less than significant. Individual development projects would be reviewed for project-specific impacts during any required environmental review. If project-specific significant impacts are identified, applicable mitigation measures would be placed on the project as conditions of approval.

Goals and Policies in the Proposed General Plan 2035:

NOISE ELEMENT

Goal N-4 Reduced noise levels from construction activities.

Policies

N-4.2 Limit the hours of construction activity in residential areas to reduce intrusive noise in early morning and evening hours and on Sundays and holidays.

N-4.3 Employ construction noise reduction methods to the maximum extent feasible. These measures may include, but not limited to, shutting off idling equipment, installing temporary acoustic barriers around stationary construction noise sources, maximizing the distance between construction equipment staging areas and occupied sensitive receptor areas, and use of electric air compressors and similar power tools, rather than diesel equipment.

Mitigation Measures:

NOI-1 The City shall require future developments to implement the following measures to reduce the potential for human annoyance and architectural/structural damage resulting from elevated groundborne noise and vibration levels.

- Pile driving within a 50-foot radius of historic structures shall utilize alternative installation methods where possible (e.g., pile cushioning, jetting, predrilling, cast-in-place systems, resonance-free vibratory pile drivers).

- The preexisting condition of all designated historic buildings within a 50-foot radius of proposed construction activities shall be evaluated during a preconstruction survey. The preconstruction survey shall determine conditions that exist before construction begins for use in evaluating damage caused by construction activities. Fixtures and finishes within a 50-foot radius of construction activities susceptible to damage shall be documented (photographically and in writing) prior to construction. All damage shall be repaired back to its preexisting condition.

- Vibration monitoring shall be conducted prior to and during pile driving operations occurring within 100 feet of the historic structures. Every attempt shall be made to limit construction-generated vibration levels in accordance with Caltrans recommendations during pile driving and impact activities in the vicinity of the historic structures.

Level of Significance After Mitigation: Less Than Significant Impact.

LONG-TERM OPERATIONAL IMPACTS

■ FUTURE NOISE LEVELS ASSOCIATED WITH IMPLEMENTATION OF THE PROPOSED GENERAL PLAN 2035 COULD CONTRIBUTE TO AN EXCEEDANCE OF THE CITY'S NOISE STANDARDS RESULTING IN POTENTIAL NOISE IMPACTS TO SENSITIVE RECEPTORS.

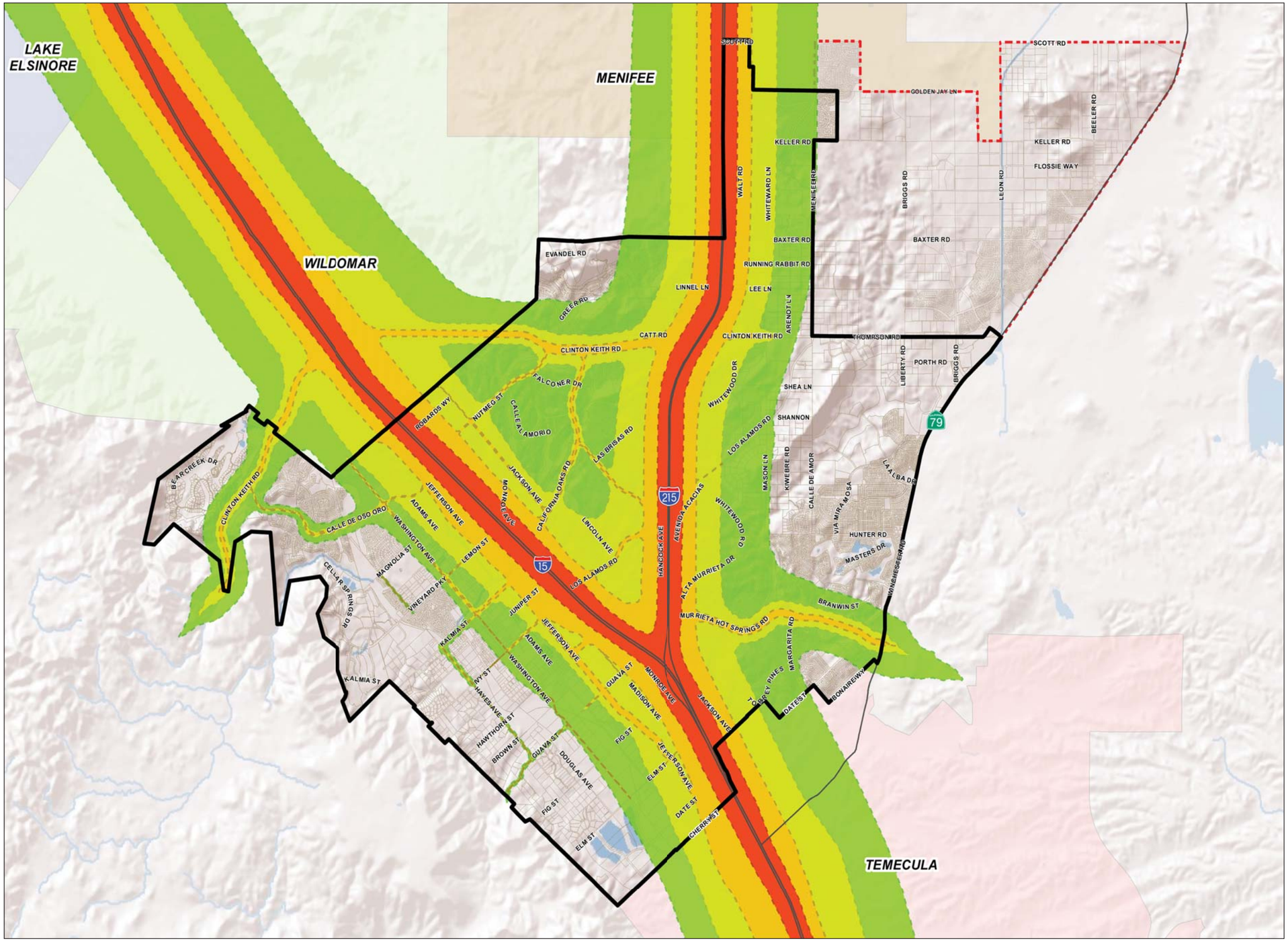
Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis:

MOBILE SOURCES

Traffic Noise

Implementation of the proposed General Plan 2035 would facilitate new development and within the City. Such development, primarily within the five Focus Areas targeted for land use change in the proposed General Plan 2035, would generate additional traffic, which would potentially increase ambient noise levels at existing land uses along roadways. *Exhibit 5.7-4*, *General Plan 2035 Roadway Noise Contours* and *Table 5.7-9*, *General Plan 2035 Roadway Noise Levels*, indicates forecast traffic noise levels associated with buildout under the Recommended General Plan Scenario. The following is a summary of the calculated traffic noise levels:



LEGEND

- 75 CNEL
- 70 CNEL
- 65 CNEL
- 60 CNEL
- Parcels
- Sphere of Influence
- City Boundary

0 0.5 1
Miles

Source: County of Riverside, City of Murrieta and ESRI - World Shaded Relief.

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General Plan 2035 Roadway Noise Contours

Exhibit 5.7-4

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- 24 modeled roadway segments (along Clinton Keith Road, Kalmia Street, California Oaks Road, Los Alamos Road, Murrieta Hot Springs Road, and Jefferson Avenue) (excluding freeway segments) would generate noise levels greater than 70 dBA CNEL at 100 feet from centerline.
- 25 segments (along Clinton Keith Road, Calle del Oso Oro, Nutmeg Street, Kalmia Street, California Oaks Road, Ivy Street, Los Alamos Road, Elm Street, Washington Avenue, Jefferson Avenue, Madison Avenue, Jackson Avenue, and Hancock Avenue) would generate noise levels between 65 dBA CNEL and 70 dBA CNEL at 100 feet from the centerline.
- 16 modeled roadway segments (along Calle del Oso Oro, Nutmeg Street, Lemon Street, Kalmia Street, Ivy Street, Elm Street, Hayes Avenue, and Washington Avenue) would generate noise levels between 60 dBA CNEL and 65 dBA CNEL at 100 feet from the centerline.
- 13 modeled roadway segments (along Ivy Street, Los Alamos Road, Guava Street, Hayes Avenue, and Washington Avenue) would generate noise levels below 60 dBA CNEL at 100 feet from the centerline.

The traffic noise levels presented represent an application of conservative traffic noise modeling methodologies, which assume no natural or artificial shielding from existing or proposed structures or topography. Actual traffic noise exposure levels at noise-sensitive receptors in the project vicinity would vary depending on a combination of factors such as variations in daily traffic volumes, shielding provided by existing and proposed structures, and meteorological conditions.

Table 5.7-9
General Plan 2035 Roadway Noise Levels

Roadway Segment	Year 2035				
	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)		
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour
Clinton Keith Road					
Southwest City Limits to Calle del Oso Oro	33,600	69.5	1,045	330	104
Calle del Oso Oro to Grand Avenue	25,600	69.5	1,034	327	103
Western City Limits to Nutmeg Street	56,000	71.7	1,740	550	174
Nutmeg Street to Murrieta Oaks Road	82,900	73.4	2,580	816	258
Murrieta Oaks Road to I-215	79,000	73.3	2,455	776	246
I-215 to Antelope Road	70,200	70.2	1,211	383	121
Antelope Road to Meadowlark Lane/Whitewood Road	60,700	69.5	1,046	331	105
Calle del Oso Oro					
Clinton Keith Road to Calle Cipres	10,200	63.2	239	76	24
Calle Cipres to Washington Avenue	19,800	66.1	464	147	46

Table 5.7-9 [continued]
General Plan 2035 Roadway Noise Levels

Roadway Segment	Year 2035				
	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)		
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour
Nutmeg Street					
Washington Avenue to Adams Avenue	12,800	64.3	300	95	30
Adams Street to Jefferson Avenue	13,200	64.3	309	98	31
Jefferson Avenue to Jackson Avenue	14,200	64.6	333	105	33
Jackson Avenue to Clinton Keith Road	15,200	66.1	473	149	47
Lemon Street					
Washington Avenue to Adams Avenue	6,300	61.5	148	47	15
Adams Avenue to Jefferson Avenue	12,100	64.3	284	90	28
Kalmia Street					
Hayes Avenue to Washington Avenue	8,200	62.6	192	61	19
Washington Avenue to Adams Avenue	18,800	67.2	585	185	59
Adams Avenue to Jefferson Avenue	28,400	69.0	883	279	88
Jefferson Avenue to Madison Avenue	49,300	71.2	1,532	485	153
Madison Avenue to I-15	54,500	71.6	1,696	536	170
California Oaks Road					
I-15 to Monroe Avenue	54,500	71.5	1,693	535	169
Monroe Avenue to Jackson Avenue	52,400	71.2	1,629	515	163
Jackson Avenue to Hancock Avenue	31,700	68.0	743	235	74
Hancock Avenue to Clinton Keith Road	25,800	68.4	801	253	80
Ivy Street					
Hayes Street to Washington Avenue	700	47.6	6	2	1
Washington Avenue to Adams Avenue	8,900	63.9	277	88	28
Adams Avenue to Jefferson Avenue	14,100	65.9	438	139	44
Jefferson Avenue to Madison Avenue	22,600	67.8	703	222	70
Los Alamos Road					
Madison Avenue to Lincoln Avenue	24,700	68.2	767	243	77
Lincoln Avenue to Hancock Avenue	35,100	69.7	1,092	345	109
Hancock Avenue to I-215	53,600	71.5	1,668	528	167
I-215 to Whitewood Road	31,000	67.9	726	230	73
Whitewood Road to Ruth Ellen Way	3,800	59.3	89	28	9
Murrieta Hot Springs Road					
Jefferson Avenue to Madison Avenue	46,400	71.1	1,441	456	144
Madison Avenue to I-15	77,500	72.8	2,411	762	241
I-15 to I-215	91,000	73.4	2,830	895	283
I-215 to Alta Murrieta Drive	93,000	73.9	2,894	915	289
Alta Murrieta Drive to Jackson Avenue	63,200	72.2	1,966	622	197
Jackson Avenue to Whitewood Road	57,600	71.8	1,792	567	179
Whitewood Road to Margarita Road	66,400	72.4	2,064	653	206
Margarita Road to Eastern City Limits	52,500	71.4	1,633	516	163

Table 5.7-9 [continued]
General Plan 2035 Roadway Noise Levels

Roadway Segment	Year 2035				
	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)		
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour
Guava Street					
West of Hayes Avenue	5,900	59.9	102	32	10
Hayes Avenue to Douglas Avenue	6,300	60.1	109	34	11
Douglas Avenue to Washington Avenue	5,200	59.3	90	28	9
Adams Avenue to Jefferson Avenue	11,400	62.7	197	62	20
Jefferson Avenue to Madison Avenue	1,100	52.6	19	6	2
Madison Avenue to Monroe Avenue	3,300	57.3	57	18	6
Elm Street					
Adams Avenue to Madison Avenue	2,800	56.4	48	15	5
Hayes Avenue					
Nighthawk Way to Vineyard Parkway	3,600	57.6	62	20	6
Kalmia Street to Ivy Street	6,500	61.6	152	48	15
Ivy Street to Hawthorne Street	4,900	56.0	42	13	4
Hawthorne Street to Guava Street	4,500	58.6	78	25	8
Washington Avenue					
North of Calle del Oso Oro	10,000	63.2	234	74	23
Calle del Oso Oro to Nighthawk Way/Magnolia Street	14,900	65.0	349	110	35
Nighthawk Way/Magnolia Street to Vineyard Parkway	12,600	64.2	295	93	30
Vineyard Parkway to Kalmia Street	20,800	66.2	488	154	49
Kalmia Street to Ivy Street	8,300	58.3	71	23	7
Ivy Street to Hawthorne Street	1,400	53.6	24	8	2
South of Hawthorne Street	3,300	57.4	57	18	6
Jefferson Avenue					
North of Nutmeg Street	24,500	68.5	762	241	76
Nutmeg Street to Magnolia Street	39,700	69.2	931	294	93
Magnolia Street to Lemon Street	40,100	70.6	1,247	394	125
Lemon Street to Kalmia Street	46,900	71.2	1,458	461	146
Kalmia Street to Ivy Street	61,500	72.2	1,912	605	191
Ivy Street to Murrieta Hot Springs Road	53,600	71.6	1,668	527	167
Murrieta Hot Springs Road to Guava Street	53,100	71.6	1,650	522	165
Guava Street to Fig Street	45,100	72.0	1,822	576	182
Fig Street to Elm Street	44,600	71.9	1,798	569	180
South of Elm Street	30,300	69.1	942	298	94
Madison Avenue					
Kalmia Street to Ivy Street/Los Alamos Road	16,900	67.7	682	216	68
Ivy Street/Los Alamos Road to Murrieta Hot Springs Road	24,100	68.1	749	237	75
Murrieta Hot Springs Road to Guava Street	18,000	61.7	155	49	15

Table 5.7-9 [continued]
General Plan 2035 Roadway Noise Levels

Roadway Segment	Year 2035				
	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)		
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour
Jackson Avenue					
North of Nutmeg Street	9,600	63.0	225	71	23
Nutmeg Street to Monroe Avenue	18,000	65.7	422	133	42
Monroe Avenue to California Oaks Road	17,600	65.5	412	130	41
Hancock Avenue					
California Oaks Road to Las Brisas Road	15,300	64.9	358	113	36
Las Brisas Road to Los Alamos Road	24,600	67.0	576	182	58
Los Alamos Road to Murrieta Hot Springs Road	27,000	67.4	633	200	63
I-15					
City Boundary to Nutmeg Street	199,900	81.0	19,309	6,106	1,931
Nutmeg Street to Kalmia Street	199,900	81.0	19,309	6,106	1,931
Kalmia Street Los Alamos Road	197,000	91.0	19,045	6,022	1,904
Los Alamos Road to I-215	142,600	79.6	13,797	4,363	1,380
I-215 to Cherry Street	248,800	82.1	24,066	7,610	2,407
I-215					
Scott Road to Los Alamos Road	195,300	80.7	15,512	4,905	1,551
Los Alamos Road to Murrieta Hot Springs Road	170,600	81.1	16,506	5,220	1,651
Murrieta Hot Springs Road to I-15	149,900	80.5	14,501	4,586	1,450
ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level					
Source: Traffic noise modeling is based on traffic data provided by Iteris, January 2011.					

With implementation of the proposed General Plan 2035, some residential uses would experience noise levels that would exceed the allowable Land Use Criteria Compatibility Criteria (refer to *Table 5.7-2*). However, proposed General Plan 2035 Goal N-3 would minimize noise from mobile sources. Specifically, Policies N-3.1, N-3.2, and LU-25.3 consider noise mitigation measures in the design of and improvements to streets, highways, and freeways as well as working with Caltrans to achieve maximum noise abatement for highway and freeway projects. Policy N-3.3 also encourages the construction of noise barriers and maintenance of existing noise barriers along I-15 and I-215. Therefore, compliance with the proposed General Plan 2035 goals and policies would reduce traffic exposure at sensitive land uses. Implementation of the goals and polices would be realized through the review of individual development projects by the City for project-specific impacts during any required environmental review. If project-specific significant impacts are identified, specific mitigation measures would be placed on the project as conditions of approval to ensure compliance with the appropriate Land Use Criteria Compatibility Criteria.

Railways

Currently, there are no railroads traversing the City. However, opportunities to pursue future light rail transit and high speed rail are planned for the future of the City, which would create a new source of mobile noise. At this time, the location of any stations or rail alignments is not known. Implementation of Policy N-3.6 would require the City to coordinate with appropriate agencies in the siting, design, and construction of rail stations and track alignments to ensure that noise attenuation measures are addressed. Additionally, Policy LU-25.2 would require the City to establish a proactive role in the implementation of Proposition 1A in regards to the High Speed Rail.

Airport Noise

There is one primary source of air traffic affecting noise levels within the City of Murrieta; the French Valley (Rancho California) Airport, located outside the City's sphere of influence. Aircraft flyovers are heard occasionally in the City; however, the aircraft do not contribute a significant amount of noise heard in the City. The Riverside County Airport Land Use Commission has prepared a *Comprehensive Land Use Plan* for the French Valley Airport (*CLUP*), which experiences an average of 506 daily operations.

The CLUP indicates only a few parcel on the City's eastern boundary close to SR-79 are within the 55 CNEL noise level contour; the remainder of the 55 CNEL noise level contour is located outside of City boundaries. The *CLUP* also designates portions of the City as being located within Compatibility Zones B1, C, D, and E, all of which require certain land use restrictions. As cited in the French Valley Airport Land Use Compatibility Plan Initial Study and Mitigated Negative Declaration, the City of Murrieta already committed to mitigate development-related impacts to noise through compliance with applicable General Plan Noise Element policies. The City would continue to compliance with applicable policies from the update Noise Element. In addition, implementation of Policies LU-25.8 and 25.9 would require the City to work with the Riverside County Airport Land Use Commission in the development of the French Valley Airport Land Use Plan and other planning and environmental studies. In addition, compliance with Mitigation Measure NOI-2 would ensure aircraft noise impacts to residential uses within the 55 CNEL noise contour are mitigated to a less than significant level.

STATIONARY SOURCES

Commercial and industrial land uses are located near sensitive receptor areas. These uses currently generate occasional stationary noise impacts. Primary noise sources associated with these facilities are due to customer trips, delivery trucks, heavy machinery, air compressors, generators, outdoor loudspeakers, and gas vents. Other significant stationary noise sources within the City include construction activities, street sweepers, and gas-powered leaf blowers.

Residential Uses

In 2035, residential uses would comprise the largest land use category in the City, with 10,255 acres or 56.5 percent of the total land in the City. Rural and single-family parcels cover the largest total area of land. A total of 93.7 percent of the residential land are rural and single-family, while 6.3 percent of the land contains multi-family uses. Future development of residential lots would create stationary noise typical of any new residential development. Noise that is typical of single-family residential areas includes children playing, pets, amplified music, pool and spa equipment operation, mechanical equipment, woodworking, car repair, and home repair. Noise from residential stationary sources would primarily occur during the "daytime" activity hours.

Commercial/Office/Industrial

Noise generally produced in commercial, office, and industrial districts includes that typically associated with slow moving truck deliveries, parking areas, landscape maintenance, and similar activities. However, noise strategies and actions require the reduction of noise transmission between commercial/office/industrial and residential uses. Implementation of Policies N-2.2 through N-2.5 would ensure the reduction of noise transmission between these uses through proper site planning and design. Policy N-2.7 would require new mixed-use developments to be designed to limit noise from loading areas, refuse collection, and other activities associated with commercial activity. Policy N-2.8 encourages commercial uses in mixed-use developments that are not noise intensive.

Mechanical Equipment

Typical mechanical equipment associated with stationary sources includes heating, ventilation, and air conditioning units (HVAC). Actual activity levels would vary from season to season and day to day, and noise level reference data for the HVAC units are only available for high activity levels more characteristic of conditions during daytime hours on a warm summer day. Typical HVAC units would operate in unoccupied mode throughout the entire nighttime period, using a temperature threshold for cooling that is unlikely to be triggered during those hours. HVAC related noise levels would be substantially lower during the nighttime hours than during the loudest daytime hour. As discussed above, temporal variations in noise emissions from the HVAC units are expected to be complex and cannot be accurately distilled into a single diurnal pattern. It is reasonable to expect that, for at least a single daytime hour during warmer times of the year, all or nearly all of the HVAC units could be operating simultaneously and nearly continuously. Implementation of Policy N-2.6 would incorporate noise reduction features for items such as HVAC units during site planning to mitigate anticipated noise impacts on affected noise sensitive land uses.

Slow-Moving Trucks (Deliveries)

In commercial and industrial areas, noise sources at loading areas may include maneuvering and idling trucks, truck refrigeration units, fork lifts, banging and clanging of equipment (i.e., hand carts and roll-up doors), noise from public address systems, and voices of truck drivers and employees. Noise sources at loading areas may include maneuvering and idling trucks, truck refrigeration units, fork lifts, banging and clanging of equipment (i.e., hand carts and roll-up doors), noise from public address systems, and voices of truck drivers and employees. Policy N-2.6 addresses noise reduction features for loading activities in commercial areas, which reduces noise impacts on sensitive land uses. Policy N-3.4 would help reduce truck traffic noise by enforcing the use of truck routes to limit unnecessary truck traffic in residential and commercial areas.

Parking Areas

Traffic associated with parking lots is not of sufficient volume to exceed community noise standards that are based on a time averaged scale such as the CNEL scale. However, the instantaneous maximum sound levels generated by a car door slamming, an engine starting-up, and car passing by may be an annoyance to adjacent sensitive receptors. Conversations in parking areas may also be an annoyance to adjacent sensitive receptors. Policy N-2.6 addresses noise reduction features for parking areas to reduce noise impacts on sensitive land uses.

Landscape Maintenance

Implementation of the proposed General Plan 2035 would introduce new landscaping requiring periodic maintenance. Noise generated by maintenance equipment such as gasoline-powered lawnmowers, leaf-blowers, or hedge edgers could be a nuisance to nearby sensitive receptors. Maintenance activities would be conducted during daytime hours for brief periods of time and would increase ambient noise levels.

In conclusion, all mobile and stationary source impacts would be reduced to less than significant levels by complying with the goals and policies in the proposed General Plan 2035 and the City's *Noise Ordinance*.

Goals and Policies in the Proposed General Plan 2035:

NOISE ELEMENT

Goal N-1 Noise sensitive land uses are properly and effectively protected from excessive noise generators.

Policies

N-1.1 Comply with the Land Use Compatibility for Community Noise Environments.

N-1.2 Protect schools, hospitals, libraries, churches, convalescent homes, and other noise sensitive uses from excessive noise levels by incorporating site planning and project design techniques to minimize noise impacts. The use of noise barriers shall be considered after all practical design-related noise measures have been integrated into the project. In cases where sound walls are necessary, they should help create an attractive setting with features such as setbacks, changes in alignment, detail and texture, murals, pedestrian access (if appropriate), and landscaping.

N-1.3 Discourage new residential development where the ambient noise level exceeds the noise level standards set forth in the Noise and Land Use Compatibility Guidelines and the City Noise Ordinance.

N-1.4 Coordinate with the County of Riverside and adjacent jurisdictions to minimize noise conflicts between land uses along the City's boundaries.

Goal N-2 A comprehensive and effective land use planning and development review process that ensures noise impacts are adequately addressed.

Policies

N-2.1 Review and update the Noise Ordinance to ensure that noise exposure information and specific policies and regulations are current.

N-2.2 Fully integrate noise considerations into land use planning decisions to prevent new noise/land use conflicts.

N-2.3 Consider the compatibility of proposed land uses with the noise environment when preparing, revising, or reviewing development proposals.

N-2.4 Encourage proper site planning and architecture to reduce noise impacts.

N-2.5 Permit only those new development or redevelopment projects that have incorporated mitigation measures, so that standards contained in the Noise Element and Noise Ordinance are met.

N-2.6 Incorporate noise reduction features for items such as, but not limited to, parking and loading areas, ingress/egress point, HVAC units, and refuse collection areas, during site planning to mitigate anticipated noise impacts on affected noise sensitive land uses.

N-2.7 Require that new mixed-use developments be designed to limit potential noise from loading areas, refuse collection, and other activities typically associated with commercial activity through strategic placement of these sources to minimize noise levels on-site.

N-2.8 Encourage commercial uses in mixed-use developments that are not noise intensive.

N-2.9 Orient mixed-use residential units, where possible, away from major noise sources.

N-2.10 Locate balconies and operable windows of residential units in mixed-use projects away from the primary street and other major noise sources, where possible, or provide appropriate mitigation.

Goal N-3 Noise from mobile noise sources is minimized.

Policies

N-3.1 Consider noise mitigation measures in the design of all future streets and highways and when improvements occur along existing freeway and highway segments.

N-3.2 Work with CalTrans to achieve maximum noise abatement in the design of new highway projects or with improvements to interchanges along the I-15 and I-215 Freeways, and with widening of SR 79.

N-3.3 Encourage the construction of noise barriers and maintenance of existing noise barriers for sensitive receptors located along the I-15 and I-215 Freeways.

N-3.4 Enforce the use of truck routes to limit unnecessary truck traffic in residential and commercial areas. Consider requiring traffic plans for construction projects and new commercial and industrial uses.

N-3.5 Consider the use of rubberized asphalt for new roadways or roadway rehabilitation projects.

N-3.6 Coordinate with appropriate agencies in the siting, design, and construction of rail stations and track alignments to ensure that noise attenuation measures are addressed.

Goal LU-25 Collaboration with Federal, State, County, and other regional agencies and authorities to ensure compliance with existing and future legislation that affects the City of Murrieta.

Policies

LU-25.2 Establish a strong role in the implementation of Proposition 1A with the California High Speed Rail Authority (CHSRA).

LU-25.3 Continue coordination with the California Department of Transportation (Caltrans) related to the local impacts of change and development of the I-15 and I-215 Freeways as well as other local transportation routes and areas of influence under the jurisdiction of Caltrans.

LU-25.8 Establish land use patterns that protect the public from impacts (noise, potential accidents) associated with the French Valley Airport, through the following:

- Consult with the Riverside County Airport Land Use Commission to ensure consistency with the scope and intent of the Airport Land Use Commission Law.
- Allow development in accordance with the Riverside County Airport Land Use Compatibility Plan and the French Valley Airport Compatibility Zones.
- Prohibit structures that are determined to be a "hazard" by the Federal Aviation Administration within the Riverside County Airport Land Use Compatibility Plan.
- Monitor legislation and regulations established by the Riverside County Airport Land Use Commission.

LU-25.9 Work closely with the Riverside County Airport Land Use Commission and other involved agencies in the development and review of the French Valley Airport Land Use Plan and other planning and environmental studies.

Mitigation Measures:

NOI-2 Residential projects located within the 55 CNEL noise contour for the French Valley Airport shall be subject to review by the Riverside County Airport Land Use Commission and shall be required to ensure interior noise levels from aircraft operations are at or below 45 dB CNEL.

Level of Significance After Mitigation: Less Than Significant Impact.

5.7.5 CUMULATIVE IMPACTS AND MITIGATION MEASURES

CUMULATIVE SHORT-TERM CONSTRUCTION NOISE

- **CUMULATIVE SHORT-TERM CONSTRUCTION NOISE ASSOCIATED WITH IMPLEMENTATION OF THE PROPOSED GENERAL PLAN 2035 COULD RESULT IN CUMULATIVELY CONSIDERABLE IMPACTS.**

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: It is anticipated that the City would experience construction activity associated with redevelopment of existing developed sites as well as new construction on undeveloped sites. Short-term construction noise is a localized activity and would affect only land uses that are immediately adjacent to a specific project site. Each construction project would have to comply with the local noise ordinance, as well as mitigation measures that may be prescribed pursuant to *CEQA* provisions that require significant impacts to be reduced to the extent feasible. Thus, a less than significant impact would occur.

Goals and Policies in the Proposed General Plan 2035: Refer to Goal N-4 and Policies N-4.1 through N-4.6 referenced above in this Section 5.7.

Mitigation Measures: Refer to Mitigation Measure NOI-1. No additional mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

CUMULATIVE LONG-TERM OPERATIONAL IMPACTS

- **CUMULATIVE LONG-TERM OPERATIONAL NOISE ASSOCIATED WITH IMPLEMENTATION OF THE PROPOSED GENERAL PLAN 2035 COULD RESULT IN CUMULATIVELY CONSIDERABLE IMPACTS.**

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: For this topic, the cumulative impacts are based upon assumptions made within Appendix E and Section 5.4, Traffic and Circulation, to address cumulative noise impacts within the City. Cumulative stationary noise sources would generally be less than significant with the implementation of the goal and policies in the proposed General Plan 2035. However, as traffic noise tends to dominate the noise environment within the City, the analysis below

considers whether the increase in traffic noise would be noticeable and significant per the criteria outlined in *Table 5.7-7*.

MOBILE SOURCES

Table 5.7-10, *Cumulative Traffic Noise Exposure*, compares the "Existing" scenario to the "General Plan Buildout" scenario and outlines the anticipated noise level changes adjacent to specific roadways in the City as a result of implementation of the proposed General Plan 2035, along with cumulative growth in the Sphere of Influence and outside the City. The proposed General Plan 2035 identifies the following five Focus Areas as areas of land use change:

- North Murrieta Business Corridor
- Clinton Keith/Mitchell
- Golden Triangle North (Central Murrieta)
- South Murrieta Business Corridor
- Multiple Use Area 3 (MU-3)

Although some growth is anticipated within the Historic Murrieta Specific Plan and Los Alamos Hills Focus Areas, no land use changes are included in proposed General Plan 2035. The change in traffic patterns is due to the redistribution of traffic on City streets associated with the change in land uses based upon the proposed General Plan 2035 Land Use Policy Map. As indicated in *Table 5.7-10*, buildout of the proposed General Plan 2035 would generate an audible noise level increase along 30 roadway segments along Clinton Keith Road, Nutmeg Street, Kalmia Street, Ivy Street, Los Alamos Road, Murrieta Hot Springs Road, Guava Street, Hayes Avenue, and Jefferson Avenue, as well as along I-15 and I-215. These 30 roadway segments would create a potentially significant impact as defined in *Table 5.7-7*. Compliance and/or adherence to the proposed General Plan 2035 goals and policies would not reduce the generated audible noise levels to a less than significant level. Therefore, if the proposed General Plan 2035 buildout condition occurred, a significant unavoidable impact would occur in this regard.

STATIONARY SOURCES

Noise caused by stationary sources would not substantially increase with implementation of the proposed General Plan 2035 as the City of Murrieta is generally built out. Through implementation of the proposed General Plan 2035, it is anticipated that there would be few new stationary sources. Therefore, a less than significant impact would occur in regards to cumulative stationary noise exposure.

Table 5.7-10
Cumulative Traffic Noise Exposure

Roadway Segment	Existing		2035 Buildout		Difference in dBA @ 100 feet from Roadway	Potentially Significant Impact?
	ADT	dBA @ 100 Feet from Roadway Centerline	ADT	dBA @ 100 Feet from Roadway Centerline		
Clinton Keith Road						
Southwest City Limits to Calle del Oso Oro	9,100	63.9	33,600	69.5	5.6	***Yes***
Calle del Oso Oro to Grand Avenue	11,100	65.9	25,600	69.5	3.6	***Yes***
Grand Avenue to Nutmeg Street	19,000	67.0	56,000	71.7	4.7	***Yes***
Nutmeg Street to Murrieta Oaks Road	27,300	68.6	82,900	73.4	4.8	***Yes***
Murrieta Oaks Road to I-215	27,040	68.6	79,000	73.3	4.7	***Yes***
I-215 to Antelope Road	5,281	58.9	70,200	70.2	11.3	***Yes***
Antelope Road to Meadowlark Road/Whitewood Lane	13,000	62.9	60,700	69.5	6.6	***Yes***
Calle del Oso Oro						
Clinton Keith Road to Calle Cipres	4,200	59.3	10,200	63.2	3.9	*No*
Calle Cipres to Washington Avenue	11,400	63.7	19,800	66.1	2.4	*No*
Nutmeg Street						
Washington Avenue to Adams Avenue	5,900	60.9	12,800	64.3	3.4	***Yes***
Adams Street to Jefferson Avenue	5,900	60.8	13,200	64.3	3.5	***Yes***
Jefferson Avenue to Jackson Avenue	9,300	62.8	14,200	64.6	1.8	*No*
Jackson Avenue to Clinton Keith Road	10,900	64.7	15,200	66.1	1.4	*No*
Lemon Street						
Washington Avenue to Adams Avenue	3,300	58.7	6,300	61.5	2.8	*No*
Adams Avenue to Jefferson Avenue	4,200	59.7	12,100	64.3	4.6	*No*
Kalmia Street						
Hayes Avenue to Washington Avenue	1,500	55.2	8,200	62.6	7.4	***Yes***
Washington Avenue to Adams Avenue	15,400	66.3	18,800	67.2	0.9	*No*
Adams Avenue to Jefferson Avenue	20,600	67.6	28,400	69.0	1.4	*No*
Jefferson Avenue to Madison Avenue	25,500	68.3	49,300	71.2	2.9	*No*
Madison Avenue to I-15	35,300	69.7	54,500	71.6	1.9	*No*
California Oaks Road						
I-15 to Monroe Avenue	29,500	68.8	54,500	71.5	2.7	*No*
Monroe Avenue to Jackson Avenue	29,200	68.7	52,400	71.2	2.5	*No*
Jackson Avenue to Hancock Avenue	24,900	67.0	31,700	68.0	1.0	*No*
Hancock Avenue to Clinton Keith Road	15,100	66.1	25,800	68.4	2.3	*No*
Ivy Street						
Hayes Street to Washington Avenue	900	48.7	700	47.6	-1.1	*No*
Washington Avenue to Adams Avenue	8,900	63.9	8,900	63.9	0	*No*
Adams Avenue to Jefferson Avenue	9,500	64.2	14,100	65.9	1.7	*No*
Jefferson Avenue to Madison Avenue	11,300	64.8	22,600	67.8	3.0	***Yes***
Los Alamos Road						
Madison Avenue to Lincoln Avenue	10,400	64.5	24,700	68.2	3.7	***Yes***

Table 5.7-10 [continued]
Cumulative Traffic Noise Exposure

Roadway Segment	Existing		2035 Buildout		Difference in dBA @ 100 feet from Roadway	Potentially Significant Impact?
	ADT	dBA @ 100 Feet from Roadway Centerline	ADT	dBA @ 100 Feet from Roadway Centerline		
Lincoln Avenue to Hancock Avenue	19,000	67.0	35,100	69.7	2.7	*No*
Hancock Avenue to I-215	19,200	67.1	53,600	71.5	4.4	***Yes***
I-215 to Whitewood Lane	23,000	66.6	31,000	67.9	1.3	*No*
Whitewood Lane to Ruth Ellen Way	3,800	59.3	3,800	59.3	0	*No*
Murrieta Hot Springs Road						
Jefferson Avenue to Madison Avenue	18,285	67.1	46,400	71.1	4.0	***Yes***
Madison Avenue to I-15	42,600	70.2	77,500	72.8	2.6	*No*
I-15 to I-215	65,100	71.9	91,000	73.4	1.5	*No*
I-215 to Alta Murrieta Drive	74,500	72.9	93,000	73.9	1.0	*No*
Alta Murrieta Drive to Jackson Avenue	48,000	71.0	63,200	72.2	1.2	*No*
Jackson Avenue to Whitewood Road	43,263	70.5	57,600	71.8	1.3	*No*
Whitewood Road to Margarita Road	51,200	71.3	66,400	72.4	1.1	*No*
Margarita Road to Eastern City Limits	40,000	70.2	52,500	71.4	1.2	*No*
Guava Street						
West of Hayes Avenue	500	49.2	5,900	59.9	1.7	*No*
Hayes Avenue to Douglas Avenue	700	50.5	6,300	60.1	9.6	***Yes***
Douglas Avenue to Washington Avenue	1,200	53.0	5,200	59.3	6.3	***Yes***
Adams Avenue to Jefferson Avenue	2,100	55.4	11,400	62.7	7.3	***Yes***
Jefferson Avenue to Madison Avenue	3,100	57.1	1,100	52.6	-4.5	*No*
Madison Avenue to Monroe Avenue	200	45.2	3,300	57.3	12.1	***Yes***
Elm Street						
Adams Avenue to Madison Avenue	2,500	55.9	2,800	56.4	0.5	*No*
Hayes Avenue						
Nighthawk Way to Vineyard Parkway	1,900	54.8	3,600	57.6	2.8	*No*
Kalmia Street to Ivy Street	1,900	56.3	6,500	61.6	5.3	***Yes***
Ivy Street to Hawthorne Street	1,300	50.3	4,900	56.0	5.7	***Yes***
Hawthorne Street to Guava Street	700	50.5	4,500	58.6	8.1	***Yes***
Washington Avenue						
North of Calle del Oso Oro	10,000	63.2	10,000	63.2	0	*No*
Calle del Oso Oro to Nighthawk Way/Magnolia Street	14,300	64.8	14,900	65.0	0.2	*No*
Nighthawk Way/Magnolia Street to Vineyard Parkway	12,600	64.2	12,600	64.2	0	*No*
Vineyard Parkway to Kalmia Street	20,800	66.2	20,800	66.2	0	*No*
Kalmia Street to Ivy Street	8,300	58.3	8,300	58.3	0	*No*
Ivy Street to Hawthorne Street	1,400	53.6	1,400	53.6	0	*No*
South of Hawthorne Street	1,300	53.3	3,300	57.4	4.1	*No*

Table 5.7-10 [continued]
Cumulative Traffic Noise Exposure

Roadway Segment	Existing		2035 Buildout		Difference in dBA @ 100 feet from Roadway	Potentially Significant Impact?
	ADT	dBA @ 100 Feet from Roadway Centerline	ADT	dBA @ 100 Feet from Roadway Centerline		
Jefferson Avenue						
North of Nutmeg Street	10,000	64.7	24,500	68.5	3.8	***Yes***
Nutmeg Street to Magnolia Street	9,000	62.8	39,700	69.2	6.4	***Yes***
Magnolia Street to Lemon Street	10,000	64.6	40,100	70.6	6.0	***Yes***
Lemon Street to Kalmia Street	11,200	65.0	46,900	71.2	6.2	***Yes***
Kalmia Street to Ivy Street	17,900	66.8	61,500	72.2	5.4	***Yes***
Ivy Street to Murrieta Hot Springs Road	12,000	65.1	53,600	71.6	6.5	***Yes***
Murrieta Hot Springs Road to Guava Street	27,800	68.7	53,100	71.6	2.9	*No*
Guava Street to Fig Street	28,000	69.9	45,100	72.0	2.1	*No*
Fig Street to Elm Street	29,000	70.1	44,600	71.9	1.8	*No*
South of Elm Street	20,736	67.4	30,300	69.1	1.7	*No*
Madison Avenue						
Kalmia Street to Ivy Street/Los Alamos Road	14,914	67.1	16,900	67.7	0.6	*No*
Ivy Street/Los Alamos Road to Murrieta Hot Springs Road	24,100	68.1	24,100	68.1	0	*No*
Murrieta Hot Springs Road to Guava Street	3,400	54.5	18,000	61.7	7.3	***Yes***
Jackson Avenue						
North of Nutmeg Street	7,100	61.7	9,600	63.0	1.3	*No*
Nutmeg Street to Monroe Avenue	14,900	64.9	18,000	65.7	0.8	*No*
Monroe Avenue to California Oaks Road	14,900	64.8	17,600	65.5	0.7	*No*
Hancock Avenue						
California Oaks Road to Las Brisas Road	14,700	64.7	15,300	64.9	0.2	*No*
Las Brisas Road to Los Alamos Road	19,550	66.0	24,600	67.0	1.0	*No*
Los Alamos Road to Murrieta Hot Springs Road	19,500	66.0	27,000	67.4	1.4	*No*
I-15						
City Boundary to Nutmeg Street	124,000	79.0	199,900	81.0	2.0	*No*
Nutmeg Street to Kalmia Street	124,000	79.0	199,900	81.0	2.0	*No*
Kalmia Street Los Alamos Road	127,000	79.1	197,000	91.0	11.9	***Yes***
Los Alamos Road to I-215	127,000	79.1	142,600	79.6	0.5	*No*
I-215 to Cherry Street	186,000	80.8	248,800	82.1	1.3	*No*
I-215						
Scott Road to Los Alamos Road	89,000	77.3	195,300	80.7	3.4	***Yes***
Los Alamos Road to Murrieta Hot Springs Road	91,000	78.3	170,600	81.1	2.8	*No*
Murrieta Hot Springs Road to I-15	83,000	77.9	149,900	80.5	2.6	*No*

ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level

Source: Traffic noise modeling is based on traffic data provided by Iteris, January 2011.

Goals and Policies in the Proposed General Plan 2035: Refer to Goal N-3 and Policies N-3.1 through N.3.6 and Goal LU-25 and Policies LU-25.2, LU-25.3, LU-25.8, and LU-25.9 referenced above in this Section 5.7.

Mitigation Measures: Refer to Mitigation Measure NOI-2. No additional mitigation measures are available.

Level of Significance After Mitigation: Significant Unavoidable Impact.

5.7.6 SIGNIFICANT UNAVOIDABLE IMPACTS

Despite compliance with goals and policies, and mitigation measures, the proposed General Plan 2035 would result in significant unavoidable impacts regarding the following:

- ***Cumulative Long-Term Operational Noise*** – The change in traffic patterns is due to the redistribution of traffic on City streets as a result of implementation of the proposed General Plan 2035, along with cumulative growth in the Sphere of Influence and outside the City. The traffic associated with the proposed General Plan 2035 and cumulative growth would generate an audible noise level increase along 30 roadway segments. Thus, cumulative long-term operational noise impacts would be significant and unavoidable.

All other impacts related to noise associated with implementation of the proposed General Plan 2035 would be less than significant with compliance with the goals and policies in the proposed General Plan 2035 and the recommended mitigation measures.

If the City of Murrieta approves the proposed General Plan 2035, the City shall be required to cite their findings in accordance with *CEQA Guidelines* Section 15091 and prepare a Statement of Overriding Considerations in accordance with *CEQA Guidelines* Section 15093.