4.11 NOISE

This section analyzes potential noise and vibration impacts associated with the implementation of the Arcadia General Plan Update and summarizes the analysis and conclusions in the *City of Arcadia General Plan Update, Noise Element Technical Report,* (Noise Assessment) prepared by Urban Crossroads (June 2010) and included in Appendix H to this EIR. This section provides background information on noise fundamentals, reviews existing noise documents and analysis procedures, identifies potential noise sources, identifies existing and future noise impacts, and provides additional discussion of noise standards, aircraft overflights, traffic, and railroad noise impacts. Unless noted otherwise, the information in this section has been obtained from the report referenced above.

Noise Definitions

Noise can be defined as "unwanted sound". Sound becomes unwanted when it interferes with normal activities, causes physical harm, or has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to a broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear. Table 4.11-1 provides the noise levels of common outdoor and indoor activities and their effects.

TABLE 4.11-1
TYPICAL NOISE LEVELS AND THEIR SUBJECTIVE LOUDNESS AND EFFECTS

Common Outdoor Activities	Common Indoor Activities	A – Weighted Sound Level dBA	Subjective Loudness	Effects of Noise
Threshold of Pain		140	Intolerable or Deafening	Hearing Loss
Near Jet Engine		130		
		120		
Jet Fly-Over at 300 m (1000 ft)	Rock Band	110		
Loud Auto Horn		100	Very Noisy	
Gas Lawn Mower at 1 m (3 ft)		90		
Diesel Truck at 15 m (50 ft), at 80 km/hr (50 mph)	Food Blender at 1 m (3 ft)	80		Speech Interference
Noisy Urban Area, Daytime	Vacuum Cleaner at 3 m (10 ft)	70	Loud	
Heavy Traffic at 90 m (300 ft)	Normal Speech at 1 m (3 ft)	60		
Quiet Urban Daytime	Large Business Office	50	Moderate	
Quiet Urban Nighttime	Theater, Large Conference Room (Background)	40		Sleep Disturbance

TABLE 4.11-1 (Continued)
TYPICAL NOISE LEVELS AND THEIR SUBJECTIVE LOUDNESS AND EFFECTS

Common Outdoor Activities	Common Indoor Activities	A – Weighted Sound Level dBA	Subjective Loudness	Effects of Noise
Quiet Suburban Nighttime	Library	30	Faint	No Effect
Quiet Rural Nighttime	Bedroom at Night, Concert Hall (Background)	20		
	Broadcast/Recording Studio	10	Very Faint	
Lowest Threshold of Human Hearing	Lowest Threshold of Human Hearing	0		

Range of Noise

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. The most common sounds vary between 40 dBA (quiet) to 100 dBA (very loud). Normal conversation at 3 feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA, which can cause serious discomfort.

Perceived Noise Levels

Due to the logarithmic nature of the decibel scale, increasing a sound intensity by a factor of 10 raises its level by 10 dB; increasing it by a factor of 100 raises its level by 20 dB; and increasing it by 1,000 raises its level to 30 dB. However, due to the internal mechanism of the human ear and how it receives and processes noise, when two sound sources of equal intensity or power are measured together, their combined effect (intensity level) is 3 dB higher than the level of either separately. Thus, two 72-dB noise sources together measure 75 dB under ideal conditions. Typically, a sound must be nearly 10 dBA higher than another sound to be judged twice as loud. Due to subjective thresholds of tolerance, the annoyance of a given noise source is perceived very differently from person to person.

Effects of Noise

Harmful effects of noise can include speech interference, sleep disruption, and loss of hearing. Speech interference begins to occur at 40 to 45 dB and becomes severe at about 60 dB. Background noise levels affect performance and learning processes through distraction, reduced accuracy, increased fatigue, annoyance and irritability, the inability to concentrate, and sleep prevention.

Several factors determine whether a particular noise will interfere with sleep. These factors include the noise level and characteristics, the stage of sleep, the individual's age, and motivation to waken. Sleep prevention can occur when intruding noise levels exceed 50 dBA. Hearing loss, which can begin to occur at prolonged levels of 75 dBA and higher, is one of the most harmful effects of noise on people.

Community Noise Assessment Criteria

In community situations, noise exposure and changes in noise levels occur over a number of years, unlike the immediate comparison made in a field study situation. The generally accepted level at which changes in community noise levels become "barely perceptible" typically occurs at values greater than 3 dBA. Changes of 5 dBA are defined as "readily perceptible", and an increase of 10 dBA is considered twice as loud.

Noise Descriptors

Environmental noise descriptors are generally based on averages rather than instantaneous noise levels. The most commonly used figure is the equivalent level (L_{eq}). L_{eq} represents a steady sound level containing the same total energy as a time-varying level over a given measurement interval. L_{eq} may represent any desired length of time; however, one hour is the most commonly used in environmental work. Consequently, L_{eq} can vary depending upon the time of day. In traffic noise measurements, the noisiest hour of the day is considered the benchmark of a road's noise emissions; therefore, the peak hour L_{eq} is the noise metric used by the California Department of Transportation (Caltrans) for all traffic noise impact analyses.

Peak hour noise levels, while useful, do not completely describe a given noise environment. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely evening and nighttime (sleeping) hours. To account for this, the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level, is utilized.

CNEL is the weighted average of the intensity of a sound with corrections for time of day and averaged over 24 hours. The time of day corrections require the addition of 5 dB to sound levels in the evening from 7:00 PM to 10:00 PM, and the addition of 10 dB to sound levels at night between 10:00 PM and 7:00 AM. These additions are made to account for the noise-sensitive time periods during the evening and night hours when sound seems louder, and it is weighted accordingly. CNEL does not represent the actual sound level heard at any particular time, but rather represents the total sound exposure. The City of Arcadia relies on the CNEL noise standard to assess transportation-related impacts on noise-sensitive land uses.

Noise Attenuation

As noise travels from the source to the receiver, noise changes both in level and frequency spectrum. The most obvious change is the decrease in noise as the distance from the source increases. The manner in which noise reduces with distance (noise attenuation) depends on a number of factors. Ground absorption, atmospheric effects, and shielding (as by natural and man-made barriers) also affect the rate of noise attenuation.

Groundborne Vibration

Vibration is the periodic movement of mass over time. It is described in terms of frequency, amplitude, and unlike sound; there is no standard way of measuring and reporting amplitude. Vibration is described in units of velocity (inches per second), and discussed in decibel units (VdB) in order to compress the range of numbers required to describe vibration. The General Plan Update does not involve activities that would generate vibration impacts but gives a planning level analysis of future vibration impacts that would occur within the City limits.

Although the human threshold of perception for vibration is around 65 VdB (or 0.0018 inches/second), human response to vibration is not usually significant unless the vibration exceeds 70 VdB (or 0.0031 inches/second).

Construction-Related Vibration

Construction vibration is generally associated with pile driving and rock blasting. Occasionally, large bulldozers and loaded trucks can cause perceptible vibration levels at close proximity. Groundborne vibration from grading construction equipment such as earthmovers and haul trucks at distances of ten feet do not create vibration amplitudes that cause structural damage to nearby structures. Structures at distances beyond 115 feet of rock blasting areas are typically not subject to vibration levels exceeding Caltrans' threshold for damage prevention.

Construction activity can result in varying degrees of groundborne vibration depending on the equipment and methods used, distance to the affected structures, and soil type. The effects of groundborne vibration are generally limited to movement of building floors, rattling of windows and objects, and rumbling sounds, which result in annoyance.

Transportation-related Vibration

In general, groundborne vibrations associated with transportation and construction activities attenuate or diminish rapidly with distance from the source. Vibration from trucks is characterized by peaks considerably higher than those generated by automobiles. These peaks last often a fraction of a second and drop off fast with distance. In general, more trucks would show up as more peaks, not necessarily higher peaks. Caltrans' truck traffic vibration data suggests that at distances greater than 130 feet from the road, the vibration levels are below the threshold of perception.

4.11.1 METHODOLOGY

To determine the existing noise level environment and to assess potential noise impacts on the adjacent residential areas, noise measurements were taken throughout the City of Arcadia. A total of 13 short-term and four 24-hour noise level measurements were taken to determine the existing ambient background noise levels. These noise level measurements were used to assess the existing noise environment and to calibrate the noise prediction models. In addition, several sample noise level measurements were taken to analyze the spectral content (frequency range) of the noise. Each of these noise level measurement locations is described in detail in the Noise Assessment.

To predict future noise levels, the following methods and procedures were used to model and analyze the future noise environment and to develop noise contour boundaries for baseline and 2035 conditions.

Traffic Noise Prediction

The level of traffic noise depends on the three primary factors: (1) the volume of the traffic; (2) the speed of the traffic; and (3) the number of trucks in the flow of traffic. Generally, the loudness of traffic noise is increased by heavier traffic volumes, higher speeds, and a greater number of trucks. Vehicle noise is a combination of the noise produced by the engine, exhaust, and tires.

Because of the logarithmic nature of traffic noise levels, a doubling of the traffic noise (acoustic energy) results in a noise level increase of 3 dBA. Based on the Federal Highway Administration's (FHWA's) community noise assessment criteria, this change is "barely perceptible". In other words, a doubling of the traffic volume (assuming that the speed and truck mix do not change) results in a noise level increase of 3 dBA. The truck mix on a given roadway also has a substantial effect on community noise levels. As the number of heavy trucks increases and becomes a larger percentage of the vehicle mix, adjacent noise levels increase.

FHWA Traffic Noise Prediction Model

The projected roadway noise impacts from vehicular traffic were projected using a computer program that replicates the FHWA Traffic Noise Prediction Model- FHWA-RD-77-108 (the "FHWA Model"). The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). Adjustments are then made to the reference energy mean emission level to account for the roadway classification (e.g., collector, secondary, major and arterial); the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway); the total average daily traffic (ADT); the travel speed; the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume; the roadway grade; the angle of view (e.g., whether the roadway view is blocked); the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping); and the percentage of total ADT which flows each hour throughout a 24-hour period.

To account for the ground-effect attenuation, soft site conditions were used to calculate all noise contours. Soft site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. A drop-off rate of 4.5 dBA per doubling of distance is typically observed over soft ground, as compared with a 3.0 dBA drop-off rate over hard ground such as concrete, stone, and very hard packed earth. In addition, soft site conditions account for the effect of existing topography, noise barriers, or buildings that may alter the roadway noise levels. Soft site conditions are appropriate for the development of noise contour boundaries.

Traffic Noise Prediction Model Inputs

The average daily traffic volume and roadway parameters used for the Noise Assessment were obtained from the *City of Arcadia General Plan EIR Traffic Study* prepared by The Mobility Group (May 2010). The results are presented in the Noise Assessment prepared for the proposed General Plan Update. The average daily traffic volumes and roadway parameters and the hourly traffic flow distribution percentages of automobile, medium trucks, and heavy trucks used in the modeling are provided in the Noise Assessment.

4.11.2 RELEVANT PROGRAMS AND REGULATIONS

Noise Standards

Public agencies have established noise guidelines and standards to protect citizens from potential hearing damage and various other adverse physiological and social effects associated with noise.

State of California

Title 24 of the *California Code of Regulations* (California Building Standards Code) requires that residential structures, other than detached single-family dwellings, be designed to prevent the intrusion of exterior noise so that the interior CNEL with windows closed, attributable to exterior

sources, shall not exceed 45 dBA in any habitable room. Noise compatibility guidelines from the State General Plan Guidelines are shown below in Table 4.11-2.

TABLE 4.11-2
LAND USE AND NOISE COMPATIBILITY GUIDELINES

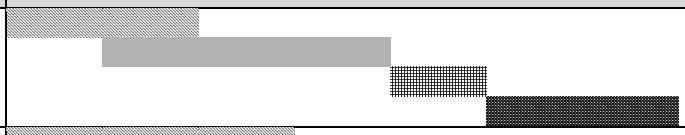
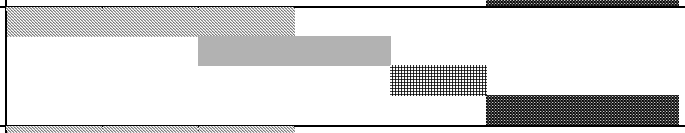
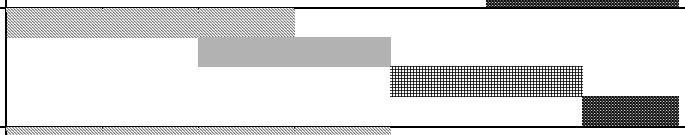
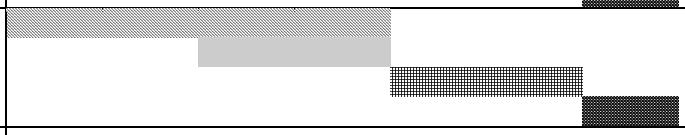
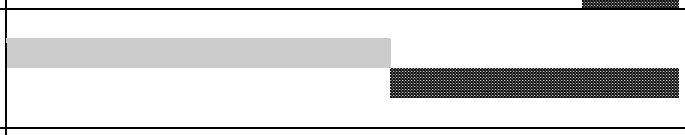
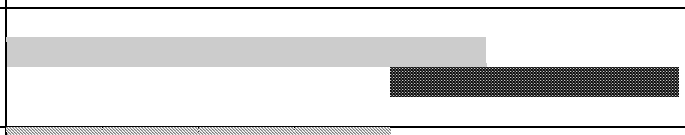
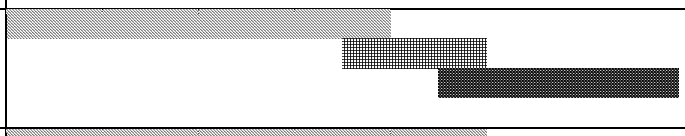
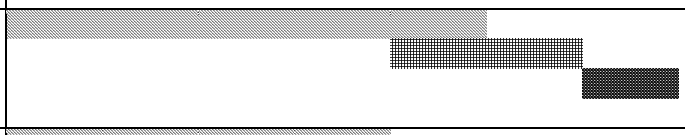
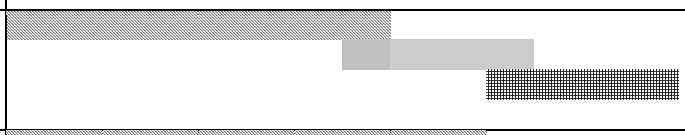
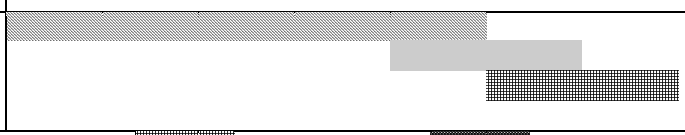
Land Use Category	Community Noise Exposure L_{dn} or CNEL, dB 55 60 65 70 75 80 85
Residential: Low-Density, Single-Family, Duplex, Mobile Homes	
Residential: Multiple-Family Homes	
Transient Lodging: Motels, Hotels	
Schools, Libraries, Churches, Hospitals, Nursing Homes	
Auditoriums, Concert Halls, Amphitheaters	
Sports Arena, Outdoor Spectator Sports	
Playgrounds, Neighborhood Parks	
Golf Courses, Riding Stables, Water Recreation, Cemeteries	
Office Buildings, Business, Commercial and Professional	
Industrial, Manufacturing, Utilities, Agriculture	
Normally Acceptable / Conditionally Acceptable / Normally Unacceptable / Clearly Unacceptable	

TABLE 4.11-2 (Continued)
LAND USE AND NOISE COMPATIBILITY GUIDELINES

Land Use Category	Community Noise Exposure L_{dn} or CNEL, dB 55 60 65 70 75 80 85			
Specified land use is satisfactory based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirement is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.	New construction or development should generally not be undertaken.	
Source: OPR 2003				

City of Arcadia General Plan

The Environmental Hazards chapter of the current *Arcadia General Plan* evaluates natural and man-made hazards in the project area and determines appropriate levels of protection through hazard reduction programs for geologic and seismic hazards, flood hazards, noise, hazardous materials, and wildland fire. The Environmental Hazards chapter is the guiding document for the City's noise policy and contains policies designed to protect residents and businesses from excessive and persistent noise intrusions. Table 4.11-3 provides the City's exterior and interior noise levels for each land use category.

TABLE 4.11-3
INTERIOR AND EXTERIOR NOISE STANDARDS

Land Use	Noise Level	
	Interior (Leq)	**Exterior (CNEL)**
Residential	45	65
Schools:		
Classrooms	45	-
Playgrounds	-	65
Libraries	45	-
Hospitals/Convalescent Facilities:		
Sleeping Areas	45	-
Living Areas	50	65
Reception, General Office, Clerical	50	-
Hotels / Motels:		
Sleeping Areas	45	-
Reception, General Office, Clerical	50	-
Places of Worship	45	65
Open Space / Active Recreation Areas	-	70

TABLE 4.11-3 (Continued)
INTERIOR AND EXTERIOR NOISE STANDARDS

Land Use	Noise Level	
	Interior (Leq)	Exterior (CNEL)
Commercial and Business Park:		
Private Office	45	-
General Office	50	-
Restaurant, Retail Store, etc.	55	-
Warehousing/Industrial	65	-

City of Arcadia Noise Ordinance

The City's Noise Ordinance (Chapter 6, Part 1, Section 4610.3 of the *City of Arcadia Municipal Code*), is designed to control unnecessary, excessive, and annoying sounds from sources on private property by setting limits that cannot be exceeded at adjacent properties and establishes maximum exterior noise levels for residential, commercial, and industrial land uses. The Noise Ordinance establishes base ambient noise level limits that apply according to the land use zone and time for stationary noise sources for residential, commercial, and industrial activities during the daytime and nighttime. The City's Noise Ordinance standards are presented in Table 4.11-4.

TABLE 4.11-4
NOISE STANDARD AT AFFECTED LAND USE

Noise Level That May Not Be Exceeded For More Than…	Noise Standard at Affected Land Use				
	Residential		Commercial		
	Daytime 7 a.m. – 10 p.m.	Nighttime 7 a.m. – 10 p.m.	Daytime 7 a.m. – 10 p.m.	Nighttime 7 a.m. – 10 p.m.	Industrial
30 min/hr	55 dBA	50 dBA	65 dBA	60 dBA	70 dBA
15 min/hr	60 dBA	55 dBA	70 dBA	65 dBA	75 dBA
5 min/hr	65 dBA	60 dBA	75 dBA	70 dBA	80 dBA
1 min/hr	70 dBA	65 dBA	80 dBA	75 dBA	85 dBA
Anytime	75 dBA	70 dBA	85 dBA	80 dBA	90 dBA
Note: Due to wind noise, the maximum permissible noise level may be adjusted so that it is no greater than 5 dBA above the ambient noise level.					

The *City of Arcadia Municipal Code*, Article IV, Chapter 2, Part 6, prohibits construction activities during the nighttime hours of 7:00 PM to 7:00 AM, Monday through Saturday. These activities include earth excavation, filling, or earthmoving operations; construction of any portion of a building or structure; and use or operation of a truck, tractor, crane, rig, or any mechanical equipment for construction. Construction is also prohibited on Sundays and major holidays.

Vibration Standards

Title 3, Section 9266.3.9, Vibration, of the *Arcadia Municipal Code* mandates that no existing or proposed use, activity, or process shall cause or create a steady state or impact vibration on or beyond any property line with a vibration displacement by frequency bands in excess of those indicated below in the Table 4.11-5.

TABLE 4.11-5
VIBRATION DISPLACEMENT

Frequency (cycles per second)	Vibration Displacement (in inches)	
	Steady State	Impact
Under 10	.0005	.0010
10--19	.0004	.0008
20--29	.0003	.0006
30--39	.0002	.0004
40 and over	.0001	.0002
Source: Urban Crossroads, June 2010		

4.11.3 EXISTING CONDITIONS

Sensitive Receptors

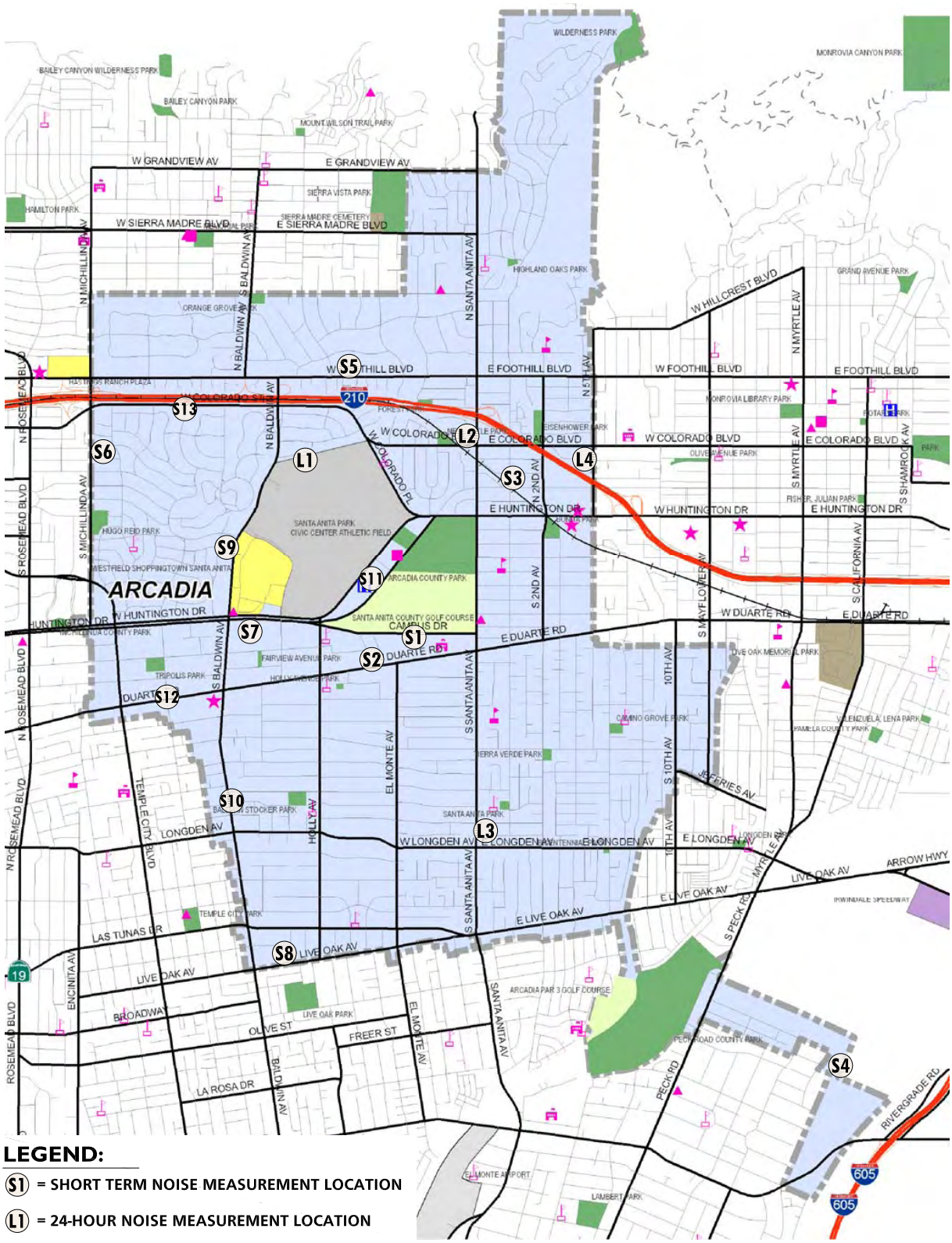
Noise-sensitive receptors are generally considered to be people engaged in activities that may be subject to the stress of significant interference from noise. Activities usually associated with sensitive receptors include, but are not limited to, talking, reading, and sleeping. The City of Arcadia identifies noise-sensitive land uses and/or receptors as residences of all types, schools, hospitals, convalescent facilities, rest homes, hotels, motels, and places of worship. In addition, certain parks, such as the Wilderness Park, are considered to be noise-sensitive. Noise level measurement locations are shown on Exhibit 4.11-1, and the four identified noise-sensitive uses are described below:

- ***Site L1:*** located near the existing single-family homes north of the Santa Anita Racetrack east of North Baldwin Avenue. The 24-hour noise level measurement results indicate that the ambient noise conditions at this location experience levels ranging from 39.9 to 57.2 dBA L_{eq}.

- ***Site L2:*** located north of West Colorado Boulevard at the Newcastle community park near the future Metro Gold Line railroad. Currently, there are no train operations occurring at this location. The 24-hour noise level measurement results indicate that this location experiences daily noise levels ranging from 49.7 to 60.9 dBA L_{eq} and the major source of noise in the study area is traffic noise on West Colorado Boulevard.

- ***Site L3:*** located 100 feet east of the South Santa Anita Avenue centerline at the Arcadia Christian School. The 24-hour noise level measurement results indicate that the ambient noise is dominated by traffic on South Santa Anita Avenue and this location experiences noise levels ranging from 53.8 to 66.1 dBA L_{eq}.

- ***Site L4:*** located north of the Interstate 210 (I-210) Freeway near the existing single-family homes near the terminus of North Fourth Avenue. There is currently a noise barrier along the I-210 Freeway that is approximately 15 feet high relative to the noise measurement receiver height. The 24-hour noise level measurement results indicate that the ambient noise is dominated by traffic on the I-210 Freeway and this location experiences noise levels ranging from 57.6 to 63.0 dBA L_{eq}.

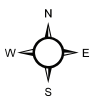


Source: Urban Crossroads

Noise Monitoring Locations

Exhibit 4.11-1

Arcadia General Plan Update



BonTerra CONSULTING

(06/15/2010 KFD) PAS R: Projects\Hogle\J010\\Graphics\EX4.11-1_NML.pdf

PAS D:\Projects\AHogle\J010\Graphics\Ex_NML.ai

Existing Noise Environment

Major noise sources in the City include vehicles on the I-210 Freeway and major roadways such as Huntington Drive, Santa Anita Avenue, Foothill Boulevard, Colorado Boulevard, Orange Grove Avenue, Michillinda Avenue, and Duarte Road. Events at the Santa Anita Park generate noise impacts on adjacent land uses that include vehicle, maintenance activity, and loudspeaker noise. Operations at the El Monte Airport to the south also generate noise in the City during the approach and departure of aircraft and flyovers.

Stationary noise generators in Arcadia include Santa Anita Park (during racing seasons), industrial businesses with outdoor operations, and commercial businesses that have outdoor entertainment, late-night activities, and excessive truck traffic. The impacts of these uses are localized. Other stationary noise sources include everyday activities such as construction and gardening equipment. Stationary noises can be as disruptive as background traffic noise.

Existing Traffic Noise Levels

Noise measurements were collected to reflect the typical weekday traffic conditions that occur throughout the City. The results of the short-term noise level measurements are presented in Table 4.11-6. As shown, the existing ambient L_{eq} noise levels ranged from 51.9 dBA L_{eq} to 69.9 dBA L_{eq}. The highest noise levels were measured in areas adjacent to the I-210 Freeway and major City roads, such as Foothill Boulevard, Campus Avenue, Duarte Road, Michillinda Avenue, Huntington Drive, Live Oak Avenue, Colorado Street, and Baldwin Avenue.

TABLE 4.11-6
EXISTING (AMBIENT) SHORT-TERM NOISE LEVEL MEASUREMENTS[A]

Observer Location[b]	Description	Time of Measurement[c]	Primary Noise Source	Noise Levels (L_{eq} dBA)	Noise Levels (L_{eq} CNEL)
1	Located 50 feet south of the Campus Drive centerline in front of Arcadia High School	2:18 PM	Traffic on Campus Avenue	63.4	66.9
2	Located 50 feet north of the Duarte Road centerline in the front yard of the single-family residence at 301 Duarte Road	2:43 PM	Traffic on Duarte Road	63.9	67.4
3	Located near the existing unused railroad tracks at the North First Avenue and East Santa Clara Street intersection	12:46 PM	Existing ambient noise near railroad tracks	55.4	58.8
4	Located at the front property line of 5535 Durfee Avenue near the commercial and industrial properties along Clark Street	9:57 AM	Ambient noise near existing commercial/ industrial uses	51.9	53.9
5	Located 50 feet south of the Foothill Boulevard centerline in the front yard of 1049 Oakdale Lane	10:50 AM	Traffic on Foothill Boulevard	69.9	71.9
6	Located 50 feet east of the South Michillinda Avenue centerline in the front yard of 1163 Encanto Drive	11:31 AM	Traffic on South Michillinda Avenue	66.3	69.8

TABLE 4.11-6 (Continued)
EXISTING (AMBIENT) SHORT-TERM NOISE LEVEL MEASUREMENTS[A]

Observer Location[b]	Description	Time of Measurement[c]	Primary Noise Source	Noise Levels (L_{eq} dBA)	Noise Levels (L_{eq} CNEL)
7	Located 100 feet south of the West Huntington Drive centerline at the apartments located at 620 West Huntington Drive	12:08 PM	Traffic on West Huntington Drive	66.5	69.9
8	Located 50 feet south of the East Live Oak Avenue centerline in the front yard of 10046 East Live Oak Avenue	10:30 AM	Traffic on East Live Oak Avenue	62.0	64.0
9	Located 50 feet west of the South Baldwin Avenue centerline near the apartments at 417 South Baldwin Avenue	11:51 AM	Traffic on South Baldwin Avenue	68.0	71.5
10	Located 50 feet east of the South Baldwin Avenue centerline in the front yard of 654 Estrella Avenue	10:48 AM	Traffic on South Baldwin Avenue	68.7	70.7
11	Located 50 feet west of the West Huntington Drive centerline at the Methodist Hospital Parking Lot	12:27 PM	Traffic on West Huntington Drive	60.0	63.4
12	Located 50 feet north of the Duarte Road centerline near the apartment building at 813 Duarte Road	3:02 PM	Traffic on Duarte Road	63.6	67.4
13	Located 50 feet south of the Colorado Street centerline in the front yard of 621 Vaquero Road	11:11 AM	Traffic on the I-210 Freeway and Colorado Street	68.9	73.5

dBA: A-weighted decibel; L_{eq}: equivalent noise level; CNEL: Community Noise Equivalent Level

[a] Noise measurements taken by Urban Crossroads, Inc. on July 21 and 22, 2008.
[b] See Exhibit 4.11-1 for the location of the monitoring sites.
[c] Taken with a Larson Davis 824 Series Type 1 noise meter.

Source: Urban Crossroads 2010

Four 24-hour noise level measurements were taken to evaluate noise variability throughout a 24-hour period. The noise level measurement results are presented in Table 4.11-7 and described above. The 24-hour noise level measurements were selected based on their proximity to major noise sources. The noise measurements were collected during the typical weekday traffic conditions in the City. The locations were selected to identify the hourly noise levels associated with the I-210 Freeway, traffic on South Santa Anita Avenue (a typical City of Arcadia street), and the ambient noise near the Santa Anita Raceway and existing railroad lines (currently not in use).

At the northern edge of the Santa Anita Park racetrack (Location A), the peak hour L_{eq} was 57.2 dBA and the CNEL was 54.6 dBA CNEL. Near the intersection of Colorado Boulevard and Santa Anita Avenue (Location B), the peak hour L_{eq} was 60.9 dBA and the CNEL was 60.0 dBA CNEL. Near the intersection of Longden and Santa Anita Avenues (Location C), the peak hour L_{eq} was 66.1 dBA and the CNEL was 68.1 dBA CNEL. On Fifth Avenue north of the I-210 Freeway (Location D), the peak hour L_{eq} was 63.0 dBA and the CNEL was 67.0 dBA CNEL.

TABLE 4.11-7
EXISTING (AMBIENT) 24-HOUR NOISE LEVEL MEASUREMENTS[A]

Observer Location[b]	Description	Hourly Noise Levels (1-hour L_{eq})[c]				24-Hour Noise Levels (CNEL)
		Daytime Minimum	Daytime Maximum	Nighttime Minimum	Nighttime Maximum	
A	Located near the existing single-family homes north of the Santa Anita Racetrack east of North Baldwin Avenue	46.5	57.2	39.9	53.8	54.6
B	Located north of West Colorado Boulevard at the existing community park near the existing railroad	54.6	60.9	49.7	54.9	60.0
C	Located 100 feet east of the South Santa Anita Avenue centerline at the Arcadia Christian School	64.3	66.1	53.8	64.2	68.1
D	Located north of the I-210 Freeway near the existing single-family homes at the terminus of North Fourth Avenue	59.2	63.0	57.6	62.5	67.0

[a] Noise measurements taken by Urban Crossroads, Inc. on July 30th and 31st, 2008.
[b] See Exhibit 4.11-1 for the location of the monitoring sites.
[c] Taken with a Quest DL Type 2 noise dosimeter.
Source: Urban Crossroads 2010

Noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway. Table 4.11-8 presents the CNEL noise contour boundaries for the 55-, 60-, 65-, and 70-dBA noise levels for existing conditions in the City. The distances to the CNEL contours from the roadway centerlines are shown in Table 4.11-7. Note that the values given in the table do not take into account the effect of any noise barriers, topography, or final roadway grades that may affect ambient noise levels.

TABLE 4.11-8
MODELED EXISTING ROADWAY NOISE LEVELS

Road	Segment	CNEL at 100 feet (dBA)	Distance to Contour (feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Sierra Madre Boulevard	West of Santa Anita Avenue	66.0	54	117	252	542
Orange Grove Avenue	Baldwin Avenue to Santa Anita Avenue	67.9	72	155	334	719
Foothill Boulevard	Michillinda Avenue to Baldwin Avenue	72.7	152	328	708	1,525
Foothill Boulevard	Baldwin Avenue to Santa Anita Avenue	72.2	140	301	649	1,397
Foothill Boulevard	Santa Anita Avenue to 5th Avenue	74.0	186	400	862	1,856
Colorado Street	Michillinda Avenue to Baldwin Avenue	71.8	131	282	607	1,309

TABLE 4.11-8 (Continued)
MODELED EXISTING ROADWAY NOISE LEVELS

Road	Segment	CNEL at 100 feet (dBA)	Distance to Contour (feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Colorado Street	Baldwin Avenue to Colorado Boulevard	71.4	125	268	578	1,246
Colorado Boulevard	Santa Anita Avenue to 2nd Avenue	67.9	73	157	339	730
Colorado Boulevard	2nd Avenue to 5th Avenue	64.8	45	96	207	447
Santa Clara Street	Colorado Place to Santa Anita Avenue	70.3	104	224	484	1,042
Santa Clara Street	2nd Street to 5th Avenue	67.1	64	139	299	645
Huntington Drive	Temple City Boulevard to Baldwin Avenue	78.1	348	751	1,617	3,484
Huntington Drive	Baldwin Avenue to Holly Avenue	78.6	373	803	1,730	3,727
Huntington Drive	Colorado Place to Santa Anita Avenue	72.8	154	333	717	1,545
Huntington Drive	2nd Avenue to 5th Avenue	73.8	179	385	830	1,787
Campus Drive	Holly Avenue to Santa Anita Avenue	69.8	97	209	451	972
Fairview Avenue	Baldwin Avenue to Holly Avenue	63.1	35	75	162	348
Duarte Road	West of Temple City Boulevard	71.6	128	276	595	1,281
Duarte Road	Temple City Boulevard to Holly Avenue	72.4	145	312	673	1,450
Duarte Road	Holly Avenue to Santa Anita Avenue	72.7	152	327	705	1,519
Duarte Road	Santa Anita Avenue to 5th Avenue	72.8	154	332	715	1,541
Camino Real	El Monte Avenue to Santa Anita Avenue	64.4	43	92	198	426
Longden Avenue	El Monte Avenue to Santa Anita Avenue	65.5	50	108	234	504
Las Tunas Drive	Baldwin Avenue to Holly Avenue	72.6	149	321	693	1,492
Live Oak Avenue	El Monte Avenue to Santa Anita Avenue	68.5	79	170	367	790
Live Oak Avenue	Santa Anita Avenue to 2nd Avenue	74.2	191	411	886	1,908
Lower Azusa Road	East of Peck Road	74.4	196	422	909	1,958
Michillinda Avenue	Colorado Street to California Boulevard	71.7	129	278	599	1,291
Temple City Boulevard	Huntington Drive to Duarte Road	72.2	140	303	652	1,405
Golden West Avenue	Huntington Drive to Duarte Road	64.4	42	91	197	424
Baldwin Avenue	Orange Grove Avenue to Foothill Boulevard	70.3	104	224	484	1,042

TABLE 4.11-8 (Continued)
MODELED EXISTING ROADWAY NOISE LEVELS

Road	Segment	CNEL at 100 feet (dBA)	Distance to Contour (feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Baldwin Avenue	Foothill Boulevard to Hugo Reid Drive	74.4	196	423	912	1,965
Baldwin Avenue	Hugo Reid Drive to Huntington Drive	73.7	175	378	814	1,753
Baldwin Avenue	Huntington Drive to Duarte Road	74.3	193	415	894	1,926
Baldwin Avenue	Duarte Road to Live Oak Avenue	73.8	180	388	835	1,800
Holly Avenue	Campus Drive to Duarte Road	67.0	63	136	294	633
Holly Avenue	Longden Avenue to Live Oak Avenue	64.0	40	86	185	398
El Monte Avenue	Longden Avenue to Live Oak Avenue	66.2	56	120	258	556
Santa Anita Avenue	Grove Avenue	67.7	71	152	328	707
Santa Anita Avenue	Foothill Boulevard to Colorado Boulevard	73.2	164	353	761	1,640
Santa Anita Avenue	Colorado Boulevard to Huntington Drive	74.6	203	438	943	2,033
Santa Anita Avenue	Huntington Drive to Duarte Road	73.9	181	390	840	1,809
Santa Anita Avenue	Duarte Road to Camino Real	74.3	193	416	897	1,932
1st Avenue	Colorado Boulevard to Huntington Drive	67.0	63	137	295	635
1st Avenue	Huntington Drive to Duarte Road	66.6	59	128	276	594
2nd Avenue	Foothill Boulevard to Colorado Boulevard	65.5	RW	107	231	499
2nd Avenue	Colorado Boulevard to Huntington Drive	66.4	58	125	269	580
2nd Avenue	Huntington Drive to Duarte Road	68.0	74	160	344	740
2nd Avenue	Duarte Road to Camino Real	66.8	61	132	284	612
6th Avenue	Duarte Road to Camino Real	63.0	34	74	160	344
10th Avenue	Duarte Road to Camino Real	62.0	RW	63	137	294
Mayflower Avenue	Duarte Road to Camino Real	65.9	53	115	248	533
Peck Road	South of Clark Street	73.0	159	343	738	1,590
I-210 Freeway	West of Baldwin Avenue	87.3	1,416	3,051	6,573	14,162
I-210 Freeway	East of Baldwin Avenue	87.2	1,394	3,004	6,472	13,943

RW: Within right-of-way

The existing noise contours along roadways and freeways in the City are shown on Exhibit 4.11-2. Due to the recent construction of noise walls along the I-210 Freeway, noise levels near the freeway are expected to be lower than estimated noise levels and projections.

Existing Bus Routes

The City of Arcadia is currently served by both Metro and Foothill Transit, which provide bus service to and through Arcadia as part of their regional systems. Metro operates five lines and Foothill Transit operates four lines. Buses do not run along all arterial streets in Arcadia; the routes are focused along travel ways with regional links. The highest concentration of bus service occurs on Huntington Drive, which has three routes. The routes primarily serve commercial districts and corridors in the City. Large portions of residential neighborhoods are some distance from bus service. The City of Arcadia operates Arcadia Transit, which provides a curb-to-curb demand response service.

Existing Airport Noise Levels

The nearest airport to the City is the El Monte Municipal Airport, located 1.25 miles south of the City's southern boundary. Aircraft operations at this airport are audible at the southern section of the City, and flyovers at low levels are audible over Arcadia. Most of the air traffic consists of single-engine planes that are local flights or transient from other small airports. As shown in Exhibit 4.11-3, El Monte Airport Noise Contours, while some aircraft may fly over portions of the City of Arcadia, the noise contours for the airport show that the 65-dBA CNEL noise contour is located entirely in the City of El Monte.

Existing Railroad Noise Levels

Freight and passenger trains once used the railroad running through the City, but train operations on this line ceased in 1994. With the proposed extension of the Metro Gold Line light rail service into and through Arcadia, train noise is expected to be reintroduced in the City. The proposed light rail commuter trains would use the existing railroad route but are expected to generate less noise than freight trains. Proposed grade-separations would eliminate the use of train horns in the City. However, adjacent residents and businesses would still be exposed to train noise.

4.11.4 THRESHOLDS OF SIGNIFICANCE

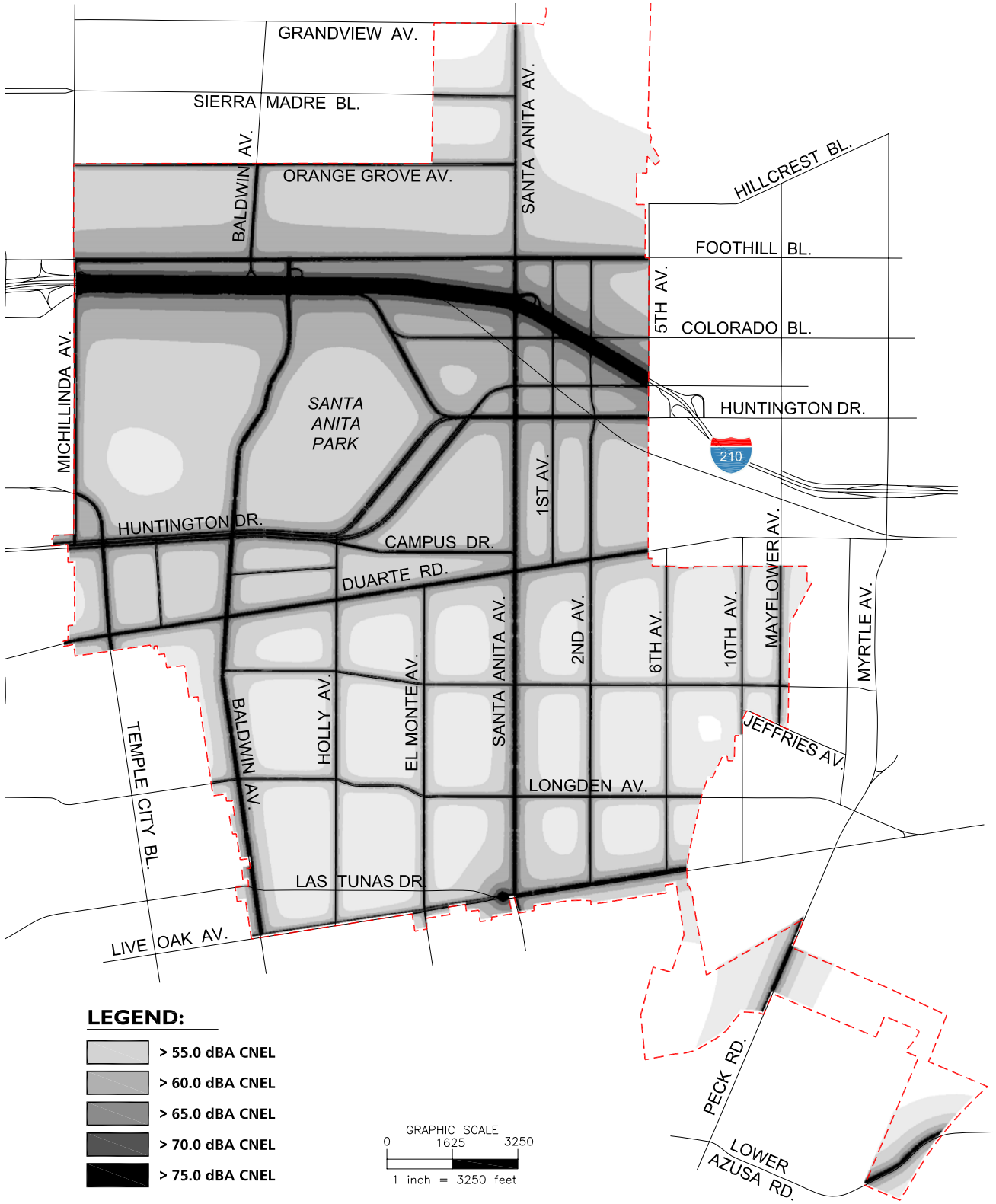
The following significance criteria are derived from Appendix G of the State CEQA Guidelines. The project would result in a significant adverse impact related to noise if it would:

Threshold 4.11a: Cause exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

Threshold 4.11b: Cause exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;

Threshold 4.11c: Cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;

Threshold 4.11d: Cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;



Source: Urban Crossroads

Existing Noise Contours

Exhibit 4.11-2

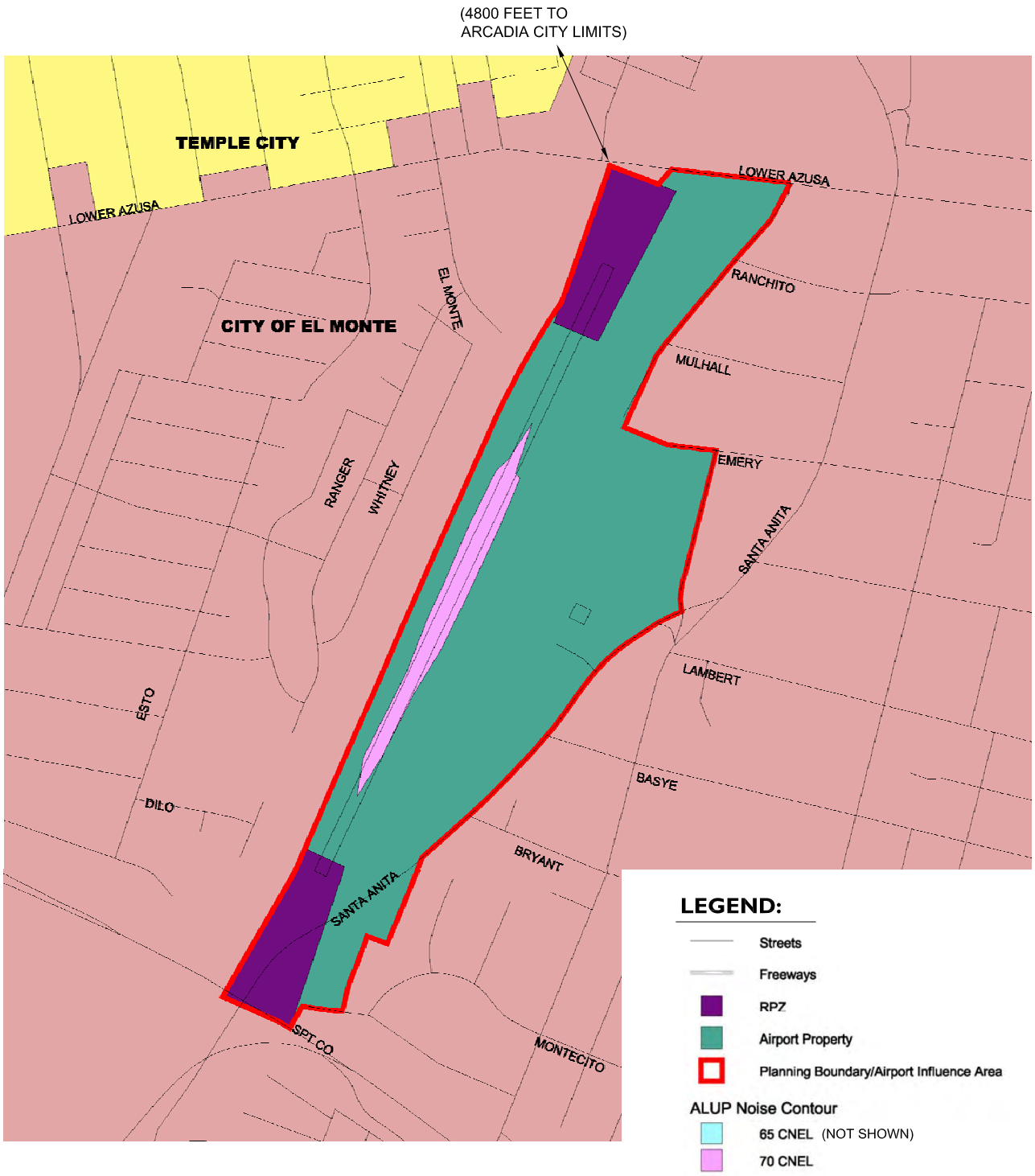
Arcadia General Plan Update

N W E S

BonTerra CONSULTING

(06/15/2010 KFD) PAS R: Projects\Hogle\J010\Graphics\EX4.11-2_EXC.pdf

PAS D:\Projects\Hogle\J010\Graphics\Ex_EXC.ai



Source: Los Angeles County Airport Land Use Commission

El Monte Airport Noise Contours

Exhibit 4.11-3

Arcadia General Plan Update

N
W E
S

BonTerra CONSULTING

(06/15/2010 KFD) PAS R: Projects\Hogle\J010\Graphics\EX4.11-3_EMANC.pdf

PAS D:\Projects\Hogle\J010\Graphics\Ex_EMANC.ai

Threshold 4.11e: For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels; or,

Threshold 4.11f: For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.

4.11.5 GENERAL PLAN GOALS, POLICIES, AND IMPLEMENTATION ACTIONS

A number of goals, policies, and programs in the Noise Element of the proposed Arcadia General Plan Update address the protection of existing and future development from excessive noise levels. Implementation of these goals, policies, and programs would reduce impacts related to noise. These include:

Goal N-1: *Effective incorporation of noise considerations into land use planning decisions.*

> ***Policy N-1.1:*** *Consider noise impacts as part of the development review process relative to residential and other noise-sensitive land uses.*
>
> ***Policy N-1.2:*** *Ensure that acceptable noise levels are maintained near schools, hospitals, and other sensitive areas in accordance with the Noise/Land Use Compatibility Guidelines in Figure N-4, Table N-2 Interior/Exterior Noise Standards, and the City's noise ordinance.*
>
> ***Policy N-1.3:*** *New commercial and industrial developments located adjacent to residential areas and identified noise-sensitive uses shall demonstrate reduction of potential noise impacts on neighboring sensitive uses to acceptable levels.*
>
> ***Policy N-1.4:*** *Discourage new development of residential or other noise-sensitive uses in noise-impacted areas unless effective mitigation measures are incorporated into the project design to reduce noise levels that comply with Noise/Land Use Compatibility Guidelines in Figure N-4 and Table N-2 Interior/Exterior Noise Standards.*
>
> ***Policy N-1.5:*** *Require that proposed projects that have the potential to result in noise impacts include an acoustical analysis and appropriate mitigation to achieve the interior and exterior noise standards indicated in Table N-2 Interior/Exterior Noise Standards.*

Goal N-2: *Reduced noise impacts from transportation sources.*

> ***Policy N-2.1:*** *Enforce State Motor Vehicle Code noise standards for cars, trucks, and motorcycles, and coordinate enforcement with the California Highway Patrol and County of Los Angeles Sheriff's Department.*
>
> ***Policy N-2.2:*** *Continue to work with and lobby Metro to fund gap closure of the I-210 sound walls between Baldwin and Santa Anita Avenues.*
>
> ***Policy N-2.3:*** *Consider using roadway sound attenuation techniques for resurfacing projects that use "quiet" pavement or noise-reducing rubberized asphalt.*
>
> ***Policy N-2.4:*** *Consider the noise impacts on adjacent residential uses associated with establishing stop signs or other traffic control or traffic calming devices.*

Policy N-2.5: *Enforce truck routes established in the Circulation and Infrastructure Element and the Municipal Code.*

Policy N-2.6: *Work with Metro to provide that the design and operation of the Gold Line tracks, crossings, and station area use approaches that will minimize noise impacts associated with train operations on the community. In particular, construct the Santa Anita Avenue crossing as a grade-separated crossing.*

Goal N-3: *Limited intrusion of point-source noise within residential neighborhoods and on noise-sensitive uses.*

Policy N-3.1: *Enforce the noise ordinance to protect residents and noise-sensitive uses from excessive noise levels associated with stationary sources.*

Policy N-3.2: *Encourage industrial and commercial activities to restrict their receiving operations to daytime periods, and condition such operations for new development projects.*

Policy N-3.3: *Explore requiring the use of noise suppression devices and techniques on all exterior noise sources (construction operations, pumps, fans, leaf blowers) to lower exterior noise to levels that are compatible with adjacent land uses.*

Policy N-3.4: *Require any new mixed use structures to be designed to minimize the transfer of noise and vibration from commercial or industrial to residential and other noise-sensitive uses.*

Policy N-3.5: *Require noise created by new non-transportation noise sources to be mitigated so as not to exceed acceptable interior and exterior noise level standards identified in this Noise Element.*

Policy N-3.6: *Provide appropriate funding to monitor noise levels and investigate noise complaints.*

Policy N-3.7: *Educate the community at large about the importance of maintaining a healthy noise environment, and identify ways residents can assist in noise abatement efforts.*

As stated in the Noise Element, land use planning decisions in the City have been and will continue to be guided by the Noise/Land Use Compatibility Guidelines (refer to Table 4.11-2 above). The more detailed criteria set forth in Table 4.11-9 below will be used on a project-specific basis.

TABLE 4.11-9
PROPOSED INTERIOR/EXTERIOR NOISE STANDARDS

Land Use	Maximum Exterior Noise Level	Maximum Interior Noise Level
Residential: Rural, Single-Family, and Multi-Family	65 dBA CNEL	45 dBA CNEL
Schools		
Classroom	70 dBA CNEL	45 dBA Leq
Playground	70 dBA CNEL	—

TABLE 4.11-9 (Continued)
PROPOSED INTERIOR/EXTERIOR NOISE STANDARDS

Land Use	Maximum Exterior Noise Level	Maximum Interior Noise Level
Libraries	—	45 dBA
Hospitals/Convalescent Facilities		
Sleeping Areas	65 dBA CNEL	45 dBA CNEL
Living Areas	—	50 dBA CNEL
Reception, Office	—	50 dBA Leq
Hotels/Motels		
Sleeping Areas	—	45 dBA CNEL
Reception, Office	—	50 dBA Leq
Places of Worship	65 dBA CNEL	45 dBA Leq
Open Space/Recreation		
Wildlife Habitat	60 dBA CNEL	—
Passive Recreation Areas	65 dBA CNEL	—
Active Recreation Areas	70 dBA CNEL	—
Commercial and Business Park		
Office	—	55 dBA Leq
Restaurant, Retail, Service	—	65 dBA Leq
Warehousing/Industrial	—	70 dBA Leq

A number of implementation actions are included in the proposed General Plan Update that would reduce impacts related to noise. These include:

Implementation Action 9-1: *Incorporate Noise Reduction Features During the Site Planning Phase of Development*

Implementation Action 9-2: *Enforce California Noise Insulation Standards*

Implementation Action 9-3: *Ensure Noise Limits Identified in the City's Municipal Code Are Enforced*

Implementation Action 9-4: *Utilization of Land Use Noise Guidelines*

Implementation Action 9-5: *Collaborate with Responsible Agencies to Minimize Transportation Related Noise*

Implementation Action 9-6: *Evaluation of City Purchases*

Implementation Action 9-7: *Quiet Pavement Surfaces*

Implementation Action 9.8: *Impact on Noise Sensitive Land Uses*

4.11.6 STANDARD CONDITIONS

Existing regulations address stationary noise sources and their impacts on adjacent land uses. Compliance by future development with these standard conditions would reduce noise impacts and prevent excessive noise levels in the City. These include those Standard Conditions of Approval (SCs) listed below.

SC 4.11-1: The City of Arcadia's Building Code limits construction-related activities to occur only between the hours of 7:00 AM and 7:00 PM, Monday through Saturday, unless otherwise permitted by the Development Services Department. Construction is prohibited on Sundays and major holidays. Future development

shall comply with these time limits to prevent construction noise during the evening and early morning hours.

SC 4.11-2: Future development in the City shall comply with the City's Noise Ordinance, (Chapter 6, Part 1, Section 4610.3 of the Municipal Code), which sets limits for exterior noise levels.

SC 4.11-3: Future development in the City shall comply with Title 24, Chapter 12 of the *California Administrative Code*, which requires that residential structures (other than detached single-family dwellings) be designed such that the interior CNEL with windows closed shall not exceed 45 dBA in any habitable room.

SC 4.11-4: Future development in the City shall comply with the City's vibration standards in Title 3, Performance Standards, Section 9266.3.9, of the *Arcadia Municipal Code*.

4.11.7 ENVIRONMENTAL IMPACTS

Future development under the proposed General Plan Update would generate new vehicle trips and stationary noise sources that could increase existing noise levels in and near the City.

Noise Levels and Vibration

Threshold 4.11a: Would the proposed 2010 General Plan Update 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?

Threshold 4.11b: Would the proposed 2010 General Plan Update expose people or structures to or generation of excessive groundborne vibration or groundborne noise levels?

Threshold 4.11c: Would the proposed 2010 General Plan Update result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Threshold 4.11d: Would the proposed 2010 General Plan Update result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Construction activities for future development under the proposed General Plan Update and any noise-generating activities associated with the operation of future development would be required to meet the Noise Ordinance standards. Inability to comply with the restrictions in the Noise Ordinance and General Plan Update Land Use and Noise Compatibility standards would result in a significant impact.

Construction (Short-Term) Noise

The General Plan Update would facilitate the completion of various construction projects at numerous locations throughout the City. These projects have the potential to occur in any zoned area, including residential, commercial/office, industrial, and mixed-use areas. It is not known at

this time when and where specific construction might occur, and therefore, potential impacts may only be addressed at a program level.

Construction activity generates noise that has a short-term impact on ambient noise levels. Construction noise is related primarily to the use of heavy equipment. Construction equipment can be considered to operate in two modes: stationary and mobile. Stationary equipment operates in one location for one or more days at a time, with either a fixed-power operation (such as pumps, generators, and compressors) or a variable noise operation (such as pile drivers, rock drills, and pavement breakers). Mobile equipment moves around a construction site with power applied in cyclic fashion (such as bulldozers, graders, and loaders). Noise impacts from stationary equipment are assessed from the center of the equipment, while noise impacts for mobile construction equipment are assessed as emanating from the center of the equipment activity or construction site. For linear construction, such as a roadway or pipeline, construction noise is considered to emanate from the centerline of the alignment.

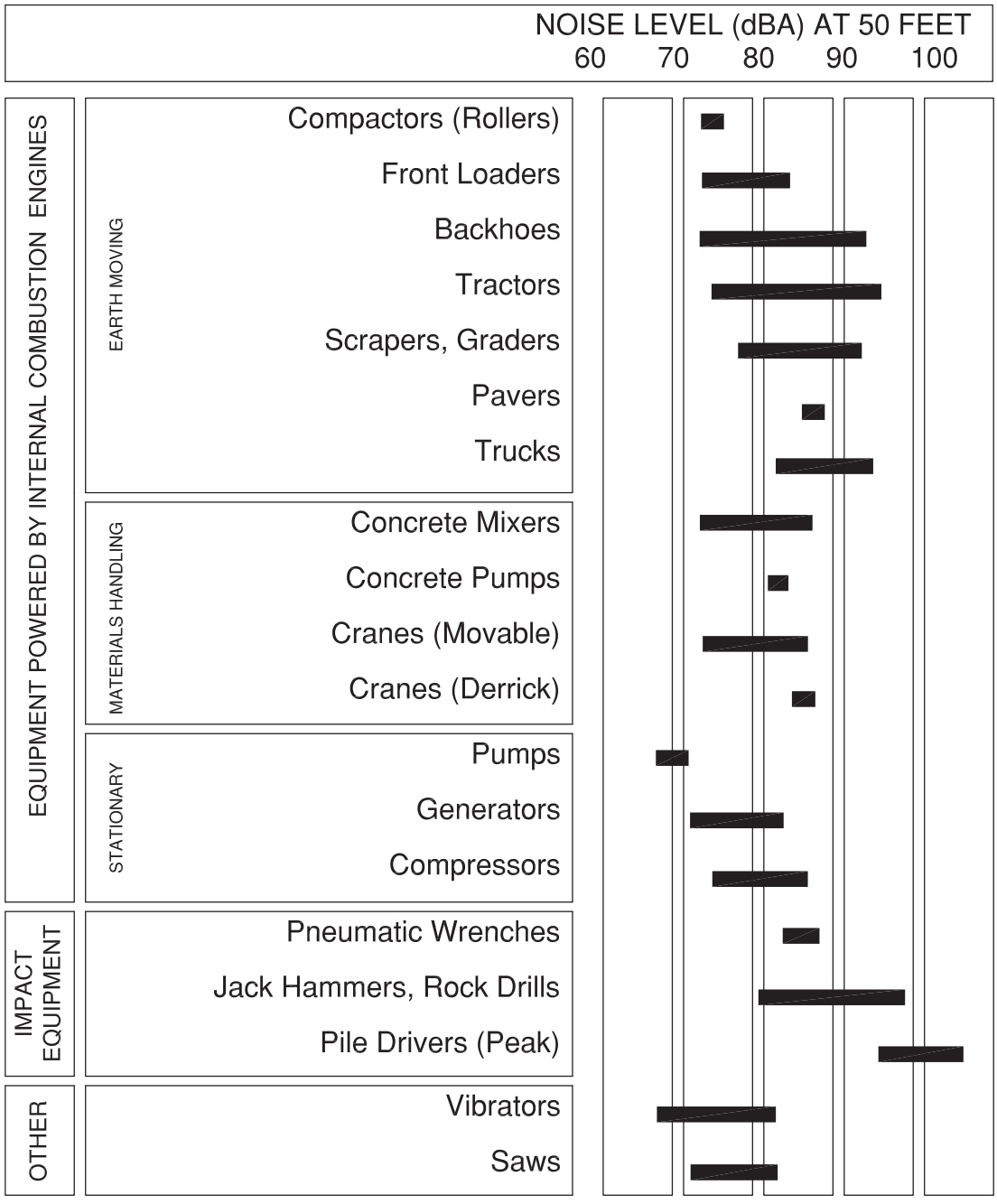
An additional complexity in characterizing the noise source level from construction equipment is the variation in power requirements. To determine the L_{eq} of the equipment's operation, the power variation is accounted for by describing the noise at a reference distance from the equipment operating at full power and adjusting it based on the duty cycle of the activity (length of time the equipment can operate without overheating).

Each stage of construction has a different equipment mix, depending on the work to be accomplished during that stage. Each stage also has its own noise characteristics; some will have higher continuous noise levels than others, and some have high-impact noise levels. The L_{eq} of each stage is determined by combining the L_{eq} contributions from each piece of equipment used in that stage. Typical heavy construction equipment would include bulldozers, excavators, dump trucks, front-end loaders, graders, and industrial/concrete saws. In typical construction projects (such as the proposed project), grading activities generate the highest noise levels as grading involves the largest equipment.

Noise levels generated by heavy construction equipment can range from approximately 68 dBA to noise levels in excess of 100 dBA when measured at 50 feet. However, these noise levels would diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. For example, a noise level of 68 dBA measured at 50 feet from the noise source to the receptor would be reduced to 62 dBA at 100 feet from the source to the receptor, and would be further reduced by another 6 dBA to 56 dBA at 200 feet from the source to the receptor. Noise characteristics for specific types of construction equipment are presented in Exhibit 4.11-4, Typical Construction Equipment Noise Levels.

Because of the effects of noise attenuation, the distance from the noise source to a receptor is a primary consideration in determining the actual noise level experienced at the receptor. Because different construction stages involve different pieces of equipment and may involve only localized portions of a site, each stage of construction can result in different noise levels being generated, depending on the relative distance to sensitive receptors.

Every construction project that is planned within the City would be subject to the standards in the Noise Ordinance (refer to Table 4.11-4). As stated previously, the Arcadia Noise Ordinance exempts construction noise that occurs between the hours of 7:00 AM and 7:00 PM on any day except Sundays and major holidays. This would reduce noise impacts to residences, which are primarily used for noise-sensitive activities (i.e., sleep, rest, relaxation) in the evening and early morning hours and on weekends and holidays.



NOTE: Based on limited available data samples.

Source: United States Environmental Protection Agency, 1971

Typical Construction Noise Levels

Exhibit 4.11-4

Arcadia General Plan Update

BonTerra CONSULTING

(06/15/2010 KFD) PAS R: Projects\Hogle\J010\Graphics\EX4.11-4_TCNL.pdf

PAS D:\Projects\Hogle\J010\Graphics\Ex_TCNL.ai

For daytime noise impacts, the Noise Element in the proposed General Plan Update contains goals and policies that would reduce noise impacts in the City, as listed above. Policy N-3.2 requires the use of noise-suppression devices and techniques during construction. Policy N-1.2 requires that noise levels comply with the Interior/Exterior Noise Standards and the Noise/Land Use Compatibility Guidelines. Implementation actions are also included to prevent nuisance noise, reduce noise impacts on sensitive receptors, and comply with City regulations and noise standards.

The determination of whether or not a particular project would violate the noise standards will need to be analyzed on a case-by-case basis. If any of these noise thresholds are violated by new project construction activity, appropriate mitigation measures would have to be designed to bring the noise level down to an acceptable level. These include development and implementation of a noise mitigation plan for construction activities near noise-sensitive receptors and designation of haul routes for construction equipment and trucks that divert construction traffic from residential areas and noise-sensitive land uses. Future projects have the potential to produce short-term construction noise levels that violate these noise standards. However, compliance with the Noise Ordinance and City Noise Standards (SC 4.11-1 through 4.11-3) and implementation of Mitigation Measures (MM) 4.11-1, construction noise impacts would be reduced to a less than significant level.

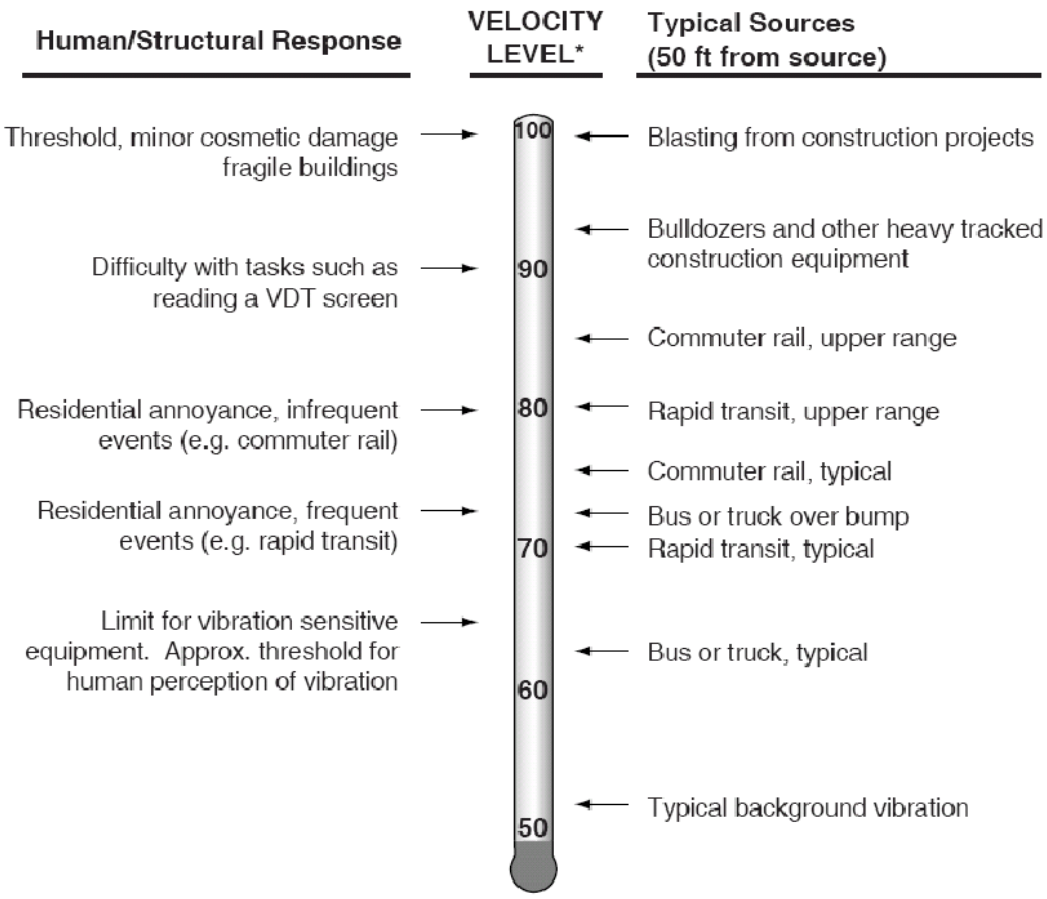
Groundborne Vibration

Groundborne vibration generated by construction projects is usually highest during pile driving, soil compacting, jack-hammering, and demolition-related activities. Typical levels of ground vibration are presented in Exhibit 4.11-5. Next to pile driving, grading activity has the greatest potential for vibration impacts as the greatest number of pieces of equipment would occur during this stage in the closest proximity to sensitive receptors. Occasionally, large bulldozers and loaded trucks can cause perceptible vibration levels at close proximity. Construction activity can result in varying degrees of groundborne vibration, depending on the equipment and methods used, distance to the affected structures, and soil type. The effects of groundborne vibration are generally limited to movement of building floors, rattling of windows and objects, and rumbling sounds, resulting in annoyance.

In general, groundborne vibration associated with transportation and construction activities attenuates rapidly with distance from the source. Vibration may be noticeable for short periods during construction, but it would be temporary and periodic and would not be excessive; vibration would not be a significant impact.

Policy N-2.5 would establish truck routes in accordance with the Circulation and Infrastructure Element and the *Arcadia Municipal Code*. Compliance with the City's vibration standards (SC 4.11-4) would also reduce vibration impacts on adjacent land uses.

Future development could generate vibration during future construction and grading activities or be exposed to vibration from off-site sources (i.e., train activity on the railroad tracks). SC 4.11-4 and MM 4.11-4 would minimize vibration impacts to on-site land uses to the maximum extent feasible. With mitigation, vibration levels at sensitive receptors would be mitigated to a less than significant level. Therefore, with implementation of SC 4.11-4 and MM 4.11-4, vibration impacts would be less than significant.



** RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second*

Source: Urban Crossroads

Typical Levels of Ground Vibration — Exhibit 4.11-5

Arcadia General Plan Update

BonTerra CONSULTING

(06/15/2010 KFD) PAS R: Projects\Hogle\J010\Graphics\EX4.11-5_TLGV.pdf

PAS D:\Projects\Hogle\J010\Graphics\Ex_TLGV.ai

Operational (Long-Term) Noise

Project Land Use Compatibility

Land use compatibility is determined by the future noise level anticipated on a site and the type of existing or proposed land use on that site. In an urban environment (such as the proposed project area), transportation-related noise is the primary concern. As previously noted, the primary source of noise in the project area is traffic on local streets adjacent to the I-210 Freeway and major City roads such as Foothill Boulevard, Campus Avenue, Duarte Road, Michillinda Avenue, Huntington Drive, Live Oak Avenue, Colorado Street, and Baldwin Avenue. Near-term noise levels would be lower than the future "buildout" or cumulative noise levels when there would be more traffic. Thus, land use compatibility based on noise impacts were determined using the daily 2035 with-project traffic volumes, as determined in the *City of Arcadia General Plan EIR Traffic Study* prepared by The Mobility Group for the proposed General Plan Update. For the purpose of this analysis and consistent with the noise compatibility guidelines included in the Environmental Hazards chapter of the *Arcadia General Plan*, the portions of the project area exposed to noise levels from 60 to 70 dBA CNEL are considered "conditionally acceptable", from 70 to 75 dBA CNEL "normally unacceptable", and over 75 dBA CNEL "clearly unacceptable" for the development of multi-family homes.

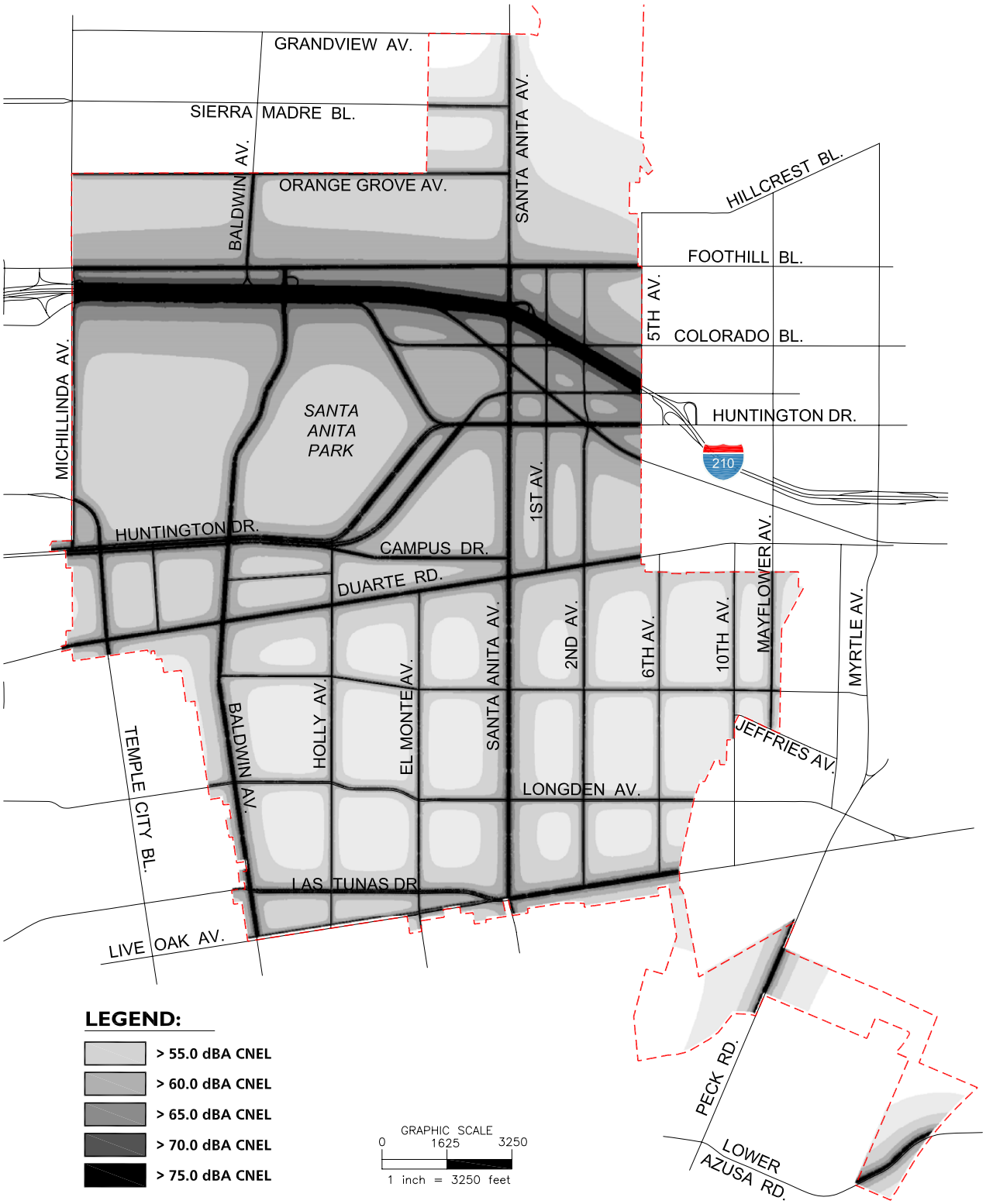
The following analysis for land use compatibility addresses (1) traffic noise impacts on proposed uses; (2) rail noise impacts on proposed uses; and (3) noise impacts from stationary sources on proposed uses including commercial/industrial uses and the Santa Anita Race Track.

Traffic Noise Impacts

Exhibit 4.11-6 illustrates the projected noise levels at buildout of the City in 2035 and Table 4.11-10 provides the estimated noise levels. These noise levels were estimated using soft site conditions. The table shows the CNEL noise level at 100 feet from the centerline of the roadway for each of the roadway segments as well as the distance to the 55, 60, 65 and 70 dBA CNEL noise contours. These contours do not take into account the effect of any noise barriers, topography, or final roadway grades that may reduce traffic noise levels.

TABLE 4.11-10
FUTURE 2035 GENERAL PLAN DEVELOPMENT NOISE CONTOURS

Road	Segment	CNEL at 100 feet (dBA)	Distance to Contour (feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Sierra Madre Boulevard	West of Santa Anita Avenue	66.2	56	120	259	559
Orange Grove Avenue	Baldwin Avenue to Santa Anita Avenue	68.1	74	160	344	742
Foothill Boulevard	Michillinda Avenue to Baldwin Avenue	73.1	160	346	744	1,604
Foothill Boulevard	Baldwin Avenue to Santa Anita Avenue	72.5	147	317	683	1,471
Foothill Boulevard	Santa Anita Avenue to 5th Avenue	74.4	196	422	910	1,961
Colorado Street	Michillinda Avenue to Baldwin Avenue	72.5	148	319	686	1,479
Colorado Street	Baldwin Avenue to Colorado Boulevard	71.7	130	280	604	1,300

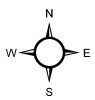


Source: Urban Crossroads

Future Noise Contours

Exhibit 4.11-6

Arcadia General Plan Update



BonTerra CONSULTING

(06/15/2010 KFD) PAS R: Projects\Hogle\J010\Graphics\EX4.11-6_FNC.pdf

PAS D:\Projects\Hogle\J010\Graphics\Ex_FNC.ai

TABLE 4.11-10 (Continued)
FUTURE 2035 GENERAL PLAN DEVELOPMENT NOISE CONTOURS

Road	Segment	CNEL at 100 feet (dBA)	Distance to Contour (feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Colorado Boulevard	Santa Anita Avenue to 2nd Avenue	68.8	84	180	389	837
Colorado Boulevard	2nd Avenue to 5th Avenue	65.7	52	111	240	517
Santa Clara Street	Colorado Place to Santa Anita Avenue	71.8	132	285	615	1,324
Santa Clara Street	2nd Street to 5th Avenue	68.0	73	158	340	732
Huntington Drive	Temple City Boulevard to Baldwin Avenue	79.2	411	885	1,907	4,108
Huntington Drive	Baldwin Avenue to Holly Avenue	79.7	442	952	2,050	4.417
Huntington Drive	Colorado Place to Santa Anita Avenue	73.9	182	393	847	1,824
Huntington Drive	2nd Avenue to 5th Avenue	74.7	205	442	952	2,051
Campus Drive	Holly Avenue to Santa Anita Avenue	71.2	120	259	558	1,203
Fairview Avenue	Baldwin Avenue to Holly Avenue	63.3	36	77	167	359
Duarte Road	West of Temple City Boulevard	72.3	143	309	665	1,434
Duarte Road	Temple City Boulevard to Holly Avenue	72.9	157	338	729	1,570
Duarte Road	Holly Avenue to Santa Anita Avenue	73.2	163	351	756	1,628
Duarte Road	Santa Anita Avenue to 5th Avenue	73.2	164	354	763	1,643
Camino Real	El Monte Avenue to Santa Anita Avenue	64.6	44	95	204	440
Longden Avenue	El Monte Avenue to Santa Anita Avenue	65.9	53	114	246	529
Las Tunas Drive	Baldwin Avenue to Holly Avenue	73.2	163	351	756	1,628
Live Oak Avenue	El Monte Avenue to Santa Anita Avenue	68.6	81	174	374	806
Live Oak Avenue	Santa Anita Avenue to 2nd Avenue	74.6	204	439	945	2,036
Lower Azusa Road	East of Peck Road	74.8	209	450	971	2,091
Michillinda Avenue	Colorado Street to California Boulevard	71.9	134	289	622	1,341
Temple City Boulevard	Huntington Drive to Duarte Road	72.5	147	317	682	1,470
Golden West Avenue	Huntington Drive to Duarte Road	64.8	45	97	209	451
Baldwin Avenue	Orange Grove Avenue to Foothill Avenue	70.5	108	233	503	1,083
Baldwin Avenue	Foothill Boulevard to Hugo Reid Drive	75.4	227	490	1,056	2,275

TABLE 4.11-10 (Continued)
FUTURE 2035 GENERAL PLAN DEVELOPMENT NOISE CONTOURS

Road	Segment	CNEL at 100 feet (dBA)	Distance to Contour (feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Baldwin Avenue	Hugo Reid Drive to Huntington Drive	73.9	183	395	851	1,833
Baldwin Avenue	Huntington Drive to Duarte Road	74.6	204	439	947	2,040
Baldwin Avenue	Duarte Road to Live Oak Avenue	74.2	189	408	879	1,893
Holly Avenue	Campus Drive to Duarte Road	67.2	65	140	303	652
Holly Avenue	Longden Avenue to Live Oak Avenue	64.2	41	88	191	411
El Monte Avenue	Longden Avenue to Live Oak Avenue	66.4	57	123	266	572
Santa Anita Avenue	Grove Avenue	68.0	74	159	343	739
Santa Anita Avenue	Foothill Boulevard to Colorado Boulevard	73.6	174	374	807	1,738
Santa Anita Avenue	Colorado Boulevard to Huntington Drive	75.7	238	513	1,106	2,383
Santa Anita Avenue	Huntington Drive to Duarte Road	74.9	212	457	984	2,119
Santa Anita Avenue	Duarte Road to Camino Real	75.0	215	462	996	2,146
1st Avenue	Colorado Boulevard to Huntington Drive	67.9	73	157	338	729
1st Avenue	Huntington Drive to Duarte Road	67.7	70	150	324	698
2nd Avenue	Foothill Boulevard to Colorado Boulevard	65.8	RW	112	242	521
2nd Avenue	Colorado Boulevard to Huntington Drive	66.7	61	131	282	607
2nd Avenue	Huntington Drive to Duarte Road	68.5	79	170	367	791
2nd Avenue	Duarte Road to Camino Real	67.0	63	136	292	629
6th Avenue	Duarte Road to Camino Real	63.2	35	76	164	353
10th Avenue	Duarte Road to Camino Real	62.2	RW	65	141	303
Mayflower Avenue	Duarte Road to Camino Real	65.9	53	115	248	534
Peck Road	South of Clark Street	73.5	170	366	789	1,699
I-210 Freeway	West of Baldwin Avenue	87.3	1,416	3,051	6,573	14,162
I-210 Freeway	East of Baldwin Avenue	87.2	1,394	3,004	6,472	13,943
RW: Within right of way						

Table 4.11-11 presents the comparison of the year 2035 CNEL contours at 100 feet as shown in Table 4.11-10 against baseline levels presented in Table 4.11-8.

TABLE 4.11-11
FUTURE 2035 WITH GENERAL PLAN DEVELOPMENT TRAFFIC NOISE INCREASE OVER EXISTING CONDITIONS

Road	Segment	CNEL at 100 Feet (dBA)		Increase	Significant Impact?[1]
		Existing	Year 2035		
Sierra Madre Boulevard	West of Santa Anita Avenue	66.0	66.2	0.2	YES
Orange Grove Avenue	Baldwin Avenue to Santa Anita Avenue	67.9	68.1	0.2	YES
Foothill Boulevard	Michillinda Avenue to Baldwin Avenue	72.7	73.1	0.3	YES
Foothill Boulevard	Baldwin Avenue to Santa Anita Avenue	72.2	72.5	0.3	YES
Foothill Boulevard	Santa Anita Avenue to 2nd Avenue	74.0	74.4	0.4	YES
Colorado Street	Michillinda Avenue to Baldwin Avenue	71.8	72.5	0.8	YES
Colorado Street	Baldwin Avenue to Colorado Boulevard	71.4	71.7	0.3	YES
Colorado Boulevard	Santa Anita Avenue to 2nd Avenue	67.9	68.8	0.9	YES
Colorado Boulevard	2nd Avenue to 5th Avenue	64.8	65.7	0.9	YES
Santa Clara Street	Colorado Place to Santa Anita Avenue	70.3	71.8	1.5	YES
Santa Clara Street	2nd Street to 5th Avenue	67.1	68.0	0.8	YES
Huntington Drive	Temple City Boulevard to Baldwin Avenue	78.1	79.2	1.1	YES
Huntington Drive	Baldwin Avenue to Holly Avenue	78.6	79.7	1.1	YES
Huntington Drive	Colorado Place to Santa Anita Avenue	72.8	73.9	1.1	YES
Huntington Drive	2nd Avenue to 5th Avenue	73.8	74.7	0.9	YES
Campus Drive	Holly Avenue to Santa Anita Avenue	69.8	71.2	1.4	YES
Fairview Road	Baldwin Avenue to Holly Avenue	63.1	63.3	0.2	NO
Duarte Road	West of Temple City Boulevard	71.6	72.3	0.7	YES
Duarte Road	Temple City Boulevard to Holly Avenue	72.4	72.9	0.5	YES
Duarte Road	Holly Avenue to Santa Anita Avenue	72.7	73.2	0.5	YES
Duarte Road	Santa Anita Avenue to 5th Avenue	72.8	73.2	0.4	YES
Camino Real	El Monte Avenue to Santa Anita Avenue	64.4	64.6	0.2	NO
Longden Avenue	El Monte Avenue to Santa Anita Avenue	65.5	65.9	0.3	YES
Las Tunas Drive	Baldwin Avenue to Holly Avenue	72.6	73.2	0.6	YES
Live Oak Avenue	El Monte Avenue to Santa Anita Avenue	68.5	68.6	0.1	YES

TABLE 4.11-11 (Continued)
FUTURE 2035 WITH GENERAL PLAN DEVELOPMENT TRAFFIC NOISE INCREASE OVER EXISTING CONDITIONS

Road	Segment	CNEL at 100 Feet (dBA)		Increase	Significant Impact?[1]
		Existing	Year 2035		
Live Oak Avenue	Santa Anita Avenue to 2nd Avenue	74.2	74.6	0.4	YES
Lower Azusa Road	East of Peck Road	74.4	74.8	0.4	YES
Michillinda Avenue	Colorado Street to California Boulevard	71.7	71.9	0.2	YES
Temple City Boulevard	Huntington Drive to Duarte Road	72.2	72.5	0.3	YES
Golden West Avenue	Huntington Drive to Duarte Road	64.4	64.8	0.4	NO
Baldwin Avenue	Orange Grove Avenue to Foothill Avenue	70.3	70.5	0.3	YES
Baldwin Avenue	Foothill Boulevard to Hugo Reid Drive	74.4	75.4	1.0	YES
Baldwin Avenue	Hugo Reid Drive to Huntington Drive	73.7	73.9	0.3	YES
Baldwin Avenue	Huntington Drive to Duarte Road	74.3	74.6	0.4	YES
Baldwin Avenue	Duarte Road to Live Oak Avenue	73.8	74.2	0.3	YES
Holly Avenue	Campus Drive to Duarte Road	67.0	67.2	0.2	YES
Holly Avenue	Longden Avenue to Live Oak Avenue	64.0	64.2	0.2	NO
El Monte Avenue	Longden Avenue to Live Oak Avenue	66.2	66.4	0.2	YES
Santa Anita Avenue	Grove Avenue	67.7	68.0	0.3	YES
Santa Anita Avenue	Foothill Boulevard to Colorado Boulevard	73.2	73.6	0.4	NO
Santa Anita Avenue	Colorado Boulevard to Huntington Drive	74.6	75.7	1.0	YES
Santa Anita Avenue	Huntington Drive to Duarte Road	73.9	74.9	1.0	YES
Santa Anita Avenue	Duarte Road to Camino Real	74.3	75.0	0.7	YES
1st Avenue	Colorado Boulevard to Huntington Drive	67.0	67.9	0.9	YES
1st Avenue	Huntington Drive to Duarte Road	66.6	67.7	1.0	YES
2nd Avenue	Foothill Boulevard to Colorado Boulevard	65.5	65.8	0.3	YES
2nd Avenue	Colorado Boulevard to Huntington Drive	66.4	66.7	0.3	YES
2nd Avenue	Huntington Drive to Duarte Road	68.0	68.5	0.4	YES
2nd Avenue	Duarte Road to Camino Real	66.8	67.0	0.2	YES

TABLE 4.11-11 (Continued)
FUTURE 2035 WITH GENERAL PLAN DEVELOPMENT TRAFFIC NOISE INCREASE OVER EXISTING CONDITIONS

Road	Segment	CNEL at 100 Feet (dBA)		Increase	Significant Impact?[1]
		Existing	Year 2035		
6th Avenue	Duarte Road to Camino Real	63.0	63.2	0.2	NO
10th Avenue	Duarte Road to Camino Real	62.0	62.2	0.2	NO
Mayflower Avenue	Duarte Road to Camino Real	65.9	65.9	0.0	YES
Peck Road	South of Clark Street	73.0	73.5	0.4	YES
I-210 Freeway	West of Baldwin Avenue	87.3	87.3	0.0	YES
I-210 Freeway	East of Baldwin Avenue	87.2	87.2	0.0	YES

[1] A significant impact is considered the noise level is above 65 dBA CNEL or the increase would be greater than 3.0 dBA.

The table shows that none of the roadway segments would experience a noise increase that exceeds 3.0 dB over existing noise levels. The comparison of dBA CNEL at 100 feet indicates that the existing baseline noise levels range from 62.0 to 87.3 dBA CNEL 100 feet from the street centerline, while the Year 2035 conditions show noise levels would range from 62.2 to 87.3 dBA CNEL 100 feet from the street centerline. Thus, existing or future sensitive noise receptors along roadways that would have noise levels greater than 65 dBA CNEL would be exposed to noise levels exceeding the City's exterior standards of 65 to 70 dBA CNEL. Depending on the building construction, interior noise levels at these sensitive receptors may also exceed standards.

For the Year 2035 conditions, noise levels are projected to increase from baseline conditions by up to 1.5 dBA CNEL, which would not be discernible. Also, increases in noise levels would be incremental over time, as buildout of the City occurs. Since an increase of less than 3.0 dBA CNEL is not considered substantial in terms of community noise impacts, off-site roadway noise level increases would not cause any perceptible noise increases. However, even if increases in noise levels would not be perceptible, vehicle trips generated by future development would add to existing high noise levels in excess of the standards in the City of Arcadia's Noise Element. Thus, significant adverse impacts would occur.

A number of goals and policies in the Noise Element address noise control and would reduce noise impacts on existing and future developments. Goal N-2 calls for reduced noise impacts related to transportation sources. Policy N-2.1 requires the enforcement of State Motor Vehicle Code noise standards for cars, trucks, and motorcycles, and coordination with the California Highway Patrol and County of Los Angeles Sheriff's Department. Policy N-2.3 calls for the consideration of using roadway sound attenuation techniques for resurfacing projects that use "quiet" pavement or noise-reducing rubberized asphalt. Policy N-2.4 considers the noise impacts on adjacent residential uses associated with establishing stop signs or other traffic control or traffic-calming devices. Policy N-2.5 calls for the enforcement of truck routes established in the Circulation and Infrastructure Element and the Municipal Code. Policy N-2.6 calls for coordination with the Los Angeles County Metropolitan Transportation Authority (LACMTA) in order to ensure that the design and operation of the Gold Line tracks, crossings, and station areas use approaches that will minimize noise impacts associated with train operations on the community, particularly construction of the Santa Anita Avenue crossing as a grade-separated crossing. A number of Implementation Actions are also proposed to reduce

noise from transportation sources and impacts on sensitive receptors, as listed above. However, continued exposure of noise-sensitive receptors to existing high noise levels along major roadways are expected to remain. This impact would be significant and unavoidable.

Railroad Noise Impacts

The Metro Light Rail Gold Line (Gold Line Phase II) would be extended from Pasadena to Montclair, into and through Arcadia. Freight and passenger trains once traveled along rail routes through the City, but ceased in 1994. Train noise would represent a reintroduced noise source. Light rail commuter trains would use the same route as the prior freight trains, but they would not create comparable noise levels to the heavier diesel locomotives and long trains of the past.

As part of the Gold Line Phase II extension, a new station and parking structure are planned for construction on the southeastern corner of the intersection of First Avenue and Santa Clara Street. Noise associated with the station and parking structure would include general rail activities, a public announcement system, and bus/locomotive idling. The proposed station would be located in an area planned for mixed-use developments including residential uses. The noise associated with the new light rail transit station could cause noise impacts to these surrounding uses. Development in this area would be required to prepare noise studies to determine noise exposure from train noise and incorporate measures to meet the City's standards for exterior and interior living areas (refer to MM 4.11-2). This may include site design with exterior living areas and common recreational areas on the opposite side of the tracks; noise control construction methods to reduce indoor noise levels; or the provision of noise barriers.

Four grade-separated and one at-grade rail line crossings are proposed in the City, all occurring at major arterial roadways. At the grade-separated crossings, an overall daily noise level of 64.4 dBA CNEL is expected at 50 feet from the track centerline. For the at-grade crossing located at Santa Clara Street and First Avenue, an overall daily noise level including horns sounding of 84 dBA CNEL at 50 feet can be expected. The noise impacts at this at-grade crossing are expected to be very short-term based on limited horn activity. All trains are required to sound their horns near at-grade crossings unless a request for a "quiet zone" is permitted.

While noise barriers may exist in some locations in relation to past freight train activities, any future rail activities on the proposed Gold Line extension are expected to cause a significant noise impact to any existing noise-sensitive land uses due to the lack of existing freight train or light rail operations.

The Noise Element in the proposed General Plan Update contains goals and policies that would reduce noise impacts in the City, as listed above. Policy N-2.6 calls for the coordination with the LACMTA to provide that the design and operation of the Gold Line tracks, crossings, and station areas use approaches that will minimize noise impacts associated with train operations on the community, particularly construction of the Santa Anita Avenue crossing as a grade-separated crossing. Implementation actions are also included to reduce noise impacts on sensitive receptors and comply with City regulations and noise standards. Compliance with SCs 4.11-2 and 4.11-3 would also reduce noise impacts on future developments from train operations.

For any future residential development in the vicinity of the proposed Gold Line extension, a detailed noise impact analysis would be required to accurately assess the potential future railroad operations once final plans are available (refer to MM 4.11-2). Noise control measures may include locating outdoor living areas away from the railroad tracks; provision of a wall,

berm, or other barrier to the noise source; and sound insulation or specialized construction methods to block out exterior noise.

For purposes of this analysis, potential impacts are considered significant; however, implementation of MMs 4.11-2 through 4.11-4 requiring preparation of project-specific noise impact analyses and adherence to the required mitigation measures identified in the analyses would reduce impacts to less than significant levels.

Bus Route-Related Noise Impacts

The increased regional emphasis on improving public transit over the long term would necessitate coordination with both Foothill Transit and LACMTA as the regional transit operators, and may involve evaluation by these agencies for new service routes or increases in service frequencies based on service standards and other operational criteria.

Noise impacts associated with bus stops include peak noise levels generated by bus brakes, shifting gears, and engine noise during bus acceleration from the bus stop. Buses are equivalent to heavy trucks in terms of noise generation. Whether conditions or changes in bus service have a detrimental impact depends on the ambient noise level at the particular location. In other words, bus stops located near noise-sensitive uses create greater noise impacts when they occur at minor streets. However, most bus and truck routes within the City are along major roads. For any future developments in the vicinity of the bus routes, a detailed noise impact analysis would be required to accurately assess the potential impacts associated with bus activities and to require compliance with the City's exterior and interior noise standards (SCs 4.11-2 and 4.11-3). This would reduce impacts to less than significant levels.

Noise Sensitive Uses

Special awareness of noise compatibility issues should be given to noise-sensitive locations adjacent to commercial/industrial areas. Noise impacts associated with commercial/industrial areas include, but are not limited to, noise generated by loading dock operations, trucks entering and leaving commercial and industrial districts, and mechanical equipment (such as fans, motors, and compressors) located inside and outside the buildings. The introduction of mixed-uses along residential and commercial corridors can create potential noise impacts to noise-sensitive uses. Potential noise conflicts can occur when noise-sensitive areas are exposed to these noise sources.

The largest single source of commercial noise in the City is the Santa Anita Race Track. The race track, when in operation, can accommodate more than 50,000 guests, resulting in increased traffic noise on local arterials. Additionally, the track side announcer's loudspeaker tends to impinge into neighboring residential areas, and noise impacts from maintenance equipment associated with Santa Anita Park occur. Noise-sensitive uses that would be developed in the vicinity of the race track should account for these potential impacts in a project-specific noise analysis and potential mitigation measures to reduce expected noise impacts (as required under SCs 4.11-2 and 4.11-3). Future development projects have the potential to produce short-term construction noise levels that generate nuisance noise impacts; however, compliance with the Noise Ordinance and the City's Noise Standards (SC 4.11-1 through 4.11-3) and implementation of MMs 4.11-1 through 4.11-3 would reduce noise impacts to less than significant levels.

As discussed above, traffic noise impacts on noise-sensitive receptors would be significant due to high noise levels that exceed City standards along major roadways and the contribution of

future development pursuant to the proposed General Plan Update to these noise standard violations.

Airport and Airstrip Noise

Threshold 4.12e: Would the proposed 2010 General Plan Update expose people residing or working in the project area to excessive noise levels, 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?

Threshold 4.12f: Would the proposed 2010 General Plan Update expose people residing or working in the project area to excessive noise levels, for a project within the vicinity of a private airstrip?

As discussed previously, the closest airport to Arcadia is the El Monte Airport, which is located approximately 1.25 miles to the south of the City. Aircraft operations at this airport are audible at the southern section of the City, and flyovers at low levels are audible over the City of Arcadia. As demonstrated in Exhibit 4.11-3, El Monte Airport Noise Contours, while some aircrafts may fly over portions of the City of Arcadia, the noise contours for the airport show that the 65-dBA CNEL noise contour is located entirely in the City of El Monte. While aircraft noise may be audible intermittently throughout the City, aircraft noise would not result in a significant impact, and no mitigation measures are necessary.

4.11.8 CUMULATIVE IMPACTS

Future development in the City and the surrounding area would add new mobile and stationary noise sources, resulting in increased noise levels. The analysis of buildout of the proposed General Plan Update includes cumulative traffic volumes in the region by 2035. Thus, noise impacts associated with the proposed General Plan Update accounts for cumulative noise impacts, which were determined using the daily 2035 with-project traffic volumes, as calculated in the *City of Arcadia General Plan EIR Traffic Study*.

The results of the short-term noise level measurements are presented in Table 4.11-6. As shown, the existing ambient L_{eq} noise levels ranged from 51.9 dBA L_{eq} to 69.9 dBA L_{eq}. The highest noise levels were measured in areas adjacent to the I-210 Freeway and major City roads such as Foothill Boulevard, Campus Avenue, Duarte Road, Michillinda Avenue, Huntington Drive, Live Oak Avenue, Colorado Street, and Baldwin Avenue. Noise levels in the City currently are illustrated in Tables 4.11-6 and 4.11-7. The existing ambient L_{eq} noise levels ranged from 51.9 dBA L_{eq} to 69.9 dBA L_{eq}. The highest noise levels were measured in areas adjacent to the I-210 Freeway and major City roads, such as Foothill Boulevard, Campus Avenue, Duarte Road, Michillinda Avenue, Huntington Drive, Live Oak Avenue, Colorado Street, and Baldwin Avenue.

Off-site cumulative noise impacts project increases in noise levels over existing conditions with buildout of the City under the proposed General Plan Update and other developments in the San Gabriel Valley subregion. Thus, the analysis of traffic-related noise impacts presented above accounts for cumulative traffic from future growth assumed in the SCAG traffic model, as well as development projects in the City of Arcadia.

While none of the roadway segments would experience a noise increase that exceeds 3.0 dB over existing noise levels, the Year 2035 noise levels would range from 62.2 to 87.3 dBA CNEL

100 feet from the street centerline. Thus, any noise level increase would contribute to existing high noise levels that would impact existing or future sensitive noise receptors along major roadways. Thus, while traffic noise increases would be less than the 3 dBA, existing violations of City noise standards would be exacerbated, and the cumulative off-site traffic noise impact would be significant.

4.11.9 MITIGATION MEASURES

MM 4.11-1: Prior to issuance of discretionary permits for construction activities, project applicants/developers shall submit evidence to the Director of Development Services that the following noise reduction measures are stated as requirements on the construction plans and specifications:

- During all excavation and grading, the construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise-sensitive receptors.

- When feasible, the construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise sensitive receptors during all project construction.

- The construction contractor shall limit all construction-related activities that would result in high noise levels, according to the construction hours set forth in the Municipal Code.

- The construction contractor shall limit haul truck deliveries to the same hours specified for construction equipment. To the extent feasible, haul routes shall not pass sensitive land uses or residential dwellings.

MM 4.11-2: Prior to the issuance of discretionary permits for residential development in areas with existing high levels of ambient noise (i.e., along major roadways and the railroad tracks), a detailed acoustical study using architectural plans shall be prepared by a qualified Acoustical Consultant and submitted to the Development Services Department for residential structures. This report shall describe and quantify the noise sources impacting the building(s), the amount of outdoor-to-indoor noise reduction provided in the architectural plans, and any upgrades required to meet the City's interior noise standards (45 CNEL for residences). The measures described in the report shall be incorporated into the architectural plans for the buildings and implemented with building construction.

MM 4.11-3: For proposed commercial and industrial land uses that would generate stationary noise near noise sensitive receptors, a detailed noise assessment shall be prepared by a qualified Acoustical Consultant prior to the issuance of building permits. The assessment shall utilize noise data provided by the manufacturer(s) of the equipment utilized by the project or noise measurements from substantially similar equipment to project noise levels at the noise-sensitive uses (on- and off-site). Compliance with the City's noise standards for residences shall be demonstrated and any measures required to meet the noise standards shall be described and incorporated into the building plans for the project. These measures may include, but not be limited to, selection of quiet models,

construction of barriers, equipment enclosures, and placement of the equipment. Project applicants/developers shall submit evidence to the Director of Planning Development that the following noise reduction measures are stated as requirements on the construction plans and specifications:

- Require preparation of a noise analysis for all proposed commercial and industrial projects to be located adjacent to an existing noise-sensitive use, including but not limited to residential areas, schools, and hospitals.

- Design the construction of new commercial and industrial uses adjacent to noise-sensitive uses with noise mitigation measures to reduce the noise impacts associated with truck deliveries and stationary equipment, such as pumps, compressors, and air conditioning units.

- Require that all loading facilities be located and designed to minimize the potential noise impacts to adjacent noise sensitive uses.

MM 4.11-4: Prior to the issuance of a grading permit for projects that have a potential to generate groundborne vibration (e.g., use of pile drivers, rock drills, and pavement breakers) or be exposed to vibration from off-site sources, the City shall require applicants for development projects that would be located adjacent to any developed/occupied sensitive local receptors or for proposed residential projects to submit a construction-related vibration mitigation plan to the City for review and approval. The mitigation plan shall depict the location of the construction equipment and activities and how the vibration from this equipment and activity would be mitigated during construction of the project.

4.11.10 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Noise Levels and Vibration

Significant Unavoidable Impact

Railroad Noise

Less Than Significant Impact With Mitigation

Bus Route Noise

Less Than Significant Impact With Mitigation

Airport and Airstrip Noise

Less Than Significant Impact

Cumulative Impacts

Significant Unavoidable Impact