5.5 Noise

5.5 NOISE

The purpose of this section is to analyze project-related noise source impacts on-site and to surrounding land uses. This section evaluates short-term construction-related noise impacts, as well operational impacts. Information in this section is based primarily on the *Azusa Light Industrial Noise Impact Analysis* (dated December 23, 2013), prepared by Giroux and Associates; refer to Appendix 13.5, *Noise Data*.

5.5.1 EXISTING SETTING

NOISE SCALES AND DEFINITIONS

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.

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 5.5-1, *Sound Levels and Human Response*.

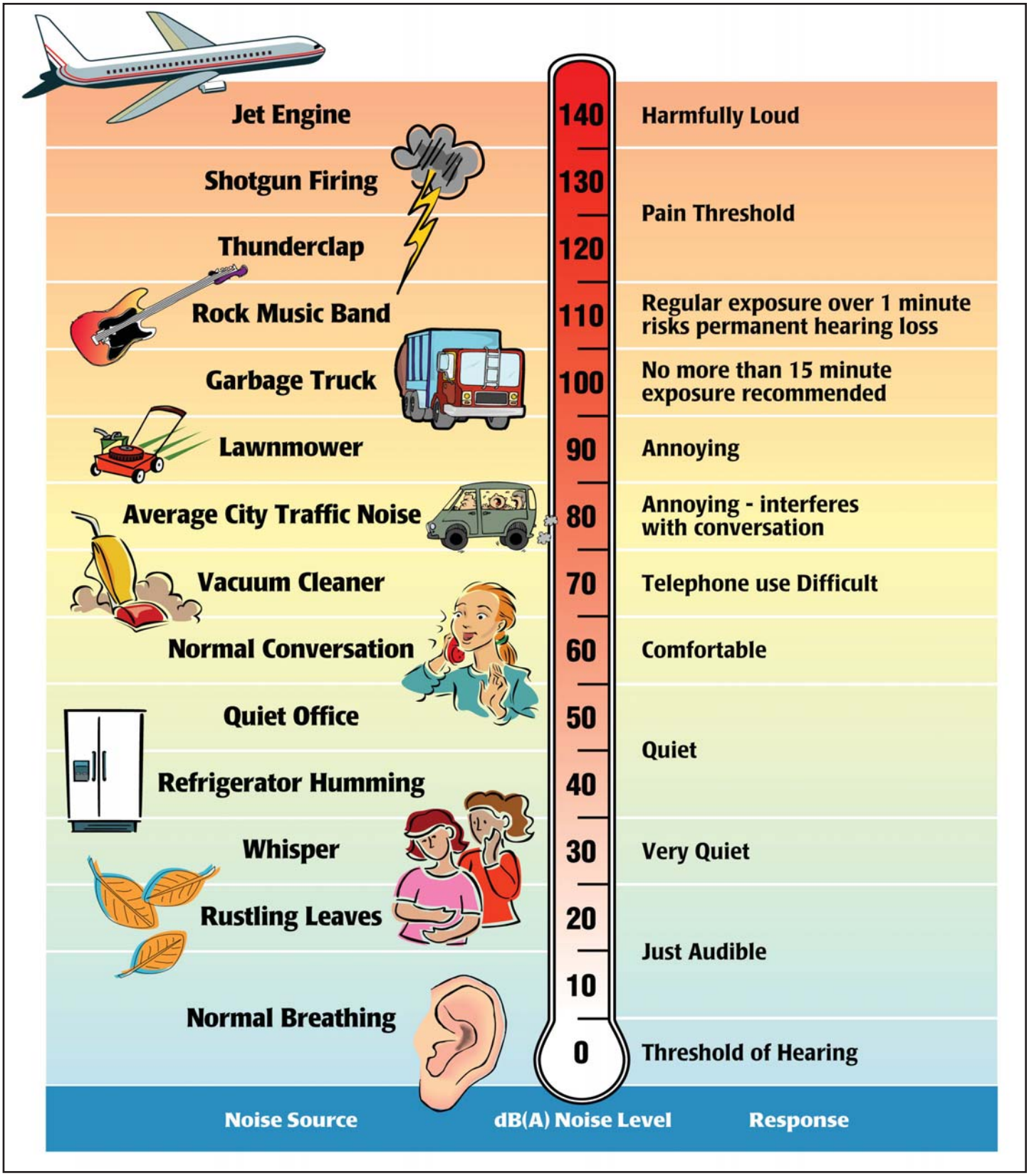
Many methods have been developed for evaluating community noise to account for, among other things:

- 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 5.5-1, *Noise Descriptors*.

HEALTH EFFECTS OF NOISE

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



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.

ENVIRONMENTAL IMPACT REPORT
TENTH STREET CENTER INDUSTRIAL PARK

Sound Levels and Human Response

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Exhibit 5.5-1

Table 5.5-1
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 p.m. to 10:00 p.m., and +10 dBA for the night, 10:00 p.m. to 7:00 a.m.
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 p.m. to 7:00 a.m.), 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*, 1979.

influence people's response. As such, response to noise varies widely from one person to another and with any particular noise, individual responses 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:

- Noise-Induced Hearing Loss;
- Interference with Communication;
- Effects of Noise on Sleep;
- Effects on Performance and Behavior;
- Extra-Auditory Health Effects; and
- Annoyance.

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. 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. 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.

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. 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 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.

GROUND-BORNE VIBRATION

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. The peak particle velocity (PPV) or the root mean square (RMS) velocity is usually used to describe vibration amplitudes. PPV is defined as the maximum instantaneous peak or vibration signal, while RMS is defined as the square root of the average of the squared amplitude of the signal. PPV is typically used for evaluating potential building damage, whereas RMS is typically more suitable for evaluating human response. Typically, ground-borne vibration, generated by man-made activities, attenuates rapidly with distance from the source of vibration. Man-made vibration issues are therefore usually confined to short distances (i.e., 500 feet or less) from the source.

Both construction and operation of development projects can generate ground-borne vibration. In general, demolition of structures preceding construction generates the highest vibrations. Construction equipment such as vibratory compactors or rollers, pile drivers, and pavement breakers can generate perceptible vibration during construction activities. Heavy trucks can also generate ground-borne vibrations that vary depending on vehicle type, weight, and pavement conditions.

SENSITIVE RECEPTORS

Human response to noise varies widely depending on the type of noise, time of day, and sensitivity of the receptor. The effects of noise on humans can range from temporary or permanent hearing loss to mild stress and annoyance due to such things as speech interference and sleep deprivation. Prolonged stress, regardless of the cause, is known to contribute to a variety of health disorders. Noise, or the lack of it, is a factor in the aesthetic perception of some settings, particularly those with religious or cultural significance. Certain land uses are particularly sensitive to noise, including schools, hospitals, rest homes, long-term medical and mental care facilities, and parks and recreation areas. Residential areas are also considered noise sensitive, especially during the nighttime hours.

The nearest residential uses to the project site are located approximately 1,040 feet to the northeast, north of Sierra Madre Avenue. The nearest school to the project site is Hodge Elementary School, located approximately 2,710 feet to the east of the project site, north of West Eleventh Street. It

should be noted that the Southern California Laborers Training School adjoins the project site to the west; however, this is a vocational school specializing in training construction workers and is not considered a noise sensitive use.

AMBIENT NOISE ENVIRONMENT

The project site is surrounded by commercial and light industrial uses. The ambient noise environment is primarily influenced by traffic noise (along North Todd Avenue, West Tenth Street, and Sierra Madre Avenue), operations associated with the surrounding industrial uses, mining activities at the Vulcans Materials Quarry, and infrequent train trips on the railroad to the south of the project site. Existing noise levels are approximately 67 dBA CNEL along Sierra Madre Boulevard, and 70 dBA CNEL along North Todd Avenue at 50 feet from roadway centerline. Existing traffic noise levels in the project vicinity are higher than normal conditions due to heavy truck traffic traveling to and from the surrounding industrial uses.[1]

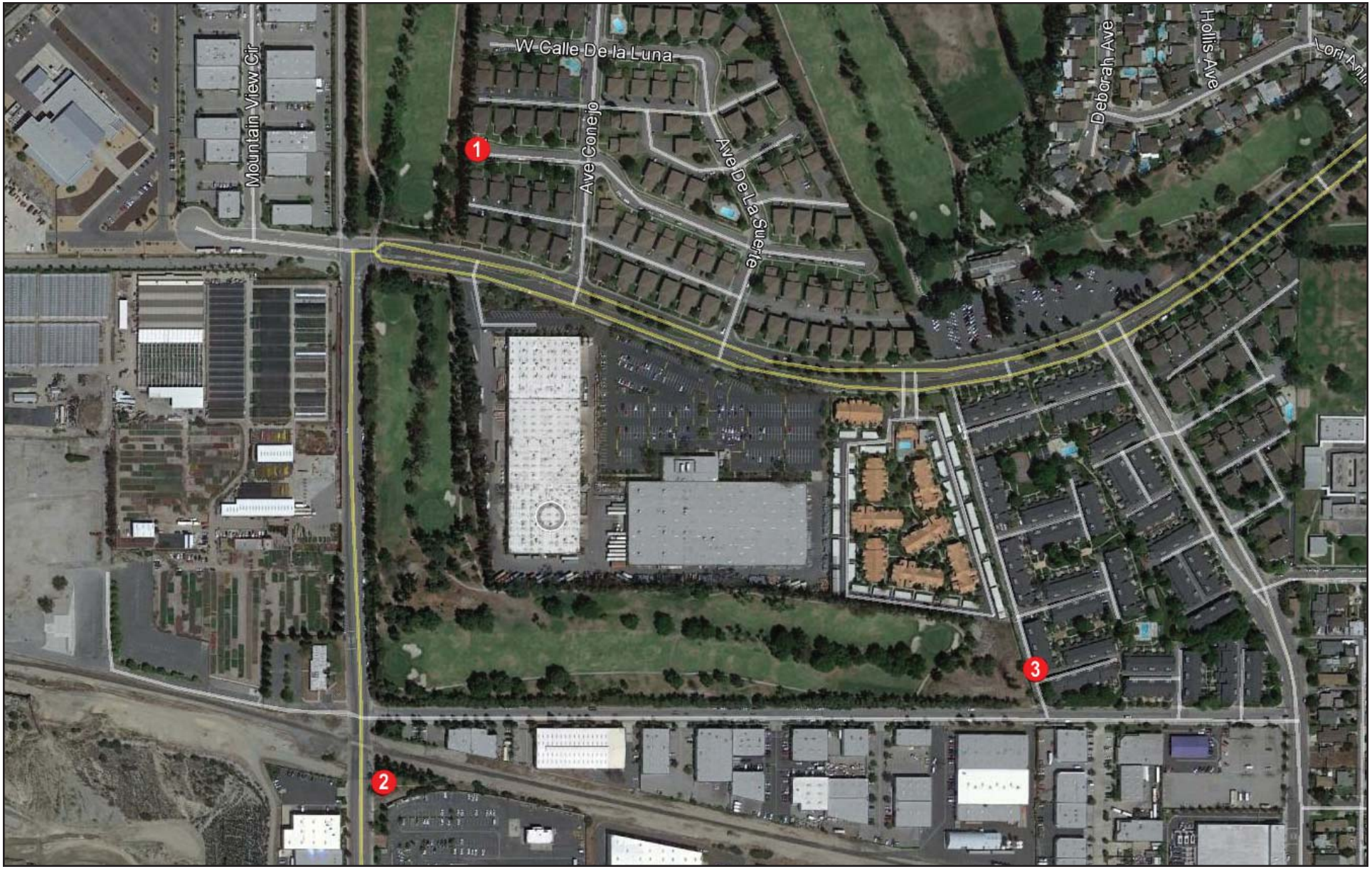
In order to further quantify existing ambient noise levels in the project area, noise measurements were conducted on Tuesday, January 14, 2014; refer to Table 5.5-2, *Noise Measurements*. Measurements were conducted on a Tuesday in order to represent typical traffic-related noise conditions in the project area (i.e., on a day not subject to weekend/holiday conditions, when traffic volumes are generally lower). The noise measurement sites were representative of typical existing noise exposure within and immediately adjacent to the project site; refer to Exhibit 5.5-2, *Noise Measurement Locations*. Measurements were taken at each site, between 2:30 p.m. and 3:30 p.m. This time period is representative of an off-peak traffic hour in the City, and characterizes a typical noise environment in the project area without exposure to heavy traffic or noise-generating activities. Meteorological conditions were clear skies, warm temperatures, with light wind speeds (approximately 0 to 5 miles per hour), and low humidity.

Table 5.5-2
Noise Measurements

Measurement Location Number	Location	L_{eq} (dBA)	L_{min} (dBA)	L_{max} (dBA)	Peak (dBA)	Time
1	Residential neighborhood to the northeast of the project site, along West Calle Del Sol cul-de-sac.	54.5	37.3	74.8	97.3	2:41 p.m.
2	Grass/wooded area southeast of the project site (caddy corner to existing building on project site), south of Santa Fe Railroad tracks.	66.4	45.1	82.9	101.5	3:00 p.m.
3	Apartments to the east of the project site, east of the Azusa Greens Country Club, north of West Tenth Street.	48.1	64.3	72.0	99.9	3:17 p.m.

Source: RBF Consulting, January 14, 2014.

[1] Giroux and Associates, *Azusa Light Industrial Noise Impact Analysis,* December 23, 2013.



Source: Google Earth, 2014.

1 - Noise Measurement Location -

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Noise Measurement Locations

Exhibit 5.5-2

Noise monitoring equipment used for the ambient noise survey consisted of a Brüel & Kjær Hand-held Analyzer Type 2250 equipped with a 4189 pre-polarized microphone. The monitoring equipment complies with applicable requirements of the American National Standards Institute for Type I (precision) sound level meters. The results of the field measurements are provided in Appendix 13.5, *Noise Data*.

5.5.2 REGULATORY SETTING

STATE OF CALIFORNIA GUIDELINES

California Environmental Quality Act

CEQA was enacted in 1970 and requires that all reasonably foreseeable and potentially significant adverse environmental impacts of a project be identified and analyzed, including noise impacts. Under CEQA, a project has a potentially significant impact if the project exposes people to noise levels in excess of standards established in the local general plan or noise ordinance. Additionally, under CEQA, a project has a potentially significant impact if the project creates a substantial increase in the ambient noise levels in the project vicinity above existing levels without the project. If a project would have a significant adverse impact, all feasible mitigation measures that avoid or substantially less the impact must be adopted. Mitigation measures may be rejected if substantial evidence shows the measure is infeasible due to economic, social, technical, environmental, legal, or other conditions.

California Government Code

California Government Code Section 65302(f) mandates that the legislative body of each county and city adopt a noise element as part of their comprehensive general plan. The local noise element must recognize the land use compatibility guidelines established by the State Department of Health Services, as shown in Table 5.5-3, *Land Use Compatibility for Community Noise Environments*.

The guidelines rank noise land use compatibility in terms of "normally acceptable", "conditionally acceptable", "normally unacceptable", and "clearly unacceptable" noise levels for various land use types. Single-family homes are "normally acceptable" in exterior noise environments up to 60 CNEL and "conditionally acceptable" up to 70 CNEL. Multiple-family residential uses are "normally acceptable" up to 65 CNEL and "conditionally acceptable" up to 70 CNEL. Schools, libraries, and churches are "normally acceptable" up to 70 CNEL, as are office buildings and business, commercial, and professional uses.

CITY OF AZUSA

The Noise Element of the *City of Azusa General Plan* (General Plan) contains the City's policies on noise. The Noise Ordinance, part of the *City of Azusa Municipal Code* (Municipal Code), applies to noise on one property impacting a neighboring property. Typically, it sets limits on noise levels that can be experienced at the neighboring property. The Noise Element of the General Plan typically presents limits on noise levels from transportation noise sources, vehicles on public roadways, railroads, and aircraft. These limits are imposed on new developments. The new developments must incorporate the measures to ensure that the limits are not exceeded. In the case of the City of

Azusa, limits on transportation noise levels are presented in Chapter 46, Article IX of the Municipal Code.

Table 5.5-3
Land Use Compatibility for Community Noise Environments

Land Use Category	Community Noise Exposure (Ldn or CNEL, dBA)			
	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 – 75	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

NA: Not Applicable

Notes:
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 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 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.

Noise generated by vehicles traveling to and from the project would travel along arterial roads in the City of Azusa and potentially impact noise sensitive uses in the City. The City of Azusa noise criteria applicable to transportation noise sources are discussed below.

Azusa Noise Ordinance

Chapter 46, Article IX, Division 2 (Section 46-401 through 45-415) of the Azusa Municipal Code defines the City's Noise Ordinance. The Noise Ordinance establishes exterior and interior noise limits that cannot be exceeded at neighboring properties due to noise generated on private property. Standards are defined for four noise zones based on the impacted property's use; Noise Zone 1 includes all residential properties, Noise Zone 2 includes all professional office and public institutional properties, Noise Zone 3 includes all commercial properties with the exception of professional office properties, and Noise Zone 4 includes all industrial properties.

The exterior noise standards are presented in Table 5.5-4, *City of Azusa Noise Ordinance Standards*, and the interior noise standards are presented in Table 5.5-5, *City of Azusa Interior Noise Ordinance Standards*. The noise standards are in terms of noise levels that cannot be exceeded for a specified period of time. The time limits are listed in the first column of Table 5.5-4 and Table 5.5-5. The second column lists the equivalent noise metric in terms of or $L_{\%}$. The $L_{\%}$ describes the noise level

that is exceeded during a certain percentage of the measurement period. For example, the L_{50} noise level is the level exceeded 50 percent of the measurement period or thirty minutes in an hour. The third and fourth columns list the daytime and nighttime noise levels for the specified metric that cannot be exceeded under the Noise Ordinance. For residential uses, greater noise levels are permitted during the day (7:00 a.m. to 10:00 p.m.) as compared to nighttime (10:00 p.m. to 7:00 a.m.) in order to account for increased sensitivity to noise during the nighttime.

Table 5.5-4
City of Azusa Exterior Noise Ordinance Standards

Maximum Time of Exposure	Noise Metric	Noise Level Not To Be Exceeded	
		Residential Zone	
		7:00 a.m. to 10:00 p.m. (daytime)	10:00 p.m. to 7:00 a.m. (nighttime)
Noise Zone 1: All Residential Properties			
30 Minutes/Hour	L_{50}	55 dBA	50 dBA
15 Minutes/Hour	L_{25}	60 dBA	55 dBA
5 Minutes/Hour	$L_{8.3}$	65 dBA	60 dBA
1 Minute/Hour	$L_{1.7}$	70 dBA	65 dBA
Any period of time	L_{max}	75 dBA	70 dBA
Noise Zone 2: All Professional Office and Public Institutional Properties			
30 Minutes/Hour	L_{50}	55 dBA	55 dBA
15 Minutes/Hour	L_{25}	60 dBA	60 dBA
5 Minutes/Hour	$L_{8.3}$	65 dBA	65 dBA
1 Minute/Hour	$L_{1.7}$	70 dBA	70 dBA
Any period of time	L_{max}	75 dBA	75 dBA
Noise Zone 3: All Commercial Properties[1]			
30 Minutes/Hour	L_{50}	60 dBA	60 dBA
15 Minutes/Hour	L_{25}	65 dBA	65 dBA
5 Minutes/Hour	$L_{8.3}$	70 dBA	70 dBA
1 Minute/Hour	$L_{1.7}$	75 dBA	75 dBA
Any period of time	L_{max}	80 dBA	80 dBA
Noise Zone 4: All Industrial Properties			
30 Minutes/Hour	L_{50}	70 dBA	70 dBA
15 Minutes/Hour	L_{25}	75 dBA	75 dBA
5 Minutes/Hour	$L_{8.3}$	80 dBA	80 dBA
1 Minute/Hour	$L_{1.7}$	85 dBA	85 dBA
Any period of time	L_{max}	90 dBA	90 dBA

Notes:
1. With the exception of professional office properties.

Source: City of Azusa, *Municipal Code*, Sections 46-404, 46-405 and 46-406.

Table 5.5-5
City of Azusa Interior Noise Ordinance Standards

Maximum Time of Exposure	Noise Metric	Noise Level Not To Be Exceeded	
		Residential Zone	
		7:00 a.m. to 10:00 p.m. (daytime)	10:00 p.m. to 7:00 a.m. (nighttime)
Noise Zone 1: All Residential Properties			
5 Minutes/Hour	$L_{8.3}$	55 dBA	45 dBA
1 Minute/Hour	$L_{1.7}$	60 dBA	50 dBA
Any period of time	L_{max}	65 dBA	55 dBA
Noise Zone 2: All Professional Office and Public Institutional Properties **Noise Zone 3: All Commercial Properties[1]** **Noise Zone 4: All Industrial Properties**			
5 Minutes/Hour	$L_{8.3}$	55 dBA	55 dBA
1 Minute/Hour	$L_{1.7}$	60 dBA	60 dBA
Any period of time	L_{max}	65 dBA	65 dBA

Notes:
1. With the exception of professional office properties.

Source: City of Azusa, *Municipal Code*, Sections 46-404, 46-407 and 46-408.

In the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, the noise limits specified in Table 5.5-4 and Table 5.5-5 shall be reduced by five dBA. In the case where the ambient noise level (i.e., the noise level without the offending source) exceeds the noise limits, the cumulative period for the category is increased to reflect the ambient conditions except for the L_{max} standard where the maximum allowable noise level is increased to reflect the ambient conditions.

For residential uses, the Noise Ordinance states that the daytime noise level for a noise source measured at an outdoor area of a residential property cannot exceed 75 dBA ever, 70 dBA for more than 1 minute of any hour, 65 dBA for more than 5 minutes of any hour, 60 dBA for more than 15 minutes of any hour, or 55 dBA for more than 30 minutes of any hour. Nighttime noise level limits are reduced by 5 dB to reflect the increased sensitivity to noise occurring during this time period. The Noise Ordinance also states that the noise level for a source measured at an indoor area of a residential property during the daytime cannot exceed 65 dBA ever, 60 dBA for more than 1 minute of any hour, and 55 dBA for more than 5 minutes of any hour. The nighttime interior noise level limits are reduced by 10 dB.

For daytime noise the residential outdoor standard is more stringent than the interior standard. This is because a typical residence achieves 12 dB of noise reduction with windows open. That is, the interior noise levels would be at least 12 dB lower than the exterior noise levels. The Noise Ordinance requires the levels to only be 10 dB lower. This is not so for nighttime noise levels. Depending on the characteristics of the noise source either the interior or exterior noise standards may be the most stringent.

Section 46-413 of the City's Noise Ordinance exempts several activities from the Noise Ordinance. Exempted activities relevant to the project include:

> *Noise sources associated with construction, repair, remodeling, or grading of any real property, provided a permit has been obtained from the city and said activities do not take place between the hours of 6:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a Federal holiday. (note that Weekday Saturday work can extend until 10:00 p.m. and work can be allowed on Sundays and Federal Holidays between 9:00 a.m. and 5:00 p.m. by the review authority through the conditions of approval)*
>
> *Noise sources associated with the maintenance of real property, provided such activities take place between the hours of 8:00 a.m. and 8:00 p.m. on any day except Sunday or a Federal holiday, or between the hours of 9:00 a.m. and 8:00 p.m. on Sunday or a Federal holiday.*
>
> *Any activity or equipment to the extent that design regulation thereof has been pre-empted by state or federal laws. (note that state law pre-empts regulation of on-road vehicles while in the public right-of-way).*

Chapter 88.31.020 of the Azusa Municipal Code presents the City's overall noise standards for various uses. These standards are presented Table 5.5-6, *City of Azusa Overall Noise Standards*. These standards are applied to new developments impacted by stationary and transportation noise sources.

Table 5.5-6
City of Azusa Overall Noise Standards

Noise Sensitive Land Use	Outdoor Activity Areas[1,2]	Interior Spaces
Residential	65 dB CNEL	45 dB CNEL
Transient Lodging	65 dB CNEL	45 dB CNEL
Hospitals, Extended Care	65 dB CNEL	45 dB CNEL
Theater, Auditorium	N/A	45 dB CNEL
Meeting Facility, Public or Private	65 dB CNEL	45 dB CNEL
Offices	65 dB CNEL	45 dB CNEL
School, Library, Museum	65 dB CNEL	45 dB CNEL
Playground, Park	70 dB CNEL	N/A

CNEL = community noise equivalent level, N/A = not applicable

Notes:
1. Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.
2. Where it is not possible to reduce noise in outdoor activity areas to 65 dB Ldn/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 70 dB Ldn/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Source: City of Azusa, *Municipal Code* Section 88.31-020.

Azusa Noise Element

The vision of the City of Azusa's Noise Element is to provide a decrease in the ambient noise level for all areas of Azusa. The element contains one goal: "Maintain community noise levels that meet health guidelines and allow for a high quality of life." Six policies and twenty Noise Implementation Programs are identified to achieve this goal. The policies applicable to the proposed project include:

1.1 Integrate noise considerations in the City's land use planning and project approval process.

1.2 Protect those areas of the City where the existing noise environments are considered unacceptable or "noise sensitive."

1.3 Maintain or reduce noise levels within acceptable levels adjacent to existing or planned major transportation facilities such as freeways, major highways, railroads, and light rail transit.

The Noise Implementation Programs that are applicable to the proposed project include:

N1 *Noise and an Evaluation Factor for New Development:* Include noise impacts as an evaluation factor in the consideration of the siting, design and construction of new residential, commercial, industrial developments, or public/semipublic facilities such as parks, schools, convalescent homes, assisted living facilities, and hospitals.

N4 *Address Noise Sensitive Uses*: Noise sensitive uses are to be specifically addressed in decisions affecting the location of commercial, institutional, and industrial land uses or activities that typically generate excessive noise.

N11 *Acoustical Analysis For Industrial And Commercial Development:* Require an acoustical analysis for new industrial and commercial developments that include outdoor activities or processes.

5.5.3 IMPACT THRESHOLDS AND SIGNIFICANCE CRITERIA

Appendix G, of the *CEQA Guidelines* contains guidance related to the assessment of noise impacts. These guidelines, in addition to the thresholds contained within the City's Noise Ordinance, have been utilized as thresholds of significance for this analysis. As stated in Appendix G, a project would create a significant adverse environmental impact if it would:

- 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 (refer to Impact Statement N-1);

- Expose persons to or generate excessive ground borne vibration or ground borne noise levels (refer to Impact Statement N-2);

- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project (refer to Impact Statements N-3 and N-4);

- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project (refer to Impact Statements N-1, N-3, and N-4);

- 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 (refer to Section 10.0, *Effects Found Not To Be Significant*); and

- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels (refer to Section 10.0, *Effects Found Not To Be Significant*).

NOISE IMPACT CRITERIA

Significance of Changes in Traffic Noise Levels

If the ambient noise environment is quiet and the new noise source greatly increases the noise exposure, an impact may occur even though a criterion level might not be exceeded. The project would create a significant impact for traffic noise levels when the following occurs:

- An increase of the existing ambient noise levels by 5 dB or more, where the ambient level is less than 60 dB CNEL;

- An increase of the existing ambient noise level by 3 dB or more, where the ambient level is 60 to 65 dB CNEL; or

- An increase of the existing ambient noise level by 1.5 dB or more, where the ambient level is greater than 65 dB CNEL.

Furthermore, the project would result in a significant noise impact when it causes a permanent increase in ambient noise levels of 1.5 dB, and the resulting noise level exceeds the applicable exterior standard at a noise sensitive use.

Significance of Changes in Cumulative Traffic Noise Levels[2]

The project's contribution to a cumulative traffic noise increase would be considered significant when the combined effect exceeds perception level (i.e., auditory level increase) threshold. The combined effect compares the "cumulative with project" condition to "existing" conditions. This comparison accounts for the traffic noise increase from the project generated in combination with traffic generated by projects in the cumulative projects list. The following criteria have been utilized to evaluate the combined effect of the cumulative noise increase.

[2] U.S. Environmental Protection Agency Office of Noise Abatement and Control, *Noise Effects Handbook-A Desk Reference to Health and Welfare Effects of Noise*, October 1979 (revised July 1981).

Combined Effects: The cumulative with project noise level ("Buildout With Project") causes the following:

- An increase of the existing noise level by 5 dB or more, where the existing level is less than 60 dB CNEL;
- An increase of the existing noise level by 3 dB or more, where the existing level is 60 to 65 CNEL; or
- An increase of the existing noise level by 1.5 dB or more, where the existing level is greater than 65 dB CNEL.

Although there may be a significant noise increase due to the proposed project in combination with other related projects (combined effects), it must also be demonstrated that the project has an incremental effect. In other words, a significant portion of the noise increase must be due to the proposed project. The following criteria have been utilized to evaluate the incremental effect of the cumulative noise increase.

Incremental Effects: The "Buildout With Project" causes a 1 dBA increase in noise over the "Buildout Without Project" noise level.

A significant impact would result only if both the combined and incremental effects criteria have been exceeded.

Long Term Noise Impacts

Long-term on-site impacts from transportation sources (i.e., traffic, aircraft, and railroads) are measured against the City of Azusa noise standards. The majority of the project is not considered noise sensitive, as it would consist of industrial uses; industrial uses do not have a noise standard and therefore would not be impacted. Office uses would be required to meet the City's 45 CNEL interior standard. The project would be significantly impacted by noise if the interior noise levels of the office areas of the project are projected to exceed 45 dBA CNEL.

5.5.4 IMPACTS AND MITIGATION MEASURES

SHORT-TERM CONSTRUCTION NOISE IMPACTS

N-1 GRADING AND CONSTRUCTION WITHIN THE PROJECT SITE WOULD NOT RESULT IN SIGNIFICANT TEMPORARY NOISE IMPACTS TO NEARBY NOISE SENSITIVE RECEIVERS.

Impact Analysis: The proposed project consists of the demolition of the existing one-story office building in the eastern portion of the site near North Todd Avenue, demolition of building foundations and the concrete remnants of the former shipping/receiving bay, and the construction of a 342,629 square-foot industrial/warehousing development. Construction of the proposed project would occur over approximately 12 months and would include demolition, site preparation, grading, paving, building construction, and architectural coating. Ground-borne noise and other types of construction-related noise impacts would typically occur during excavation activities of the

grading phase. This phase of construction has the potential to create the highest levels of noise. Temporary noise impacts associated with the project would occur from construction activities. Table 5.5-7, *Maximum Nose Levels Generated by Construction Equipment*, shows the range of noise emissions for various pieces of construction equipment. Temporary construction noise impacts would vary markedly because the noise strength of construction equipment ranges widely as a function of the equipment used and its activity level.

Table 5.5-7
Maximum Nose Levels Generated by Construction Equipment

Type of Equipment	Acoustical Use Factor[1] (percent)	L_{max} at 50 Feet (dBA)
Crane	16	81
Dozer	40	82
Excavator	40	81
Generator	50	81
Grader	40	85
Other Equipment (greater than five horse power)	50	85
Paver	50	77
Pile Driver (impact)	20	101
Pile Driver (sonic)	20	96
Roller	20	80
Tractor	40	84
Truck	40	80
Welder	40	73

Note:
1. Acoustical use factor (percent): Estimates the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a daily construction operation.

Source: Federal Highway Administration, Roadway Construction Noise Model (FHWA-HEP-05-054), January 2006.

The project site is predominantly flat and would not require extensive heavy grading. The primary construction equipment noise sources used during construction would be during fine grading and paving activities, when loader/backhoes and a dozer would be employed. This equipment typically generates the highest noise levels, emitting approximately 85 dBA at 50 feet from the noise source.

Point sources of noise emissions are atmospherically attenuated by a factor of 6 dBA per doubling of distance.[3] This assumes a clear line-of-sight and no other machinery or equipment noise that would mask project construction noise. The shielding of buildings and other barriers that interrupt line-of-sight conditions further reduce noise levels from point sources.

The City of Azusa exempts construction noise from adherence to noise standards as long as activity occurs during permissible hours of 7:00 a.m. to 6:00 p.m. Monday through Saturday. Unless conditional approval is provided by the review authority, construction activities are not permitted outside the allowable time window or on Sundays and National Holidays. The proposed project would comply with the City's Noise Ordinance; thus, the project would not expose persons to, or

[3] California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.

generate, noise levels in excess of standards established by the City. However, a conservative analysis of potential impacts to nearby sensitive receptors is provided below.

The nearest sensitive use for this project is located more than 1,000 feet from the closest site boundary. At this distance, it is unlikely that project construction activity would be audible at the nearest sensitive use and the construction noise would not impact any off-site residential uses. An 85 dBA equipment noise level at 50 feet from the source would decay to less than 59 dB at 1,000 feet. The nearest sensitive receptor is northeast of the project site on the north side of Sierra Madre Avenue. Traffic noise along these roadways is approximately 69 to 70 dBA CNEL at 50 feet.[4] It is unlikely that daytime construction noise would be noticeable with these background traffic noise levels.

As described above, construction of the proposed project would not be audible to any sensitive uses in the project vicinity, as on-site construction noise would be masked by the traffic noise along North Todd Avenue, Sierra Madre Avenue, and West Tenth Street. All noise generating construction activities would occur between the hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday. Construction noise impacts would cease upon completion of the construction phase. As such, a less than significant impact would occur with regard to short-term construction noise. Mitigation Measure N-1 would be required to ensure compliance with the City's Noise Ordinance and implementation of Best Management Practices. Short-term construction Best Management Practices require mobile equipment to be muffled and directing equipment away from receptors in order to minimize construction-related noise. With Implementation of Mitigation Measure N-1, construction-related noise impacts would be less than significant.

Mitigation Measure:

N-1 Prior to Grading Permit issuance or the start of demolition activities, the Applicant shall demonstrate, to the satisfaction of the City of Azusa Community Development Department, that the project complies with the following:

- Construction contracts specify that all construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers and other State required noise attenuation devices.
- During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receivers.
- Construction activities shall not occur between the hours of 6:00 p.m. and 7:00 a.m., including Saturdays, or at any time on Sunday or a Federal holiday, per the City's Noise Ordinance.

Level of Significance: Less Than Significant Impact With Mitigation Incorporated.

[4] Giroux and Associates, *Azusa Light Industrial Noise Impact Analysis,* December 23, 2013.

CONSTRUCTION-RELATED VIBRATION IMPACTS

N-2 GRADING AND CONSTRUCTION ASSOCIATED WITH THE PROPOSED PROJECT WOULD NOT RESULT IN SIGNIFICANT TEMPORARY VIBRATION IMPACTS TO NEARBY NOISE SENSITIVE RECEPTORS.

Impact Analysis: Project construction can generate varying degrees of ground-borne 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 the 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. Ground-borne vibrations from construction activities rarely reach levels that damage structures.

The Federal Transit Administration has published standard vibration velocities for construction equipment operations. In general, the Federal Transit Administration architectural damage criterion for continuous vibrations (i.e., 0.2 inch/second) appears to be conservative even for sustained pile driving. Pile driving levels often exceed 0.2 inch/second at distances of 50 feet, and 0.5 inch/second at 25 feet without any apparent damage to buildings.

The types of construction vibration impact include human annoyance and building damage.[5] Human annoyance occurs when construction vibration rises significantly above the threshold of human perception (i.e., approximately 0.006 to 0.019 in/sec)[6] 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 30 feet from typical non-impact construction equipment. 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. The vibration produced by construction equipment, is illustrated in Table 5.5-8, *Typical Vibration Levels for Construction Equipment*.

As noted above, the City of Azusa Noise Ordinance allows construction activities to occur between 7:00 a.m. to 6:00 p.m. Monday through Saturday. Unless conditional approval is provided by the review authority, construction activities are not permitted outside the allowable time window or on Sundays and National Holidays. The proposed project would comply with the City's Noise Ordinance.

5 Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Guidelines*, May 2006.
6 Jones and Stokes, *Transportation- and Construction-Induced Vibration Guidance Manual*, June 2004.

Table 5.5-8
Typical Vibration Levels for Construction Equipment

Equipment	Approximate peak particle velocity at 25 feet (inches/second) [1]	Approximate peak particle velocity at 75 feet (inches/second) [2]
Large bulldozer	0.644	0.124
Loaded trucks	0.170	0.033
Small bulldozer	0.089	0.017
Auger/drill rigs	0.089	0.017
Jackhammer	0.076	0.015
Vibratory hammer	0.035	0.007
Vibratory compactor/roller	0.003	0.001

Notes:
1 – Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Guidelines*, May 2006. Table 12-2.
2 – Calculated using the following formula:

$$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$$

where: PPV (equip) = the peak particle velocity in in/sec of the equipment adjusted for the distance
PPV (ref) = the reference vibration level in in/sec from Table 12-2 of the FTA *Transit Noise and Vibration Impact Assessment Guidelines*
D = the distance from the equipment to the receiver

Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Guidelines*, May 2006.

Ground-borne vibration decreases rapidly with distance. As indicated in Table 5.5-8, based on the Federal Transit Administration data, vibration velocities from typical heavy construction equipment operations that would be used during project construction range from 0.003 to 0.644 inch-per-second peak particle velocity (PPV) at 25 feet from the source of activity. With regard to the proposed project, ground-borne vibration would be generated primarily during site clearing and grading activities on-site and by off-site haul-truck travel. The nearest structure to the proposed construction activities on the project site is located approximately 75 feet to the west (Southern California Laborers School). At this distance (75 feet), vibration velocities would range from 0.001 to 0.124 inch-per-second PPV; refer to Table 5.5-8. While vibration caused by the project may be perceptible (based on the human perception level of 0.006 to 0.019 inches-per-second), the nearest structure to the site would not be exposed to vibration in excess of the 0.2 inch-per-second PPV significance threshold. Thus, vibration impacts associated with construction would be less than significant and no mitigation measures are required.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

LONG-TERM (MOBILE) NOISE IMPACTS

N-3 TRAFFIC GENERATED BY THE PROPOSED PROJECT WOULD NOT SIGNIFICANTLY CONTRIBUTE TO EXISTING TRAFFIC NOISE IN THE AREA.

Impact Analysis:

Traffic Noise Impacts

Project implementation would result in additional traffic on adjacent roadways, thereby increasing vehicular generated noise in the vicinity of the existing sensitive uses in the project area. These noise increases were addressed using the California specific vehicle noise curves (CALVENO) in the Federal Highway Administration (FHWA) RD-77-108 roadway noise model. According to the *Traffic Impact Analysis*, the proposed project would generate 1,462 daily trips. The project *Traffic Impact Analysis* estimates a vehicle trip distribution as follows:

- Light duty autos: 65 percent
- Vans/trucks: 20 percent
- Heavy duty trucks: 15 percent

Because the project vehicle fleet would be different from the standard suburban vehicle mix, the traffic noise deriving from the background traffic was calculated in a separate model run. Project associated vehicular noise was then calculated and combined logarithmically into one composite total. Since non-project-area traffic is also comprised of a higher number of truck traffic than is typically found on suburban roadways, in order to create a traffic noise signature reflective of the site, calculated noise levels were used to adjust computer model-predicted background levels by an increase of approximately 2 dB CNEL on existing approved truck route roadways (Foothill Boulevard, Vernon Avenue, and Todd Avenue).[7]

The number of project related trips on surrounding roadways was derived from the Traffic Impact Study; refer to Appendix 13.3, *Traffic Report*. Table 5.5-9, *Project-Related Traffic Noise Levels*, summarizes the calculated CNEL at 50 feet from the roadway centerline for the roadways analyzed in the project traffic report. Along all area roadways, the baseline traffic levels are sufficiently high as to mask any project-related contribution. The most significant noise level increase would occur along North Todd Avenue between West Tenth Street and Foothill Boulevard, which would see a 0.6 dBA CNEL increase under project versus no-project roadway noise conditions. However, there are no residential or sensitive uses located along this roadway segment. The largest traffic related noise increase along any segment in proximity to a residential use would be 0.4 dBA CNEL along West Tenth Street from North Todd Avenue to Vernon Avenue. However, the resultant noise increase along this roadway segment would be 62.6 dBA CNEL, which would be below the City's Land Use Compatibility threshold of 65 dBA CNEL. As such, project traffic noise impacts would be imperceptible and therefore, a less than significant would occur in this regard.

Typical building construction receives at least 20 dB of reduction and construction meeting Title 24 energy efficiency requirements often achieves around 25 dB of outdoor-to-indoor noise reduction. The proposed project would meet Title 24 energy efficiency requirements; therefore, the indoor noise levels at the office uses in Building 1 would be approximately 42.2 dBA CNEL. As such, traffic noise levels experienced at the office uses in Building 1 would be within City Noise Standards. Therefore, a less than significant impact would occur in this regard.

[7] City of Azusa, *Geographic Information Systems – Truck Routes*, accessed on January 17, 2014 at http://gis.ci.azusa.ca.us/truckroutes/

Table 5.5-9
Project-Related Traffic Noise Levels

Roadway Segment	dBA CNEL @ 50 feet from Roadway Centerline		Difference in dBA CNEL @ 50 feet from Roadway	Potentially Significant Impact?
	Existing	Existing Plus Project		
Todd Avenue				
Foothill Boulevard to West Tenth Street	70.1	70.7	0.6	No
Foothill Boulevard				
East of Azusa Avenue	72.5	72.5	0.0	No
San Gabriel Avenue to Vernon Avenue	72.0	72.1	0.1	No
Vernon Avenue to Todd Avenue	72.2	72.3	0.1	No
Todd Avenue to Irwindale Avenue	74.2	74.3	0.1	No
Huntington Drive				
Irwindale Avenue to I-605	73.1	73.2	0.1	No
Sierra Madre Avenue				
East of San Gabriel Avenue	68.7	68.8	0.1	No
San Gabriel Avenue to Todd Avenue	68.3	68.4	0.1	No
Irwindale Avenue				
South of I-210	74.5	74.5	0.0	No
I-210 to Foothill Boulevard	73.8	73.9	0.1	No
First Street				
East of Alameda Avenue	71.1	71.2	0.1	No
Tenth Street				
Todd Avenue to Vernon Avenue	62.2	62.6	0.4	No

Source: Giroux and Associates, *Azusa Light Industrial Noise Impact Analysis*, December 23, 2013.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

LONG-TERM (STATIONARY) NOISE IMPACTS

N-4 THE PROPOSED PROJECT WOULD NOT RESULT IN A SIGNIFICANT INCREASE IN AMBIENT NOISE LEVELS DUE TO LONG-TERM STATIONARY NOISE.

Impact Analysis: Land uses intended for the project site include 342,629 square feet of light industrial distribution/warehousing/manufacturing uses. Noise associated with operational activities of these uses are typically generated by the following sources:

- Trucks traveling on the site, to and from loading docks;
- Mechanical equipment (air conditioners, trash compactors, emergency generators, etc.); and
- Typical parking lot activities (e.g., parking lot traffic and car door slamming).

It should be noted that the proposed project is consistent with the City's existing General Plan and Development Code designations for the site.

Slow-Moving Trucks (Deliveries)

Typically, a medium 2-axle truck used to make deliveries can generate a maximum noise level of 75 dBA at a distance of 50 feet. Higher noise levels may be generated by the excessive application of power. Lower levels may be achieved, but would not be considered representative of a nominal truck operation.

The project proposes three buildings ranging in size from 75,000 to 179,000 square feet. All three buildings would be equipped with metal roll-up drive-in doors and/or roll-up dock-high doors for truck loading/unloading, warehouse, and distribution operations. The roll-up drive-in doors and/or roll-up dock-high doors are concentrated away from the boundaries of the project site. As the docking operations are concentrated between buildings, sensitive receptors would be shielded from potential operational-related noise impacts. The nearest sensitive receptors are located approximately 1,040 feet to the northeast of the project site. Based on distance attenuation (not including reductions from intervening structures or roll-up drive-in doors), operational noise levels from trucks on the project site would be 49.0 dBA, which is below the City's exterior noise standard of 65 dBA for residential uses. It should be noted that noise barriers (i.e., intervening landscaping and the developed nature of the surrounding industrial uses) would further attenuate noise generated by on-site operations. Sensitive receptors surrounding the project site would not be directly exposed to on-site docking operations created by the proposed project. Therefore, a less than significant impact would occur.

Mechanical Equipment

The proposed project would require the use of heating, ventilation, and air conditioning units (HVAC). Typically, mechanical equipment noise is 55 dBA at 50 feet from the source. HVAC units would be located on the roofs of all the buildings. The closest sensitive receptors to the project site are over 1,000 feet to the northeast of Building 1. Noise levels from mechanical equipment would be nominal at this distance. As such, impacts resulting from mechanical equipment would be less than significant.

Parking Areas

Traffic associated with parking lots is typically not of sufficient volume to exceed community noise standards, which are based on a time-averaged scale such as the CNEL scale. Also, noise would primarily remain on site and would be intermittent (during peak-events). However, the instantaneous maximum sound levels generated by a car door slamming, engine starting up and car pass-bys may be an annoyance to adjacent noise-sensitive receptors. Parking lot noise can also be considered a "stationary" noise source, and would be expected to generate maximum noise levels shown in Table 5.5-10, *Maximum Noise Levels Generated by Parking Lots*. Conversations in parking areas may also be an annoyance to adjacent sensitive receptors. Parking lot noise would also be partially masked by background noise attenuation from proposed walls, landscaped buffers, and other typical community noise sources.

Table 5.4-10
Maximum Noise Levels Generated by Parking Lots

Noise Source	Maximum Noise Levels at 50 Feet from Source (dBA L_{eq})	Maximum Noise Levels at 75 Feet from Source (dBA L_{eq}) [1,2]	Maximum Noise Levels at 1,000 Feet from Source (dBA L_{eq}) [1,2]
Car door slamming	63	59.5	37.0
Car starting	60	56.5	34.0
Car idling	61	57.5	35.0

Notes:
1. Distance is from the nearest sensitive receptor to the closest parking space at the project site.
2. Estimated parking lot activity noise level is calculated by applying a 6-dBA reduction per doubling distance to the noise profiles at 50 feet. More precisely, the formula is as follows:

$$dBA2 = dBA1 + 10Log_{10} (d1/d2)^2$$

where:
dBA2 = Estimated Parking Lot Activity Noise Level;
dBA1 = Reference noise level at 50 feet;
d1 = reference distance of 50 feet;
d2 = Approximate Receptor Location Distance

Most of the noise generated in the parking lot would be at a distance of over 1,000 feet or more from the nearest sensitive receptor located to the northeast. As shown in Table 5.5-10, *Parking Lot Noise Levels*, during operation of the proposed project, noise levels from parking lot activities at this distance would range from 34.0 dBA to 37.0 dBA at the nearest sensitive receptor to the northeast. As such, noise associated with parking lot activities would not expose sensitive receptors to the northeast to noise levels in excess of the City's Noise Standards. Therefore, the sensitive receptors in the project area would not be exposed to excessive noise from parking areas. A less than significant impact would occur in this regard.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

5.5.5 CUMULATIVE IMPACTS

- **DEVELOPMENT ASSOCIATED WITH THE PROPOSED PROJECT AND OTHER RELATED CUMULATIVE PROJECTS WOULD NOT RESULT IN CUMULATIVELY CONSIDERABLE NOISE IMPACTS.**

Impact Analysis:

Cumulative Short-Term Construction Noise Impacts

Of the past, present and reasonably foreseeable related projects that have been identified within the project area, none are anticipated to involve construction at the same time as the proposed project such that there would be cumulatively considerable construction related noise impacts. Neither the City nor the Applicant has control over the timing or sequencing of construction of other related

projects. For these reasons, a quantitative analysis to ascertain any daily cumulative construction noise level increase from multiple, concurrent construction would be speculative.

Construction noise is a localized activity that would affect only land uses located in proximity to each respective cumulative project's construction site. Noise from construction of the cumulative projects could expose adjacent receptors to noise levels between 70 and 90 dBA at 50 feet from the noise source.

The degree of impact would be site specific and would be dependent upon the distance between the construction site and the nearest noise sensitive receptor. The City's exterior residential noise standard (65 dBA) could be exceeded during the construction phase of the cumulative projects. Construction noise impacts would cease upon completion of grading/construction activities. Compliance with site-specific mitigation, as well as compliance with requirements of the Azusa Municipal Code (Chapter 46, Article IX, Division 2, Section 46-401 through 45-415), would serve to minimize the length of time noise-sensitive receptors are exposed to significant noise levels. Additionally, because noise dissipates as it travels away from its source, noise impacts from construction activities would be limited to each of the respective sites and their vicinities. Project-related short-term construction impacts would be less than significant, and based on their location, construction noise from cumulative projects would not interact with noise from the proposed project due to distances between the specific sites. Mitigation Measure N-1 would reduce construction noise impacts by requiring equipment to be muffled and best management practices for hauling activities. Therefore, a less than significant impact would occur in this regard after implementation of Mitigation Measure N-1.

Mitigation Measures: Refer to Mitigation Measure N-1.

Level of Significance: Less Than Significant Impact With Mitigation Incorporated.

Cumulative Construction-Related Vibration Impacts

Based on the nature and intensity of the anticipated cumulative development, cumulative construction and operations would not be cumulatively considerable. Ground-borne vibration decreases rapidly with distance. Project-related vibration impacts would be less than significant, based on their distance from sensitive receptors. Additionally, vibration impacts would not interact with other cumulative projects due to distances between the sites.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

Cumulative Long-Term Mobile Noise Impacts

As seen in Table 5.5-9, traffic noise on the surrounding roadways would increase up to 0.6 dBA with implementation of the proposed project. Therefore, the increase in noise associated with cumulative traffic would not be cumulatively considerable and is less than significant. Additionally, on-site uses would not be exposed to significant mobile source noise impacts (refer to Impact Statement N-3). As such, the proposed project would not result in long-term mobile noise impacts based on project generated traffic as well as cumulative and incremental noise levels. The proposed project, in

combination with cumulative background traffic noise levels, would result in a less than significant cumulative impact in this regard.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

Cumulative Long-Term Stationary Noise Impacts

Cumulative development would include warehousing/industrial commercial uses, which would generate operational noise. Operational noise associated with these uses would be consistent with the existing uses in the surrounding area and would be required to comply with the applicable noise standards. Additionally, operational noise would be local and would not extend far beyond each project's boundaries. The proposed project would introduce the use of stationary equipment that would increase noise levels within the area. Based on the analysis, on- and off-site impacts would be less than significant. Furthermore, future development proposals within the City of Azusa would require separate discretionary approval and CEQA assessment, which would address potential noise impacts and identify necessary attenuation measures, where appropriate. Thus, cumulative noise exposure for long-term operations would be considered a less than significant impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

5.5.6 SIGNIFICANT UNAVOIDABLE IMPACTS

No unavoidable significant impacts related to noise have been identified in this section.

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