Noise Assessment For:

ARMSTRONG RANCH SPECIFIC PLAN

CITY OF ONTARIO

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1.0 Introduction

This report analyzes the potential noise impacts associated with the proposed development of the Armstrong Ranch Specific Plan project in the City of Ontario. Potential noise impacts arising from the construction and operation of the proposed project are assessed for activities occurring within the project site along with off-site traffic noise impacts. Future noise impacting the proposed project is also assessed relative to the City's land use/noise compatibility criteria. Section 1.1 presents a description of the proposed project.

The existing noise environment is discussed in Section 2.0. Existing land uses in the immediate vicinity of the project that are considered sensitive to noise are presented in Section 2.1. Section 2.2 presents background information on noise, including a discussion of the criteria used to assess the impacts of noise. Due to the time varying characteristics of sound there are various noise metrics used to quantify noise. These metrics are discussed in Section 2.3. Noise impact criteria applicable to the proposed project are discussed in Section 2.4. Existing noise levels in the project area are discussed in Section 2.5. The results of existing noise measurements are presented in Section 2.5.1. Section 2.5.2 presents modeled existing traffic noise levels on roadways in the vicinity of the project. The project site is located approximately 2.3 miles south of LA/Ontario International Airport. Existing aircraft noise levels in the project area are discussed in Section 2.5.3.

The Project's impacts are assessed in Section 3.0. The thresholds of significance used to evaluate the impacts are presented in Section 3.1. Short-term, construction, noise impacts are discussed in Section 3.2. Long-term, operational, impacts are discussed in Section 3.3. Noise impacts from on-site activities are discussed in Section 3.3.1 and noise impacts from off-site activities are discussed in Section 3.3.2. The Project's compatibility with future noise levels is discussed in 3.3.3. Mitigation measures to reduce the Project's noise impacts are discussed in Section 4.0.

1.1 Project Description

The Armstrong Ranch Specific Plan proposes the development of a maximum of 994 single-family dwelling units on approximately 198.8 acres bounded by Riverside Drive to the north, Chino Avenue to the south, Vineyard Avenue to the west, and Cucamonga Creek Channel to the east. The project includes one planning area, Planning Area 7, which is reserved for a 1,000 student elementary school. If the School District selects this site for a future elementary school then the number of residential units developed by the project will be reduced to 944. If the school is not developed, then 50 residential units will be constructed in Planning Area 7.

Figure 1 presents a vicinity map showing the project location, Figure 2 shows the project boundary overlaid on an aerial photograph, and Figure 3 shows the six Planning Areas established by the Specific Plan. The size and number of dwelling units proposed for each planning area is presented in Table 1.

Table 1
Proposed Development By Planning Area

Planning Area	Acres	Dwelling Units
1	38.6	193
2	36.2	157
3	26.8	154
4	26.9	148
5	34.2	161
6	24.5	131
7†	11.6	50
Total	**198.8**	**994**

†Planning Area 7 is reserved for a 1,000 student elementary school. If the site is not selected for future expansion by the school district, the land will revert to residential with 50 dwelling units.

Existing uses on the project site include agricultural fields, a former dairy site and scattered single-family homes. All existing development would be removed with the implementation of the proposed Specific Plan.

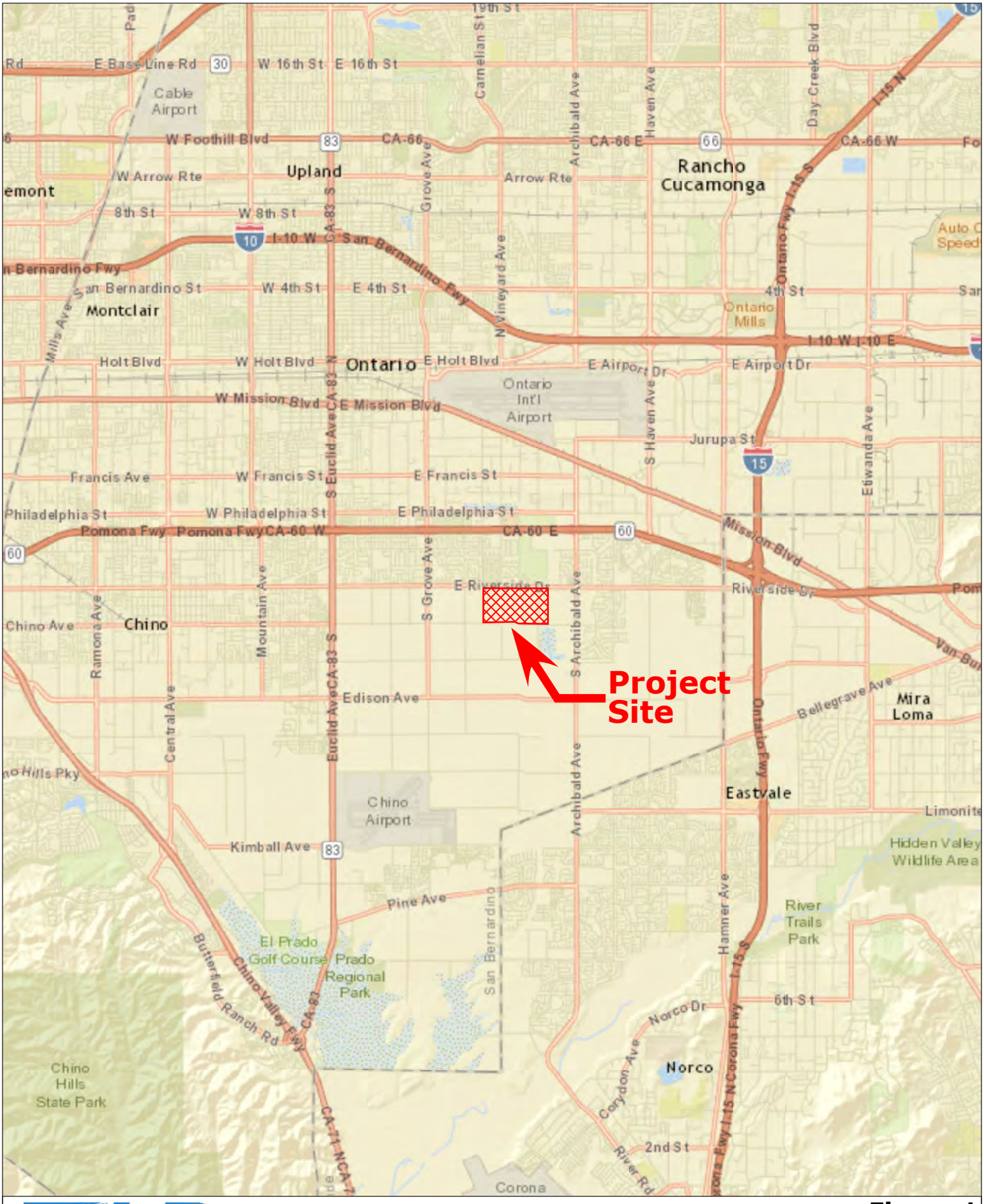

Figure 1
Vicinity Map
Armstrong Ranch Specific Plan

Figure 2
Project Boundaries
Armstrong Ranch Specific Plan

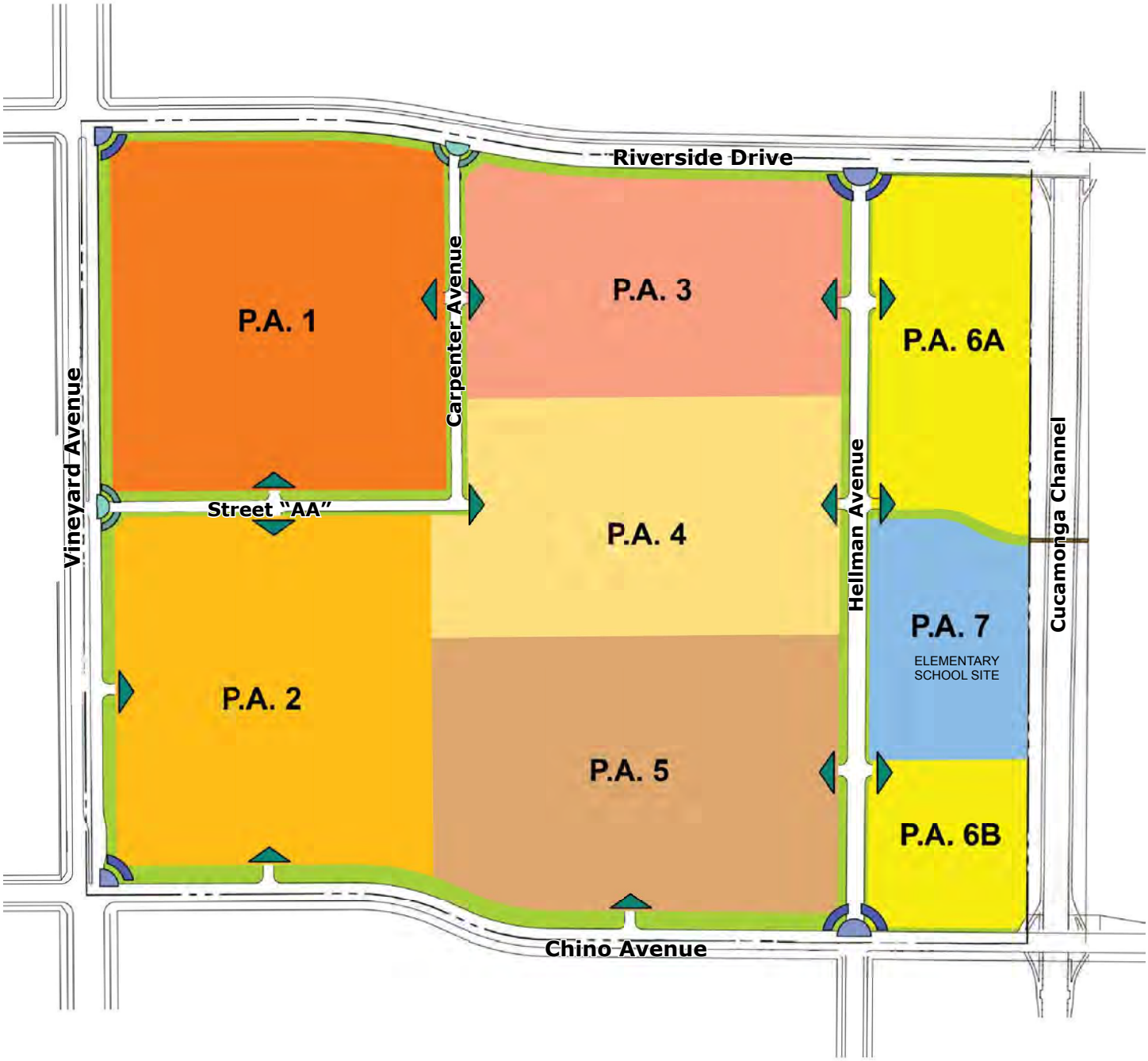

Figure 3
Project Site Plan

Armstrong Ranch Specific Plan

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2.0 Existing Setting

2.1 Sensitive Receptors

Figure 2 shows that the nearest existing sensitive receptors to the project site are the single family homes and preschool/child care facility located to the north across Riverside Drive. In addition, there are single-family homes located northwest of the project site north of Riverside Drive and west of Vineyard Avenue. There are a few rural residential homes along Chino Avenue, south of the Project site.

There are no other sensitive receptors located in the immediate project vicinity. A golf course is located along the western portion of the northern boundary of the project across Riverside Drive. Westwind Park and Community Center is located northeast of the project site, north of Riverside Drive and east of the Cucamonga Creek Channel. The existing uses to the west, south and east consist of agricultural fields and dairy farms.

2.2 Background Information on Noise

2.2.1 Noise Impact Criteria

Sound is technically 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). 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 dB higher than another is judged to be twice as loud; a sound 20 dB higher is perceived to be four times as loud; and so forth. Everyday sounds normally range from 30 dB (very quiet) to 100 dB (very loud).

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. Community noise levels are measured in terms of the "A-weighted decibel," abbreviated dBA.

Sound levels decrease as a function of distance from the source as a result of wave divergence, atmospheric absorption and ground attenuation. As the sound wave form travels away from the source, the sound energy is dispersed over a greater area, thereby dispersing the sound power of the wave. Atmospheric absorption also influences the levels that are received by the observer. The greater the distance traveled, the greater the influence and the resultant fluctuations. The degree of absorption is a function of the frequency of the sound as well as the humidity and temperature of the air. Turbulence and gradients of wind, and temperature also play a significant role in determining the degree of attenuation. Intervening topography can also have a substantial effect on the effective perceived noise levels. Figure 4 provides examples of various noises and their typical A-weighted noise level.

SOUND LEVELS AND LOUDNESS OF ILLUSTRATIVE NOISES IN INDOOR AND OUTDOOR ENVIRONMENTS

Numbers in Parentheses are the A-Scale Weighted Sound Levels for that Noise Event

dB(A)	OVER-ALL LEVEL	COMMUNITY (Outdoor)	HOME OR INDUSTRY	LOUDNESS Human Judgement of Different Sound Levels
120		Military Jet Aircraft Take-Off With After-Burner From Aircraft Carrier @ 50 Ft. (130)	Oxygen Torch (121)	120 dB(A) 32 Times as Loud
110	UNCOMFORTABLY LOUD	Concord Takeoff (113)*	Riveting Machine (110) Rock-N-Roll Band (108-114)	110 dB(A) 16 Times as Loud
100		Boeing 747-200 Takeoff (101)*		100 dB(A) 8 Times as Loud
90	VERY LOUD	Power Mower (96) DC-10-30 Takeoff (96)* Motorcycle @25 Ft. (90)	Newspaper Press (97)	90 dB(A) 4 Times as Loud
80		Car Wash @ 20 Ft. (89) Boeing 727 w/ Hushkit Takeoff (96)* Diesel Truck, 40 MPH @ 50 Ft. (84) Diesel Train, 45 MPH @ 100 Ft. (83)	Food Blender (88) Milling Machine (85) Garbage Disposal (80)	80 dB(A) 2 Times as Loud
70	MODERATELY LOUD	High Urban Ambient Sound (80) Passenger Car, 65 MPH @ 25 Ft. (77) Freeway @ 50 Ft. From Pavement Edge, 10:00 AM (76 ± 6) Boeing 757 Takeoff (76)*	Living Room Music (76) TV-Audio, Vacuum Cleaner	70 dB(A)
60		Propeller Airplane Takeoff (67)* Air Conditioning Unit @ 100 Ft. (60)	Cash Register @ 10 Ft. (65-70) Electric Typewriter @ 10 Ft. (64) Dishwasher (Rinse) @ 10 Ft. (60) Conversation (60)	60 dB(A) 1/2 as Loud
50	QUIET	Large Transformers @ 100 Ft. (50)		50 dB(A) 1/4 as Loud
40		Bird Calls (44) Lower Limit Urban Ambient Sound (40)		40 dB(A) 1/8 as Loud
20	JUST AUDIBLE	(dB[A] Scale Interrupted) Desert at Night		
10	THRESHOLD OF HEARING			

*Aircraft takeoff noise measured 6,500 meters from beginning of takeoff roll

SOURCE: Leo L. Beranek "Noise And Vibration Control," 1971
*Aircraft Levels From FAA Advisory Circular AC-36-3G

Noise has been defined as unwanted sound and it is known to have several adverse effects on people. From these known effects of noise, criteria have been established to help protect the public health and safety and prevent disruption of certain human activities. This criterion is based on known impacts of noise on people, such as hearing loss, speech interference, sleep interference, physiological responses and annoyance. Each of these potential noise impacts on people are briefly discussed in the following narratives:

HEARING LOSS is not a concern in community noise situations of this type. The potential for noise induced hearing loss is more commonly associated with occupational noise exposures in heavy industry or very noisy work environments. Noise levels in neighborhoods, even in very noisy airport environs, are not sufficiently loud as to cause hearing loss.

SPEECH INTERFERENCE is one of the primary concerns in environmental noise problems. Normal conversational speech is in the range of 60 to 65 dBA and any noise in this range or louder may interfere with speech. There are specific methods of describing speech interference as a function of distance between speaker and listener and voice level.

SLEEP INTERFERENCE is a major noise concern for traffic noise. Sleep disturbance studies have identified interior noise levels that have the potential to cause sleep disturbance. Note that sleep disturbance does not necessarily mean awakening from sleep, but can refer to altering the pattern and stages of sleep.

PHYSIOLOGICAL RESPONSES are those measurable effects of noise on people that are realized as changes in pulse rate, blood pressure, etc. While such effects can be induced and observed, the extent is to which these physiological responses cause harm or are signs of harm is presently unknown.

ANNOYANCE is the most difficult of all noise responses to describe. Annoyance is a very individual characteristic and can vary widely from person to person. What one person considers tolerable can be quite unbearable to another of equal hearing capability.

2.3 Noise Assessment Metrics

The description, analysis and reporting of community noise levels around communities is made difficult by the complexity of human response to noise and the myriad of noise metrics that have been developed for describing noise impacts. Each of these metrics attempts to quantify noise levels with respect to community response. Most of the metrics use the A-Weighted noise level to quantify noise impacts on humans. A-Weighting is a frequency weighting that accounts for human sensitivity to different frequencies.

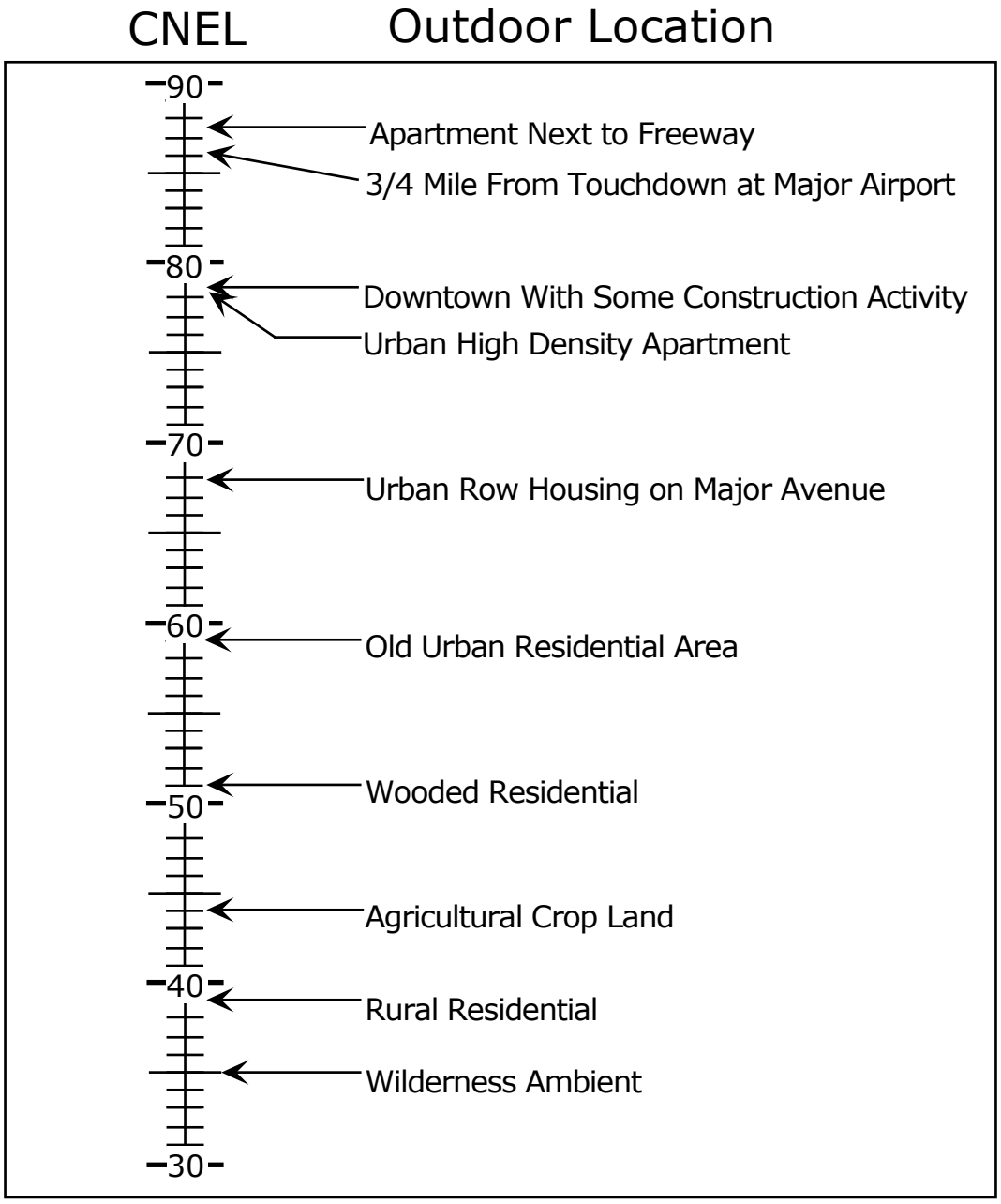
Noise metrics can be divided into two categories: single event and cumulative. Single-event metrics describe the noise levels from an individual event such as an aircraft fly-over or perhaps a heavy equipment pass-by. Cumulative metrics average the total noise over a specific time period, which is typically 1 or 24-hours

for community noise problems. For this type of analysis, cumulative noise metrics is typically used.

Several rating scales have been developed for measurement of community noise. These account for: (1) the parameters of noise that have been shown to contribute to the effects of noise on man, (2) the variety of noises found in the environment, (3) the variations in noise levels that occur as a person moves through the environment, and (4) the variations associated with the time of day. They are designed to account for the known health effects of noise on people described previously. Based on these effects, the observation has been made that the potential for a noise to impact people is dependent on the total acoustical energy content of the noise. A number of noise scales have been developed to account for this observation. The two most predominate noise scales are the: Equivalent Noise Level (LEQ) and the Community Noise Equivalent Level (CNEL). These scales are described in the following paragraphs along with the Ldn and L(%) scales that are also used for community noise assessment.

LEQ is the sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period. LEQ is the "energy" average noise level during the time period of the sample. LEQ can be measured for any time period, but is typically measured for 1 hour. This 1-hour noise level can also be referred to as the Hourly Noise Level (HNL), the energy average of all the events and background noise levels that occur during that time period.

CNEL, Community Noise Equivalent Level, is the predominant rating scale now in use in California for land use compatibility assessment. The CNEL scale represents a time weighted 24-hour average noise level based on the A-weighted decibel. Time weighted refers to the fact that noise that occurs during certain sensitive time periods is penalized. The evening time period (7 p.m. to 10 p.m.) penalizes noises by 5 dBA, while nighttime (10 p.m. to 7 a.m.) noises are penalized by 10 dBA. These time periods and penalties were selected to reflect people's increased sensitivity to noise during these time periods. A CNEL noise level may be reported as a "CNEL of 60 dBA," "60 dBA CNEL," or simply "60 CNEL." Typical noise levels in terms of the CNEL scale for different types of communities are presented in Figure 5.



Source: U.S. Environmental Protection Agency, "Impact Characterization of Noise Including Implications of Identifying and Achieving Levels of Cumulative Noise Exposure," EPA Report NTID 73.4, 1973.

Figure 5
Typical Outdoor Noise Levels

LDN, the day-night scale is similar to the CNEL scale except that evening noises are not penalized. It is a measure of the overall noise experienced during an entire day. The time-weighted refers to the fact that noise that occurs during certain sensitive time periods is penalized. In the Ldn scale, those noise levels that occur during the night (10 pm to 7 am) are penalized by 10 dB. This penalty was selected to attempt to account for increased human sensitivity to noise during the quieter period of a day, where resting at home and sleep are the most probable activities.

L(%) is a statistical method of describing noise which accounts for variance in noise levels throughout a given measurement period. L(%) is a way of expressing the noise level exceeded for a percentage of time in a given measurement period. For example since 5 minutes is 25% of 20 minutes, L(25) is the noise level that is equal to or exceeded for five minutes in a twenty-minute measurement period. It is L(%) that is used for many Noise Ordinance standards. For example, most daytime City, State and City Noise Ordinances use an ordinance standard of 55 dBA for 30 minutes per hour or an L(50) level of 55 dBA. In other words the Noise Ordinance states that no noise level should exceed 55 dBA for more that fifty percent of a given period. The L(%) levels are not used for the City of Noise Ordinance.

2.4 Applicable Noise Impact Criteria

2.4.1 State of California

The State of California's 2013 Green Building Code (California Code of Regulations, Title 24, Part 11) specifies an interior noise standard for non-residential uses exposed to exterior noise levels from transportation noise sources (aircraft, roadway or rail) exceeding 65 CNEL or a one-hour Leq of 65 dBA or greater. The standard specifies minimum outdoor-indoor-transmission-class (OITC) ratings for exterior walls or a performance standard of a one-hour interior noise level of 50 dBA Leq(H). Prior State Building Codes also contained interior noise standards for residential buildings but these have been omitted from in the most recent updates to the code.

2.4.2 City of Ontario

The City of Ontario noise criteria are presented in the Section S4, Nose Hazards of the Safety Element of The Ontario Policy Plan, which serves as the City's General Plan, as well as the City's Municipal Code (Noise Ordinance). Each of these documents is discussed below. The Noise Element presents the City's goals and policies for minimizing impacts and establishes noise standards for various land uses. The Noise Ordinance regulates noise generated on private property from impacting adjacent properties. State and federal laws prohibit the City from regulating transportation noise sources and the noise ordinance is not applicable to motor vehicles traveling on public rights of way.

2.4.2.1 Safety Element Section S4, Noise Hazards

The Ontario Plan (the City's General Plan) was most recently updated in 2010. Noise hazards are examined in section S4 of the Safety Element, Noise Hazards (http://www.ontarioplan.org/policy-plan/safety-element/s4-noise-hazards/). Table LU-7 of the Safety Element identifies acceptable exterior and interior noise standards for various land use categories within the City. This table is reproduced in Figure 6.

The Noise Hazards section presents one goal and six policies to achieve the goal. The City's goal and policies are presented below.

Goal S4: An environment where noise does not adversely affect the public's health, safety, and welfare.

Policy S4-1: Noise Mitigation. We utilize the City's Noise Ordinance, building codes and subdivision and development codes to mitigate noise impacts.

Policy S4-2: Coordination with Transportation Authorities. We collaborate with airport owners, FAA, Caltrans, SANBAG, SCAG, neighboring jurisdictions, and other transportation providers in the preparation and maintenance of, and updates to transportation-related plans to minimize noise impacts and provide appropriate mitigation measures.

Policy S4-3: Airport Noise Mitigation. We aggressively pursue funding and utilize programs to reduce effects of aircraft noise in impacted areas of our community.

Policy S4-4: Truck Traffic. We manage truck traffic to minimize noise impacts on sensitive land uses.

Policy S4-5: Roadway Design. We design streets and highways to minimize noise impacts.

Policy S4-6: Airport Noise Compatibility. We utilize information from Airport Land Use Compatibility Plans to prevent the construction of new noise sensitive land uses within airport noise impact zones.

This analysis will ensure that the proposed project is consistent with the noise related goals and polices of the City of Ontario. Policies S4-1, and S4-6 are applicable to this project. Potential noise impacts to adjacent land uses from on-site activities during construction and operation, are evaluated relative to the City's Noise Ordinance standards below. Potential impacts to off-site land uses from project-generated traffic are evaluated relative to the City's land use noise compatibility standards presented in Figure 6. Further, the impacts from noise sources on the land uses proposed by the project are evaluated using the City's land use noise compatibility standards. The project site is located approximately 2.3 miles south of LA/Ontario International Airport. The provisions of the Airport's Land Use Compatibility Plan applicable to the proposed project are discussed in Section 2.5.3 and airport noise impacts on the proposed project are discussed in Section 3.3.3.

NOISE LEVEL EXPOSURE AND LAND USE COMPATIBILITY GUIDELINES

Table LU-7

LAND USE CATEGORIES		COMMUNITY NOISE EQUIVALENT LEVEL (CNEL)						
Category	**Land Use**	**55**	**60**	**65**	**70**	**75**	**80**	
Residential/ Lodging	Single Family / Duplex							
	Multi-Family							
	Mobile Homes							
	Hotel/Motels							
Public/Institutional	Schools/Hospitals							
	Churches/ Libraries							
	Auditoriums/Concert Halls							
Commercial	Offices							
	Retail							
Industrial	Manufacturing							
	Warehousing							
Recreational/ Open Space	Parks/Playgrounds							
	Golf Courses/ Riding Stables							
	Outdoor Spectator Sports							
	Outdoor Music Shells/ Amphitheaters							
	Livestock/Wildlife Preserves							
	Crop Agriculture							

LEGEND

Clearly Acceptable:	No special noise insulation required, assuming buildings of normal conventional construction.
Normally Acceptable:	Acoustical reports will be required for major new residential construction. Conventional construction with closed windows and fresh air supply systems of air conditioning will normally suffice.
Normally Unacceptable:	New construction should be discouraged. Noise/aviation eas ements required for all new construction. If new construction does proceed, a detailed analysis of noise reduction requirements must be made and necessary noise insulation features included.
Clearly Unacceptable:	No new construction should be permitted.

Note: For noise compatibility criteria and contours for Ontario International Airport refer to the adopted ALUCP for ONT.

Figure 6 - Noise Exposure Level and Land Use Compatibility Guidelines

2.4.2.2 Noise Ordinance

The City's Noise Ordinance is contained in Title 5, Chapter 29 City of Ontario Municipal Code. Sections 5-29.04 and 5-29.05 establish exterior and interior noise level standards for five noise zones designated in Section 5-29.03. Table 2 presents the exterior noise standards defined in Section 5-29.04. The section states, "It is unlawful for any person at any location within the incorporated area of the City to create noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which noise causes the noise level, when measured at any location on any other property, to exceed" the noise levels presented in Table 2.

Table 2
Allowable Exterior Noise Levels

Noise Zone	Type of Land Use	Daytime (7 a.m. to 10 p.m.) Leq[1]	Daytime (7 a.m. to 10 p.m.) Lmax	Nighttime (10 p.m. to 7 a.m.) Leq[1]	Nighttime (10 p.m. to 7 a.m.) Lmax
I	Single-Family Residential	65 dBA	85 dBA	45 dBA	65 dBA
II	Multi-Family Residential, Mobile Home Parks	65 dBA	85 dBA	50 dBA	70 dBA
III	Commercial Property	65 dBA	85 dBA	60 dBA	80 dBA
IV	Residential Portion of Mixed Use[2]	70 dBA	90 dBA	70 dBA	90 dBA
V	Manufacturing and Industrial, Other Uses	70 dBA	90 dBA	70 dBA	90 dBA

1. 15 minute measurement period.
2. The Noise Zone IV standard shall apply to that portion of residential property falling within one hundred (100) feet of a commercial property or use, if the noise originates from that commercial property or use.
3. If the ambient noise level, i.e., the noise level without the offending source, exceeds the standard then the ambient noise level shall be the standard.
4. If the measurement location is on a boundary between two (2) different noise zones, the lower noise level standard applicable to the noise zone shall apply.

Section 5-29.15 of the Noise Ordinance, Noise Level Measurement, specifies the locations where exterior noise measurements are taken to determine compliance with the noise level limits presented in Table 2. This section limits where the noise standards are applicable. The location selected for measuring exterior noise levels in a residential area can be at any part of a private yard, patio, deck or balcony normally used for human activity and may be the closest point to the noise source. However, the measurement location should not be located in nonhuman activity areas such as trash container storage areas, planter beds, above or contacting a property line fence, or other areas not normally used as part of the yard, patio, deck or balcony. The location selected for measuring exterior noise levels in a nonresidential area shall be at the closest point to the noise source. The measurement microphone height shall be five (5) feet above ground or floor at the location of the measurement.

Section 5-29-11 extends the Noise Zone 1 exterior noise standards, shown above in Table 2, to apply to schools, day care centers, hospitals or similar health car institutions, church, library or museum while these facilities are in use.

Table 3 presents the interior noise standards for residential uses defined in Section 5-29.05. There are no interior noise standards for commercial, manufacturing, industrial or other uses. The section states, "It is unlawful for any person at any location within the incorporated area of the City to create noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which noise causes the noise level, when measured at any location on any other property, to exceed" the noise levels presented in Table 3.

Table 3
Allowable Interior Noise Levels

Noise Zone	Type of Land Use	Daytime (7 a.m. to 10 p.m.) Leq[1]	Daytime (7 a.m. to 10 p.m.) Lmax	Nighttime (10 p.m. to 7 a.m.) Leq[1]	Nighttime (10 p.m. to 7 a.m.) Lmax
I	Single-Family Residential	45 dBA	60 dBA	40 dBA	60 dBA
II	Multi-Family Residential, Mobile Home Parks	45 dBA	60 dBA	40 dBA	60 dBA
IV	Residential Portion of Mixed Use[2]	45 dBA	60 dBA	40 dBA	60 dBA

1. 15 minute measurement period.
2. The Noise Zone IV standard shall apply to that portion of residential property falling within one hundred (100) feet of a commercial property or use, if the noise originates from that commercial property or use.
3. If the ambient noise level, i.e., the noise level without the offending source, exceeds the standard then the ambient noise level shall be the standard.
4. If the measurement location is on a boundary between two (2) different noise zones, the lower noise level standard applicable to the noise zone shall apply.

Section 5-29.15 of the Noise Ordinance, Noise Level Measurement, specifies the locations where interior noise measurements are taken to determine compliance with the noise level limits presented in Table 3. The location selected for measuring interior noise levels must be made at a point at least four (4) feet from the wall, ceiling or floor, or within the frame of a window opening, nearest the noise source. Further, the measurements shall be made with windows in an open position.

Section 5-29.06 presents a list of activities that are exempt from the noise standards presented in Tables 2 and 3 above This includes activities such as sporting and recreational events conducted by the City, or any school district, as well as occasional outdoor gatherings, public dances, shows or sporting and entertainment events approved by the planning commission or City Council provided that these events are conducted pursuant to a permit or license. Noise generated by construction, repair, remodeling, demolition, or grading of public rights-of-way or by authorized seismic surveys is exempt from the limits. Noise generated by agricultural operations is exempt as long as the activities take place between 7:00 a.m. and 8:00 p.m., if they are required for protection or salvage of crops during periods of frost or other adverse weather, or if they are involved in

pesticide application in accordance with permits issued by or regulations enforced by the California Department of Agriculture.

Noise from construction repair, remodeling, demolition or grading of any real property is exempt from the noise standards presented in Tables 2 and 3 above. Noise from these activities is regulated under Section 5-29.09. Similarly, noise associated with maintenance of real property is exempt from the noise standards but regulated by Section 5-29.08. Noise associated with a party at a residential property is subject to the provisions of Section 5-29.07. Noise from ice cream trucks are subject to the provisions of Section 4-18.04 and intermittent noise made by dogs and animals is subject to the provisions of Chapter 1, Title 6 of the Municipal Code.

Section 5-29.07 of the Municipal Code, Loud and Disturbing Noise is what is commonly referred to as a nuisance ordinance in that it prohibits "loud, excessive, impulsive or intrusive noise, disturbance or commotion that disturbs the peace and quiet of any area or that causes discomfort or annoyance to any reasonable person of normal sensitivities in the area, after a Polices or Code Enforcement Officer has first requested that the person or property owner cease and desist from making such noise."

Section 5-29.08 prohibits loud noises, exceeding the limits defined in Table 2, during the maintenance of real property except between 8:00 a.m. and 6:00 p.m. The use of chainsaws, mulching machines and gasoline or electric blowers is only allowed between 8:00 a.m. and 6:00 p.m. on a weekday and between 9:00 a.m. and 5:00 p.m. on Saturdays and Sundays. Emergency property maintenance activities or municipal maintenance activities that cannot be feasibly completed during normal business hours are fully exempted from the Noise Ordinance.

Section 5-29.09 prohibits loud noises, exceeding the limits defined in Tables 2 and 3, during construction, remodeling, digging, grading, demolition or any other related building activity except between 7:00 a.m. and 6:00 p.m. on a weekday or between 9:00 a.m. and 6:00 p.m. on Saturdays and Sundays. Emergency construction activities or municipal construction activities that cannot be feasibly completed during normal business hours are fully exempted from the Noise Ordinance.

Sections 5-29.12 and 5-29.13 regulate sound amplifying equipment and amplified sound. These sections describe the activities that require an amplified sound permit. The Ordinance specifies that common sound amplifying equipment designed and operated for personal use within a building and not used to convey sound to an audience outside of the building. The sections describe the process and considerations for applying for and receiving an amplified sound permit.

Sections 5-29.17 and 5-29.18 describe the penalties for violating the Noise Ordinance and how the Ordinance is enforced. Section 5-29.19 allows the City Manager to grant temporary waivers for the period of time needed to correct a violation of the Noise Ordinance under certain conditions.

Section 5-29.20 allows for the City Council to establish a noise abatement program for specific sources where the adopted noise standards prove impractical in controlling the noise generated by the source.

2.5 Existing Noise Levels

2.5.1 Ambient Noise Measurements

Noise measurements were performed in order to document the existing aural environment and noise levels currently experienced on and around the project site. Short-term (15 to 30 minute) noise measurements were performed between the hours of 9:00 a.m. and 12:30 p.m. on May 11, 2015 at the four locations shown in Figure 7 and described in Table 4.

The primary source of noise impacting the project site is traffic noise from vehicles on Vineyard Avenue, Riverside Drive, and Chino Avenue, which border the project site and Ontario Avenue which runs through the project site. Ontario Hills Airport is located approximately 2.4 miles northeast of the Project site. Aircraft overflights occasionally generate noise within the project sites. The noise measurement locations were selected to document the noise levels from these sources.

Table 4
Ambient Noise Measurement Sites

Site	Location
1	Near corner of Whispering Lakes and East Riverside Drive, on grassy knoll in front of the Kid's First Learning Center, about 60 feet from the centerline of East Riverside Drive
2	On sidewalk, near manhole cover, in front of the Country Meadows Mobile Home Community, approximately 100 feet from the intersection of Vineyard Avenue and East Riverside Drive
3	Inside Westwind Park, on grass area between vehicle entrance and parking lot, just west of the pedestrian sidewalk, about 150 feet from the centerline of East Riverside Drive
4	At the intersection of Ontario Avenue and Chino Avenue, at the edge of Ontario near property line fence, about 90 feet north of the intersection

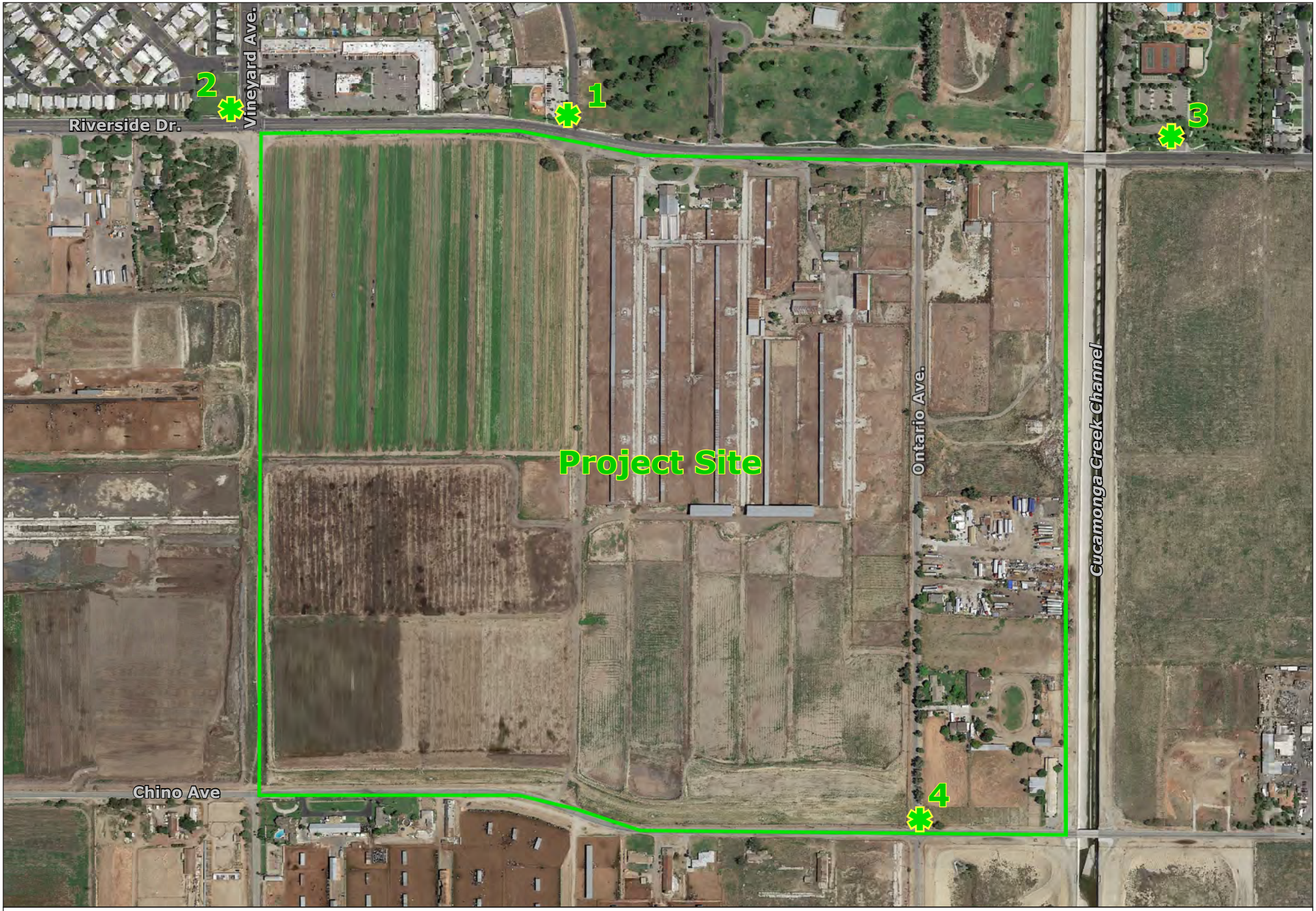


Figure 7
Noise Measurement Locations
Armstrong Ranch Specific Plan

The measurement survey utilized a Brüel & Kjær 2236 automated digital noise data acquisition system. This instrument automatically calculates both the Equivalent Noise Level (LEQ) and Percent Noise Levels (L%) for any specific time period. The noise monitor was equipped with a Brüel & Kjær 1/2-inch electret microphone and was calibrated with a Brüel & Kjær calibrator with calibration traceable to the National Institute of Standards and Technology before and after each measurement. Calibration for the instrument is performed annually and is certified through the duration of the measurements. This measurement system satisfies the ANSI (American National Standards Institute) Standards 1.4 for Type 1 precision noise measurement instrumentation. The monitor was set up to record the Leq, Lmax, L25, L50, L90, and Lmin noise levels for the measurement period.

Table 5 presents the results of the noise measurements. The start time of each measurement is presented along with the energy average noise level (Leq), the minimum noise level (Lmin) and maximum noise level (Lmax) during the measurement.

Table 5
Ambient Noise Measurement Results (dBA)

Site	Start	Duration (min)	Leq	Lmax	L25	L50	L90	Lmin
1	10:41 am	30	68.5	86.7	68.5	63.5	54.0	44.3
2	9:24 am	30	67.5	85.5	66.5	63.5	56.5	51.9
3	11:39 am	30	61.0	73.3	61.5	59.0	54.0	48.3
4	10:56 a,	30	63.7	84.4	60.5	54.5	47.5	41.6

Leq – Equivalent (Energy Average) Noise Level
Lmax – Maximum Noise Level during Measurement Period
L25 – Noise Level Exceed 25% of Measurement Period (equivalent to 15 minutes in an hour)
L50 – Noise Level Exceed 50% of Measurement Period (equivalent to 30 minutes in an hour)
L90– Noise Level Exceed 90% of Measurement Period (equivalent to 54 minutes in an hour)
Lmin – Minimum Noise Level during Measurement Period

Site 1 was located on a grassy knoll near the corner of Whispering Lakes Lane. The noise monitoring location was approximately 60 feet north of the centerline of East Riverside Drive, and about 12 feet west of the curb on Whispering Lakes Lane. The dominant noise source at this location was from traffic on East Riverside Drive. Other minor noise events were from children playing at the playground of the Kids First Learning Center, chirping birds, and an occasional aircraft flyover. The measured Leq at Site 1 was 68.5 dBA. The maximum noise level during the measurement was due to noise from a squealing drive belt in a truck passing on East Riverside Drive.

Site 2 was located on a sidewalk in front of the County Meadows Mobile Home Community. The noise meter was set up about 100 feet from the intersection of Vineyard Avenue and East Riverside Drive. The dominant noise source at Site 2 was from traffic (primarily truck traffic) at the intersection of Vineyard Avenue and East Riverside Drive. The Leq during the 30-minute noise measurement at Site 2 was 67.5 dBA. The maximum noise level during the measurement was due engine noise from a big rig passing northbound on Vineyard Avenue.

Site 3 was located inside Westwind Park near a pedestrian walkway situated between the vehicle entry and a parking lot. The monitoring location was approximately 150 feet from the centerline of East Riverside Drive just south of the southeast corner of the parking lot. The dominant noise source at Site 3 was from traffic on East Riverside Drive. Minor noise events were from occasional aircraft flyovers and from construction equipment in the park and on the south side of East Riverside Drive. During the 30-minute measurement at Site 3 the Leq was 61.0 dBA. The maximum noise level during the measurement was due to engine noise from a big rig passing on East Riverside Drive.

Site 4 was located in a dirt area (between some trees) that runs along the east side of Ontario Avenue, near a chain link fence. The noise monitoring location was situated about 90 feet north of the intersection of Chino Avenue and Ontario Avenue. Though the site seemed to be more remote than Sites 1 through 3, the primary source of noise at Site 4 was due to traffic on Chino Avenue. The Leq at Site 4 was 63.7 dBA. The maximum noise level during the measurement was due to a dump truck passing the monitoring location on Ontario Avenue.

2.5.2 Traffic Noise Levels

The highway noise levels presented in this report were computed using the Highway Noise Model published by the Federal Highway Administration ("FHWA Highway Traffic Noise Prediction Model," FHWA-RD-77-108, December, 1978). The FHWA Model uses traffic volume, vehicle mix, vehicle speed, and roadway geometry to compute the "equivalent noise level." A computer code has been written which computes equivalent noise levels for each of the periods used in the calculation of CNEL. Weighting these noise levels and summing them results in the CNEL for the traffic projections used. CNEL contours are found by iterating over many distances until the distances to the 60, 65, and 70 CNEL contours are found.

The distances to the CNEL contours for the roadways in the vicinity of the project site are given in Table 6. These represent the distance from the centerline of the roadway to the contour value shown. Note that the values given in Table 6 do not take into account the effect of any noise barriers or topography that may affect ambient noise levels. The traffic data used to calculate the noise levels presented in Table 6 were provided by the traffic engineer for the proposed project (Stantec). The traffic volumes, speeds, and distribution used in the calculations are presented in the Appendix of this report.

Table 6 shows that the highest traffic noise levels are experienced along Grove Avenue between Francis Street and SR-60. Roadway noise levels exceed 65 CNEL more than 100 feet from the centerline of the roadway along this segment as well as along Euclid Avenue between SR-60 and Riverside Drive, Archibald Avenue from Philadelphia Street to Schaefer Avenue, and Riverside Drive between Campus Avenue and East of Haven Avenue. Traffic noise levels along these segments are considerable. Traffic noise levels along Vineyard Avenue between Chino Avenue and Schafer Avenue, Philadelphia Street between Archibald Avenue and Haven Avenue, and Chino Avenue from Grove Avenue to Archibald Avenue are all less than 60 dBA at 100 feet from the centerline. Traffic noise levels along these segments are minor.

Table 6
Existing Roadway Traffic Noise Levels

Roadway Segment	CNEL @ 100' †	Distance To CNEL Contour (feet)† 70 CNEL	65 CNEL	60 CNEL
Euclid Avenue				
SR-60 to Riverside Dr.	67.2	65	141	303
Grove Avenue				
Francis St. to Philadelphia St.	67.9	73	156	337
Philadelphia St. to SR-60	68.5	79	171	369
SR-60 to Riverside Dr.	63.6	37	81	174
Riverside Dr. to Chino Ave.	62.2	30	65	141
Chino Ave. to Schaefer Ave.	62.2	30	65	141
Vineyard Avenue				
Francis St. to Philadelphia St.	63.6	37	80	173
Philadelphia St. to SR-60	64.7	44	95	204
SR-60 to Riverside Dr.	63.0	RW	74	159
Riverside Dr. to Chino Ave.	--	--	--	--
Chino Ave. to Schaefer Ave.	47.5	RW	RW	RW
Archibald Avenue				
Francis St. to Philadelphia St.	63.9	39	85	182
Philadelphia St. to SR-60	66.4	58	124	267
SR-60 to Riverside Dr.	67.2	65	141	304
Riverside Dr. to Chino Ave.	65.6	51	110	236
Chino Ave. to Schaefer Ave.	65.6	51	110	236
Philadelphia Street				
Grove Ave. to Vineyard Ave.	62.9	RW	72	156
Vineyard Ave. to Archibald Ave.	63.0	RW	74	159
Archibald Ave. to Haven Ave.	59.7	RW	45	96
Riverside Drive				
Euclid Ave. to Campus Ave.	64.1	40	87	187
Campus Ave. to Grove Ave.	65.2	48	104	223
Grove Ave. to Vineyard Ave.	65.4	50	107	230
Vineyard Ave. to Archibald Ave.	66.4	57	124	266
Archibald Ave. to Turner Ave.	66.4	57	124	266
Turner Ave. to Haven Ave.	65.1	47	102	220
East of Haven Ave.	65.1	47	102	220
Chino Avenue				
Grove Ave. to Vineyard Ave.	54.6	RW	20	43
Vineyard Ave. to Archibald Ave.	54.6	RW	20	43

† From Centerline of Road
-- Roadway does not exist under existing conditions.

2.5.3 Aircraft Noise Levels

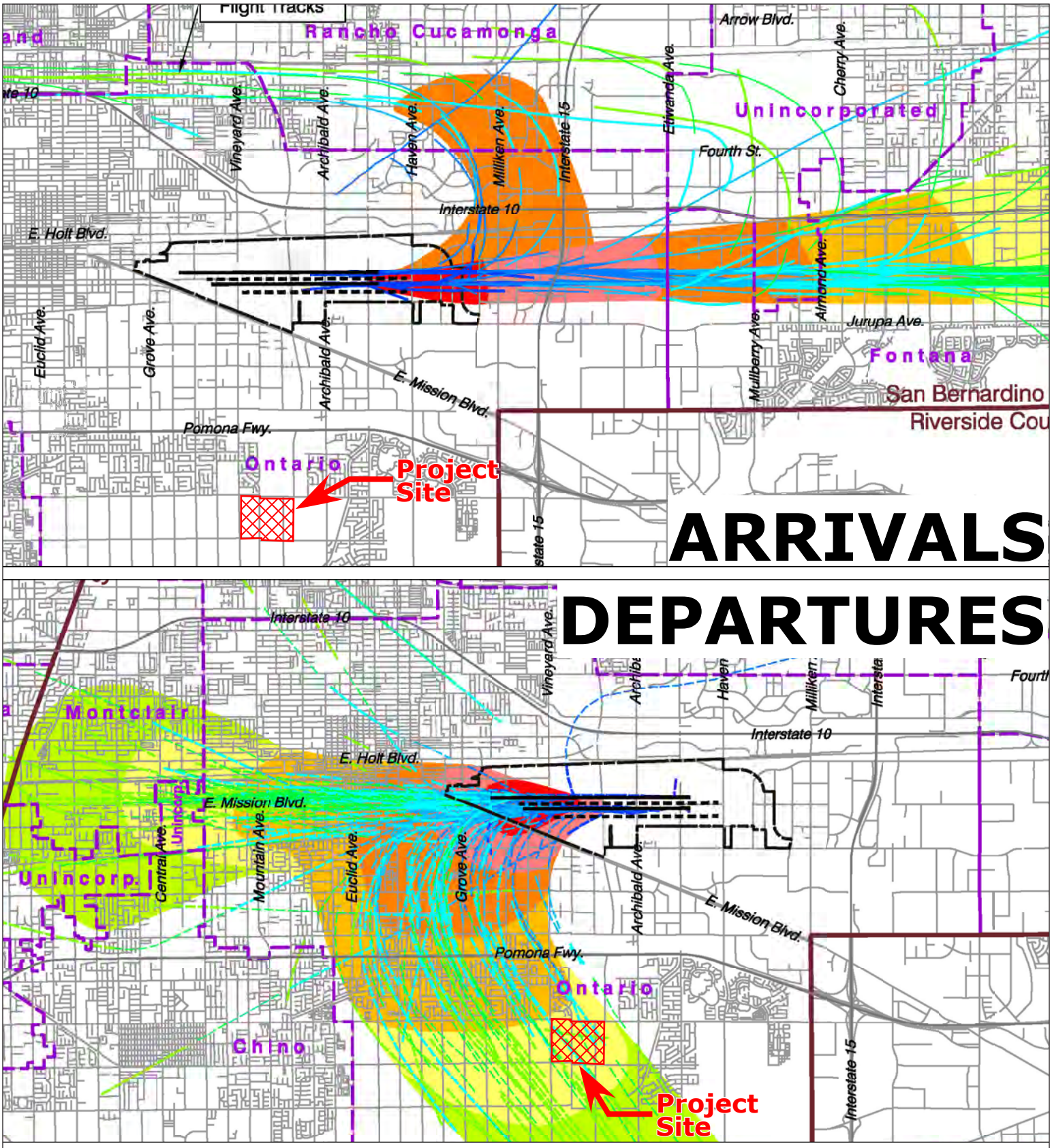
The LA/Ontario International Airport is located approximately 2.3 miles north of the project site. The primary runways at the airport run east west with the normal operating direction to the west. (i.e., aircraft take off to the west and land from the east). Figure 8 shows the flight tracks for aircraft arriving to and departing from the airport during normal operations. Under Santa Ana Wind conditions the operating direction is reversed. Aircraft take off to the east and land from the west during Santa Ana Conditions. Figure 9 shows the flight tracks for aircraft arriving to and departing rom the airport during Santa Ana Conditions.

Figures 8 and 9 show that arriving aircraft do not fly over the project site during both normal operations and with Santa Ana Winds but that the project site is overflown by departing aircraft during both conditions. During normal operations, some departing aircraft flying to the southeast overfly the site at between approximately 1,500 feet and 2,000 feet above the ground elevation. During Santa Ana Wind conditions, aircraft flying to the southwest overfly the site at altitudes greater than 2,500 feet above ground elevation. As noted in Section 2.5.1 aircraft were observed and heard during the ambient noise measurements. While aircraft noise was audible it was not intrusive.

The noise contours shown in the Compatibility Policy Map: Noise Impact Zones of the LA/Ontario Airport Land Use Compatibility Plan (ALUCP) are presented in Figure 10. This map shows that while the project site is located outside of the 60 CNEL noise contour it is located within the Airport Influence Area. Uses located outside the 60 CNEL contour but within the Airport Influence Area are designated by the ALUCP as being in the Real Estate Transaction Disclosure Overflight Notification Zone. State law (Business and Professions Code Section 11010 and Civil Code Sections 1102.6, 1103.4, and 1353.) requires airport proximity disclosure information to be provided during real estate transactions in this zone.

Chino Municipal Airport is located approximately 2.4 miles south-southwest of the project site. This is a general aviation airport that does not have any scheduled commercial operations. Both propeller and business jet aircraft operate from the airport. The two principal runways at the airport are oriented east west with the primary operating direction to the west (i.e., aircraft take off to the west and land from the east). There is also a crosswind runway that aligns with the project site. However, the distance between the airport and site and the fact that the crosswind runway is not used regularly results in few aircraft from Chino Municipal Airport overflying the vicinity of the project site.

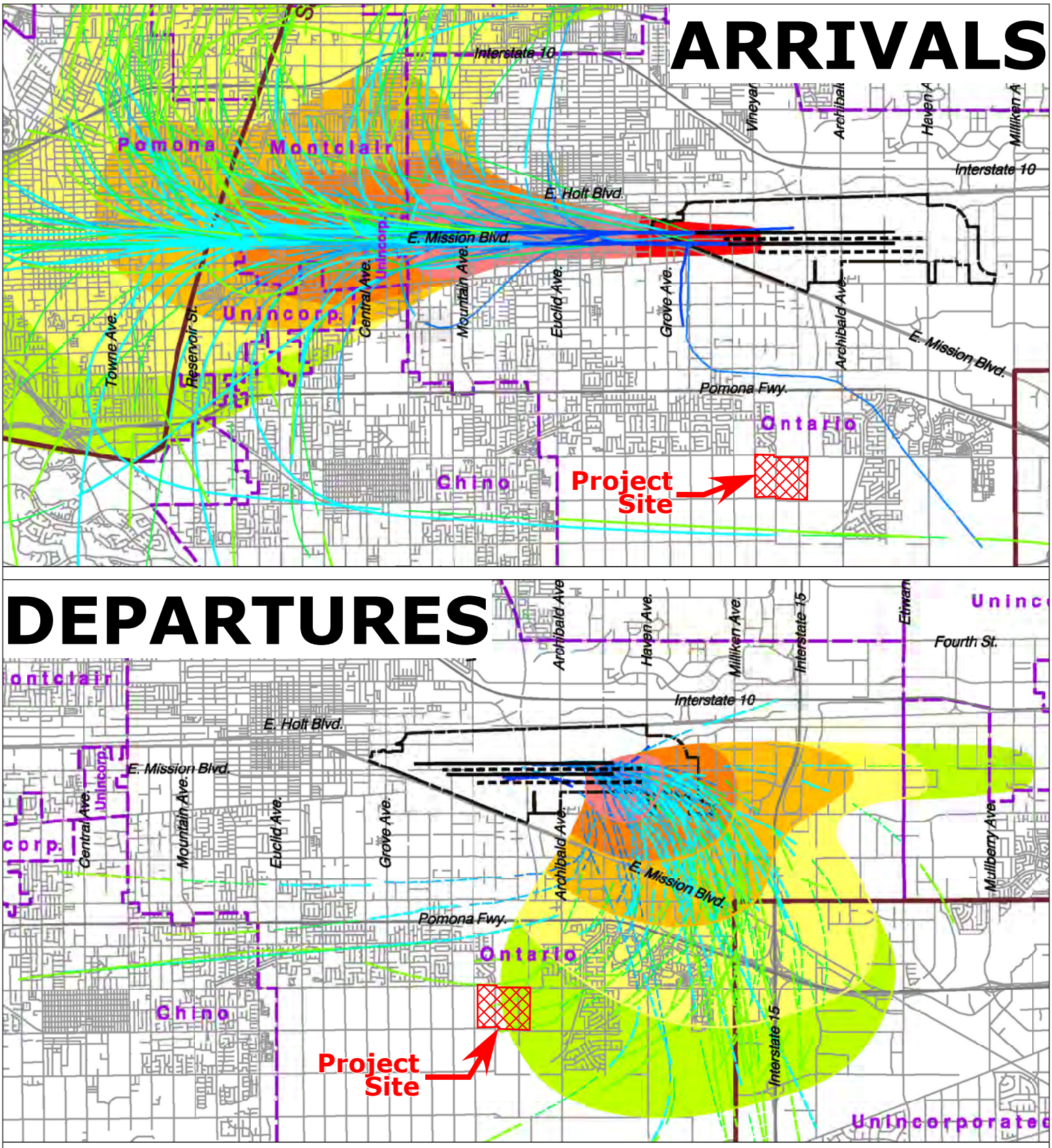
Figure 11 presents the future 2025 noise contours from the airport presented in the Noise Element Technical Memorandum for the City of Chino Hills General Plan and were taken from a draft Master Plan prepared for the airport in 2003. Figure 11 shows that the project is located well outside of the 55 CNEL aircraft noise contour.



Source: LA/Ontario Airport Land Use Compatability Plan (Adopted April 19, 2011)

Figure 8 - LA/Ontario Airport Flight Tracks for Normal Operations

Armstrong Ranch Specific Plan



Boundary Lines

- Airport Property Line
- County Line
- City Limits
- Street
- Existing Runways
- Future Runways

Flight Track Altitudes

- 0-500'
- 500'-1,000'
- 1,000'-1,500'
- 1,500'-2,000'
- 2,000'-2,500'
- 2,500'-3,000'

Radar Flight Tracks

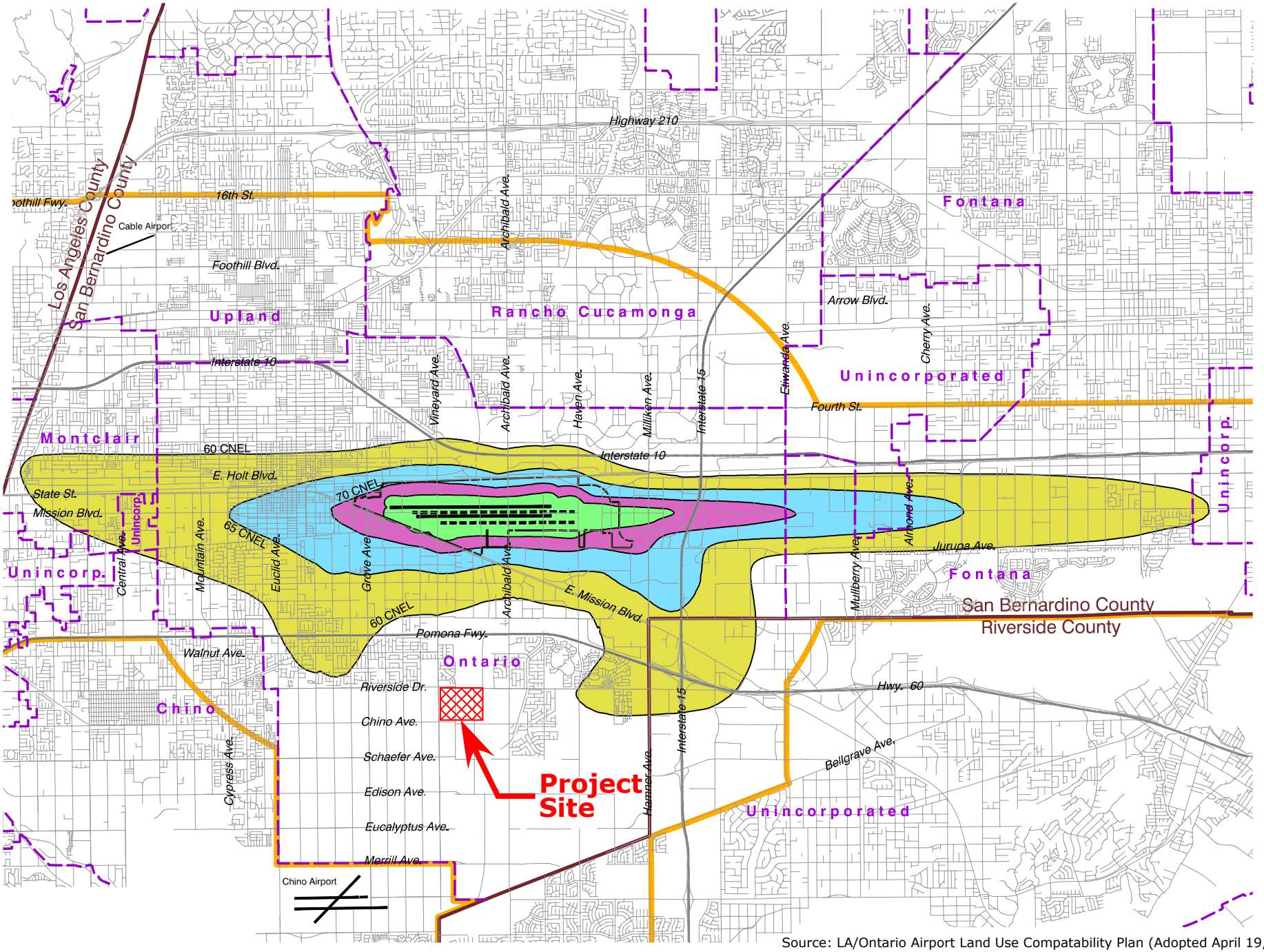
- 0-500'
- 500' - 1,000'
- 1,000' - 1,500'
- 1,500' - 2,000'
- 2,000' - 2,500'
- 2,500' - 3,000'

N

0' 4,000' 8,000'

Source: LA/Ontario Airport Land Use Compatability Plan (Adopted April 19, 2011)

Figure 9 - LA/Ontario Airport Flight Tracks with Santa Ana Wind Conditions



Source: LA/Ontario Airport Land Use Compatability Plan (Adopted April 19, 2011)

0' 5,000' 10,000'

N

Airport Influence Area

Noise Impact Zones
- 60 - 65 dB CNEL
- 65 - 70 dB CNEL
- 70 - 75 dB CNEL
- 75 + dB CNEL

- Airport Property Line
- County Line
- City Limits
- Street
- Existing Runways
- Future Runways

Figure 10
LA/Ontario Airport Noise Contours
Armstrong Ranch Specific Plan

Figure 11
Chino Municipal Airport Noise Contours

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3.0 Potential Noise Impacts

Noise impacts are commonly divided into two groups; short-term (temporary) and long-term. Short-Term impacts are those associated with noise generated by construction activities required to implement the project. Long-Term impacts are the impacts caused by the long-term operation of the proposed project. Impacts are also divided between those from on-site activities and those from off-site activities. Impacts from off-site activities are those arising from additional road noise generated by traffic increases resulting from the project.

Short-term impacts are discussed in Section 3.2 and long-term impacts are analyzed in Section 3.3. Long-term impacts from on-site activities are assessed in Section 3.3.1 and impacts from off-site activities are analyzed in Section 3.3.2. Section 3.3.3 assesses the noise compatibility of the proposed project. Section 3.1 presents the impact criteria used to determine the significance of the noise impacts.

3.1 Noise Impact Significance Thresholds

Impacts from on-site activities, short-term and long-term are measured against the City of Ontario Noise Ordinance criteria presented in Section 2.4.2.2. Construction or on-site operational activities that violate the provisions of the Noise Ordinance will result in a significant noise impact.

An off-site traffic noise impact occurs when there is a discernable increase in traffic noise AND the resulting noise level exceeds an established noise standard. In community noise assessment, changes in noise levels greater than 3 dB are often identified as discernable, while changes less than 1 dB will not be discernible to local residents. In the range of 1 to 3 dB, residents who are very sensitive to noise may perceive a slight change. In laboratory testing situations, humans are able to detect noise level changes of slightly less than 1 dB. This is based on a direct immediate comparison of two sound levels. In a community noise situation, however, noise exposures are over a long period, and changes in noise levels occur over years, rather than the immediate comparison made in a laboratory situation. Therefore, the level at which changes in community noise levels become discernible is likely to be some value greater than 1 dB, and 3 dB is the most commonly accepted discernable difference. A 5 dB change is generally recognized as a clearly discernable difference.

Because traffic noise levels at sensitive uses likely approach or exceed the 65 CNEL standard, a 1.0 dB increase due to the project will be used as the increase threshold for project. The project will result in a significant noise impact when it causes a permanent increase in ambient noise levels of 1.0 dB and the resulting noise level exceeds the applicable exterior standard at a noise sensitive use.

A cumulative significant noise impact will occur if there is a 3.0 dB increase over existing conditions and the resulting noise level exceeds the applicable exterior standard at a sensitive use. The project will have considerably contributed to a significant cumulative impact if it contributes 1 dB or more to the cumulative noise level increase.

Project noise compatibility is measured against compliance with the noise standards specified in the City of Ontario Noise Element discussed in Section 2.4.2.1. Achievement of these standards will result in a less than significant impact.

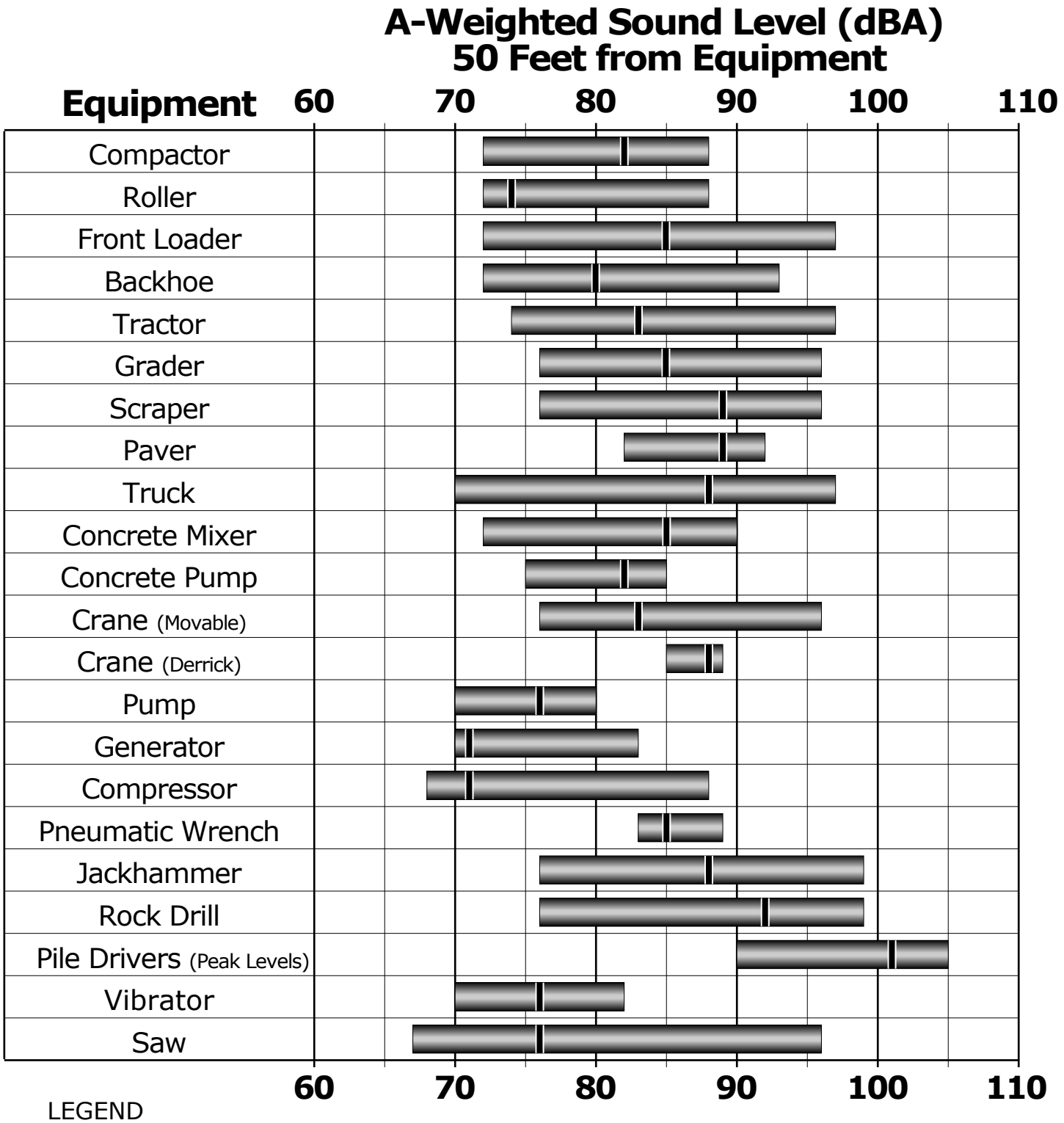
3.2 Short-Term Impacts

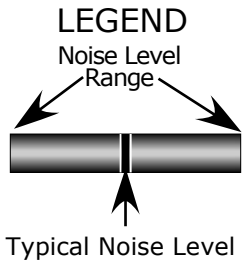
Construction of the project is anticipated to begin in January of 2017 and be completed in August of 2023. Demolition of the existing structures on-site is anticipated to take approximately five months. While demolition can generate considerable levels of noise, there are no exiting sensitive receptors within 500 feet of the existing structures. At this distance, noise generated by demolition activities may be audible during periods when noise from other sources is absent, but the noise levels will not be substantial.

The highest levels of noise will be generated during site preparation and grading when large pieces of heavy equipment are operated. Site preparation and grading are anticipated to begin in April 2017 and take approximately 14 months to complete. High noise generating activities during site preparation will be somewhat sporadic and irregular in any one area. Grading of the site will involve considerable periods of near continuous operation of multiple pieces of heavy equipment at one time and result in the highest overall noise levels. However, due to the size of the site these noise levels will only be experienced in any one area for a relatively small portion of time. Noise generated during construction of the buildings and the surrounding site will be lower as fewer and smaller pieces of heavy equipment are operated for shorter periods of time.

Worst-case examples of construction noise at 50 feet are presented in Figure 12. Note that rock drills or pile drivers are not anticipated to be required during construction of the project. The peak noise level for most of the equipment that will be used during the construction is 70 to 95 dBA at a distance of 50 feet. At 200 feet, the peak construction noise levels range from 58 to 83 dBA. At 400 feet, the peak noise levels range from 52 to 77 dBA. Note that these noise levels are based upon worst-case conditions. Typically, noise levels near the site will be less. Noise measurements made by Landrum & Brown for other projects show that the noise levels generated by commonly used grading equipment (i.e. loaders, graders and trucks) generate noise levels that typically do not exceed the middle of the range shown in Figure 12.

Backup warning systems, which are required by California labor law for heavy equipment, typically employ audible alarms in the form of backup beepers. These beepers typically produce sound levels between 63 to 67 dBA measured at 50 feet. Backup beepers tend to be audible over large distances, even when the sound may not be readily measurable. In general, the sound level generated by backup beepers is low enough that it would not increase the overall sound level produced by heavy equipment operating concurrently with the beepers. Accordingly, no attempt is made to project over distance the sound level produced by backup beepers. However, given the nature of the sound produced by backup beepers, they could be audible over several thousand feet when background noise levels are low.





Sources: "Handbook of Noise Control," by Cyril Harris, 1979
"Transit Noise and Vibration Impact Assessment" by Federal Transit Administration, 1995

Figure 12
Construction Equipment Noise Levels

As shown in Figure 2, the nearest residential uses to the project are located to the north of the project across Riverside Drive. There is a preschool/daycare facility located adjacent to these homes as well. These homes and the preschool/daycare facility are located approximately 75 feet from the edge of the project. Equipment operating at the near edge of the site will generate a noise level approximately 4 dB lower than the levels shown in Figure 12. There is a block wall located along the southern boundary of the residences that will reduce first floor noise levels by an additional 5 dB. All of the homes are single story homes. Noise levels could reach as high as 90 dBA for short periods at these residences as a heavy piece of equipment is operated near full power at the edge of the project site. However, equipment at the closest point would not be expected to exceed 84 dBA.

Because the vast majority of the site is located much further away, average noise levels will be much less than peak noise levels. The majority of the site is located more than 1,300 feet from these homes. At this distance, peak construction noise levels will not exceed 60 dBA. Equipment operating at half this distance from will generate noise levels less than approximately 66 dBA. The ambient measurements at Sites 1 and 2 presented in Section 2.5.1 shows that the average daytime noise level along Riverside Drive is approximately 68 dBA.

Construction noise is regulated in Chapter 5-29.09 of the City's Municipal Code. Construction activities occurring within the hours between 7:00 a.m. to 6:00 p.m. Monday through Friday and 9:00 a.m. to 6:00 p.m. on Saturdays or Sundays are specifically exempted from the noise standards defined in the Noise Ordinance. The project does not propose construction outside of these hours. Therefore, construction of the project will not result in a significant impact.

3.3 Long-Term Impacts

The following sections assess the long-term operational noise impacts from the project. Section 3.3.1 examines noise impacts from on-site activities on the sensitive land uses in the immediate vicinity of the project site. Noise impacts from off-site activities, traffic on roadways around the project are assessed in Section 3.3.2. Noise impacts on the proposed project are discussed in Section 3.3.3.

3.3.1 Impacts from On-Site Activities

The residential uses proposed by the project are not considerable sources of noise and would not be expected to generate impacts at the neighboring existing uses or proposed uses within the project site. While schools can be sources of considerable noise, the City of Ontario's Noise Ordinance specifically exempts activities at schools from the noise level limits. Therefore, the noise levels generated by activities at the school are not considered to significantly impact adjacent uses. The uses proposed by the project are not anticipated to result in significant impacts to any existing neighboring uses or on the uses proposed by the project.

3.3.2 Impacts from Off-Site Activities

Traffic generated by the project will increase traffic noise levels. This section examines the traffic noise level increases caused by the project and evaluates their significance. As discussed in Section 3.1, traffic noise impacts are measured against two criteria, the change in traffic noise levels and the absolute noise levels.

Table 7 presents the projected change in traffic noise levels and Table 8 presents the projected opening year traffic noise levels with the proposed project.

Table 7 shows the projected traffic noise CNEL level changes on the roadways in the vicinity of the project site for existing conditions and for the buildout year of the project (2021). The first column of noise level changes "Existing Due to Project" presents the change in traffic noise CNEL levels over current conditions with no other changes to the traffic volumes. This represents the theoretical condition where the project immediately begins operation at full capacity with no changes to the surrounding area. The next two columns show the noise level increases projected for the buildout year of the project, 2021. The first value shows the projected cumulative change over existing conditions and the second value shows the portion of this increase that is due to the project. Increases due the project of 1.0 dB or greater are shown in bold-italics as are cumulative increases (over existing conditions) greater than 3.0 dBA. The noise level increases were calculated using traffic volume data provided by the traffic engineer for the proposed project. The traffic volumes used are presented in the Appendix of this report.

The distances to the opening year (2021) 60, 65 and 70 CNEL contours with the proposed project are presented in Table 8. These represent the distance from the centerline of the road to the contour value shown. The CNEL at 100 feet from the roadway centerline is also presented. The contours do not take into account the effect of any noise barriers or topography that may affect ambient noise levels. The traffic data used to calculate these noise levels is presented in the Appendix of this report.

Table 7 shows that traffic noise levels are projected to change by less than 1 dB due to the project along all road segments except Chino Avenue between Grove Avenue and Archibald Avenue. The table shows that the project would increase existing traffic noise levels by 2.1 dB between Grove Avenue and Vineyard Avenue and by 4.5 dB between Vineyard Avenue and Archibald Avenue if it were implemented instantaneously with no other changes to the surrounding area. This is due to the extremely low existing traffic volume along this segment of Chino Avenue. In 2021, at project buildout, traffic noise levels are anticipated to increase by 9.2 and 9.7 dB along these segments. However, the Project is anticipated to contribute less than 1 dB to this increase, which is an imperceptible noise level change. The significance of the Project's impact is based on the noise level increases projected in 2021 as the existing plus project scenario will not occur in reality.

Agricultural uses are located along Chino Avenue between Grove Avenue and Archibald Avenue with a few farmhouse residences. Table 8 shows that the 65 CNEL noise contour from traffic on this segment of Chino Avenue is projected to extend, at most, 90 feet from the Centerline of Chino Avenue. All of the residences face Chino Avenue and are set back from the roadway. There are no private yard areas located within 90 feet of the centerline of Chino Avenue. Therefore, there are no sensitive uses that will be exposed to a considerable traffic noise increase and future noise levels above the City's 65 CNEL residential noise standard. Therefore,

the project will not result in a significant impact along Chino Avenue between Grove Avenue and Archibald Avenue.

Table 7 shows that the noise levels increase along Vineyard Avenue between Riverside Drive and Chino Avenue is dependent on the distance from the roadway. This is because this segment of road does not currently exist. Therefore, noise levels will increase from background ambient levels to the traffic noise levels shown in Table 8. Table 8 shows that the future traffic noise levels along this road segment will be less than 65 CNEL. Further, there are no existing noise sensitive uses located along this segment. Therefore, while the addition of the roadway will considerably increase noise levels in the immediate vicinity of the roadway, there are no sensitive receptors exposed to this increase or exposed to noise levels exceeding the City's standards.

There are no existing noise sensitive receptors that will experience a traffic noise level increase of 1 dB or more due to the project and be exposed to traffic noise levels exceeding City standards. Therefore, the project will not result in a significant noise impact.

Table 7 shows that there are three roadway segments with projected traffic noise level increase greater than 3 dB over existing conditions (1) Vineyard Avenue between Chino Avenue and Schaefer Avenue, (2) Chino Avenue between Grove Avenue and Vineyard Avenue, and (3) Chino Avenue between Vineyard Avenue and Archibald Avenue. In addition, traffic noise level increases greater than 3 dB would be experienced along the new road segment, Vineyard Avenue between Riverside Drive and Chino Avenue. As discussed above there are no sensitive uses that will be exposed to excessive traffic noise levels along Chino Avenue between Grove Avenue and Archibald Avenue and the new segment of Vineyard Avenue between Riverside Drive and Chino Avenue.

There is one residence located along Vineyard Avenue between Chino Avenue and Schaefer Avenue. However, Table 8 shows that traffic noise will not exceed 65 CNEL beyond the roadway right-of-way. Therefore, traffic noise levels along this segment of Vineyard Avenue will be less than 65 CNEL.

There are no existing sensitive noise receptors that will experience cumulative traffic noise levels of 3 dB or greater and be exposed to traffic noise levels exceeding City standards. Therefore, there will be no cumulative traffic noise impacts.

Table 7
Traffic Noise Level Changes with the Project (dB CNEL)

Roadway Segment	Existing Due to Project	Project Opening (2021) Over Existing	Project Opening (2021) Due to Project
Euclid Avenue			
SR-60 to Riverside Dr.	0.0	0.3	0.0
Grove Avenue			
Francis St. to Philadelphia St.	0.0	0.3	0.0
Philadelphia St. to SR-60	0.0	0.3	0.0
SR-60 to Riverside Dr.	0.1	0.4	0.1
Riverside Dr. to Chino Ave.	0.0	0.3	0.0
Chino Ave. to Schaefer Ave.	0.1	0.4	0.1
Vineyard Avenue			
Francis St. to Philadelphia St.	0.4	1.6	0.3
Philadelphia St. to SR-60	0.2	1.1	0.2
SR-60 to Riverside Dr.	0.8	1.9	0.6
Riverside Dr. to Chino Ave.	**	**	**
Chino Ave. to Schaefer Ave.	0.0	***9.6***	0.0
Archibald Avenue			
Francis St. to Philadelphia St.	0.1	2.2	0.1
Philadelphia St. to SR-60	0.1	1.6	0.1
SR-60 to Riverside Dr.	0.3	1.9	0.2
Riverside Dr. to Chino Ave.	0.0	2.5	0.0
Chino Ave. to Schaefer Ave.	0.2	2.6	0.1
Philadelphia Street			
Grove Ave. to Vineyard Ave.	0.0	0.3	0.0
Vineyard Ave. to Archibald Ave.	0.0	0.3	0.0
Archibald Ave. to Haven Ave.	0.0	0.3	0.0
Riverside Drive			
Euclid Ave. to Campus Ave.	0.3	1.3	0.3
Campus Ave. to Grove Ave.	0.3	1.3	0.3
Grove Ave. to Vineyard Ave.	0.4	1.4	0.3
Vineyard Ave. to Archibald Ave.	0.7	1.4	0.6
Archibald Ave. to Turner Ave.	0.3	1.1	0.3
Turner Ave. to Haven Ave.	0.4	1.5	0.3
East of Haven Ave.	0.4	1.4	0.3
Chino Avenue			
Grove Ave. to Vineyard Ave.	***2.1***	***9.2***	0.3
Vineyard Ave. to Archibald Ave.	***4.5***	***9.7***	0.9

** Road segment does not exist under existing conditions. Noise level increase is dependent on distance from roadway.

Table 8
Future Roadway Traffic Noise Levels

Roadway Segment	CNEL @ 100' †	Distance To CNEL Contour (feet)† 70 CNEL	65 CNEL	60 CNEL
Euclid Avenue				
SR-60 to Riverside Dr.	67.5	68	146	315
Grove Avenue				
Francis St. to Philadelphia St.	68.2	76	163	352
Philadelphia St. to SR-60	68.8	83	179	386
SR-60 to Riverside Dr.	64.0	40	85	184
Riverside Dr. to Chino Ave.	62.5	32	68	147
Chino Ave. to Schaefer Ave.	62.6	32	69	149
Vineyard Avenue				
Francis St. to Philadelphia St.	65.1	47	102	220
Philadelphia St. to SR-60	65.8	53	113	244
SR-60 to Riverside Dr.	65.0	46	99	214
Riverside Dr. to Chino Ave.	55.8	RW	RW	RW
Chino Ave. to Schaefer Ave.	57.1	RW	RW	64
Archibald Avenue				
Francis St. to Philadelphia St.	66.1	55	118	255
Philadelphia St. to SR-60	68.0	73	158	339
SR-60 to Riverside Dr.	69.2	88	189	408
Riverside Dr. to Chino Ave.	68.1	74	160	345
Chino Ave. to Schaefer Ave.	68.2	76	163	352
Philadelphia Street				
Grove Ave. to Vineyard Ave.	63.1	35	75	162
Vineyard Ave. to Archibald Ave.	63.3	36	77	165
Archibald Ave. to Haven Ave.	60.0	RW	46	100
Riverside Drive				
Euclid Ave. to Campus Ave.	65.4	49	106	229
Campus Ave. to Grove Ave.	66.6	59	127	274
Grove Ave. to Vineyard Ave.	66.8	61	132	283
Vineyard Ave. to Archibald Ave.	67.8	71	154	331
Archibald Ave. to Turner Ave.	67.5	68	147	317
Turner Ave. to Haven Ave.	66.6	60	128	276
East of Haven Ave.	66.6	59	127	275
Chino Avenue				
Grove Ave. to Vineyard Ave.	63.7	RW	82	177
Vineyard Ave. to Archibald Ave.	64.3	RW	90	194

† From Centerline of Road

3.3.3 Project Noise Compatibility

3.3.3.1 Traffic Noise Impacts

Future traffic noise exposures at the nearest receptors within the project located along the major roadways are presented in Table 9. The table shows the distance from the centerline of reach road along with the traffic noise CNEL level at that distance. The City of Ontario's noise standards for residential uses is 65 CNEL for outdoor areas and 45 CNEL for the interior. Table 9 also shows the approximate height of a noise barrier that would reduce the outdoor noise level to less than 65 CNEL and the amount of outdoor-to-indoor noise reduction that the residential structures will need to achieve to reduce indoor noise levels to less than 45 CNEL.

Table 9
Project Traffic Noise Exposures and Abatement

Roadway Segment	Nearest Receptor Distance †	Nearest Receptor CNEL Level	Noise Barrier Height for Outdoor Noise < 65 CNEL	Noise Reduction for Indoor Noise <45 CNEL
Vineyard Avenue				
Riverside Dr. to Chino Ave.	99.0	54.0	None	9.0
Riverside Drive				
Vineyard Ave. to Archibald Ave.	77.0	69.3	6.0'	24.3
Chino Avenue				
Vineyard Ave. to Archibald Ave.	54.0	68.0	5.5'	23.0
Hellman Avenue				
South of Riverside Dr.	62.0	59.1	None	14.1
North of Chino Ave.	62.0	54.3	None	9.3
Carpenter Avenue				
Riverside Dr. to Street "AA"	37.0	59.8	None	14.8
Street "AA"				
Vineyard Ave. to Carpenter Ave.	40.0	55.8	None	10.8

† From Roadway Centerline

Table 9 shows that receptors along Riverside Drive and Chino Avenue will be exposed to outdoor noise levels greater than 65 CNEL. Without mitigation, homes along these roadways would be significantly impacted by traffic noise. However, the table shows the approximate heights of noise barriers that would be required to reduce the noise level to below 65 CNEL. This demonstrates that it is feasible to reduce outdoor noise levels at the residences proposed by the project to less than 65 CNEL to mitigate this impact.

The noise reduction provided by noise barriers is dependent on the geometric relation between the roadway, the noise barrier, and the receptor. The specific noise barrier heights required to reduce outdoor noise levels to below the 65 CNEL standard will need to be determined based on final grading plans. Mitigation presented in Section 4.2.3 will require noise studies to be prepared prior to

issuance of final grading permits for the project to determine the specific noise barrier heights.

The aforementioned noise barriers may consist of a wall, a berm, or a combination of the two. The noise barriers must have a surface density of at least 3.5 pounds per square foot, and shall have no openings or gaps. The wall may be constructed of stud and stucco, 3/8-inch plate glass, 5/8-inch plexiglass, any masonry material, or a combination of these materials.

Standard residential construction achieves 12 dB of outdoor-to-indoor noise reduction with open windows and at least 20 dB of reduction with windows closed. Residential construction complying with modern building efficiency standards often achieve on the order of 25 dB of outdoor-to-indoor noise reduction. With considerable acoustical upgrades up to approximately 33 dB of outdoor-to-indoor noise reduction is achievable.

Table 9 shows that homes along Vineyard Avenue, Hellman Avenue north of Chino Avenue, and "AA" Street will require less than 12 dB of outdoor-to-indoor noise attenuation to meet the City's 45 CNEL interior residential standard. This amount of reduction is provided by typical construction with windows open. Therefore, interior noise levels in homes along Vineyard Avenue will not exceed 45 CNEL.

Homes along Riverside Drive and Chino Avenue will require more than 20 dB of outdoor-to-indoor noise reduction to achieve the 45 CNEL interior noise standard. These homes will need to achieve up to 24.3 dB of outdoor-to-indoor reduction. As discussed above, this level of reduction is often achieved with standard construction due to modern energy efficiency requirements. However, acoustically upgraded windows may be required to achieve the maximum level of reduction. The required reduction is much less than the maximum realistically achievable noise reduction and therefore, it will be feasible to reduce indoor noise levels to less than the City's 45 CNEL standard. Detailed calculations based on final architectural drawings are required to demonstrate outdoor-to-indoor reductions of greater than 20 dB. Mitigation presented in Section 4.2.3 will require noise studies to be prepared prior to issuance of building permits for the project to determine the amount of reduction provided by the proposed structures and whether any acoustical upgrades are required.

Homes requiring more than 12 dB of outdoor-to-indoor noise reduction will require windows closed to achieve the interior noise standard. Windows do not need to be sealed shut, but closable at the occupants' discretion. In order to assume that windows can remain closed, adequate ventilation per the Uniform Building Code must be provided. Specific units requiring such ventilation will be identified in the noise studies presenting the detailed noise reduction calculations. Table 9 shows that Homes along Hellman Street south of Riverside Drive and Carpenter Drive will require more than 12 dB of outdoor-to-indoor noise reduction but less than 20 dB of reduction.

3.3.3.2 Aircraft Noise Impacts

As discussed in Section 2.5.3, the project site is located approximately 2.3 miles south of LA/Ontario International Airport and approximately 2.4 miles north-northeast of Chino Municipal Airport. As shown in Figures 8 and 9, aircraft departing LA/Ontario International Municipal airport overfly the project site during both normal operation and during Santa Ana Wind conditions. However, these aircraft are flying more than 2,000 feet above the site during normal operations and more than 2,500 feet during Santa Ana Wind Conditions. As noted in Section 2.5.1, aircraft were observed and heard during the ambient noise measurements but the aircraft noise levels were not intrusive.

Figure 10 shows the LA/Ontario International Airport aircraft noise contours from the Airport's Land Use Compatibility Plan (ALUCP). This figure shows that project site is located outside of the 60 CNEL noise contour. The residential and elementary uses proposed by the project are designated in the ACLUP as normally compatible with noise exposures of less than 60 CNEL. Therefore, the proposed project is not significantly impacted by aircraft noise from LA-Ontario International Airport.

Figure 10 shows that the project site is located within the designated Airport Influence Area. Uses located outside the 60 CNEL contour but within the Airport Influence Area are designated by the ALUCP as being in the Real Estate Transaction Disclosure Overflight Notification Zone. State law (Business and Professions Code Section 11010 and Civil Code Sections 1102.6, 1103.4, and 1353) requires airport proximity disclosure information to be provided during real estate transactions in this zone. Without such notification the project site would be significantly impacted by aircraft overflights. Mitigation for aircraft noise is discussed in Section 4.2.3.

Chino Municipal Airport is located approximately 2.4 miles south-southwest of the project site. Figure 11 presents the future 2025 noise contours from the airport presented in the Noise Element Technical Memorandum for the City of Chino Hills General Plan and were taken from a draft Master Plan prepared for the airport in 2003. Figure 11 shows that the project is located well outside of the 55 CNEL aircraft noise contour. Further, the project site is not located within the Airport Influence Area. Therefore, the project will not be significantly impacted by aircraft noise from Chino Municipal Airport.

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4.0 Mitigation Measures

4.1 Short-Term Impacts

The analysis presented in Section 3.2 shows that construction activities could generate noise levels in excess of limits defined in the Noise Ordinance. However, the Noise Ordinance exempts construction activities occurring between 7:00 a.m. and 6:00 p.m. Monday through Friday, and between 9:00 a.m. and 6:00 p.m. on Saturdays and Sundays. Therefore, the following mitigation measure is proposed and will result in construction noise not resulting in a violation of the Ontario Noise Ordinance and resulting in a significant impact.

> **Mitigation Measure N-1: Control of Construction Hours** – All noise generating construction activities shall be limited to the allowable hours of 7:00 a.m. and 6:00 p.m. Monday through Friday, and between 9:00 a.m. and 6:00 p.m. on Saturdays and Sundays.

4.2 Long-Term Impacts

4.2.1 On-Site Activities

The analysis presented in Section 3.3.1 concludes that the project will not result in any significant long-term on-site or off-site noise impacts from activities within the project site. Therefore, no mitigation is required.

4.2.2 Off-Site Activities

The analysis presented in Section 3.3.2 concludes that the project will not result in any significant long-term off-site traffic noise impacts. Therefore, no mitigation is required.

4.2.3 Impacts on the Proposed Project

The analysis presented in Section 3.3.3.2 shows that aircraft noise levels will not significantly impact the project site. However, the project site is located within the Airport Influence Area of LA/Ontario International Airport and located within the Real Estate Transaction Disclosure Overflight Notification Zone. The Airport Land Use Compatibility Plan and State law requires airport proximity disclosure information to be provided during real estate transactions in this zone. The following mitigation measure will require notification and fully mitigate this potential significant impact.

> **Mitigation Measure N-2: Real Estate Transaction Disclosure** – All real estate transactions within the project will include aircraft overflight notification disclosures required by the ALUCP and state law (Business and Professions Code Section 11010 and Civil Code Sections 1102.6, 1103.4, and 1353.) State law provides the following disclosure language: "NOTICE OF AIRPORT IN VICINITY: This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances can vary from person to person. You may wish to consider what airport annoyances, if any, are

associated with the property before you complete your purchase and determine whether they are acceptable to you.

The analysis presented in Section 3.3.3.1 shows that, without mitigation, residences proposed by the project along Riverside Drive, and Chino Avenue, will be exposed to outdoor traffic noise levels greater than the City's 65 CNEL noise standard without mitigation. Table 9 shows the approximate heights of noise barriers that will reduce the traffic noise levels to less than 65 CNEL. The specific locations and heights of walls are dependent on the geometry and topography of the site and need to be determined based on final grading plans, which have not been completed. The following mitigation measure requires that a study be prepared prior to issuance of grading permits to determine the specific locations and heights of noise barriers required to reduce exterior residential traffic noise levels to less than the City's 65 CNEL standard.

Mitigation Measure N-3: Residential Exterior Traffic Noise – Prior to issuance of grading permits for the residential portion of the project, a detailed acoustical study using final grading plans shall be prepared by a qualified acoustical consultant and submitted to the City. This study shall determine and present the sound barrier heights and locations required to reduce traffic noise levels to be in compliance with the City's 65 CNEL exterior noise standard for residential uses.

Table 9 shows that homes along Riverside Drive, and Chino Avenue will be exposed to traffic noise levels greater than 65 CNEL. Homes along these roadways will require more than 20 dB, and up to 25 dB, of outdoor-to-indoor noise reduction to achieve the City's 45 CNEL interior standard. Detailed engineering calculations based on final building plans are required to demonstrate outdoor-to-indoor noise attenuation greater than 20 dB. Achieving 25 dB of reduction is feasible but may require acoustically upgraded windows.

Table 9 shows that homes along Hellman Avenue south of Riverside Drive, and Carpenter Avenue will be exposed to noise levels greater than 57 CNEL but less than 65 CNEL. Homes along these roads will require closed windows in order to meet the 45 CNEL standard. This will require that ventilation requirements of the Uniform Building Code satisfied with windows closed. The following mitigation measure requires that a study be prepared prior to issuance of building permits for the residential portion of the project to determine any acoustical upgrades required to meet the City's 45 CNEL interior noise standard along with the specific units that will require windows closed conditions to meet this standard.

Mitigation Measure N-4: Residential Interior Traffic Noise – Prior to issuance of building permits for the residential portion of the project, a detailed acoustical study using final building plans shall be prepared by a qualified acoustical consultant and submitted to the City. This study shall demonstrate compliance with the City's 45 CNEL interior noise standard and describe any acoustical upgrades required to meet the standard as well as to determine the units that will require windows closed conditions to meet the standard.

The implementation of Mitigation Measure N-3 and N-4 will result in the residential portion of the project meeting the City's exterior and interior noise standards and fully mitigate any significant traffic noise impacts.

5.0 Unavoidable Significant Impacts

With the mitigation measures described in Section 3.0, all significant impacts will be reduced to a level of insignificance and the project will not result in any unavoidable significant impacts.

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Appendix

Data Used To Predict Traffic Noise Levels

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Table A-1
Average Daily Traffic Volumes (1,000's) and Speeds

Roadway Segment	Speed (mph)	No Project			With Project		
		Exst.	2019	2021	Exst.	2019	2021
Euclid Avenue							
SR-60 to Riverside Dr.	45	32.87	33.56	34.24	32.87	33.56	34.92
Grove Avenue							
Francis St. to Philadelphia St.	50	29.43	30.09	30.69	29.62	30.15	31.49
Philadelphia St. to SR-60	50	33.76	34.50	35.19	33.95	34.57	36.09
SR-60 to Riverside Dr.	45	14.29	14.63	14.92	14.67	14.76	15.60
Riverside Dr. to Chino Ave.	50	7.94	8.14	8.30	7.94	8.14	8.47
Chino Ave. to Schaefer Ave.	50	7.94	8.14	8.30	8.13	8.21	8.66
Vineyard Avenue							
Francis St. to Philadelphia St.	50	10.86	14.17	14.39	11.81	14.50	15.57
Philadelphia St. to SR-60	45	18.25	22.06	22.43	19.20	22.39	23.77
SR-60 to Riverside Dr.	45	12.56	16.69	16.94	14.94	17.52	19.58
Riverside Dr. to Chino Ave.	45	0.00	0.00	0.00	2.38	0.83	2.38
Chino Ave. to Schaefer Ave.	45	0.36	3.22	3.23	0.36	3.22	3.23
Archibald Avenue							
Francis St. to Philadelphia St.	45	15.38	24.35	24.65	15.85	24.52	25.44
Philadelphia St. to SR-60	45	27.27	37.44	37.99	27.75	37.61	39.03
SR-60 to Riverside Dr.	50	25.23	36.38	36.88	27.03	37.01	39.21
Riverside Dr. to Chino Ave.	50	17.28	29.86	30.21	17.28	29.86	30.56
Chino Ave. to Schaefer Ave.	50	17.28	29.86	30.21	18.13	30.16	31.42
Philadelphia Street							
Grove Ave. to Vineyard Ave.	50	9.24	9.43	9.62	9.24	9.43	9.81
Vineyard Ave. to Archibald Ave.	50	9.53	9.72	9.91	9.53	9.72	10.11
Archibald Ave. to Haven Ave.	40	7.88	8.04	8.20	7.88	8.04	8.36
Riverside Drive							
Euclid Ave. to Campus Ave.	45	15.91	19.71	20.04	17.15	20.14	21.60
Campus Ave. to Grove Ave.	50	15.91	19.71	20.04	17.15	20.14	21.60
Grove Ave. to Vineyard Ave.	50	16.63	20.43	20.77	18.25	20.99	22.73
Vineyard Ave. to Archibald Ave.	50	20.70	24.45	24.87	24.12	25.65	28.72
Archibald Ave. to Turner Ave.	50	20.70	24.45	24.87	22.31	25.01	26.92
Turner Ave. to Haven Ave.	50	15.54	19.61	19.93	17.16	20.18	21.87
East of Haven Ave.	50	15.54	19.61	19.93	16.97	20.11	21.68
Chino Avenue							
Grove Ave. to Vineyard Ave.	55	1.06	8.08	8.10	1.73	8.31	8.79
Vineyard Ave. to Archibald Ave.	55	1.06	8.08	8.10	2.96	8.74	10.02

Table A-2
Traffic Mix

Vehicle Type	Daytime (7 am to 7 pm)	Evening (7 pm to 10 pm)	Night (10 pm to 7 am)
Auto	75.51%	12.57%	9.34%
Medium Trucks	1.56%	0.09%	0.19%
Heavy Trucks	0.64%	0.02%	0.08%