



PALMDALE GENERAL PLAN UPDATE

Noise

SPRING 2020 | FINAL REPORT



Envision  
PALMDALE 2045  
a complete community



# Chapter 13: Noise

*This section of the Existing Conditions Report addresses topics related to noise.*

## Key Findings

- Traffic, particularly from SR-14 and major arterials, is the city's most prevalent noise source.
- Noise generated by Palmdale Airport operations is not currently a significant issue because it is surrounded by uses not sensitive to noise, including industrial uses and undeveloped land.
- Potential noise concerns may arise with mixed-use (i.e., residential/commercial/office) development.
- Over the General Plan horizon, portions of the city may be exposed to additional railway noise associated with the proposed High-Speed Rail.
- The current Noise Element includes quantitative noise standards but does not provide guidelines regarding minimizing harmful exposure to excessive noise.
- Use of the city's noise ordinance to regulate noise is limited since it does not provide quantitative standards for determining whether noise is excessive.

## Noise Background

Noise is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and, in the extreme circumstances, hearing impairment (Caltrans 2013).

The unit of measurement used to describe a noise level is the decibel (dB). However, the human ear is not equally sensitive to all frequencies within the sound spectrum. Therefore, a method called "A weighting" is used to filter noise frequencies that are not audible to the human ear. A weighting approximates the frequency response of the average young ear when listening to most ordinary everyday sounds. When people make relative judgments of the loudness or annoyance of a sound, their judgments correlate well with the "A-weighted" levels of those sounds. Therefore, the A-weighted noise scale is used for measurements and standards involving the human perception of noise. In this analysis, all noise levels are A weighted and "dB(A)" is understood to identify the A weighted decibel.

Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. A 10 dB

increase represents a 10-fold increase in sound intensity, a 20 dB change is a 100-fold difference, 30 dB is a 1,000-fold increase, etc. Thus, a doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; a halving of the energy would result in a 3 dB decrease.

Human perception of noise has no simple correlation with acoustical energy. The perception of noise is not linear in terms of dB(A) or in terms of acoustical energy. Two equivalent noise sources do not sound twice as loud as one source. It is widely accepted that the average healthy ear can barely perceive changes of 3 dB(A), increase or decrease; that a change of 5 dB(A) is readily perceptible; and that an increase (decrease) of 10 dB(A) sounds twice (half) as loud (Caltrans 2013).

To help relate noise level values to common experience, Table 13.1 shows typical noise levels from various sources.

**Table 13.1: Typical Noise Levels**

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet Flyover at 1,000 feet		
	100	
Gas Lawn Mower at three feet		
	90	
Diesel Truck at 50 feet, at 50 mph		Food Blender at 3 feet
	80	Garbage Disposal at 3 feet
Noisy Urban Area, Daytime		
	70	Vacuum Cleaner at 10 feet
Commercial Area		Normal Speech at 3 feet
Heavy Traffic at 300 feet	60	
		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (background)
Quiet Suburban Nighttime		
	30	Library
Quiet Rural Nighttime		Bedroom at Night, Concert Hall (background)
	20	
		Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: Caltrans 2009

## Noise Sources

Major sources of noise in a community generally include: motor vehicles, railways, airports, and construction activities. The most commonly distributed and predominant noise source is traffic noise due to motor vehicles driving along area roadways. Traffic noise is of concern because it is characterized by a high number of individual events, which often create a sustained noise level.

### Traffic Noise

Traffic noise is the primary noise source in the City of Palmdale. The highest noise levels occur along high traffic volume roadways, including freeways, highways, and arterials. These roadways in Palmdale include Highway 138, Highway 14, the Sierra Highway and Highway 122 and major streets such as Fifth Street W, 50<sup>th</sup> Street E, 30<sup>th</sup> Street E, , Palmdale Boulevard, and Rancho Vista Boulevard.

### Railway Operation Noise

In general, noise from rail operations, both for people and goods movement, is under the jurisdiction of the Federal Railroad Administration (FRA), which sets forth and enforces safety standards, including noise emissions for railroad locomotive cabs, at-grade crossing bells, and locomotive warning horns. Rail lines are operated by Union Pacific and Metrolink.

The Antelope Valley Station Line of the Metrolink commuter rail system runs through Palmdale adjacent to Sierra Highway. The Antelope Valley Line has 15 trains en route to Union Station and 14 trains en route to Lancaster on weekdays and six trains each way on weekends (Metrolink 2018). As a commuter rail service, most weekday trains on the Antelope Valley line run during the peak traffic morning and evening hours, when noise levels are high due to peak traffic amounts.

The California High Speed Rail, which will run from San Francisco to the Los Angeles area, is also proposed to run through Palmdale. The environmental impact analysis for the portion of the rail to be located in Palmdale has yet to be released. However, the environmental impact analysis for other portions of the high speed rail show moderate to severe noise impacts in locations where train speeds and operations are high near sensitive land uses such as residential areas, churches, schools, and hospitals (California High Speed Rail Authority and the Federal Railroad Administration 2011). The level of noise impacts associated with the high-speed rail in Palmdale will depend on the final rail alignment and the nature and density of nearby sensitive uses.

An additional high-speed rail line funded by Virgin Trains USA, (formerly XpressWest) is expected to begin construction as early as 2019 and will begin operations in 2022. Virgin Trains USA will run from Las Vegas to Palmdale. The environmental impact analysis for the Palmdale section of the rail line has not been released. However, similar to the impacts described in the environmental impact analysis for the San Francisco to Los Angeles high speed rail mentioned

above, noise impacts could be moderate to severe at noise sensitive receptors in the vicinity of the rail line.

The Union Pacific Railroad transports freight through the City of Palmdale. Most of the freight train traffic occurs between the hours of 1:00 am and 5:00 am. Freight traffic does not have a set schedule. Noise generated by freight trains in Palmdale was previously measured at 64 to 73 dBA. Approximately 10 to 25 freight trains travel through Palmdale per day (Caltrans 2018).

## **Airport Noise**

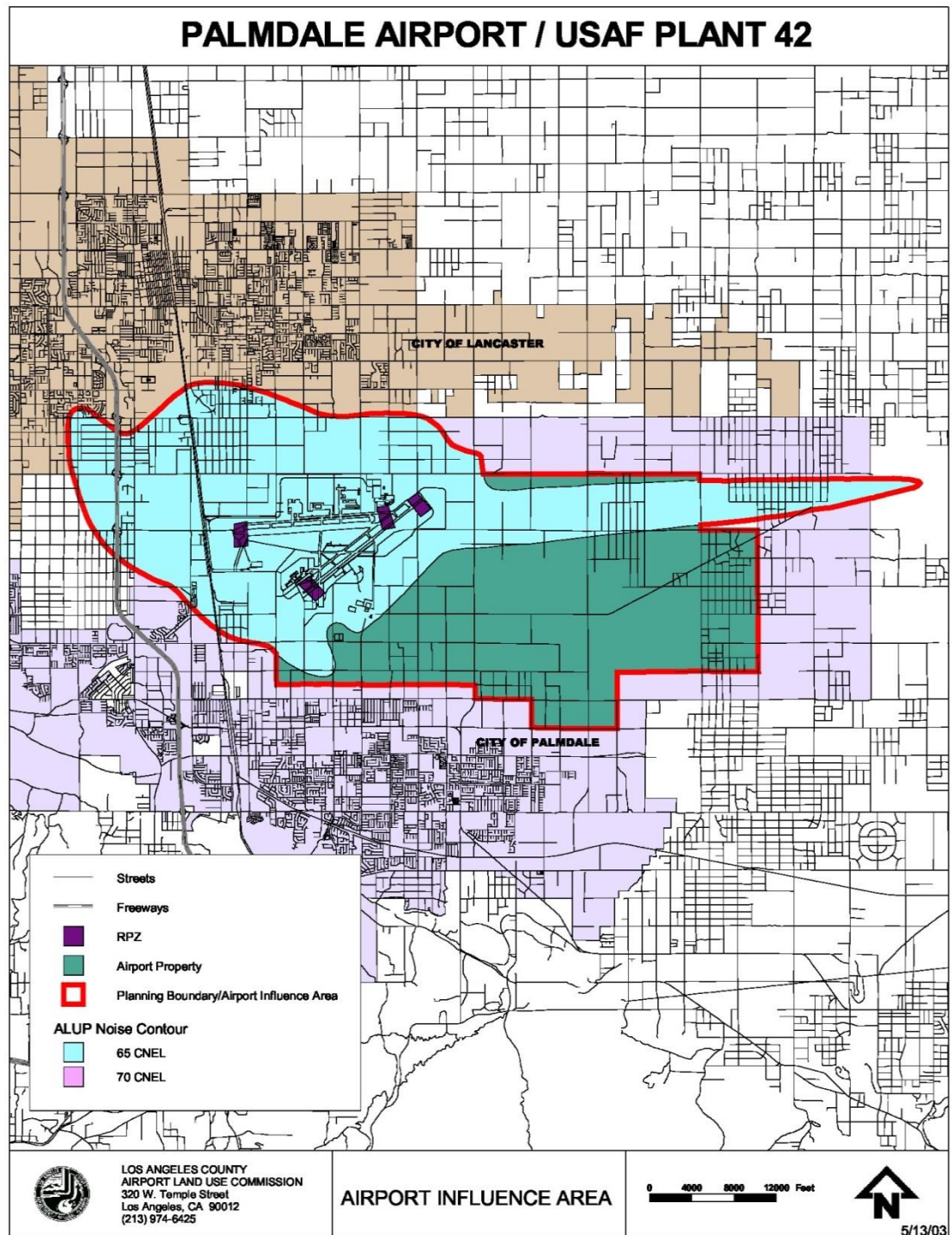
Plant 42, currently the only operational runway at the Palmdale Regional Airport, is located in the northern part of the City near existing industrial uses and undeveloped land that is designated as industrial. Noise levels in this area of the City have been measured at 60.5 – 68.5 dBA depending on their proximity to major noise sources. Peak noise levels due to aircraft operations (approaches and landings) have been measured at 85.5 dBA near the USAF Plant 42 runway (Palmdale 1995). Because Plant 42 runway is currently the only operational runway at the Palmdale Regional Airport overall community noise levels surrounding the airport are typically around 65 CNEL. See Figure 13.1. In 2018, USAF Plant 42 had 25,235 total flights, a majority of which were military.

The City is considering the construction of a new passenger airport terminal, which would promote an increase in commercial flights. Plant 42 operations would increase with the addition of the passenger terminal; however, flight increases generated by the single passenger terminal would not exceed the previous operation of the whole airport.

Other airports in the vicinity of Palmdale include:

- Agua Dulce Airpark in Agua Dulce located approximately 4 miles from Palmdale
- Sterks Ranch Airport in Lancaster located approximately 4 miles from Palmdale
- Bohunk’s Airpark in Lancaster located approximately 5 miles from Palmdale
- Nichols Farms airport located in the unincorporated area of Palmdale approximately 5 miles from the Palmdale City limits
- General William J. Fox Airfield in the Lancaster located approximately 7 miles from Palmdale

Figure 13.1 Palmdale Airport Influence Area Noise Levels



Source: Los Angeles County Airport Land Use Commission 2003

## Stationary Noise

Whereas mobile-source noise affects many receptors along an entire length of roadway, stationary noise sources affect only their immediate areas. Stationary sources of noises may occur from all types of land uses. Residential uses generate noise from landscaping, maintenance activities, and air conditioning systems. Commercial uses generate noise from building operations such as heating, ventilation, air conditioning (HVAC) systems, loading docks, as well as commercial activity from restaurants, bars, outdoor dining, parking garages/lots, etc. Consequently, potential noise concerns can arise when new developments with mixed-uses (i.e. residential, commercial, office) are proposed.

Industrial uses may generate noise from HVAC systems, loading docks, and, possibly, machinery; all of which may be on a more continual basis due to the nature of the particular activities. Industrial activity is typically the generator of the highest levels of stationary source noise. However, Palmdale's industrial uses (e.g. Air Force Plant 42, Northrup Grumman, and Boeing) are in the northeastern section of the City, adjacent to the Palmdale Regional Airport, and are not near any noise sensitive land uses.

Noise generated by residential, commercial, and school uses is generally intermittent. Schools are considered noise-sensitive because of the necessity for quiet in the classroom to provide an adequate environment for learning. However, outdoor activities that occur on school campuses throughout Palmdale can generate noticeable levels of noise. While it is preferable to have schools in residential areas to support the neighborhood, noise generated on both the weekdays (by physical education classes and sports programs) and weekends (by use of the fields by youth organizations) can elevate noise levels.

Construction of new development could also result in stationary noise through the use of various types of construction equipment, such as backhoes, dump trucks, and paving machines, all of which can cause substantial short-term increases in noise in the vicinity of construction sites.

## Existing Noise Conditions

Fifteen noise measurements were taken in various locations throughout the City. Noise measurement locations are shown in Figure 13.2. Table 13.2 identifies the sound level measurement locations and measured noise levels. As shown in Table 13-2, noise levels are the highest adjacent to freeways, highways and other large roadways.



**Table 13.2** Sound Level Measurement Results (dBA)

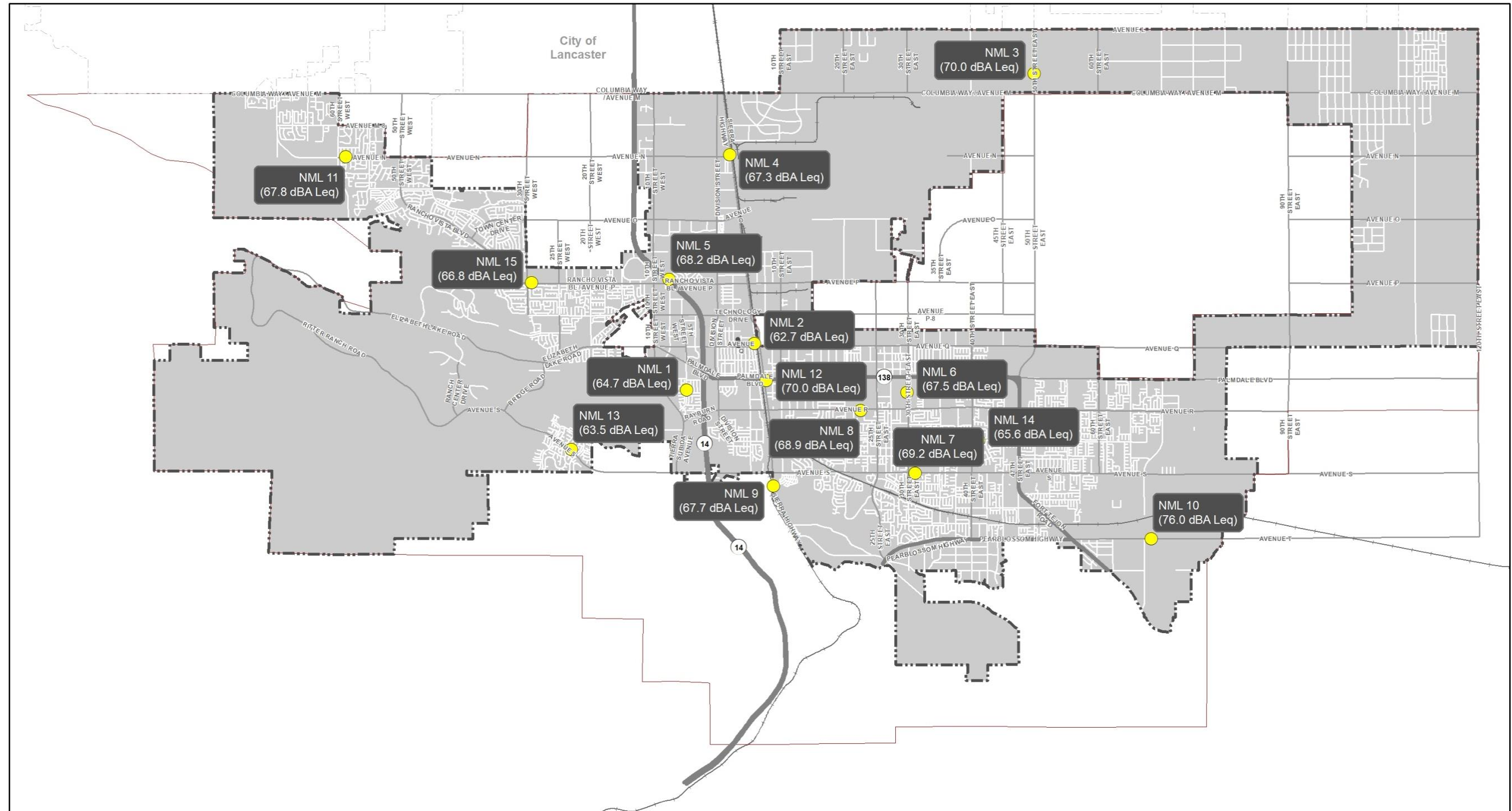
Measurement Location	Primary Noise Source	Sample Time	Leq	Lmax
1 – Fifth Street W adjacent to Manzanita Heights Park	Traffic along Fifth Street W	2:12 pm – 2:22pm	64.7	80.3
2 – Clock Tower Plaza Drive E	Traffic along Plaza Drive	2:51pm – 3:01pm	62.7	79.5
3 – 50 <sup>th</sup> Street E between Avenue L-8 and E Avenue M	Traffic along 50 <sup>th</sup> Street E	3:43pm – 4:03 pm	70.0	85.7
4 – Sierra Highway and W Avenue N	Traffic along Sierra Highway	3:29pm – 3:39pm	67.3	84.7
5 – Callet Street adjacent to Highway 138	Traffic along Highway 138	3:10 pm – 3:20pm	68.2	83.3
6 – 30 <sup>th</sup> Street E adjacent to Williams J. MacAdam Park	Traffic Along 30 <sup>th</sup> Street E	4:37pm – 4:47pm	67.5	90.4
7 – E Avenue S adjacent to 30 <sup>th</sup> Street E	Traffic along E Avenue S	5:14pm – 5:24pm	69.2	84.0
8 – E Avenue R between Hasting Street and 25 <sup>th</sup> Street E	Traffic along E Avenue R	4:19pm – 4:29pm	68.9	79.7
9 – Sierra Highway adjacent to E Avenue S	Traffic along Sierra Highway	1:49pm – 1:59pm	67.7	84.1
10 – East Avenue T adjacent to 70 <sup>th</sup> Street	Traffic along E Avenue T	5:39pm – 5:49pm	76.0	90.6
11 – W Avenue N between 60 <sup>th</sup> Street and Maple Street	Traffic along W Avenue N	12:30pm – 12:40pm	67.8	81.0
12 – Palmdale Boulevard adjacent to Sierra Highway	Traffic along Palmdale Boulevard	2:32pm – 2:42pm	70.0	94.4
13 – W Avenue S between The Groves and Mimosa Way	Traffic along W Avenue S	1:29pm – 1:39pm	63.5	83.9
14 – E Avenue R-8 between Penara Street and 42 <sup>nd</sup> Street E	Traffic along E Avenue R-8	4:54pm – 5:04pm	65.6	79.3
15 – Rancho Vista Boulevard between 30 <sup>th</sup> Street W and 27 <sup>th</sup> Street W	Traffic along Rancho Vista Boulevard	12:58pm – 1:08pm	66.8	75.8

**Note:**  $Leq[10]$  is the ambient noise level for a 10-minute measurement period;  $Lmax$  is the maximum sound level recorded during the 10-minute measurement. Sound pressure levels are expressed in decibels (dBA), which is a logarithmic scale. Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dBA.

**Source:** Rincon Consultants, field measurements on March 18, 2019 using ANSI Type II integrating sound level meter.

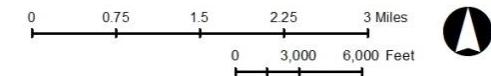
*This page is intentionally left blank.*

Figure 13.2 Noise Measurement Locations



**Noise Measurement Locations**

- Noise Measurement Locations
- Major highway/Arterial
- Arterials
- Railroad
- City Limits
- City Boundary
- Sphere of Influence



Data Sources: City of Palmdale GIS data; World Terrain Base, 2015 ESRI, USGS, NOAA.

Produced by Raimi + Associates  
March 2019

*This page is intentionally left blank*

## Sensitive Noise Receptors

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with each of these uses. Residences, schools, libraries, hospitals/convalescent facilities/medical facilities are most sensitive to noise intrusion and, therefore have, more stringent noise exposure standards than manufacturing or agricultural uses that are not subject to impacts such as sleep disturbance. The sensitive noise receptors in Palmdale are shown in Figure 13.3.

## Noise Regulation

### Existing Plans and Policies

#### *Palmdale General Plan Noise Element*

California Government Code Section 65302(f) requires all General Plans to include a Noise Element that addresses noise related impacts in the community. The City of Palmdale General Plan outlines goals, objectives, and policies to minimize the exposure of residents and other sensitive receptors to excessive noise. Policies in the General Plan include noise standards and land use compatibility guidelines are used during planning and when the City makes development decisions in order to reduce excessive noise to the furthest extent possible. Additionally, the City's noise element promotes compatible land uses with the Palmdale Regional Airport.

The Palmdale General Plan specifies outdoor and indoor noise limits for various land uses: Residential, Commercial, Institutional, and Industrial. See Table 13.3 below. The noise limits specified are in terms of the Community Noise Level (CNEL) and Leq. These standards include maximum permissible noise levels for noise sources not operating on a public right-of-way. Therefore, they don't apply to traffic noise.

**Table 13.3** City of Palmdale Noise Guidelines

Land Use	Maximum Acceptable Exterior Noise Levels	Maximum Acceptable Interior Noise Levels	Scale
Residential	65	45	dBA CNEL
Commercial	Noise level which does not jeopardize health, safety, and welfare of visitors.	55	Leq
Institutional	Noise level which does not jeopardize health, safety, and welfare of visitors.	45	Leq
Industrial	Noise level which does not jeopardize health, safety, and welfare of visitors.	65	Leq

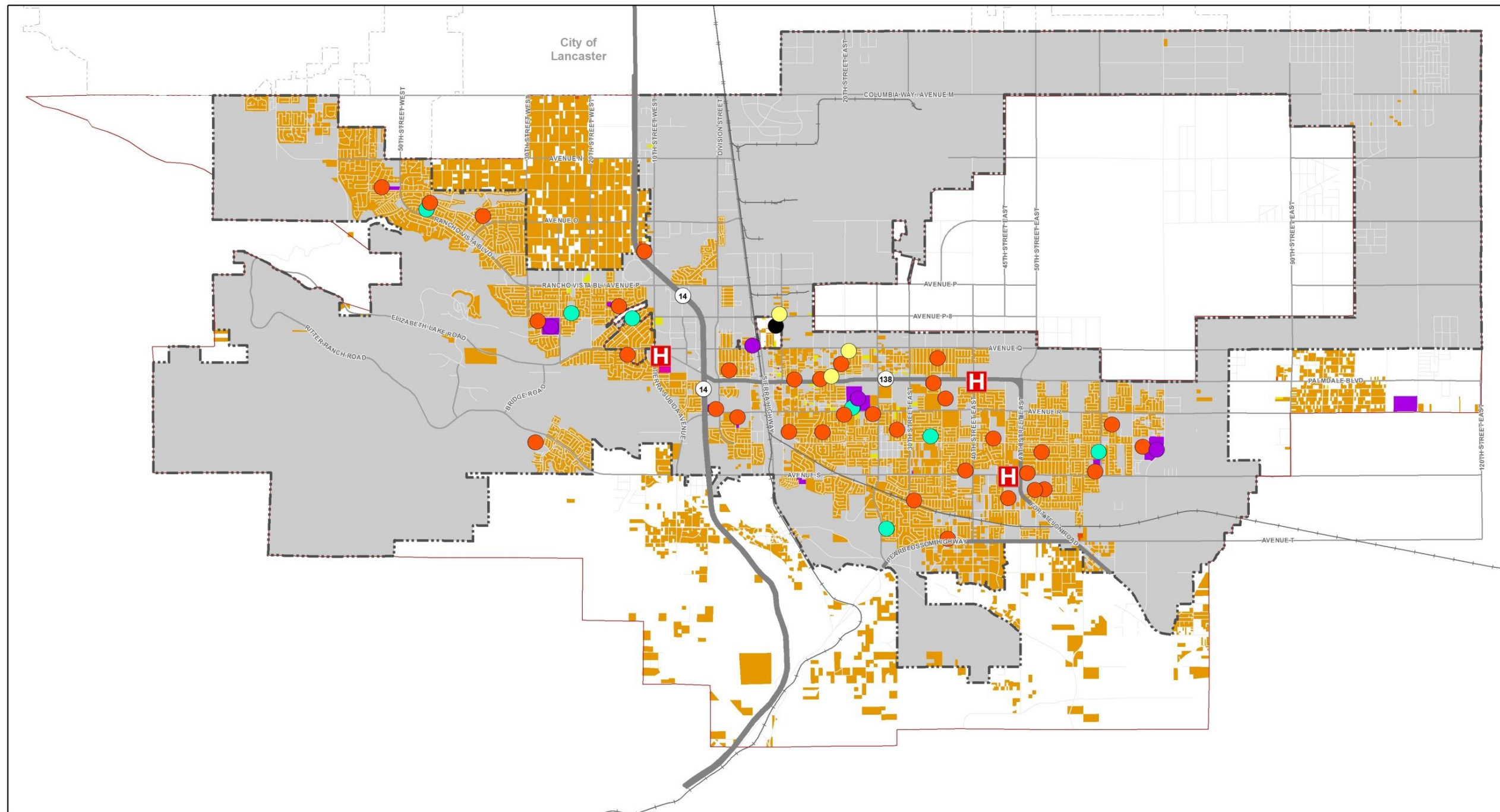
Source: Palmdale General Plan 1993

Although the existing Palmdale General Plan consists of quantitative noise standards, it does not provide guidelines on how to minimize harmful exposure to excessive noise. The General Plan Update may consider providing strategies of how noise could be minimized in accordance with Palmdale’s various land uses. Some examples of these strategies include soundproofing with soundproof windows and insulation, landscaping and berms, building design and setbacks, buffer areas, operating hours of major sources, roadway maintenance and traffic flow, quieter pavement strategies, and other techniques.

### ***Palmdale Municipal Code***

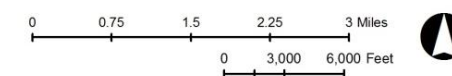
The City’s Municipal Code limits excessive noise that would disturb neighborhoods or other sensitive uses. The ordinance does not contain any specific limits, but rather states that “It shall be unlawful for any person to willfully make or continue, or cause or to be made or continued, any loud, unnecessary, or unusual noise...” The use of this noise ordinance to regulate noise is limited since it does not provide specific limits by which to determine if a noise source is excessive or not. Palmdale Municipal Code (PMC) Section 8.28.030, prohibits earth excavating and similar activities between 6:30 a.m. and 8:00 p.m. in any residential zone, and on Sundays.

Figure 13.3 Noise Sensitive Land Uses



**Noise Sensitive Land Uses**

- |                       |                 |                           |
|-----------------------|-----------------|---------------------------|
| <b>Schools</b>        | <b>Land Use</b> | City of Palmdale Boundary |
| Preschool             | Church          | Sphere of Influence       |
| Elementary; K-8; 6-12 | Education       | Other City Boundary       |
| Intermediate          | Hospitals       | Major Highway/Arterial    |
| High School           | Mixed Use       | Railroad                  |
| Unknown               | Residential     |                           |
| hospitals             |                 |                           |



Data Sources: City of Palmdale GIS data.

Produced by Rincon Consultants, Inc.  
June 2019

*This page is intentionally left blank*



## Resources

California Department of Transportation (Caltrans). 2009, November. Technical Noise Supplement (“TeNS”). Prepared by ICF International.

Caltrans. 2018. California State Rail Plan. Available at:  
<http://www.dot.ca/californiarail/>

California High Speed Rail Authority and the Federal Railroad Administration. 2011. California High-Speed Train Project EIR/EIS. Section 3.4 Noise And Vibration Merced To Fresno Section. Available at:  
[http://www.hsr.ca.gov/docs/programs/merced-fresno-eir/drft\\_EIR\\_MerFres\\_Vol1\\_3\\_4.pdf](http://www.hsr.ca.gov/docs/programs/merced-fresno-eir/drft_EIR_MerFres_Vol1_3_4.pdf)

Federal Aviation Administration, 2019. Air Traffic Activities System (ATADS), Airport Operations. Available at:  
<https://aspm.faa.gov/opsnet/sys/Airport.asp>

Los Angeles County Airport Land Use Commission. 2003. Palmdale Regional Airport, Airport Influence Area. Available at:  
[http://planning.lacounty.gov/assets/upl/project/aluc\\_airport-palmdale.pdf](http://planning.lacounty.gov/assets/upl/project/aluc_airport-palmdale.pdf)

Metrolink. 2018, Metrolink Timetable. Effective October 8, 2018. Available at:  
<https://www.metrolinktrains.com/globalassets/schedules/1st-all-lines-timetable-final.pdf>

Palmdale, City of. 1995. Environmental Impact Report for the Palmdale Specific Business Park Center Specific Plan. Volume II: Technical Appendices. Available at:  
<http://www.cityofpalmdale.org/Portals/0/Documents/Business/Planning/EIR/Palmdale%20Business%20Park%20EIR%20-%20Vol%202.pdf>